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Sr. Dr. Christina Augustine
Managing Editor & Publisher
Santhom Journal of Edu. RACE

EDITOR'S NOTE

Welcome to the latest edition of **Santhom Journal of Educational Researches and Curriculum Enrichments (Santhom Journal of Edu. RACE)**, where the pursuit of knowledge meets the thrill of educational innovation. In this dynamic issue, we invite you to embark on a journey through the evolving landscapes of education, exploring the frontiers of pedagogy, technology, and global collaboration. Our journal thrives on diversity, and this issue is no exception. Within these pages, you will encounter a rich tapestry of perspectives from educators, researchers, and thought leaders who are shaping the educational narrative. From local classrooms to global initiatives, the variety of voices represented here reflects the vibrant mosaic of the educational community.

Santhom Journal of Edu. RACE is committed to showcasing groundbreaking approaches to teaching and learning. As you delve into this issue, be prepared to discover innovative pedagogical methods, technology integrations, and insightful strategies that are transforming classrooms and inspiring learners.

Education knows no bounds, and in this issue, we extend our gaze to encompass global conversations. Whether it's the challenges faced by educators around the world or the triumphs of localized initiatives, Edu. RACE is dedicated to bridging the gap between global perspectives and local impacts. In the ever-changing landscape of education, ethical leadership is more crucial than ever. Our journal takes a closer look at the role of educators as ethical leaders, emphasizing the values that guide us in shaping the minds and character of future generations.

As we navigate the Edu. RACE, we turn our attention to the future. What trends and technologies will shape the educational landscape in the years to come? Join us in exploring these questions as we peer into the horizon of educational possibilities.

Edu. RACE is not just a publication; it's a platform for collaboration. Your engagement is integral to the success of this journal. Share your insights, experiences, and reflections with us. Let's build a community where ideas flow freely, and the collective wisdom of educators propels us forward.

Thank you for being part of the Santhom Journal of Edu. RACE. We hope this issue sparks inspiration, ignites curiosity, and fosters a sense of camaraderie among our readers. Together, let's continue to push the boundaries of educational excellence.

Happy reading!

Dr.Shimna Paul
Chief Editor

Invitation for Articles / Research Papers

Authors are invited to contribute articles on contemporary issues in education in general and Indian education in particular for publication in Santhom Journal of Edu. RACE.

The articles may be sent as an e-mail attachment in MS Word to: stmprincipal123@gmail.com. Also send three printed / typed copies to :

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Chief Editor
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Promoting Values through Teaching Mathematical Concepts

Dr. Priya Mathew

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Abstract

Education is at the heart of UNESCO's mission to transform lives, build peace, and promote sustainable development. In a world often marked by conflicts and misunderstandings, the application of mathematical concepts can serve as a powerful tool for instilling values that promote peace and harmony. By integrating Mathematics into educational curricula, fostering critical thinking skills, and encouraging problem-solving, we can work towards a more peaceful and cooperative global society. There is a notion that Mathematics, which is taught systematically and is perceived to be robotic, can never be regarded to promote peace. In an effort to change this perception of the subject and as an undertaking of Mathematics club a one-week workshop was organized on the subject of "Instilling values through Mathematical Concepts". The participants were teacher trainees of St. Joseph's College of Education, Mysuru. During this workshop, we attempted to draw values from the concepts in the Mathematics textbooks for classes 8, 9, and 10. The impact of the workshop was evaluated, and the participation of the teacher trainees in this approach to Mathematics instruction was determined by a survey. This paper provides an insight into the effectiveness of this innovative approach to Mathematics instruction as well as the suggestions of the teacher trainees on how to put it into practice in the classroom.

Key Words : *Values, Mathematical concepts, peace, sustainable development, innovative approach etc.*

Introduction

The fundamental tenets of both education and peace are included by peace education. Although it has a similar tone, its purpose is very different from the traditional method of instruction. The idea of peace education is both broad and beneficial. As it attempts to teach every person to live in peace with one another, the necessity and significance of peace education become both apparent and evidently necessary. It encourages equality and deters aggression. Arts courses typically aim to encourage ideals via peace education. From the beginning of the twenty-first century, Science and technology have taken initiatives to support peace and growth. Mathematics is a key to all other fields of Science. But relating

Mathematics to peace and promotion of peace remains a difficult task for many. Savannah Yates quotes, “Mathematics may not teach us how to end world hunger, create world peace or fix a broken heart. But it does teach us that every problem has a solution.” This points out that Mathematics too has an inner meaning that contributes to value education. For instance, with matrices we can calculate, identify chains and groups of positive and negative relations in a class of pupils or countries. With graphs we are back to geometry-mathematics for the eyes- a great tool to map what happens when the elements, the points, are human beings and the “edges”, the lines, are their relations’ (Galtung and Fischer, 2012).

Literature Review:

Panicker and Srivatsa (2020) conducted a study to develop strategies for teaching Mathematics through an integrated approach, put the strategies into practice, and assess the effectiveness of the approach in terms of students’ acquisition of value conceptual knowledge and value perception in order to instill the values of equality and cooperation in students.

Anilkumar (2014) conducted a study utilizing a pre-test post-test quasi experimental approach to determine the effects of value integrated education on value-based student behavior and on value attainment of students at upper primary level. According to the study, value-integrated education is beneficial in changing the behavior and attaining values of upper primary school pupils.

Yaro, Amoah, and Wagner (2020) reflected on their paper about their experiences teaching and working with Mathematics teachers to explore challenges and opportunities for creating mathematics tasks for peace and sustainability. They emphasized that local communities have already been colonized by globalization. Making Mathematics assignments that are issue-centric and socially relevant to address issues of the local community is still difficult due to the linked “technoscientific,” the conservative nature of textbooks, time restraints, and the predominating force of poverty. They suggested a development of a mathematics task to illustrate the possibility of creating “a situated mathematics task’ for students that respond to issues of local community. They proposed the creation of a math assignment to demonstrate the potential for developing “a placed mathematics challenge” for pupils that addresses concerns of the local community.

Afolabi (2016) in his paper made a clarification on conceptual issues of education, teaching and peace and Mathematics teachers were given a suggestion to emphasize the components of affective development which are also elements of peace.

Widiati and Juandi (2019) pointed out that Mathematics education plays an important role in realizing Education for Sustainable Development (ESD). Through his review paper he came to an inference that the Mathematics philosophy for ESD is continuous learning and synchronization between Mathematics learning and character values. Also, students should be sensitive to

the inherent values included in a mathematical problem so that they can assist the advancement of student life in the future.

Pinto and Venugopal (2019) in their survey, through the content analysis of NCERT class IX textbooks stated that, all the textbooks have instances that help students to cultivate peace values and peace skills. Social Science, Languages and science have greater scope for peace. Mathematics subject enables to students to be skillful.

Most of the research in this area focuses on teaching strategies that teachers might use with Mathematics classes, but does not emphasize the importance of the values derived from the concepts in the textbook.

Objectives of the Study:

- To analyze the Values in each of the High School Level Mathematical Concepts based on the Karnataka State Mathematics textbook.
- To determine the influence of Value Analysis in Mathematical Concepts on student teachers.

Methodology

Method :

The present study was carried out by critical analysis of Karnataka State Board Mathematics textbook and a survey method to determine the influence of value analysis.

a. Critical Analysis of Mathematics Textbooks

In order to analyze the values instilled in Mathematical concepts, the Mathematics club of St. Joseph's College, Mysuru conducted a two-week workshop. The teacher trainees were divided into six groups. Among the six groups, two groups received 8th grade, two groups received 9th grade and again two groups received 10th grade texts respectively. During this workshop, students were directed to investigate the values that can be taught in the classroom alongside each mathematical concepts.

b. Survey

A post-workshop survey was administered to assess the workshop's impact and learn more about the trainees' opinions on this system for teaching mathematics. Researchers prepared a questionnaire which contained 8 polar questions and 2 open ended questions. Question wise percentage analysis was done to analyze the influence of the workshop.

c. Sample

Sample of the study consists of 24 teacher trainees of Mathematics department from St. Joseph's College, Mysuru.

Results and Discussion:

From the critical analysis of the textbook done by the teacher trainees certain values were drawn out from the concepts like rational numbers, exponents, quadrilaterals, co-ordinate geometry, linear equations in two variable, area, volume, triangles, circles, probability and many more. Some of the values extracted through the workshop are presented in table 1.

Table 1

Values extracted through critical analysis of mathematics textbook

Sl. No.	Mathematical Concepts	Values	Description
1	Negative of a number	Stay positive. Avoid negative thoughts	When a minus sign is added, any positive number becomes negative. Like how a tiny negative idea or action may alter your otherwise optimistic outlook.
2	Role of zero	Respect others	Zero is always viewed as having no worth. Yet, it is capable of altering the value of any number. Everyone has their own strengths, too. Nobody should be judged or undervalued.
3	Mensuration - Quadrilateral	Uniqueness	Quadrilaterals are closed geometric shapes with four sides. Nonetheless, every quadrilateral is distinct from the others in some manner. Similarly, every person in a group of the same age is distinctive in their own manner in terms of their skills and interests.
4	Exponents and Powers- Negative and positive exponents	Positivity	When two numbers raised to negative exponential are multiplied, it gives a value with increased negative exponent. In case of positive exponential, the result will be increased positive exponent. Similarly, one should always have positive thoughts which can result in a happier life.
	Zero Exponential	Equality	Any number raised to zero gives the answer '1'. Likewise, regardless of who they are, everyone is equal before the law.

In a survey conducted by Pinto and Venugopal (2019) on peace values and peace skills among secondary school students of Karnataka, it was noted that in chapter, 'Introduction to Mathematical Modeling', real world problem is taken and written in an equivalent mathematical problem. Then its solution is interpreted in terms of the real world.

Table 2

Analysis of the Survey

#	Question	Yes(%)	No(%)
1	Are values for each concept time-consuming to figure out?	90.9	9.1
2	Do you struggle to determine the values in each Mathematics chapter?	81.8	18.2
3	Do you find it effective to use Mathematics in inculcating values in children?	90.9	9.1
4	Is it time-consuming for teachers to include values into Mathematics lessons?	50	50
5	Prior to the workshop, have you ever considered values through Mathematics?	63.6	36.4
6	Was this workshop effective?	95.5	4.5
7	Do you think this is beneficial for the B. Ed trainees?	90.9	9.1 (may be)

Among the surveyed teacher trainees, it was found that 63.6% of them had not thought about the values derived from mathematical concepts prior to the workshop. Almost 91% of them thought it took a long time to find out the values, but they also thought it was good for B.Ed trainees to instill values through teaching Mathematics. And majority of them found the workshop useful.

Table 3

Survey on age preference of value-based instructioon

#	Question	Higher Primary	Second-ary	Higher Secondary	Degree	Post Graduation	B.Ed
1	Which age group do you think this method of teaching Mathematics is most beneficial for?	45%	4.5%	27.3%	9.1%	9.1%	4.5%

It was found that 45% of the surveyed teacher trainees suggested that, this value-based instruction will be beneficial in higher primary level and 27.3% of them agreed for higher secondary level.

Analyzing the perspectives of the teacher trainees revealed that although time consuming to bring out a value and relate it to a mathematical concept, it would be beneficial to the learner group by humanizing Mathematics. Despite concentrating on these values, each mathematical notion provided with additional benefits, and it even altered the student teachers' perception of those concepts. Most students view Mathematics as a rigid subject and thus loose interest in the long run. By inculcating values in teaching Mathematics, one can take a humane approach in embracing the subject, known for its beautiful complexities that is fundamental to the functioning of the world.

Conclusion

The study of Mathematics involves more than just numbers. Its significance to societal wellbeing is always being contested. All Math enthusiasts are looking for persuasive answers to all of these questions. If properly executed, this novel way of teaching Mathematics would be a really compelling concept. Always, the material is made intriguing or uninteresting by the teacher. Getting students to talk about concepts, methods, and understandings is the best approach to enhance their understanding of science. Like it did for Physics, Mathematics for peace may lead to new peace prospects. A little arithmetic could be able to open up some undiscovered or secret peaceful realms.

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Learning and Innovation Skill: A Study among Secondary School Students

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Abstract

The 21st century has provided us with dynamic, exploratory and enriching platform on one hand and on the other hand, it is imposing challenging and gruesome demand on people from all walks of life amidst the constantly evolving present global scenario (Sing, 2012). The Partnership for 21st Century Skills (P21; 2008, 2009) recognizes Learning and Innovation Skill as those skills which is associated with an individual while learning and exploring things. Through the present study, the investigator tried to find out the Learning and Innovation Skill among secondary school students. The investigator conducted a survey among 75 secondary school students - both aided and government schools - using the Learning and Innovation Skill test. The collected data was analyzed using descriptive statistics and 't' test and the results revealed that the Learning and Innovation Skill among secondary school students is low and there is significant difference in the Learning and Innovation Skill among secondary school students with respect to gender and type of school.

Key Words *: Critical thinking, Problem solving, Communication and Collaboration, Creativity etc.*

Introduction

As the world is changing rapidly in every sector the students also need to be trained to move along with the changes with potential. 21st Century Skill is a dynamic evolving concept and the present education system needs an exploration of the several dimensions of 21st Century Skills. P21(2009) includes Learning and Innovation Skill among 21st Century Skills and recognizes as those skills that separate students who are prepared for a more and more complex life and work environments in the 21st century and those who are not. The sub skills of Learning and Innovation Skill are Creativity and Innovation, Critical thinking and Problem solving, Communication and Collaboration.

1. Creativity and Innovation

Creativity makes the child to elaborate and express their ideas in a manner they wish. It includes the following aspects.

- Think creatively
- Work creatively with others
- Implement innovations

2. Critical Thinking and Problem Solving

The focused and careful analysis of things to develop better understanding about it is termed as critical thinking. A student having critical thinking and problem solving ability will be able to accept or reject an idea based on logical reasoning. It involves:

- Reason effectively
- Use systems thinking
- Make judgments and decisions
- Solve problems

3. Communication and Collaboration

In the era of 21st century learner's communication and collaboration are the two major skills that are of greatest importance as the present teaching learning processes are based on constructivist theories. The following aspects are related to this skill.

- Communicate clearly
- Collaborate with others

Statement of the Problem

The present study entitled as, "**Learning and Innovation Skill: A Study among Secondary School Students".**

Objectives

1. To find out the Learning and Innovation Skill of secondary school students
2. To compare the Learning and Innovation Skill of secondary school students based on,
   a. Gender
   b. Type of School

Hypotheses

1. There is a significant difference between boys and girls at secondary leve in on their Learning and Innovation Skill.
2. There is a significant difference between aided school students and government school students at secondary level on their Learning and Innovation Skill.

Methodology

The researcher carried out this description study by using survey method which was the appropriate method to find out the Learning and Innovation Skill among Secondary School Students.

Sample

Sample consists of 75 secondary school students in which 32 students from aided school and 43 students from government school.

Tool

A test on Learning and Innovation Skill prepared by the investigator was used to assess the Learning and Innovation Skill of secondary school students.

Statistical Techniques Used

Statistical techniques like mean, median, mode, standard deviation and 't' test was used.

Analysis and Interpretation

The data collected was analyzed using descriptive statistical techniques and 't' test. The level of significance was tested at 0.05 level. The details of analysis are given below.

1. Descriptive analysis on Learning and Innovation skill among Secondary School Students

Table 1

M, Md, Mo, SD of Learning and Innovation Skill

Mean	Median	Mode	Standard Deviation
18.84	20	20	9.26

The analysis of table 1 indicates that the mean of Learning and Innovation Skill among secondary school students is 18.84, mode is 20, median is 20 and standard deviation is 9.26. The mean value 18.84 is less than compared to the total value. The low mean value indicates that Learning and Innovation Skill among secondary school students is low.

2. Analysis of Learning and Innovation Skill among secondary school students on the basis of gender.

Table 2

N, M, SD and 't' value of Learning and Innovation Skill based on gender.

Sub-sample	No. of Students	Mean	SD	't' value	Level of Significance
Girls	40	15.64	9.88	2.21	Significant at 0.05 level
Boys	35	21	10.15		

Analysis of table 2 indicates that there is significant difference in the Learning and Innovation Skill among girls and boys of secondary school. The mean value of the Learning and Innovation Skill of girls are lower than boys.

Learning and Innovation Skill of girls is only 15.64 which is significantly less than the mean value of Learning and Innovation Skill of boys (21). This indicates that Learning and Innovation Skill of girls is less than that of boys.

3. Analysis of Learning and Innovation Skill among secondary school students on the basis of type of school.

Table 3

N, M, SD and 't' value of Learning and Innovation Skill based on type of school

Sub-sample	No. of Students	Mean	SD	't' value	Level of Significance
Government	32	17.58	8.95	3.50	Significant at 0.05 level
Aided	43	19.20	8.08		

Analysis of table 3 indicates that there is significant difference in the Learning and Innovation skill of secondary school students of government school and aided school and the Learning and Innovation skill of government school students were lower than aided school students.

Conclusion

This study assessed the Learning and Innovation Skill of secondary school students. The study results revealed that their skill was low and there exist a significant difference in the Learning and Innovation skill among secondary school students with respect to their a. Gender (Boys & Girls), b. Type of School (Government & Aided). Attainment of Learning and Innovation Skills makes the learners critical, creative and collaborative and stresses on the importance of communication and collaboration in education. Therefore, a careful incorporation of this skill in the text books and training programs for teachers regarding this skill should be undertaken by the policy makers.

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Peace and Peace Education - A Perspective

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Abstract

Peace, both as a state of tranquility and a collective aspiration, forms the cornerstone of harmonious societies. In case peace is not merely the absence of conflict but a dynamic equilibrium fostered by understanding, tolerance and cooperation. Peace education therefore, emerges as a crucial endeavor aimed at cultivation these values in individuals and communities. It goes beyond the traditional realms of academic learning, seeking to unstill empathy, conflict resolution skills and a deep appreciation for diversity. By fostering a culture of peace through education, societies lay the foundation for sustainable development, social justice and the resolution of conflicts through dialogue rather than violence. In essence Peace Education becomes a catalyst for buildings a world where difference is celebrated and the pursuit of shined well- being takes precedence over discord.

Key Words *: Peace education, Values, Conflict, Constructive education etc.*

Introduction

Peace is usually understood as an absence of war (Peter Gonsalves 2003). But what about in countries where there is no war at all? Isn't peace prevailing there? Hence peace has other connotations than mere absence of war. The UN defines the word 'peace' in terms of a type of a culture that exists when peace prevails. In spelling out what this culture is, it identifies the ideals of peace that have become standard principles of peace that are accepted universally. It calls the embodiment of these ideals the culture of peace. "A culture of peace is based on respect for human rights, democracy, and tolerance, the promotion of development, education for peace, the free flow of information and the wider participation of women as an integral approach to preventing violence and conflicts, and efforts aimed at the creation of conditions for peace and its consolidation" (UN Resolution 52\13 , 1998).

Peace is an idealistic term and rarely there will be stable peace, which means that peace can be achieved but maintaining it is very difficult. Peace also doesn't mean that total absence of any conflict. It means the absence of violence in any form and resolving the conflict in a constructive way. There is a distinction sometimes made between 'negative peace 'and 'positive peace'. Negative peace refers to the absence of violence. It is negative in nature because something undesirable stopped happening, e.g., violence stopped, the oppression ended. Positive peace is often called as 'warm' Peace too, which

is filled with positive content and encompasses all the aspects of good society such as restoration of social relationships, economic wellbeing, economical balance and other values required for the constructive resolution of conflict. Therefore, peace exists where people are interacting non-violently and are managing their conflict in a positive way keeping in mind the concerns and interests of others. (Singh Vandana 2007)

Peace is an energy, a qualitative energy which emanates constantly from the One imperishable source. It is a pure force that penetrates the shell of chaos, and by its very nature automatically puts things and people into balanced order. The self is a reservoir of vital resources, one of which is peace. To recognize the original quality of the human soul as peace is to stop searching outside for peace. Through connection with the One eternal and unlimited source of peace, our own reservoirs overflow with silent strength. In its purest form, peace is inner silence filled with the power of truth. Peace consists of pure thoughts, pure feelings, and pure wishes. When the energy of thought, word, and action is balanced, stable, and non-violent, the individual is at peace with the self, in relationships, and with the world. The power of peace embraces the fundamental principle of spirituality: look inward in order to look outward with courage, purpose, and meaning. The first step in that process takes careful examination of one's thoughts, feelings, and motives. By opening the window of the inner self, individuals are able to clarify and pinpoint attitudes and behaviour patterns which are destructive causing chaos and carelessness.

Conceptual Frame Work on Peace Education

Peace Education means to learn about and to learn for peace. In the first place it should be an education which imparts or provides knowledge and understanding of PEACE and its constituent elements. It should talk about what contributes to real peace, what damages it, and how to achieve the real peace. Secondly the goal or ideal of the Peace Education should be PEACE itself. There is no single methodology or consensus on the content of peace education. The variety of approaches may be reflected in the variety of terminology such as peace education, peace studies, peace research, disarmament education, defence education, world order studies, global education, conflict resolution studies, international studies or even multi-cultural education. What is important here is that it should equip the learner with the skills, attitudes and values that one should possess in one's quiver, in order to establish or maintain or contribute to peace. Peace Education should prepare the field from where peace should sprout as the natural growth from the individuals. It should conscientize, mature and educate the individual towards attaining a perfect human social condition for co-existence. It should enable people to live together in a peaceful way, to resolve conflicts in a non-violent manner. (Mishra Loknath, 2009) Peace education is a process whereby the people learn about the dangers of violence, develop their capacities to counter violence and build sustainable peace in their communities.

Peace Education differs according to the context, geographical structure, social conditions, political structure, and international

situation. E.g., Peace Education in Sri Lanka can be different from the Peace Education in India. Because the political situation in Sri-Lanka is different than that of India. After the fall of LTTE – the peace that is required in Sri-Lanka is different than that is required in India. Another example of Israel and Palestine could be quoted here. The peace that is required in Israel is rather "negative peace" and in India it is the "Positive Peace". All Peace Education is based on Human Values but enriched by a particular society's cultural and spiritual values. Hence it is needless to say that the Peace Education curriculum developed in India will be based on universal human values such as love, reciprocity, empathy and concern for others. Because it reflects the Indian social problems where there is no threat of internal war. In India we require the positive peace condition and not mere absence of war as in negative peace. Behind this present concept of peace education there lies the past concept of Peace Education which was purely a "war prevention education". It was about analysing the causes of war, its effect and ways and means to prevent the war. Today Peace Education has entered a wider scope. Besides issues related to war, the Peace Education includes issues related to social violence, conflict resolution, issues relating to life, abortion, ethnic hatred, racism, genocide and poverty, etc. This does not mean that peace education would provide answers to all the problems, but definitely it is a most apt approach to the present gloom; because such type of education works towards the behavioural and attitudinal change.

In general Peace Education could be understood from a negative or a positive perspective. Negatively Peace Education is learning how to react in situations of conflict and war or how to avoid them. Positively Peace Education is a long-term pro-active strategy. It aims to promote peaceful persons who are equipped with appropriate knowledge, skills and attitudes to encounter the many conflicts.

Definitions on Peace Education

Peace Education is in the process of evolution. Hence a perfect definition is not possible, however there have been efforts to define it in the following manner.

1. "Peace Education is an attempt to respond to problems of conflict and violence on scales ranging from the global and national to the local and personal. It is about exploring ways of creating more just and sustainable futures" – R.D.Liang (1978).
2. "Peace Education is holistic. It embraces the physical, emotional, intellectual and social growth of children within a framework deeply rooted in traditional human values. It is based on a philosophy that teaches love, compassion, trust, fairness, co-operation and reverence for the human family and all life on our beautiful planet" – Franschmidt and Alice Friedman (1988).
3. "Peace Education is skill building. It empowers children to find creative and non-destructive ways to settle conflict and to live in harmony with themselves, others and their world…peace building is the task of every human being and the challenge of the human family. (Franschmidt and Alice Friedman) (1988).
4. Hicks is of the opinion that the "Peace Education refers to the activities that develop the knowledge, skills and

attitudes needed to explore concepts of peace, enquire into the obstacle to peace to resolve conflicts in a just and non-violent way and to study ways of constructing just a sustainable alternative future".

5. Galtang is of the opinion that the "Peace Studies evolve from a focus on research and building knowledge to an emphasis on skills building insight into the rots of violence must be balanced with work on devising ways to overcome, reduce and prevent violence".
6. Gandhiji opines that "there is no way to peace, but Peace is the way. Peace Education refers to the pedagogical efforts to create a better world. It teaches love, non-violence, compassion and reverence for all life".
7. Dale Hudson says that "Peace Education can be defined as education that actualises children's potentialities in helping then learn how to make peace with themselves and with others to live in harmony and unity with self-humankind and with nature".

Thus, the basic concept embedded in the above definition is that Peace Education is a remedial measure to protect children from falling into the ways of violence in the society. It aims at the total development of the child. It tries to inculcate higher human and social values in the mind of the child. In other words, it tries to develop a set of behavioural skills necessary to powerful living and peace building from which the whole humanity would benefit.

Scope of Peace Education

A few decades back "Peace Education" was unheard, especially in India, though it was very much heard in European countries. But today Peace Education has transcended all the boundaries and has become an important component of whole educational system. It has become an interdisciplinary field of study. It comprises a diversity of significant contributions from about the whole spectrum of the human sciences, because peace is a comprehensive term and it cannot be restricted. Thought the primary aim of peace education seems to be the conflict resolution, secondary aims like communication, human rights awareness, tolerance, co-operation, problem solving also come in the umbrella of peace education.

The main thrust of peace education can be exerted in the following ways:

- Through courses specifically focused on studying conflict, conflict resolution and peace.
- Through peace education themes infused into a variety of courses presented in existing disciplines.
- Through the influence of staff and students who are committed to solving problems, resolving conflict and restoring relationships, etc.

According to Dr.Lokanath Mishra (2009) during the developmental stage of the child the school or education has to try to develop an effective, integrated and positive personality. In other words, the peaceful co-existence requires skills like affirmation, positive thinking, empathetic listening, better communication, assertive behaviour, decision making, and critical thinking. Peace culture in the school environment is the need of time. It is in such culture of peace that our children will imbibe the values of peaceful co-existence

and other human values. First of all, there should be a peace culture existing in the school between students themselves and between teachers and students. The teachers should shift from teacher centred learning to child-centred learning and create a lively atmosphere in the classroom which gives way for the creative expressions of the child. It is the prime duty of the teachers to identify effective strategies and practices that could transform the school into a place of harmony and peace. Hence peace education should include a kind of citizenship training emerging out of present sociopolitical and economic issues.

In relation to the fundamental duties the Article 51 A of our constitution stresses the need of harmony and common brotherhood among its citizens; preservation of national heritage and diverse culture, protection and improvement of natural environment and safeguarding public property along with the doing away of violence. Undoubtedly this article speaks about the constituent elements of peace education. The UNESCO concept of Peace falls very much in live with the ideas discussed in relation to the fundamental duties.

Growth and Development of Peace Education

In tracing the recent development of peace education, we begin to see that in the past it had been an integral part of education at all times and in all cultures, every culture regards peace as a noble ideal to attain. However, with the advent of Western secularism at the beginning of the 20th century through the guise of a positivist scientific outlook to education, moral and human values including peace were slowly discouraged away from school curricula. Under the ideal of value-free positivist and reductionist knowledge the whole education was viewed narrowly tracing facts of various subjects. However, in spite of such materialistic views, the thinking of such humanists like Rousseau, Henry Thoreau, Tolstoy and Maria Montessori kept the sense of education alive. With the witness of the horrors of the First and Second World Wars there was-a reawakening to the need of developing the humanistic side of education at least among a few educationists. In this context Maria Montessori's loud and tireless reiteration on the need for educating for peace should be mentioned here with respect and appreciation. At the beginning of the 21st century today we are only rediscovering her vision of peace education which she tried to tell the world in the 1930s. For instance, she said in one of her public talks "Those who want war prepare young people for war; but those, who want peace, have neglected young children and adolescents so that they are unable to organize them for peace".

Her vision of education provides a meaningful sound basis for peace education. She looked at education as a tool for building World Peace. To her peace is the guiding principle of man and nature. Any attempt to deviate from the principle will only bring about destruction. However, it has never been investigated seriously so far. Peace should be studied as a science identifying its direct and indirect complex factors. She also observed that man had neglected to realize his inner sources of energies. Mastery over the external world alone is inadequate in bringing about a peaceful world. Peace is not only cessation of war. There are many positive qualities in peace. She said that

violence destroys the moral perception inherited in man. She described her time as an era of insidious madness, which demanded man to return to reason immediately. Like Rousseau, she believed that man is intrinsically pure by nature. The child's natural innocence has to be preserved from being sidetracked or spoilt by society. To her the child is the promise of mankind. The child has real vision, a bright little flame of enlightenment that brings us a gift. Constructive education for peace must aim to reform humanity so as to permit the inner development of human personality and develop a more conscious vision of the mission of mankind and the present conditions of social life. What we need today is an education that is capable of saving mankind from the present predicament. Such an education involves the spiritual development of man and the enhancement of his value as an individual and prepares the young people to understand the time in which they live. At school we must construct an environment in which children can be actively engaged in learning.

The beginning of Peace Education can be traced in the United States. It was begun there as a way to bring about greater harmony among groups of people through schools, but the legitimacy of this fact is always questioned. The Americans involved in Peace Education have always advocated for the recognition of the worth of others who may differ in linguistic or cultured terms. The organizations like U.S. Institute of Peace, International Institute for Peace Education at Teacher's College, Columbia University, private organizations and community based Peace Centres have been in this venture of attaining peace in the world.

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Gender Stereotypes and Self-Concept among Secondary School Students

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Abstract

Education certainly determines the quality of an individual's life. It improves one's knowledge, skills and develops the personality and attitude. It develops understanding about the world, environment, human behaviour and us. It helps us to understand oneself and others. Thus, education helps us to develop a self-concept. Self-concept is an important concept of any child's development. As children develop a sense of self and interact with and gain experience in the world, their self-concept is affected. It is not surprising that the root of self-concept lies in family experiences. Self-concept is defined as the value that an individual places on his or her own characteristics, qualities, abilities and actions (Woolfork, 2001). Gender stereotypes affect a person from the very young age itself. "Stereotypes were especially strong in feedback on achievements and had a significant impact on the children's Self-concept" (Tiedemann, 2000). In case of a person being influenced by stereotypes, it creates its impression on his/her self-concept of that person. Gender stereotypes shape his/her views on the idea of gender and their role. It defines what he or she is in terms of gender. "Many of our gender stereotypes are so strong because we emphasize gender so much in culture" (Bigler & Liben, 2007).

Key Words : *Gender stereotypes, Self-concept, Secondary School Students etc.*

Introduction

Education is probably the most important tool to change one's life. "Education is the most powerful weapon which you can use to change the world" (Mandela, 1990). Education also play a vital role in shaping one's self concept. Self-concept is a collection of beliefs about oneself. Generally, we can see it as our idea about who we are. Self-concept has been referred by Lowe (1961) as one's attitude towards self. Self-concept can be influenced by various factors like family, peer group, society etc. This influence mostly happens without our awareness. Tajfel (1979) in his Social Identity Theory describes social identity as a person's sense of who they are based on their group membership. He proposed that the groups which people

belonged to were an important source of pride and self-esteem. Therefore, everything of that group affects that person or influences him. Their ideas, concepts, beliefs, practices, thinking pattern or perception will be interconnected. These beliefs or concepts can include stereotypes too. Gender stereotypes create widely accepted biases about certain characteristics or traits and perpetuate the notion that each gender and associated behaviours are binary. Gender stereotypes affect a person from the very young age itself. “Stereotypes were especially strong in feedback on achievements and had a significant impact on the children’s Self-concept “(Tiedemann, 2000). Gender stereotypes shape his views on the idea of gender and their role. It defines what he or she is in terms of gender. “Many of our gender stereotypes are so strong because we emphasize gender so much in culture” (Bigler & Liben, 2007).

Need and Significance

Self-concept can be influenced by various factors like family, peer group, society etc. This influence mostly happens without our knowledge. The influence can be positive as well as negative. Sometimes it helps in developing positive self-concept and in cases where our self-concept is influenced by various factors like stereotypes and taboos; it can affect the self-concept development in a negative manner. Stereotyping is not only hurtful but also wrong. Constantly putting someone down based on one's preconceived perceptions will not encourage them to succeed. It can lead to bullying from a young age. A child may carry it into his adulthood. A student's self-concept determines academic performance, his outlook and even behaviour. Gender stereotyping may affect the self-concept of a child. He may develop his attitude, mental health and even character under its influence. He may develop perceptions on how a male or female should be and what their roles are. Since a male dominancy existed and even still exists, gender stereotypes are of great significance throughout the world, especially in Kerala. Adolescence is the period when a person becomes more conscious about his self. It is the period of half madness. This period is characterised by questioning, development of self-awareness and concept, developing opinions etc. They are the face of the future world and so it is significant to check the influence of gender stereotypes among secondary school students and to measure their self-concept also.

Schools are adopting gender neutrality in different ways as they realised the presence of gender stereotypes developing among students. Some have chosen to modify rules around uniforms while others are making communication more gender-neutral. Removal of gender stereotyped elements from textbooks has also been done. People of Kerala still upholds certain gender stereotyped concepts like boys should not cry, girls should be shy and polite, boys should be authoritative etc. These concepts are being passed on to young minds. Here comes the importance of gender neutrality. Gender-neutral upbringing empowers kids to be confident in their choices and expression. It makes them open-minded individuals who can have stronger conversations to fight gender stereotypes and biases as they grow up. It helps them to develop positive self-concept. For ensuring equality, it is necessary to know the present stand or

condition of young minds, which are to be the future of our world. After understanding the status, we could take measures as gender stereotype eradication as well as positive self-concept development which are of great importance.

Research Questions

Research questions define an investigation and provide direction, but it is up to the researcher to define and redefine questions so that they can most appropriately accomplish the tasks. In this study the researcher felt the increased growth of gender stereotypes among school students, especially among the adolescents. Researcher also believes that it affects their self-concepts. In order to find out this, the researcher developed two questions to which he has to find answers.

1. Whether there is any relationship between gender Stereotypes and Self-Concept of secondary school students?
2. Is there any relationship between gender Stereotypes and Self-Concept with respect to background variable gender?

Statement of the Problem

This study is an attempt to find out Gender Stereotypes and Self-Concept among secondary school students in Kottayam district. The study is entitled as '**Gender Stereotypes and Self-Concept among Secondary School Students**'.

Objectives of the Study

1. To find out whether there is any significant relationship between Gender Stereotypes and Self-Concept of secondary school students.
2. To find out whether there is any significant relationship between Gender Stereotypes and Self-Concept of secondary school students with respect to background variable gender

Hypotheses of the Study

1. There is significant relationship between Gender Stereotypes and Self-Concept of secondary school students.
2. There is significant relationship between Gender Stereotypes and Self-Concept of secondary school male students.
3. There is significant relationship between Gender Stereotypes and Self-Concept of secondary school female students.

Methodology of the Study

To achieve the objectives of the study the investigator selected the descriptive method because descriptive research studies are designed to obtain pertinent and precise information concerning the current status of phenomena and, whenever possible, to draw valid general conclusions from the facts discovered. Among the different approaches that may be used in research, the survey method was selected for the study.

Population and Sample of the Study

A research population is any group that is the subject of research interest. In the study the population consists of the entire secondary school students of Kottayam district. The sample of present study consists of 256 secondary school students of Kottayam district considering the sub-samples of the study. The investigator used simple random sampling technique for selecting the sample.

Analysis and Interpretation

Objective 1

To find out whether there is any significant relationship between Gender Stereotypes and Self-Concept of secondary school students.

The following hypothesis was formulated to test whether there is any significant relationship between Gender Stereotypes and Self-Concept of secondary school students.

Hypothesis 1

Ha: There is significant relationship between Gender Stereotypes and Self-Concept of secondary school students.

The investigator formulated a null hypothesis for the statistical analysis.

Ho: There is no significant relationship between Gender Stereotypes and Self-Concept of secondary school students.

To analyse the objective, the correlation coefficient between Gender stereotypes and Self-Concept of secondary school students was found out by Pearson's product moment correlation. The data and the results are given in table 1.

Table 1

Relationship between Gender Stereotypes and Self-Concept of Secondary School Students

Variable	N	Df	'r' Value	Level of Significant
Gender Stereotypes and Self-Concept	256	254	0.46	0.05

(For 254 degrees of freedom at 0.05 level of significance, the table value of 'r' is 0.12.)

From the table 1, it is clear that the calculated 'r' value 0.46 is greater than the table value 0.12. Hence, the null hypothesis that there is no significant relationship between Gender Stereotypes and Self-Concept of secondary school students is rejected and the alternate hypothesis that there is significant relationship between Gender Stereotypes and Self-Concept of secondary school students is accepted at 0.05 level of significance.

Objective 2

To find out whether there is any significant relationship between Gender Stereotypes and Self-Concept of secondary school students with respect to background variables gender.

The following hypotheses was formulated to test whether there is any significant relationship between Gender Stereotypes and Self-Concept of secondary school students with respect to background variable gender. It can be divided into two hypotheses.

Hypothesis 2

Ha: There is significant relationship between Gender Stereotypes and Self-Concept of secondary school male students.

The investigator formulated a null hypothesis for the statistical analysis.

Ho: There is no significant relationship between Gender Stereotypes and Self-Concept of secondary school male students.

To analyse the objective, the correlation coefficient between Gender stereotypes and Self-Concept of secondary school male students was found out by Pearson's product moment correlation. The data and the results are given in table 2.

Table 2

Relationship between Gender Stereotypes and Self-Concept among Male Secondary School Students

Variable	Gender	N	Df	'r' Value	Sig. Level
Gender Stereotypes and Self-Concept	Male	147	145	0.42	0.05

For 145 degrees of freedom at 0.05 level of significance, the table value of 'r' is 0.16.

From the table 2, it is clear that the calculated 'r' value 0.42 is greater than the table value 0.16. Hence, the null hypothesis that there is no significant relationship between Gender Stereotypes and Self-Concept of secondary school male students is rejected and the alternate hypothesis that there is significant relationship between Gender Stereotypes and Self-Concept of secondary school male students is accepted at 0.05 level of significance.

Hypothesis 3

Ha: There is significant relationship between Gender Stereotypes and Self-Concept of secondary school female students.

The investigator formulated a null hypothesis for the statistical analysis.

Ho: There is no significant relationship between Gender Stereotypes and Self-Concept of secondary school female students.

To analyse the objective, the correlation coefficient between Gender stereotypes and Self-Concept of secondary school female students was found out by Pearson's product moment correlation. The data and the results are given in table 3.

Table 3

Relationship between Gender Stereotypes and Self-Concept among Female Secondary School Students

Variable	Gender	N	Df	'r' Value	Sig. Level
Gender Stereotypes and Self-Concept	Female	109	107	0.38	0.05

For 107 degrees of freedom at 0.05 level of significance, the table value of 'r' is 0.19.

From the table 3, it is clear that the calculated 'r' value 0.38 is greater than the table value 0.19. Hence, the null hypothesis that there is no significant relationship between Gender Stereotypes and Self-Concept of secondary school female students is rejected and the alternate hypothesis that there is significant relationship between Gender Stereotypes and Self-Concept of secondary school female students is accepted at 0.05 level of significance.

Major Findings of the Study

- There exists significant correlation between Gender Stereotypes and Self-Concept of secondary school students,
- There exists significant relationship between Gender Stereotypes and Self-Concept of secondary school students with respect to gender.

Educational Implications of the Study

On the basis of the above findings, the following educational implications can be listed.

1. This study helps to create awareness about Gender Stereotypes and Self-Concept of secondary school students.

2. This study helps to understand the relation of Gender Stereotypes towards Self Concept of secondary school students.
3. This study helps the authorities to take proper remedies for reducing the Gender Stereotypes of secondary school students.
4. This study helps the parents to change their attitude towards children and thus help the child to increase their Self-Concept and reduce the Gender Stereotypes.

Ccnclusion

After analysing and interpreting all the above stated objectives and hypotheses, the investigator would feel qualified if the findings of the present study would lead to be a better understanding of the importance of gender stereotypes and its relation to self concept.

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Leveraging Artificial Intelligence for Sustainable Development

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Abstract

Artificial Intelligence, commonly known as AI, is an area of computer science that focuses on the development of intelligent machines that are able to think and act like a human being. Artificial intelligence is predicted to continue to have an increasing impact on our daily lives as it progressively gains more and more clout in the modern world. AI has the power to completely transform the current educational system. In addition to offering real-time feedback and personalized learning experiences, it can enhance interaction and engagement in the learning process. AI-driven virtual assistants can also assist students with their coursework, respond to their inquiries, and offer advice and support.AI has the potential to improve the evaluation procedure as well. AI can help teachers and students to identify areas where pupils need to improve by analyzing and by learning patterns provide feedback. AI can also assist educators with administrative duties like record-keeping and grading, freeing up more time for them to concentrate on instructing and interacting with students. The breadth and potential applications of AI in finance, industry, healthcare, and education are covered in this article. However, there are drawbacks to using AI in the classroom. Concerns exist over data security and privacy, and it's important to make sure that the AI systems employed in classrooms are impartial and fair.

Key Words : *Artificial Intelligence (AI), Sustainable development, Education, Machine Learning (ML), Robots etc.*

Introduction

The emergence of artificial intelligence (AI) is determining an increasing range of sectors. AI, for instance, is anticipated to have both immediate and long-term effects on global productivity, equality and inclusion, environmental results, and a number of other domains. Both positive and negative effects on sustainable development are indicated by the reported potential effects of AI. The idea of AI is often associated with robots and other heavily automated machines, Artificial Intelligence, commonly known as AI, However, the core concept of AI has continuously been to create machines that were capable of thinking like humans (Marr, 2018). Artificial intelligence is gradually becoming more and more influential in the modern world, and its impact on our daily lives is only expected to grow.

"It took approximately 200,000 years for humankind's intelligence to evolve from *natural* to *artificial*, and 10 years to cut the ties with 'earth' to move to the 'cloud'" (Garimella & Fingar, 2018, p. 7). AI systems must be able to learn and make decisions on their own. To facilitate decision-making, AI systems use a combination of data and algorithms to determine the best course of action. AI systems also use algorithms to understand language and generate natural-sounding responses. AI can automate inefficient processes, identify patterns, and make more informed decisions than humans. For example, AI can be used to create personalized customer experiences, predict outcomes, and optimize scheduling. AI can also be used in fields such as health care, transportation, education, and manufacturing (Don Hee Lee and Seong No Yoon, 2021). The idea of AI is often associated with robots and other heavily automated machines, but it can also take the form of software, like chatbots or recommendation engines. AI can also be found in more subtle forms, like voice recognition services, spam filters, and automated translation. AI has the potential to support sustainable development in several ways by providing new tools and addressing some of the world's most pressing environmental challenges.

Sustainable Development

Sustainable development is a concept that emphasizes meeting the needs of the present generation without compromising the ability of future generations to meet their own needs (Morelli, 2011). It involves finding a balance between economic growth, social development, and environmental protection. The concept recognizes that economic development and environmental protection are interdependent and must be integrated to ensure long-term sustainability.

The United Nations has played a key role in promoting sustainable development through its Sustainable Development Goals (SDGs), which were adopted in 2015 as part of the 2030 Agenda for Sustainable Development. The SDGs provide a framework for global action on issues such as poverty, hunger, health, education, gender equality, clean water and sanitation, affordable and clean energy, responsible consumption and production, climate action, and biodiversity.

Achieving sustainable development requires a shift towards more sustainable patterns of production and consumption, as well as the adoption of policies and practices that promote social inclusion, environmental protection, and economic growth. This requires collaboration between governments, businesses, civil society, and individuals at all levels, from local to global.

Review of Literature

Masson-Delmotte et al., (2018) in their study revealed that ML has been utilized extensively in AI solutions for sustainability. ML uses patterns and relationships observed in the historical data for learning and making predictions. Numerous research groups such as the Intergovernmental Panel on Climate Change (IPCC) are building simulation models to predict possible future scenarios with increases from 1° C to 6° C in global average temperature.

Rohit Nishant (2020) identified that AI for sustainability extends across many disciplines and domains and addresses environmental challenges. Transportation,

energy, water, and biodiversity are all fertile ground for AI research. In particular, climate change and smart cities are particularly rich fields for AI study. Researchers have also applied machine learning (ML) models to environmental, economic, and, to a lesser extent, social investigation.

Ricardo Vinuesa et al (2019) reviewed and analyzed the role of artificial intelligence in achieving Sustainable Development Goals and found out that AI can support the achievement of 128 targets across all Sustainable Development Goals.

Working paper (August 2019) Artificial Intelligence for Sustainable Development: challenges and opportunities for UNESCO's science and engineering programmes identified that the predictive and prescriptive capabilities of AI systems have enormous promise for a wide range of industries, including freshwater management, geoscience research, ecological and biodiversity research, medical research and diagnostics, disaster risk reduction, and strategic foresight.

Rusul, Hussein, Sohani, Saeed, (2019) in their study of artificial intelligence and transport identified that AI can address the challenges of the transport system.

Demerci et al, (2019) in their study identified the role of AI in maintaining stream flow and water quality parameters.

Rationale of the Study on Artificial Intelligence and Sustainable Development

Artificial intelligence (AI) has become increasingly important in recent years due to its ability to solve complex problems, automate routine tasks, and improve decision-making processes. Here are some of the key reasons why AI is needed in various sectors like education, heath, business, science and technology and environment. Efficiency, Accuracy, Personalization, Innovation, Safety and Sustainability.

Overall, the need for AI is driven by the increasing complexity of our world, the growing volume of data and information, and the desire to improve efficiency, accuracy, and innovation in all areas of our lives. Horvitz in a study opined about warnings of our foremost thinkers and opinion leaders that super intelligent machines are poised to outstrip human control and abilities. He argued that these technologies will have both positive and negative effects on society (Markoff, 2014). Along with the advancement of AI, it is obligatory on the part of the personnel's and advocates who promote AI for better living condition to strike a balance between technology and sustainable development. As teachers and teacher educators, the mandate to promote sustainable development and create awareness about the proper use of AI in the upcoming generation is vested upon them. There is a great emergency in developing positive attitude among the learners, hence this study is highly relevant at this juncture.

Sustainable development is necessary to ensure that the economic, social, and environmental needs of present and future generations are met. Here are some of the key reasons why sustainable development is needed: Environmental Protection, Social Equity, Economic Growth, Climate Change and Global Cooperation.

Overall, the need for sustainable development is driven by the need to ensure a sustainable and equitable future for all, to protect the natural environment, and to

address the urgent challenges of poverty, inequality, and climate change.

Objectives of the Study

1. To Study about the opportunity of AI in Various sectors of human life.
2. To Study about the role of AI in sustainable development.

Methodology

The paper is based on secondary data. The researchers have collected data from different sources- reports, articles and websites. This paper gave a brief description on the need and importance of AI in sustainable development. The study identified the scope of AI after reviewing relevant literature and secondary sources pertaining to artificial intelligence and sustainable development is given below.

Scope of Artificial Intelligence

1. AI in Science and Research

Science has made significant progress with AI. Large amounts of data can be handled and processed by artificial intelligence more quickly than by human brains. This makes it ideal for studies where the sources have large amounts of data. In this area, AI has already made strides. A great example is 'Eve,' which is an AI-based robot. It discovered a component in toothpaste that has the potential to treat a deadly condition like malaria. Between 2011 and 2016, the supply of industrial robots worldwide increased by about 31% per year. By 2020, there were about 3 million operational robots. Most robots are employed in the automotive industry (35%), the electronics and electrical industry took 31% of the market in 2016, including in China, Japan and the Republic of Korea (IFR, 2017).

2. Cybersecurity with AI

AI is very helpful in the realm of cyber security. The increasing migration of business data to cloud computing and IT networks is making hackers a more serious danger.

One great example of this field is cognitive AI. In addition to identifying and analysing dangers, it gives analysts information so they may decide more intelligently. Deep Learning networks and Machine Learning algorithms are used to make AI more resilient and smarter over time. This enables it to counter possible, more advanced threats in the future. AI-based solutions are being used by many organisations to automate the repetitious cyber security procedures. Fraud detection is an additional field. AI can assist in identifying frauds and assist individuals and organisations in staying away from scams. Recurrent Neural Networks, for instance, have the ability to identify fraud in its early phases. They have the ability to swiftly scan massive amounts of transactions and classify them according to their dependability.

3. Data Analysis with AI

AI and ML have a lot to offer data analysis. AI algorithms have the capacity to get better through repetition, which raises their accuracy and precision levels correspondingly. Large dataset handling and processing can be aided by AI for data analysts.

Artificial intelligence (AI) is able to recognise patterns and insights that the human eye cannot without significant effort. Furthermore, it accomplishes this more quickly and scalable. For instance, webmasters can obtain information about their websites more quickly with the use of machine learning

thanks to Google Analytics' Analytics Intelligence feature.

AI's application in data analytics is expanding quickly. AI systems process vast amounts of data far more quickly than humans can. Thus, they can use customer data to generate predictions that are more accurate.

4. AI in Transportation

AI has been used in the transportation industry for many years. Few people are aware that we regularly employ artificial intelligence, despite the fact that its existence and potential have long been understood in theory. Because AI can learn automated manual activities exactly like humans, its scope is quite advanced. Artificial Intelligence is taking over time-consuming tasks as automation becomes increasingly commonplace. Artificial intelligence (AI) systems exhibit the same potential as human intelligence. These AI-powered devices are capable of doing tasks that call for independent critical thinking and decision-making. AI has taken over a number of transportation-related firms so they can stay ahead.

Autopilot helps the human operator and assists them in heading in the right direction forecasting the weather and maintaining the trajectory of the plane.

Another area where the future scope of AI is quite broad is driverless cars with lower emissions and enhanced road safety. For example, self-driving cars will be free from human errors, which account for 90% of traffic accidents. Many companies, including Tesla and Uber, are developing these vehicles. AI come with several benefits like an increase in safety of the passengers, fewer accidents, lesser traffic congestion, lesser carbon emissions, and reduced financial expenses.

These vehicles are being developed by a number of firms, including as Tesla and Uber. There are several advantages to AI, including improved passenger safety, fewer accidents, less traffic, lower carbon emissions, and lower costs.

5 AI at Home

The Smart Home Assistant is one example of how AI has made a unique home in people's homes. Popular smart home appliances like Google Home and Amazon Echo allow you to complete a variety of tasks with simple voice commands.

With a few voice commands, you can turn on and off the lights in your living room, play music, and purchase groceries. They both rely on voice recognition technologies, which are the outcome of machine learning and artificial intelligence. To improve their comprehension and efficiency, they are always picking up new skills from the commands that their users give them.

Mobile phones also come with smart assistants. Examples of this kind of technology are Apple's Siri and Google Assistant. To continuously read them more accurately, they also learn to identify the voices of their users. And they are capable of doing a wide range of jobs. Cortana, a smart assistant from Microsoft, is another option.

In many ways, AI is assisting medical experts and researchers. For instance, Intel and the Knight Career Institute collaborated to create a cancer cloud that aids in improved diagnosis for medical professionals. Through

applications, the National Health Service of the United Kingdom assesses a person's health risk using Google's Deep Mind platform. AI can assist physicians in avoiding these mistakes by giving them access to pertinent resources and suggestions. It has the ability to examine a database of individuals with comparable symptoms and recommend the course of action that worked best in those particular instances.

To address the many issues facing the healthcare industry, a number of significant corporations, such as Microsoft and IBM, are working in conjunction with healthcare facilities.

AI can also lower medical expenses by assisting physicians and preventing illnesses in advance. By avoiding illnesses before they arise and assisting medical professionals in providing more accurate diagnoses, AI can also lower medical expenses. Brain-computer Interfaces, or BCIs, represent yet another use of AI in the medical field. These interfaces aid in the prediction of speech and motor difficulties that may arise from brain abnormalities. By decoding cerebral activations, they employ AI to assist these patients in resolving these problems as well.

6. AI in Business

The extensiveness of artificial intelligence has also contributed to the fundamental transformation of enterprises, and this trend is only growing. Although operating an internet business might seem simple, that is not the case. Many companies have moved their operations online in order to better serve their clients' demands and provide a distinctive and cosy experience. Businesses need to manage vast amounts of data generated every second in order to make better and more informed decisions. In this process, artificial intelligence has been extremely important. Artificial Intelligence is widely used in sales, marketing, customer service, and human resources, among other areas of business. Based on their online activity, they provide tailored recommendations for things they believe their clients will use.

7. AI in Education

Artificial intelligence plays a huge role in every aspect of education. Here are some of the leading roles of AI. Here are some of the applications of AI in education: Personalized Learning, Intelligent Tutoring Systems, Adaptive Assessments, Natural Language Processing, Intelligent Content Creation, Predictive Analytics, Augmented reality, Voice recognition, Biometric attendance.

Artificial Intelligence for Sustainable Development.

Artificial intelligence (AI) has the potential to contribute significantly to sustainable development in various ways. Here are some examples:

- **Climate change**

  AI can help monitor and predict climate patterns and make more accurate predictions of weather events. It can also help to optimize the use of energy resources and reduce energy consumption, resulting in a reduction of greenhouse gas emissions.

- **Agriculture**

  AI can help farmers to optimize crop yields by providing them with accurate data on soil conditions, weather patterns, and plant health. This can result in a

reduction in the use of pesticides and other harmful chemicals, leading to sustainable and environmentally friendly farming practices.

- **Healthcare**

  AI can help to improve healthcare by providing faster and more accurate diagnoses, personalized treatment plans, and improved patient outcomes. This can lead to a more sustainable and efficient healthcare system. The computer compared 25,000 clinical tests, 1.2 million patient files and two million scientific articles (Otake, 2016).

- **Transportation**

  AI can help to optimize traffic flow and reduce congestion, resulting in a reduction of carbon emissions from vehicles. It can also improve safety by detecting and avoiding potential accidents and optimizing vehicle routes.

- **Waste management**

  AI can help to optimize waste management processes by predicting and identifying areas where waste is likely to accumulate. It can also be used to monitor the impact of waste on the environment and optimize recycling and waste disposal processes.

Overall, AI can play an important role in achieving sustainable development by providing accurate and real-time data, optimizing processes and systems, and reducing waste and inefficiency. However, it's important to ensure that the development and implementation of AI are ethical, transparent, and inclusive, to avoid exacerbating existing inequalities and unintended consequences.

Conclusion

Artificial intelligence has the potential to significantly contribute to sustainable development goals in many ways. By providing new and innovative solutions to complex challenges, AI can help us achieve environmental sustainability, economic growth, and social progress. For example, AI can improve energy efficiency, reduce waste, optimize resource allocation, and enable more sustainable manufacturing processes. AI can also help us address climate change by facilitating better understanding of environmental phenomena, predicting natural disasters, and supporting climate change adaptation and mitigation efforts.

However, to fully realize the potential of AI for sustainable development, it is important to ensure that AI is developed and used in an ethical, transparent, and responsible manner. This means considering the potential negative impacts of AI and taking steps to mitigate them, while also promoting its positive impacts. It also means promoting collaboration and partnerships between different stakeholders, including government, industry, civil society, and academia, to ensure that AI is used to benefit society as a whole.

It's important to note that many of the risks are not inherent to AI itself, but rather to how it is developed and used. By being aware of these risks and taking steps to mitigate them, we can work to ensure that AI is used in ways that benefit society as a whole. People in advanced countries may fear job loss due to AI, in low-income countries people may see AI as offering new opportunities to break the cycle of poverty (Lohr, 2018). AI has the potential to play a vital role in sustainable development, but it

must be approached in a thoughtful and responsible way. By harnessing the power of AI for the greater good, we can work towards achieving a more sustainable and equitable future for all.

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Attitude Towards Higher Education - A Study among Higher Secondary School Students from Plantation Areas of Idukki District

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Abstract

Higher education plays a major role in individual career choice and development, economic growth, and societal progress by preparing individuals with the knowledge, competence, and skills needed for various professions and contributing to the development of new ideas and technologies. The attitude of students towards higher education, especially those from adverse living environments, is a subject of discussion and analysis. Personal factors, family circumstances, peer influence, and the social environment collectively contribute significantly to shaping individual attitudes, ultimately influencing the decision to pursue higher education. This dynamic interplay of personal motivations and external factors influences the higher education choices and outcomes of learners. The present study probes into the Attitude Towards Higher Education among higher secondary school students from plantation areas of Idukki district in Kerala, where they face numerous adverse conditions in pursuing education.

Key Words: *Attitude towards Higher Education, Higher Secondary School Students, Plantation Areas, Idukki District etc.*

Introduction

Idukki district in Kerala was established on January 26, 1972, by carving out Devikulam, Udumbanchola, and Peerumade taluks from Kottayam district and Thodupuzha taluk from Ernakulam district. Now, Idukki is the largest district in Kerala, covering an area of 4,61,223.14 hectare. It is characterized by its mountainous terrain, with high hills and deep valleys. The district has a population of 1,108,974 as of the 2011 census, with a population density of 255 per square kilometre and a literacy rate of 91.99%. Most of the district's land is unsuitable for cultivation due to its hilly terrain. Idukki district is the cradle of plantation crops. The District has the agro-climatic conditions suitable for the cultivation of plantation crops.

Tea gardens and cardamom plantations are significant in the region, owned by both corporate bodies and private agencies. The plantation areas in Idukki are located close to the Tamil Nadu border. Due to the scarcity of local people willing to work in remote areas with low wages and poor living conditions, many labourers were brought in from Tamil Nadu, and their families had little alternative for livelihood. Plantation workers in Idukki face numerous challenges, including low wages, difficult working conditions, and lack of educational and healthcare facilities. Many workers and their families live in housings provided by the plantation companies, known as “Layams” or line houses. Once workers retire, they are required to vacate these houses, which often results in the younger generation taking up the same jobs to maintain housing.

There are several studies describing the pitiable conditions of plantation workers in South India. According to Bhowmik (2011), plantation workers are exploited by the unscrupulous companies, providing nominal wages and harsh living conditions. Tea plantation workers, positioned at the bottom rung of the societal hierarchy, receive minimal pay for delicate tasks. They heavily depend on plantations for basic needs like food, water, housing, education, and healthcare. A survey conducted by the Labour Department in 2019 reported that 32,591 families working in the plantation sector in Kerala do not own a house or possess land (Joseph, 2020). Koshy and Tiwary (2011) noticed that the necessary facilities for the plantation labourers were given by only 10 percent of estates and tea plantations in the South India. Nath et al. (2019) clearly depict the socio-economic deprivation of women tea plantation labourers in Idukki district based on a study among tea plantation labourers in Munnar, Pallivasal and Devikulam grama-panchayaths of Idukki district; the women tea plantation labourers were deprived in income, housing, other public services, social recognition, democratic participation and credit dimensions.

Despite the facilities provided by companies, the socio-economic status of plantation labourers remains poor, with limited access to education, healthcare, and social recognition. Employees in plantations lead distinct lives, isolated from others, lacking opportunities to connect with people in different walks of life. Despite having permanent jobs and basic facilities, many feel their life standards haven’t improved. Education facilities for children are inadequate, forcing some to work in the fields due to insufficient family income. The conditions of women labourers are particularly challenging, as they are often the primary breadwinners for their families, and their educational status is low. The life and job patterns of plantation workers are different from those in other regions, and they often lead isolated lives with limited opportunities for exposure and improvement in their living standards. Education facilities are inadequate, and many adolescents end up working in the fields to support their families, hindering their education and development.

Significance of Higher Education

Education in India has been a driving force behind advancements in various fields. It brings forth numerous benefits such as economic prosperity, improved health, active

civic participation, personal growth, enhanced communication skills, the pursuit of passions, a greater sense of discipline, and a sense of accomplishment. In addition to these advantages, higher education provides individuals with wisdom, knowledge, and the skills necessary for leadership, which are vital components for both personal and societal progress.

Recognizing the pivotal role of higher education in national development, policymakers and administrators have given due attention to its growth. Consequently, numerous policies and programs have been implemented to establish higher education institutions throughout the country. India has witnessed a remarkable increase in the number of higher education institutions, with the total number of universities growing from 621 in 2010-11 to 935. Similarly, there are 40,923 colleges across the nation. The overall enrolment in higher education has risen to approximately 4.14 crore in the academic year 2020-21, up from 3.85 crore in 2019-20. Since the academic year 2014-15, there has been a growth of approximately 72 lakh in enrolment, marking a 21% increase. Similarly, female enrolment has experienced an increase, reaching 2.01 crore from 1.88 crore in 2019-20, representing an increase of around 44 lakh or 28% since 2014-15 (Government of India, 2021).

Need and Significance of the Study

Kerala stands out as one of India's most advanced states in terms of education. With high literacy rates and nearly universal elementary education, the state has made significant steps in providing quality schooling to its population. Furthermore, Kerala claims substantial enrolment rates in secondary education. A large portion of the populace has received some level of education, and a considerable number of students pursue higher education upon completing their secondary schooling. However, it's worth noting that Kerala's performance in higher education, while not as impressive as its school education system, still compares favourably with the rest of the country. Despite this, it hasn't received much attention from observers (Tilak, 2016). In contrast, Idukki district, known for its tea and cardamom plantations, lags in terms of higher education, particularly among the working-class population. Many families in this district have a tradition of working in the plantations, and their children often follow in their parents' footsteps. The lack of higher education institutions in remote areas, along with cultural backwardness and limited parental education, contributes to the reluctance of students to pursue further education. After completing their higher secondary schooling, students face challenges in pursuing higher education, such as graduation and post-graduation, without the support of their families.

Educational aspirations and attitudes of students are shaped by various factors such as family environment (Singh et al., 2015; Rani & Setia, 2016), socioeconomic status of families (Singh & Singh, 2014), and parent's involvement and assistance (Bashir & Bashir, 2016). A favourable attitude towards higher education plays a crucial role in motivating individuals to pursue and excel in their academic journeys. This mind-set

provides the impetus needed to set clear educational and career goals and the resilience required to navigate academic challenges. It fosters an active engagement with learning, encouraging students to seek out opportunities for growth. Understanding the attitude of students from plantation area in Idukki towards higher education is essential for shaping targeted educational policies and interventions, promoting access to higher education, mitigating economic disparities, and fostering regional and national development.

Objectives of the Study

1. To study the Attitude Towards Higher Education among higher secondary school students in the plantation areas of Idukki district
2. To compare the Attitude Towards Higher Education among higher secondary school students in the plantation areas of Idukki district based on gender

Methodology

Survey method was adopted to realise the objectives of the present study. All the higher secondary school students belonging to plantation areas of Idukki district comprised the population, while 300 students from six higher secondary schools in plantation areas of Idukki district were randomly selected as the sample for the study. A five point attitude scale developed by the investigators was employed to collect the data required for the study. The scale was constructed employing the Likert method of summated ratings, with 32 statements, half of which were favourable and half unfavourable, to quantify students' attitudes. An initial draft was prepared with 48 items and through a try-out among 120 higher secondary school students followed by item analysis the number of statements was reduced to 32. Scoring was done using the Likert method, with scores ranging from 32 to 160, where a score of 96 indicates a neutral attitude. The validity of the scale was established through expert consultations while the reliability was determined by split half method (Coefficient of reliability = .816).

Analysis and Discussion

The data collected through the attitude scale were analysed using various descriptive and inferential statistical procedures.

1. Attitude towards Higher Education among Higher Secondary School Students in the Plantation Areas of Idukki District

The descriptive statistics of the distribution of attitude towards higher education among higher secondary school students in the plantation areas of Idukki District is depicted in Table 1.

Table 1

Descriptive Statistics of the Distribution of Scores of Attitude towards Higher Education among Higher Secondary School Students (N= 300)

Sl. No.	Statistic	Value
1	Arithmetic Mean	99.17
2	Median	98.12
3	Mode	96.02
4	Standard Deviation	20.36
5	Skewness	+0.154
6	Kurtosis	0.262

The arithmetic mean and standard deviation obtained for the scores of attitude towards higher education scale for higher secondary school students in the sample (N=300) are 99.17 and 20.36 respectively. Since the central tendency measures are close to the middle score (96) of the attitude scale it can be inferred that the higher secondary school students possess a moderate level of attitude towards higher education. Since the arithmetic mean (99.17) is slightly greater than the median (98.12); and the median is slightly greater than the mode (96.02) there is a tendency of the scores to concentrate at the lower end of the scale. The value of skewness (+0.154) refers to a slightly positively skewed nature of the distribution. The value of kurtosis (0.262) is nearly equal to the kurtosis value (0.263) of a normal distribution (Garrett, 1966); hence the distribution does not vary much from normal. The analysis indicates that the higher secondary school students from plantation areas do not possess favourable attitude towards higher education to a great extent.

2. Comparison of Attitude towards Higher Education of Higher Secondary School Students Based on Gender

To find out whether there exist significant difference between the male higher secondary school students and female higher secondary school students on their Attitude Towards Higher Education. The mean scores were subjected to independent sample *t* test. The details of this analysis are presented in table 2.

Table 2

Data and result of the test of significance of the difference between mean score of attitude towards higher education of male and female students

Gender	*N*	*M*	*SD*	*t*
Male	150	101.39	19.29	1.871
Female	150	97.01	21.22	(p>.05)

The mean attitude score of male students (101.39) is apparently greater than that of female students (97.01). When the difference between the mean attitude towards higher education scores of male respondents and that of females was subjected to the test of significance, the obtained critical ratio (1.871) does not reach the table value for a significant difference at .05 level. Therefore it can be interpreted that there exists no significant difference between the attitudes towards higher education based on gender. The apparent difference is statistically not significant; the male and female higher secondary school students from plantation areas possess comparable level of attitude towards higher education.

Conclusion

The findings of the present study clearly reveals that the higher secondary school students from the plantation areas of Idukki district possess only moderate levels of attitude towards higher education irrespective of their gender. Their attitude serves as a distressing reflection of their challenging living circumstances. It becomes evident that the harsh realities of their lives leave little room for aspiring to lofty dreams.

While these students have managed to cultivate a somewhat positive outlook on higher education, the prevailing conditions make it unlikely for them to actively pursue it. The absence of conducive factors in their environment hampers their ability to transform aspirations into tangible educational pursuits.

Implications of the Study

The findings of the study regarding the attitude towards higher education among higher secondary school students have several practical implications:

1. Educational Support Programmes: Recognizing the challenges these students face, educational institutions and policymakers can design support programmes to address specific barriers hindering their pursuit of higher education. Initiatives could include mentorship programmes, career counseling, and financial aid to create a more conducive environment for developing educational aspirations.
2. Community Engagement and Awareness: Increased awareness within the community about the importance of higher education can foster a supportive environment. Workshops and awareness campaigns can be organized to involve parents, teachers, and community leaders in fostering a positive attitude towards education.
3. Infrastructure and Resource Development: Investments in educational infrastructure, such as the establishment of accessible schools and libraries, can provide students with better resources for learning. Adequate infrastructure can contribute to a more favourable environment for academic pursuits.
4. Social and Economic Interventions: Addressing the underlying economic challenges faced by families in plantation areas is crucial. Implementing social and economic interventions, such as skill development programs or employment opportunities, can alleviate financial pressures on families, making higher education more feasible.
5. Collaboration with NGOs and Support Organizations: Collaboration with non-governmental organizations and support groups can amplify efforts to create a more supportive educational environment. These organizations can provide additional resources, counseling services, and community-based programs.
6. Long-term Monitoring and Evaluation: Establishing a system for continuous monitoring and evaluation of the effectiveness of interventions is crucial. Regular assessments will help fine-tune strategies, ensuring that they remain relevant and impactful over time.

By implementing these practical implications, stakeholders can work collaboratively to improve the educational landscape for students in plantation areas, fostering an environment where their positive attitudes towards higher education can be translated into tangible pursuits.

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A Study on Social Intelligence of Students at Degree Level

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Abstract

Social Intelligence is the capacity to effectively negotiate complex social relationships and environments. It is difficult to lead a successful life in a society without Social Intelligence. It helps an individual to develop healthy co-existence with other people. Socially intelligent people behave tactfully and become prosperous in life. Social Intelligence is useful in solving the problems of social life and help in tackling various social tasks. Thus Social Intelligence is important developmental aspect of education. This paper deals with a study on social intelligence of students at degree level.

Key Words : *Social Intelligence, Multiple Intelligences, socio-psychological, multi-dimensional, Harmony and Restoring etc.*

Introduction

Education is the complex human enterprise. It is a multifaceted activity having its influence on all aspects of human existence. Education is considered as the most effective means for the all-round development of the learner, which helps him grow socially, intellectually, morally and emotionally. If education is described as a preparation for life or complete living, education cannot be separated from the life, because we learn something in each moment of this journey of life. Through this experience we earn a lot of knowledge. It helps to lead a worthwhile life.

Social Intelligence is the capacity to effectively negotiate complex social relationships and environments. According to Nicholas Humphrey it is social intelligence, rather than quantitative intelligence that defines humans. According to Ross Honeywill social intelligence is an aggregated measure of self- and social-awareness, evolved social beliefs and attitudes, and a capacity and appetite to manage complex social change.

Thorndike (1920) defined Social Intelligence as “the ability to understand and manage men and women, boys and girls, to act wisely in human relations”. It is equivalent to interpersonal intelligence, one of the types of intelligence identified in Howard Gardner’s Theory of Multiple Intelligences and closely related to theory of mind. Some authors have restricted the definition to deal only with knowledge of social situations, perhaps more properly called social cognition or social marketing intelligence, as it pertains to trending socio-psychological advertising and

marketing strategies and tactics. According to Sean Foleno, social intelligence is a person's competence to understand his or her environment optimally and react appropriately for socially successful conduct.

Need and Significance of the Study

Thorndike (1920) studied intelligence in its three facets, pertaining to understand & manage ideas (abstract intelligence), concrete objects (mechanical intelligence) and people (social intelligence). Social Intelligence is the person's ability to understand and manage other people and to engage in adaptive social interactions (Thorndike, 1920). Social intelligence has two key constituents which are distinctly personal and social in nature, one is intrapersonal intelligence and other is interpersonal intelligence. Intrapersonal intelligence is the person's ability to gain access to his or her own internal, emotional life while interpersonal intelligence is the individual's ability to notice and make distinctions among other individuals.

It is difficult to lead a successful life in a society without Social Intelligence. Social Intelligence helps an individual to develop healthy co-existence with other people. Socially intelligent people behave tactfully and prosper in life. Social Intelligence is useful in solving the problems of social life and help in tackling various social tasks. Thus Social Intelligence is important developmental aspect of education. Several studies have shown that Social Intelligence is multi-dimensional and distinguishable from general intelligence domains. These concepts of Social Intelligence are incorporating internal & external perceptions, social skills and other psychosocial variables. Marlowe's (1986) model of Social Intelligence comprised five domains-prosocial attitude, social performance skills, empathetic ability, emotional expressiveness and confidence. Pro-social attitude is indicated by having an interest and concern for others, social performance skills is demonstrated in appropriate interaction with other, empathetic ability refers to one's ability to identify with others, emotion expressiveness describes one's emotionality towards others and confidence in social situations is based on one's comfort level in social situations. Many studies had showed that supporting harmony and restoring equilibrium between individuals as acts of being socially intelligent.

Statement of the Problem

The present study is entitled as "A study on Social Intelligence of Students at Degree Level".

Objectives of the Study

1. To identify the extent of Social Intelligence among students at degree level.
2. To compare the level of Social Intelligence based on the sub groups.
   a. Gender
   b. Locality of College
   c. Type of College

Hypotheses of the Study

1. There exists a significant level of Social Intelligence among students at degree level.
2. There is a significant difference on Social Intelligence with respect to gender, locality and type of management among the students at degree level.

Methodology

In the present study survey method was used to find out the Social Intelligence among degree students with respect to their gender, locality and type of management. Social Intelligence is taken as the main variable for the study. Demographic variables like genders, locality and type of management are also taken in to consideration. The sample for this study consists of 300 degree students from various colleges of Ernakulam and Kottayam districts. Tools used for the study was Social Intelligence scale.

Social Intelligence Scale

In order to measure the Social Intelligence, the investigator adapted the Social Intelligence scale which was expaned and standardised. Components of Social Intelligence are Personal adequacy, Interpersonal adequacy and Social adequacy.

Analysis and Discussion

1. Analysis of the extent of Social Intelligence of students at degree level for the total sample.

As the measurement of Social Intelligence is the objective of the study, the Investigator had taken the scores of Social Intelligence and tabulated them. From the Social Intelligence scores the Investigator then calculated the mean, median, SD, skewness, kurtosis and presented in the following table 1

Table 1

Results of measures of central tendency, standard deviation skewness and of Social Intelligence

Variable	N	AM	Md	SD	Sk
Social Intelligence	300	51.08	48.12	10.03	0.73

From the analysis it is found that arithmetic mean for the total sample is 51.08 and standard deviation is 10.06. The median value 48.12 denotes that 50 percentages of the pupils scored above 48.12.

Since the value of skewness is 0.73, the distribution is said to be positively skewed. This shows that the number of students who got high scores are lower than those of low scores in the group. Positive skewness shows that the scores of the students are centred at the low end.

The investigator further identified high achievers, average achievers and low achievers based on Arithmetic mean and Standard Deviation. Those who scored between 40 and 60 were considered as average achievers, those who scored above 60 considered high achievers and those who scored below 40 were considered as low achievers. The investigator then calculated their percentage.

Table 2

Extent of Social Intelligence for the total sample.

Category	No.of pupils	Percentage
High Achievers	48	16%
Average Achievers	34	11.33%
Low Achievers	218	72.66%

From the table it is clear that majority of the students are having low Social Intelligence

2. Comparison of Social Intelligence of students based on the sub samples

By finding out the critical ratio of their difference and testing it for significance, the

analysis was conducted for the following sub samples.

a. Gender

b .Locality of Colleges

c .Type of Colleges

Comparison of Social Intelligence based on gender

The mean and standard deviation of Social Intelligence of boys and girls were calculated. The significance of differences between the mean score of these groups was found out by calculating their critical ratio. The data and results of test of significance are given in table 3

Table 3

Comparison of Social Intelligence of students based on Gender

Category	No	Mean	SD	't' value	Level of Sig.
Boys	151	51.43	11.63	4.22	P<001
Girls	149	46.63	8.17		

From the table it is clear that the calculated' value (4.22) is greater than the table value (2.58) at 0.01 level. Thus it can be interpreted that there is significant difference in the Social Intelligence of students based on gender. The mean value of boys is 5.22, which is greater than those for girls ie 46.63.Thus the Social Intelligence of boys is greater than girls.

Comparison of Social Intelligence of students based on Locality

The mean and standard deviation of Social Intelligence of urban and rural students were calculated. The significance of difference between the mean scores of these groups was found out by calculating their critical ratio. The data and results of test of significance are given in the table 4.

Table 4

Comparison of Social Intelligence of students based on Locality

Category	No	Mean	SD	't' value	Level of Sig.
Urban	140	49.92	8.73	1.92	p>0.01
Rural	160	50.13	11.13		

From the table it is clear that the calculated value (1.92) is less than table value (2.58) at 0.01 level. Thus it can be interpreted that there is no significant difference in the Social Intelligence of students based on the locality.

Comparison of Social Intelligence of students based on type of school

ANOVA is an effective way to determine whether the means of more than two samples are too different to attribute to sampling error. The analysis of variance consists of total groups variance, within group variance, between group variance and F ratio. Here the total group variance is 1821.31, within group variance is **90.19** and between group variance is 1731.12. the F ratio is **19.19,** which is greater than the table value (4.61) at 0.01 level. Here there is significance difference among the means of three groups. That is there is no significant difference in the Social Intelligence of students based on type of Colleges.

Table 5

Summary of Analysis of Variance.

Source	Sum of square	df	Mean square	F	Level of Sig.
Between groups	3462.25	2	1731.12	19.19	P>0.01
Within groups	26787.04	297	90.19		

The significant F doesn't pinpoint exactly where the differences are in a pair wise way, that is the three groups differ significantly, but does group 1 differ from group 2 or group 3? These questions can be answered by using Scheffe's test. It is used because of its flexibility and robustness. It can be applied even to departures from normality and any assumptions of equal population variances than some other tests.

Scheffe's critical value was calculated between each part pair of means and compared with actual sample mean differences. When actual sample mean differences exceeded the critical value, the Investigator rejected the null hypothesis.

Table 6

Scheffe's test Result

Groups	X_1—X_2	Scheffe's F value
Government vs aided	7.66	8.2193
Government vs unaided	1.18	8.37
Aided vs unaided	6.48	2.67

Since the actual sample mean differences of aided and unaided school students exceeded the critical value. So there exists a significant difference between aided and unaided college students on their Social Intelligence. In other two cases the actual sample mean differences lie below critical values, so in those cases there exists no significant differences in Social Intelligence.

Major Findings of the Study

Since 72.66% students scored below 40 on Social Intelligence scale, the investigator concluded that majority of the students are having low Social Intelligence. Certain related findings are listed below.

- There is a significant difference on social Intelligence of degree students based on gender and the social intelligence of boys was found to be greater than that of girls.
- There was no significant difference on social Intelligence of degree students with respect to their college locality.
- There is a significant difference on social intelligence of degree students with respect to their college type.

Educational Implications of the Study

Teachers who are properly trained in educational psychology may help the students to be socially matured in their academic and nonacademic aspects.

Curriculum can be planned and transacted in such a way that it must fulfil the responsibility and social needs of the students. The present curriculum includes activities which are intended to enhance social responsibility feeling among the students. Teachers should compulsory practice what is envisaged in the curriculum.

Facilities such as sports, library, debate and excursions may help the students in their adjustment and when needed show intelligent

behavior with others. If the classroom atmosphere is affectionate and cooperative enough, it can facilitate better social relation among the students. Cordial relation between principal and teachers and the peers also play important role in creating harmonious and congenial environment in institutions.

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The Relation of Non-cognitive Variables with Science Achievement of 8th Year Australian Students: A Multiple Regression Analysis of TIMSS 2019

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Abstract

Non-cognitive factors have gained prominence in the world of educational research because they have high potential for improving students' academic performance and success. The aim of the current study is to examine the relationship of non-cognitive factors, such as students' opinion on of school atmosphere, perception of teaching quality, and self-confidence in science, with and Science Achievement. The sample comprised 9060 Australian Year 8 students who participated in TIMSS 2019. Multiple regression analysis revealed that students' self-confidence and opinions on school atmosphere were significant predictors of Science Achievement. In contrast, results showed that students' perception of science teaching quality was not a significant predictor of Science Achievement. Overall, the findings revealed that these student-level variables accounted for 17% of the total variance in Science Achievement. The implications of these findings for theory, research, and practice are discussed.

Keywords: *School atmosphere, Science teaching quality, Self-confidence, and Multiple regression etc.*

Introduction

Every child in the world has the right to an education. It is a fundamental human principle and a basic universal human right (Watkins, 2016). Children are naturally curious about the world and how they fit into it. Schools offer science education to tap into this curiosity and set adolescents in a direction of methodical inquiry into the world they live in. As students' perceptions of science grow, they become more capable of making informed decisions about themselves and their world, preparing them to become well-educated citizens capable of distinguishing scientific facts (Lucas, 2021). In recent decades, educators, academics, and policymakers have paid more attention to science, technology, engineering, and mathematics (STEM). Students in STEM fields should be able to inquire, extract information, test new ideas to solve issues and apply what is learned throughout their educational journey.

Background of the Australian Education System

According to Future Learn (2021), there is a similar education system in all six states of Autralia: New South Wales, Tasmania, South Australia, Queensland, Victoria, and Western Australia, as well as two territories: the Northern Territory and the Australian Capital Territory (ACT). The Australian education system is divided into four educational stages - early childhood education, primary education, secondary education, and post-secondary education. Since 1994, several versions of a national science curriculum have been introduced, with a structured framework meant to enhance scientific literacy in each state and territory of Australia (Rennie et al., 2001). The fundamental goal of the Australian curriculum is to enable all Australian youngsters to be equipped with the right qualifications, to be an active and informed citizen for the country to stay competitive in the twenty-first century.

To compete in the global economy, a country's workforce must be well-versed in science (Olsen et al., 2011). The Organization for Economic Co-operation and Development (OECD) and the International Association for Evaluation of Educational Assessment (IEA) organise large-scale international assessments, including the Trends in International Mathematics and Science Study (TIMSS) and the Program for International Student Assessment (PISA). The ranking given by these two tools has a tremendous influence on the participating countries, as the countries compare their relative rankings with other countries. This helps them change or modify their educational policies to improve the quality of their education systems. Similarly, such global analyses help identify the strengths and weaknesses of each country's education system and the countries' performance trends over the past years (Yang & Johansson, 2020).Many educational authorities and professionals have concentrated their efforts in international comparative studies of academic accomplishment. This study analyses data from the TIMSS 2019 Australian Year 8 students' database.

Background of the TIMSS

The IEA undertakes large-scale comparative studies of educational achievement. Initially, IEA used paper-based assessments for TIMSS and other evaluations, but it now uses computer-based data collecting and assessments tools. Hence, TIMSS began to move to a computer-based assessment in its 2019 cycle, with half of the countries electing e-assessment, or computer-based exams, while the other half (including Australia) still chose to use the traditional paper-based method (Thomson et al., 2020). TIMSS defines criteria for evaluating the test scores with countries with a mean test score of more than 500 determined as high performing countries. In contrast, countries with a mean score below 500 are considered low performing (Güven & Akçay 2019).

TIMSS evaluates how well the children in each country are supplied with educational opportunities and resources and which factors influence their learning. This is done by using questionnaire or survey techniques, where the questionnaires are filled by respondents such as students, teachers, school principals, and

curriculum experts of each country. Students are asked about their homes, school lives, self-perceptions and attitudes toward science, and perceptions of their school (Mohtar et al., 2019). Hence, this research analyses the student level questionnaire.

TIMSS is a useful source for examining educational success because science, technology, engineering, and mathematics, also known as STEM, are the most important core curriculum subjects (Jones et al., 2015). The TIMSS achievement data, in conjunction with the context questionnaire scales, can be used to obtain important information about the home and school contexts for teaching and learning in relation to students' achievement in mathematics and science (Jones et al.,2015).

Motivation for this study

Australia faces significant social, economic, and environmental challenges that can only be addressed by well-educated and scientifically capable people (Hackling, 2014). Since 1994, several variations of a national science curriculum have been implemented in each of Australia's eight states and territories; this included a national science curriculum with a structure (format) specially designed to encourage scientific literacy in the states and territories (Rennie et al., 2001). Every three years, PISA assesses 15-year-old students' ability to apply their reading, maths and science knowledge and skills to real-world problems. Therefore, in 2018, PISA reported that Australian students' science scores have dropped to their lowest levels ever. In contrast, the findings of TIMSS so far have indicated that the proportion of students who have achieved the under-developed and advanced science benchmarks has remained constant since 1995 (Thomson et al., 2020).

Moreover, numerous Australian studies have observed a widespread decline in students' enthusiasm and interest in science, especially during the secondary years of schooling (Kennedy et al.,2014; Thomson 2009: Goodrum et al., 2011). This decreasing interest in science throughout the early secondary school classes is especially concerning because attitudes about science topics and vocations are developed during these years (Speering & Rennie 1996). As our society becomes more reliant on experts in science, engineering, technology, and mathematics, a decline in the number of students opting to major in mathematics and science is a significant concern (Kennedy et al., 2014).

Academic achievement has a significant impact on students' lives. For example, academic achievement has an impact on children's academic choices and professional goals, as well as their emotional development and success (Steinmayr et al., 2014). Several research studies in science education have investigated the factors that determine academic success. Most of these studies focus on cognitive elements, but more recent research has begun to emphasize the role of noncognitive factors in academic achievement (Al-Mutawah et al.,2018). According to Gracia (2016), persons are endowed with qualities and skills such as critical thinking skills, problem-solving skills, social skills, perseverance, imagination, and self-confidence that enable them to contribute meaningfully to society and succeed in their

public lives, workplaces, homes, and other societal contexts. Noncognitive skills are a broad term for these characteristics. Non-cognitive elements or characteristics have high potential, when it comes to improving the academic performance and success of the students, therefore, non-cognitive factors have gained prominence in the world of educational research (Garcia, 2016). Therefore, the motivation for conducting this study is to better understand a range of non-cognitive factors that can impact on Australian students' achievement in science.

Methodology

The researcher conducted the study by using survey method. The IDB Analyser tool developed by the International Association for the Evaluation of Educational Achievement (IEA) was used to create the scripts for SPSS data analysis.

Dataset and samples

Data were taken from the TIMSS 2019 dataset, directed by the International Association for the Evaluation of Educational Achievement (IEA). The feasibility of using existing data is becoming more popular when large amounts of data are being obtained and documented by researchers worldwide (Johnson, 2014).

In Australia, data for the TIMSS 2019 was collected from 288 primary schools and 283 secondary schools, resulting in a sample of 5980 students in Year 4 and 9070 students in Year 8. The data in this research was collected from the Year 8 Australian students who participated in TIMSS 2019.

Variables

Table 1

Items comprising students' perception of science teaching quality (á = 0.935)

How much do you agree with the statements about your science lessons?	
a.	I know what my teacher expects me to do
b.	My teacher is easy to understand
c.	My teacher has clear answers to my questions
d.	My teacher is good at explaining science
e.	My teacher does a variety of things to help us learn
f.	My teacher links new lessons to what I already know
g.	My teacher explains a topic again when we don't understand

(Source: Fishbein, Foy, Yin, 2021).

Table 2

Items comprising students' opinions of the school atmosphere (á=0.839)

What do you think about your school? How much you agree with these statements.	
a.	I like being in school
b.	I feel safe when I am at school
c.	I feel like I belong at this school
d.	Teachers at my school are fair to me
e.	I am proud to go to this school

(Source: Fishbein, Foy, Yin, 2021).

Table 3

Items comprising students' self-confidence in science (á = 0.892)

How much do you agree with these statements about science?	
a.	I usually do well in science.
b.	Science is more difficult for me than for many of my classmates*.
c.	Science is not one of my strengths*.
d.	I learn things quickly in science.
e.	I am good at working out difficult science problems.
f.	My teacher tells me I am good at science.
g.	Science is harder for me than any other subject*.
h.	Science makes me confused*.

* Denotes non- reverse coded items
(Source: Fishbein, Foy, Yin, 2021).

Dependent Variable: Students' Science Achievement.

Science Achievement is the dependent variable in the current study, and the average Science Achievement scores from the TIMSS 2019 dataset were used to reflect students' Science Achievement. A continuous variable, Science Achievement score, was recorded as a series of five plausible values. The five plausible values (PVs) were developed in TIMSS as a computational approximation to provide consistent and accurate estimates of students' general abilities. Using the jackknife repeated replication method, the IEA's IDB analyzer for TIMSS combined the five PVs, produced their average values, and corrected standard errors (Foy & Yin, 2021). The investigator used a combined five PVs to indicate student Science Achievement in this study.

Multiple Regression Analysis

Table 4

Result of multiple regression analysis on the effects of Science Teaching Quality, School Atmosphere and Self-confidence on Science Achievement

Variable	Regression Coefficient β	Regression Coefficient β(s.e)	Regression Coefficient β(t-value)	Standard Coefficient	Standard Coefficient (s.e)	Standard Coefficient (t-value)	p-value	R^2	Adjusted R^2
CONSTANT	346.90	10.64	32.60	.		.		0.17	0.17
School Atmosphere	29.10	2.55	11.39	0.23	.23	11.23	.000(p<.05)		
Science Teaching quality	-2.50	2.46	-1.02	-0.02	-.02	-1.02	.307(p>.05)		
Science Self-confidence	38.64	2.44	15.82	0.31	.31	15.79	.000(p<.05)		

Table 4 presents the outcomes of the multiple linear regression analysis. Students' self-confidence β= 38.64, p<.05) in science and perception of school atmosphere (β= 29.10, p<.05) positively predicted their science achievement, with increases of 38.64 and 29.10 units in the accomplishment of science for each point change of one-scale in students' self-confidence and perception of school atmosphere, respectively. The obtained adjusted R^2 value is 0.17, which indicates that there is 17% of the contribution of predictors on Science Achievement. The findings revealed that students' perceptions of the quality of science lessons taught were not statistically significant predicted for Science Achievement (β= -2.50, p> .05). The association between students' self-confidence in science (β= 38.64, p<.05) was the most significant of the studied predictors. Overall, the result indicated that there is 17% of the contribution of predictors on Science Achievement.

Conclusion

This study is significant for stakeholders in Australia because it is part of an effort to improve Science Achievement in TIMSS. The profound findings of this study is that Australian Year 8 students' perception of School Atmosphere, and Students' Self-confidence in Science were significant predictors of Science Achievement. However, students' perception of Science Teaching Quality was not a significant predictor of Science Achievement and warrants further examination. The purpose of this study is link to non-cognitive factors that happen in school or classrooms to Student Achievement. Non-cognitive developments in Japanese educational practices including non-formal education, out-of-school education, and various community-based activities led to the success of Japanese in TIMSS and these activities not only help with non-cognitive development but also with cognitive development (Mohtar et al., 2019). Therefore these practices might lead to the success of Australian students' in TIMSS.

Ultimately, a constructive school environment can trigger the students to acquire their optimal level of cognitive achievements. Students' psychological state (e.g., self-confidence) can directly influence their academic performance. Consequently, schools, teachers, and parents need to work together to make sure that Australian students are happy and at ease at school. Schools should discover strategies to make students enjoy school, feel safe, and be pleased to be at school. At the same time, science teachers need to tailor their pedagogical methodologies to promote students' confidence in science. The instructional strategies need more focus as they play an inevitable role in making the students more productive.

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English Language Anxiety and Reticence among Secondary School Students

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Abstract

English language is the universal language and the necessary language needed to fit in the mainstream of society. Day by day the relevance of English language is growing. So, it is necessary to identify the problems affect language learning. This study will help them to understand the causes of these two problems in language classrooms. It will help teachers and also students identify what is Reticence and English Language Anxiety. This study will also help them to realize the role of Reticence and anxiety in English language learning. This study also focuses on the Relationship between and English Language Anxiety Reticence. It also emphasizes the Extent of Reticence and English Language Anxiety among Secondary School Students. It will help all those who want study about Reticence and Language Anxiety among Students.

Key Words : *English Language Anxiety, Reticence, Language Learning etc.*

Introduction

Education plays a very important role in the society, regardless which country or region of the world one is living. In fact, it is the very basis for development of any society and country. The same holds true for India as well.

However, it has been observed that many students experience anxiety in the English classroom while trying to learn English. The subjective feelings, psycho-physiological symptoms, and behavioural responses of the anxious foreign language learner are essentially the same as for any specific anxiety. They experience apprehension, worry, even dread. They have difficulty in concentrating, become forgetful, sweat, and have palpitations. They exhibit avoidance behaviour such as missing class and postponing homework (Hortwitz, Horwitz, & Cope 1986).

Reticence and Language anxiety are two common problems that teachers observe among school students. This is seen especially in English classrooms. In English language classrooms students tend to keep silent rather than having any contribution in the classroom, giving their opinion, or asking questions. They choose not to use the target language most of the time in responding to teachers and other students. This phenomenon is called Reticence. Reticence on the part of students in second or foreign language classrooms has received attention in recent decades (Jackson, 2002; Liu & Jackson, 2009; Tsui, 1996).

Studies have been conducted to identify the role of Reticence and English Language Anxiety among students. Studies have proved that one of the reasons for Reticence is language Anxiety. Despite the awareness of the importance of using English, students remain passive and reticent in English classrooms (Chalak& Baktash, 2015). The reticent students tend to speak in low voice while responding to direct questions from the teacher (Liu & Jackson, 2009). They also usually are reluctant to answer questions in front of the whole class. Liu & Jackson (2009) claimed that students' fear of making mistake, lack of confidence, being laughed at are the variables which contribute to students' Reticence. On the contrary Carter & Henrichsen 2015) argued that student's lack of competence, motivation, and proficiency have inequitably contributed to Reticence. Liu et al. (2011) underlined how reticent students behave in classroom interaction. They have propensity to speak in short, unspontaneous, or even rely on protective actions. For instance, nodding head, using body to block lecturer's eye from seeing them, and showing hesitant gaze or anxiety. It is, however, interpreted as a barrier for language learning practice. The students still have problem in learning English. They are reticent and passive in the classroom. They tend to be silent and quiet during the learning process.

Need and Significance of the Study

Today, English is one of the most important languages in the world. we cannot deny and ignore the importance of English language since English is the common language spoken universally. English today is needed almost everywhere. English has become the most important language around the world; there are more people who need to learn this language in order to improve their professional and academic lives.

Language anxiety has occupied a great body of research for the past few decades. Previous research findings on language anxiety have revealed the fact that anxiety can impede foreign language performance and its production. Most of the time, language learners face some kind of problems in learning a new language. Language Anxiety has long been recognized as an obstacle in second language learning. Anxiety experienced in learning English language can be debilitating and may influence students' achievements of their goals. In the other words, anxiety is one of the most significant factors affecting language learning. High level of Language Anxiety is correlated with poor performance in language learning. The experience of language anxiety varies from learner to learner. According to Ying (2008), language anxiety is caused by personal and interpersonal problems, learner beliefs about language learning, teacher belief about language anxiety, teacher-learner interactions, classroom procedures, and language testing.

Reticence is a common phenomenon among students either English or Non-English majors, Students are often resistant to participating in individual or group-based speaking activities. Reticence is a communication problem with cognitive, affective, and behavioural dimensions and is due to the belief that one is better off remaining silent than risking appearing foolish (Keaten & Kelly 2000). Reticent individuals tend to avoid communication in social and

public contexts, particularly novel situations that have the potential for negative evaluation (Hui Li, 2011). In recent decades, research has revealed that Reticence and anxiety can have a debilitating impact on second language (L2) learning (Horwitz et al., 1986; MacIntyre& Gardner, 1991a; Tsui, 1996; Jackson, 2002a; Liu, 2006a; Liu & Jackson, 2008). It is widely agreed that reticent students often speak less and exhibit more negative forms of arousal (e.g., anxiety, tension, unpleasant effect), with speech that tends to be brief and less comprehensible. Likewise, high-anxious people are more reluctant to speak in second language classroom activities and this often hinders their learning. Reticence and anxiety are complex constructs that stem from a range of linguistic, educational, and cultural elements as well as personality attributes. Reticence research that centres on native speakers in social interactions has a long history (Burgoon, 1976; Keaten & Kelly, 2000). Findings indicate that many people are apprehensive when communicating in their native language and are reluctant to voice their opinions in conversations. When people speak in second language, they may become even more apprehensive, tense and unwilling to participate in conversations (Horwitz et al., 1986; MacIntyre& Gardner, 1989). This problem becomes crucial in school education. Research shows that Language anxiety and Reticence affect the general academic performance of the students. This is especially evident in classes where English is taught as a second language. Therefore, the study is relevant to English language education and school education in general.

Research Questions

The following are the research questions addressed in this study:

1. What is the extent of English Language Anxiety among Secondary School Students?
2. What is the extent of Reticence among Secondary School Students?
3. What is the relationship between English Language Anxiety and Reticence among Secondary School Students?

Objectives of the Study

The investigator formulated the following objectives for the present study.

1. To find the English Language Anxiety among Secondary School Students.
2. To find the Reticence among Secondary School Students.
3. To find the relationship between English Language Anxiety and Reticence among Secondary School Students.

Hypotheses of the Study

The investigator formulated the following hypotheses for the present study.

- There is English Language Anxiety among Secondary School Students.
- There is Reticence among Secondary School Students.
- There is a relationship between English Language Anxiety and Reticence among Secondary School Students.

Methodology of the Study

The present study intends to study the Relationship between English Language Anxiety and Reticence among Secondary School Students. Hence, the investigator adopted corelation method under the

Descriptive studies for collecting the data. The sample consists of 460 Secondary School Students in Kottayam District.

Tools to be used for the Study

- 'English Language Anxiety Scale' to be prepared by the investigator.
- 'Reticence scale', standardised tool developed by Keaten & Kelley in 1997 based on their Reticence theory

Statistical Techniques to be used for the Study

In this study, the investigator uses Descriptive and Inferential Statistics. include Mean, Median, Graphical Representation, Standard Deviation, and Karl Pearson's Product Moment Correlation and t-test.

Analysis and Interpretation of Data

The investigator had formulated three objectives for the present study. The investigator analysed and interpreted the data in accordance with the following objectives.

The investigator formulated the following objectives for the present study:

- To find the English Language Anxiety among Secondary School Students
- To find the Reticence among Secondary School Students
- To find the relationship between English Language Anxiety and Reticence among Secondary School Students.

In the present study, the investigator attempted to study the Relationship between English Language Anxiety and Reticence among Secondary School Students of Kottayam District by collecting data from 460 Secondary School Students of different schools using the Stratified Random Sampling Technique.

1. Distribution of Scores on English Language Anxiety among Secondary School Students

The investigator formulated the first objective as 'To find the English Language Anxiety among Secondary School Students'. The data needed for the analysis of the objective was obtained by administering a self -constructed tool 'English Language Anxiety Scale' on 460 Secondary School Students.

The investigator used the Descriptive Statistics namely Frequency Distribution, Mean, Standard Deviation. The investigator presents the Frequency Distribution of the Scores on English Language Anxiety among Secondary School Students in Table 1.

Table 1

Frequency Distribution of the Scores on English Language Anxiety among Secondary School Students

Class Interval	Frequency	Percentage
140-150	4	0.869565
150-160	16	3.47826
160-170	58	12.6086
170-180	136	29.5652
180-190	204	44.347
190-200	42	9.130
Total	460	100

From the above Table, the investigator interpreted that distribution of Scores on English Language Anxiety for a sample of 460 Secondary School Students falls between the scores 140 to 200. From the table 1, the investigator concluded that out of the 460 Secondary School Students the majority of the students fall in the class interval 180 and 190.

The Descriptive Statistics employed for the distribution of the Scores on English Language Anxiety among Secondary School Students is presented in Table 2.

Table 2

Variable, Number, Minimum Score, Maximum Score, Mean and Standard Deviation of the Scores on English Language Anxiety.

Variable	No.	Min. Score	Max. Score	Mean	SD
English Language Anxiety	460	142	196	178.4804	9.72753

From the Table 2, the investigator observes that the Mean and Standard Deviation of the Scores on English Language Anxiety among Secondary School Students is 178.48 and 9.7275 respectively. Maximum and the Minimum scores obtained from the scale are 142 and 196 respectively.

From the above table, the investigator interpreted and concluded that out of 200 marks, Maximum score obtained by the students is 196 and the Minimum score is 142.

Classification of the Total Sample of the Secondary School Students based on English Language Anxiety

The investigator classified the whole sample into class by using the scores obtained on the tool 'English Language Anxiety Scale' among Secondary School Students. The investigator classified the whole sample into three categories. The classification as follows,

Above M+1σ denotes High English Language Anxiety

Between M+σ and M-1σ denotes Medium English Language Anxiety

Below M-1σ denotes Low English Language Anxiety

Where M is the Mean and σ is the Standard Deviation of the Scores on English Language Anxiety. Therefore, M+1σ is 179.48 and M-1σ is 177.48

Therefore investigator concluded that the range above 179.48 is considered as High English Language Anxiety, the range below 177.48 is considered as Low English Language Anxiety and the range between 179.48 and 177.48 is considered as Medium English Language Anxiety.

Therefore the investigator concluded that the majority of Secondary School Students, High English Language Anxiety.

2. Distribution of Scores on Reticence among Secondary School Students

The investigator formulated the second objective as 'To find the Reticence among Secondary School Students'. The data needed for the analysis of the objective was obtained by administering a standardized tool 'Reticence Scale' on 460 Secondary School Students.

The investigator used the Descriptive Statistics namely Frequency Distribution, Mean, Standard Deviation, Bar Graph and Pie Diagram for the analysis of the data pertaining to this objective.

The investigator presents the Frequency Distribution of the Scores on Reticence among Secondary School Students in Table 3.

Table 3

Frequency Distribution of the Scores on Reticence among Secondary School Students.

Class interval	Frequency	Percentage
90-95	1	0.21739
95-100	3	0.65217
100-105	36	7.82608
105-110	228	49.565
110-115	182	39.565
115-120	10	2.1739
Total	460	100

From the above Table, the investigator interprets that distribution of Scores on Reticence for a sample of 460 Secondary School Students falls between the scores 90 and 120. 10 Secondary School Students falls between 115 and 120 and only one student got the scores between the class intervals 90 to 95.

Therefore, from the Table 4.4, the investigator concluded that out of the 460 Secondary School Students the majority of the students fall in the class interval 105 to 110.

The Descriptive Statistics employed for the distribution of the Scores on Reticence among Secondary School Students is presented in Table 4.

Table 4

Variable, Number, Minimum Score, Maximum Score, Mean and Standard Deviation of the Scores on Reticence

Variable	No.	Min. Score	Max. Score	Mean	SD
Reticence	460	93	120	109.76	3.174

From the Table 4 the investigator observes that the Mean and Standard Deviation of the Scores on Reticence among Secondary School Students is 109.76 and 3.174 respectively. Maximum and the Minimum scores obtained from the test are 120 and 93 respectively.

From the above Table, the investigator interpreted and concluded that out of 126 marks, Maximum score obtained by the students is 120 and the Minimum score is 93.

Classification of the Total Sample of the Secondary School Students based on Reticence

The investigator classified the whole sample into class by using the scores obtained on the tool 'Reticence Scale' among Secondary School Students. The investigator classified the whole sample into three categories. The classification is as follows,

- Above 110 denotes High Reticence (>M+1σ.)
- Between 110 and 90 denotes Medium Reticence (M+1σ & M-1σ)
- Below 90 denotes Low Reticence (<M-1σ.)

According to the Reticence scale constructor, Scores for each of the six dimensions range from 1 to 21, where a low score indicates less anxiety, fewer problems with knowledge, organization, etc. The total scores ranged from 6 to 126, with a lower number indicating lower levels of Reticence.

Table 5

Classification of the Total Sample of the Students based on Scores on Reticence

Variable	Levels	Range	No.of Students	Perce-entage
Reticence	High	Above 100	456	99.130
	Average	Between 100 & 90	4	0.869
	Low	Below 90	0	0
Total			460	100

From the Table 5, the investigator observes that the range above 100 is considered as High Reticence, the range below 90 is considered as Low Reticence, and the range between 100 and 90 is considered as Average Reticence.

From the above Table, the investigator interprets that 456 Secondary School Students scored above 100. They constitute 99.130 percentage of the total samples and have High level of Reticence. Only 4 Secondary School Students scored below 100 and 90. They constitute 0.869 percentage of the total sample and have average Reticence. There is No student scored below 90.

Therefore, from the Table 5, the investigator concluded that the majority of Secondary School Students, possessed High Reticence.

3. Relationship between English Language Anxiety and Reticence among Secondary School Students

The investigator formulated the Fifth objective as 'To find out the relationship between English Language Anxiety and Reticence among Secondary School Students'.

For the analysis of the objective the investigator has formulated the null hypothesis as,

Ho: There is no significant relationship between English Language Anxiety and Reticence among Secondary School Students.

The data pertaining to this objective was analysed using Karl Pearson's Product Moment Correlation r. The r value was set .098 at .05 level of significance with degrees of freedom 458.

The Product Moment Correlation 'r' value between the scores on English Language Anxiety and Reticence among Secondary School Students is presented in Table 6.

Table 6

Relationship between English Language Anxiety and Reticence among Secondary School Students

Variables	No. of students	df	Calculated 'r' value
English Language Anxiety Reticence	460	458	.121

N Note: p< .05 significant at.05 level

From the Table 6, the investigator interprets that the obtained 'r' value is 0.121 and it shows a positive correlation between English Language Anxiety and Reticence among Secondary School Students. The calculated 'r' value 0.121 is greater than the table value 0.092 at .05 level of significance with degrees of freedom 458. In the view of the result, the null hypothesis 'There is no significant relationship between English

Language Anxiety and Reticence among Secondary School Students' is rejected and the research hypothesis is accepted. The result indicates that there is significant relationship between English Language Anxiety and Reticence among Secondary school students.

The investigator concludes that there is significant positive correlation between English Language Anxiety Reticence among Secondary School Students.

Major Findings of the Study

- Most of the students at Secondary Level possess a High level of English Language Anxiety.
- Most of the students at Secondary Level possess a High level of Reticence.
- There is significant positive correlation between English Language Anxiety and Reticence among Secondary School Students.

Educational Implications of the Study

The present study aimed to examine the Extent of English Language Anxiety and Reticence among Secondary School Students with regard to Gender. The study put forward the following educational implications.

- Use group work to give students practice saying new phrases before asking them to perform individually.
- Acknowledge students' anxious feelings and help them realize that anxiety is a widespread phenomenon.
- Encourage students to concentrate on communicative success rather than formal accuracy.
- Teacher asks them how it must feel to be a student in your language classroom from time to time.
- Teacher should encourage students to share their opinion in every matter.
- Teacher should encourage students to start talking with people in social networking sites, if can't face them directly. Then slowly start interacting directly. Social networking sites helps to develop their personality up to some extent.
- Teacher should support to start making friends and go for outings, hangout and enjoy day. Share their thoughts.
- Teacher should motivate the students to speak openly.

Conclusion

The present study helped to find out the Relationship between English Language Anxiety and Reticence among Secondary School Students with regard to Gender. There is a significant positive correlation between English Language Anxiety and Reticence among Secondary School Students. The study also reveals that most of the students have High English Language Anxiety and Reticence in English. The study is an earnest attempt of the investigator to study in detail the topic under consideration with all the limitations. The investigator firmly believes that the findings of this research would help the teachers, parents, Academicians to understand the English Language Anxiety and Reticence among Secondary School Students. The investigator would feel gratified if the findings

of the present study would help in finding ways to reduce English Language Anxiety and Reticence among Secondary School Students.

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Effectiveness of 4A Approach on Scientific Creativity among Ninth Standard Students

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Abstract

Since has played a pivotal role in changing the society. The modern era has changed the concept of science education from being teacher centered to child centered. Beyond the potential scientific bread throughs there are Indi victual benefits in learning science such as developing problem solving ability, scientific creativity, critical thinking, logical thinking etc. Method of teaching in very influential in achieving these personal and social goals. The purpose of this study is to find out the effectiveness of 4A Approach in enhancing Scientific Creativity of Ninth Standard Students. The investigator adopted Quasi Experimental method with pre-test post-test non-equivalent group design. The population of the present study was ninth standard students in Idukki district following Kerala state syllabus. The sample was 70 ninth standard students from one of the secondary schools in Idukki district. The findings of the study showed that 4A Approach is more effective among ninth standard students for enhancing Scientific Creativity than the existing method.

Key Words : *4A Approach, Scientific Creativity, Effectiveness etc.*

Introduction

Education is the process of acquiring knowledge from the world, it helps human to show their strength and status in the society. Education is not only learned from school or college, it starts from home and extends to the living in society. Also it proceeds from generation to generation. Education is a light that shows the mankind the right direction to surge. The purpose of education is not just making a student literate but adds rational thinking, knowledge, ability and self sufficiency. It equips a society to encounter all forms of suppression. When there is a willingness to change there is hope for progress in any field.

Educational research is that activity which is directed towards the developments in the field of science of behavior. The ultimate aim of such a science is to provide knowledge that will permit the educator to achieve his goals by the most effective methods. Now a days educational research is of much significance because educators can use research findings to improve their teaching and learning process.

New methods and techniques have been developed on the basis of research findings. The traditional methods and techniques have been replaced by new techniques and strategies. Learners are much benefited from these new methods and techniques that we faithfully implement them in classroom communication.

Engaging students in changing environments of the modern era has become a challenge for teachers as well as instructional planners and designers .The teaching learning community will have to realize this changing environment if they are to make the best and most effective available resources for providing authentic learning experiences.

Need and Significance of the Study

Science is the systematic study of the structure and behavior of the physical, social, and natural worlds through observation and experimentation. Science and technology contributes to society in the creation of knowledge, and then utilization of that knowledge to boost the prosperity of human lives, and to solve the various issues facing society.

When we analyze the reason for this, we can see that educational policy on the curriculum has been updated. According to NEP (2022), Activity Based Child Centered Curriculum (ABCCC) is being adopted by almost all the schools now a days. If we truly implement the updated curriculum, students will benefit a lot from this methodology. The modern era has changed the concept of education from being teacher centered, the system has now become child centered.

Beyond the potential scientific breakthroughs, there are individual benefits in learning science, such as developing our ability to ask questions, collect information, organize and test our ideas, solve problems, and apply what we learn and develop new ideas.

Therefore the investigator decided to study the effectiveness of 4A Approach on Scientific Creativity among Ninth Standard Students. The study will be useful to encourage students' scientific creativity, active participation in subject through problem solving, creative thinking, knowledge acquisition through cooperative and collaborative learning methods.

While considering the need and importance of child centered approach in educational process for improving Scientific Creativity in students, the study made an attempt to apply the 4A Approach to find out its effectiveness in enhancing Scientific Creativity.

Statement of the Problem

The study was conducted to improve Scientific Creativity. So the investigator entitled the study as Effectiveness of 4A Approach on Scientific Creativity among Ninth Standard Students.

Definition of the key terms

Effectiveness

Effectiveness means the use of plan for presentation which causes a desired change in learners' behavior (Good, 1972).

In this study the effectiveness is to describe the consequences of the 4A Approach on Scientific Creativity in terms of the scores obtained in Scientific Creativity test.

4A Approach

According to Cambridge English Dictionary, approach means a way of dealing with a situation or problem.

4 A is an Acronym. It stands for:

- Activate prior knowledge
- Acquire new knowledge
- Application of new knowledge
- Assessment

Scientific Creativity

Scientific Creativity is developing original ideas and concepts. Imagination in science is the ability to form mental images and visualize or to think in terms of various possibilities that are directly or indirectly linked to Scientific Creativity.

In this study Scientific Creativity means science learning to generate alternative hypotheses or ideas and synthesize new models to further our understanding of how the world works.

Ninth Standard Students

Students who are studying in Ninth Standard following Kerala state syllabus during the academic year 2022-2023.

Objectives of the study

1. To find out effectiveness of 4A Approach in improving Scientific Creativity among Ninth Standard Students.

Hypotheses of the study

1. There is a significant difference between the means of scores of pretests of Scientific Creativity of control and experimental groups.
2. There is a significant difference between the means of scores of pretest and posttest of Scientific Creativity of Ninth Standard Students in control group.
3. There is a significant difference between the means of scores of pretest and posttest of Scientific Creativity of Ninth Standard Students in experimental group.
4. There is a significant difference between the gain scores of Scientific Creativity of control and experimental groups.

Methodology in Brief

For the present study the investigator selected quasi experimental method since it was not possible to conduct pure experimentation in educational setting.

In quasi experimental method, random assignment of members to the experimental and control groups was not made, but random selection of experimental and control groups from among the groups available was made. For conducting this study the investigator selected the pretest posttest nonequivalent group design.

Procedure of the study

Pre-text ofScientific Creativities was conducted for control and experimental groups. After conducting pre-texts for the experimental group 15 classes were taken using lesson plans based on 4A Approach. For the control group also 15 classes were taken using lesson plans based on Activity method. Post-text of scientific creativits was conductes in both the group.

Results and Discussion

Hypothesis 1

There is a significant difference between the means of scores of pretests of Scientific Creativity of control and experimental groups.

In order to verify whether the difference was significant, t test was employed to test the null hypothesis at 0.01 level of significance with value 2.66. The result is given in table 1.

Table 1

Number (N), Mean (M), Standard Deviation (SD) and t value of mean of pretests scores of Scientific Creativity of control and experimental groups of Ninth Standard Students

Pretests of Scie. ntific Creativity	N	Mean	SD	t value	Result
Control Group	35	8.54	1.88	0.4702	Not Sig.at level 0.01
Exp. Group	35	8.29	2.63		

From Table 1 it was observed that the means of scores of pretests of control and experimental groups were 8.54 and 8.29 respectively. The calculated t value (0.4702) is less than theoretical t value (2.66) at 0.01 level of significance. Hence the null hypothesis was accepted and the research hypothesis was rejected. Therefore it is possible to conclude that there is no significant difference between the pretest scores of Scientific Creativity of the control and experimental groups of Ninth Standard Students. Hence it implies that the two groups were equivalent in their initial stages of Scientific Creativity.

Hypothesis 2

There is a significant difference between the means of scores of pretest and posttest of Scientific Creativity of Ninth Standard Students in control group.

In order to verify whether the difference was significant, t test was employed to test the null hypothesis at 0.01 level of significance with value 2.66. The result is given in table 2.

Table 2

Number (N), Mean (M), Standard Deviation (SD) and t value of pretest and posttest scores of Scientific Creativity of control and experimental groups of Ninth Standard Students

Control Group	N	Mean	SD	t value	Result
Pre-tests of Scientific Creativity	35	8.54	1.88	7.4946	Significant at level 0.01
Post-tests of Scientific Creativity	35	8.29	2.63		

Table 2 it was observed that the means of scores of pretest and posttest of Scientific Creativity of ninth standard students of control group obtained were 8.54 and 12.11 respectively. The calculated t value (7.4946) is grater than theoretical t value (2.66) at 0.01 level of significance. Hence the null hypothesis was rejected and the research hypothesis was accepted. Therefore it was concluded that there is a significant difference between the means of score of the pretest and posttest of Scientific Creativity among Ninth Standard Students in the control group. Hence it is evident that there was some increase in the Scientific Creativity of control group of Ninth Standard Students after giving instruction through Activity method.

Hypothesis 3

There is a significant difference between the means of scores of pretest and posttest of Scientific Creativity of Ninth Standard Students in experimental group.

In order to verify whether the difference was significant, t-test was employed to test the null hypothesis at 0.01 level of significance with value 2.66.The result is given in table 3.

Table 3

Number (N), Mean (M), Standard Deviation (SD) and t value of pretest and posttest scores of Scientific Creativity of experimental group of Ninth Standard Students

Experimental Group	N	Mean	SD	t value	Result
Pre-tests of Scientific Creativity	35	8.29	2.63	23.903	Significant at level 0.01
Post-tests of Scientific Creativity	35	20.63	1.55		

From the table 3 it was observed that the means of scores of pretest and posttest of Scientific Creativity of ninth standard students in experimental group were 8.29 and 20.63 respectively. The calculated t value (23.903) is grater than theoretical t value (2.66) at 0.01 level of significance. Hence the null hypothesis was rejected and the research hypothesis was accepted. Therefore it was concluded that there is a significant difference between the means of score of the pretest and posttest of Scientific Creativity of ninth standard students in the experimental group. Hence it is evident that there was considerable increase in the Scientific Creativity of experimental group of Ninth Standard Students after the intervention through 4A Approach. The difference between the pretest and posttest scores of experimental group was much more than that of the control group.

Hypothesis 4

There is a significant difference between the gain scores of Scientific Creativity of control and experimental group of Ninth Standard Students.

In order to verify whether the difference was significant, t-test was employed to test the null hypothesis at 0.01 level of significance with value 2.75. The result is given in table 4.

Table 4

Number (N), Mean (M), Standard Deviation (SD) and t value of gain scores of Scientific Creativity of control and experimental group of Ninth Standard Students

Scientific Creativity	N	Gain Scores	SD	t value	Result
Experimental Group - Gain Score	35	12.34	2.96	16.303	Significant at level 0.01
Control Group - Gain Score	35	3.57	1.17		

From the table 4 it was observed that the gain scores of Scientific Creativity of control and experimental group of Ninth Standard Students were 12.34 and 3.57 respectively. The calculated t value (16.303) is grater than theoretical t value (2.66) at 0.01 level of significance. Hence the null hypothesis was rejected and the research hypothesis was accepted. Therefore it is possible to conclude that there is a significant difference between the gain scores of Scientific Creativity of the control and experimental groups of Ninth Standard Students. The experimental group showed a significant increase in the gain scores of Scientific Creativity. Hence it was concluded that 4A Approach is highly effective for increasing the Scientific Creativity among ninth standard students than Activity method.

Table 5

Summary of analysis of co-variance of pretests and posttests scores of control and experimental groups of Ninth Standard Students

Source of Variation	df	SSx	SSy	SSxy	MSyx	(Vyx)	SDyx
Among group means	1	2.016	814.017	40.516	748.2842	748.2842	
Within group means	67	6407.234	5307.567	5323.9	948.3916	17.221	5.00
Total	68	6409.25	6111.567	5364.416	1696.67		

The obtained value of F ratio was 43.45. It is significant at 0.01 level, since the value at 0.01 level from the table is 7.08. The significant F ratio for the adjusted posttest scores showed that the two final scores or the final mean scores of Scientific Creativity of Ninth Standard Students in the control and experimental groups differ significantly after they had been adjusted.

The adjusted means for the posttests scores of Ninth Standard Students in the experimental and control groups were computed using regression.

Table 6

Data for adjusted means for the posttests scores of control and experimental groups of Ninth Standard Students

Group	N	Mx	My	Myx
Control group	35	90.422	104.674	104.028
Exp. groups	35	95.052	141.822	141.90

Adjusted means for posttest scores were tested for significance for df (1, 67). The t value obtained was 6.241. From the Table, the t value for df (67) at 0.01 level is 2.66 and at 0.05 level is 2. So the obtained value is significant at 0.01 level.

The significant t value leads to the conclusion that the two means differ considerably. This implies that the experimental group and the control group differ significantly in their posttest scores. The adjusted means of posttest scores for the experimental group is better than the control group in their Scientific Creativity. It may therefore be concluded that 4A Approach was highly effective for improving Scientific Creativity among Ninth Standard Students.

Major findings of the study

From the statistical analysis it was found that 4A Approach was very effective for improving Scientific Creativity of ninth standard students than Activity method.

Educational implications of the study

The present study was undertaken to investigate the effectiveness of 4A Approach on Scientific Creativity among Ninth Standard Students. The major findings of the study and the conclusion drawn from the findings helped to frame some measures to improve Scientific Creativity. Following are the implication of the study.

1. It can be used as an effective method for improving Scientific Creativity among ninth standard students.
2. 4A Approach encourages students to think creatively and more actively about what they had learned and what they are to learn and thereby improve their compre-

hension abilities. It provides an opportunity for the students to expand ideas beyond the text. So 4A Approach is one of the best methods for promoting student centered learning.

3. As students become more active and experienced in 4A Approach, the teacher can shift to more individualized and collaborative ways which will provide opportunity for imagination, fluency, flexibility and original way of thinking to acquire more deep and thorough learning.
4. 4A Approach is effective for improving application ability and cooperation among students. So it can be used as an effective teaching method for promoting permanent learning..
5. The findings of the study help curriculum planners and those who are connected with educational field to understand the effectiveness and necessity of new teaching approaches.

Conclusion

The study examined the effectiveness of 4A Approach in improving Scientific Creativity among Ninth Standard Students. It was found that 4A Approach was more effective in improving Scientific Creativity among Ninth Standard Students when compared with Activity method. So the investigator hopes that in the light of the results of the study, a teacher can make use of 4A Approach as a best means to improve Scientific Creativity of the students at high school level.

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Effectiveness of UNIQUE Strategy on Spiritual Intelligence among Higher Secondary School Students

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Abstract

Education, as an integrative force in society, may convey values, educate students with skills and abilities, and promote social cohesiveness and national identity. Along with cognitive development, the purpose of education is to instil desired psychological and affective qualities in students. Taking into account these factors, the researcher UNIQUE Strategy based on the current pedagogical strands to assure effective value teaching at the high school level. The UNIQUE Strategy generates a tranquil environment that facilitates a deeper understanding of reality, motivates and stimulates an individual's thinking to attain his or her objectives, and translates into revitalized activity and doing things in a unique manner. It promotes personal realization in order to distinguish truth from life events. The study resulted that the Unique Strategy is superior to present method on the enhancement of spiritual Intelligence among Higher Secondary School Students. The present study concluded that current modalities when combined with Unique Strategy, could enlarge student's systematic and active engagement with real-life experiences.

Key Words *: Unique strategy, Spiritual intelligence, social adjustment, Self-efficacy, Higher secondary school students etc.*

Introduction

Spiritual intelligence necessitates numerous modes of knowledge and the fusion of the inner life of mind and spirit with the outside life of activity in the world. Spiritual intelligence is the capacity to ponder the ultimate meaning of existence and our interconnectedness with the universe in which we live. It increases individuals' psychological well-being and gives them a sense of purpose in life. The materialism and individualism of Western civilization have left a void in many people's life, and there is a growing desire for spirituality, a need for community as a result of urbanization, and a search for identity in a world that is becoming increasingly

depersonalized. People are trying to rely on their own inner authority to seek a purposeful path, establish their own vision, and attain a sense of empowerment.

Today, educational institutions are under a tremendous deal of pressure to establish safe, orderly settings that foster social as well as academic abilities that enable students to succeed in school and in their future endeavours Young students have difficulty understanding the purpose of school and learning. Their comprehension is restricted to the subjects they have studied. They are unsure about how to live their life, contribute to the nation's welfare, care about the environment, and address other social and moral concerns.

Need and Significance of the Study

The present goals and objectives are not being met in the current context of higher secondary education. Even though the Prof. P.O.G. Labba Committee's (Report, 2014) definition of the value of postsecondary education is accurate, its application in the present setting is highly difficult. Despite the fact that the schedule is appropriately planned in accordance with the Labba Committee Report, i.e., one week with 47 periods allocated as follows: There are 32 core class periods, seven for English language, six for second language, and two for physical education. Daily classes are held from 9 a.m. to 4:45 p.m., with one hour of free time (short breaks and noon recess) per day, and two hours on Fridays. Within one year, based on the activities of the Sowhrudha Club, they must teach classes on Reproductive Health, Mental Health, and Life Skills to students, as well as one class (Amma Ariyan) to mothers. Typically, they invite a single gynaecologist from a local hospital to talk on these topics. Extremely few educators with strong religious or philosophical beliefs teach value classes. The majority of students, however, are uninterested in these classes. There is no moral instruction course in the high school curriculum. Using an integrated approach, teachers unintentionally and consciously communicate values to students through their actions outside of the classroom. Establishing a formal learning environment demands a value education curriculum that is well constructed.

The researcher feels compelled to assist high school students who are on the cusp of making important life decisions and in the height of their adolescence. In this transitional period, proper supervision and parental control are important; otherwise, the younger generation will lack moral principles. It is the primary role of teachers and parents to assist students in comprehending the meaning and purpose of their life, work, and the world in which they live, as well as in recognizing and creatively discovering new values. As an individual, social, and spiritual entity, each teenager must undertake a training that comprises Spiritual Intelligence, Social Adaptability.

Effectively enhancing the influence of modern trends on academic, social, cultural, and personal dimensions is the increasing wealth in modern education. Educationalists, administrative bodies, parents, and society anticipate a high-quality education, instruction at the learner's pace, and remarkable performance. Modernizing the possibilities and opportunities of informative, constructive, and productive components of education will

communicate efficacy and efficiency in the brains of the world's youth. An effective value-based strategy can sustain academic improvement, individual growth, and psychological confidence among students. Interconnecting these dimensions allows for the enhancement of value-related variables such as Spiritual Intelligence. Taking into account these elements of experimental space, the researcher considered a value-based technique UNIQUE Strategy for enhancing Spiritual Intelligence among Higher Secondary School Students.

Objectives of the Study

To find out the effectiveness of UNIQUE Strategy on Spiritual Intelligence among Higher Secondary School Students with respect to gender.

Hypotheses of the Study

There is a significant difference between the boys and girls of Unique Strategy group on their post-test Spiritual Intelligence scores.

Methodology of the study

The population of the study consists of all the higher secondary schools of Thodupuzha educational district. The sample consisted of 50 students enrolled in plus-one program. Random selection was used to form one experimental group.

Definition of the Study

The UNIQUE Strategy is a student-cantered, value-based approach that aids in the development of self-awareness, clarity about one's life's goals, the acquisition of desirable traits, the consolidation of knowledge and experience, and the realization of desired changes. Those who have participated in the Pastoral Orientation Centre, Ernakulam's lessons designed on the basis of the Moral Instruction series have been guaranteed the opportunity for genuine personal growth through this method.

Statistical Techniques

It is of the utmost importance to choose acceptable statistical methods for codifying results and generating valid conclusions. In this study, the researcher employed descriptive and inferential statistical methods. Statistical Package for the Social Sciences was used to analyze the collected data (IBM SPSS Statistics Version 26).

Analysis and Discussion

To determine whether the newly established UNIQUE Strategy has a substantial impact on Boys and Girls in that particular group in terms of boosting Spiritual Intelligence.

Table 1

The results of the gender-based t-test of significance for pre-test scores of higher secondary school students in the UNIQUE strategy group regarding spiritual intelligence

Gender	No of Respondents	Mean Value	Standard Deviation	t-value	P value
Boys	25	86.78	5.78	1.34	.089
Girls	25	82.67	2.68		

Source: Primary data

As seen in Table 1, the p-value is not statistically significant at any level (.089). This indicates that the samples of Boys and Girls in the higher secondary level who participated in the UNIQUE Strategy Group were comparable in terms of their Spiritual Intelligence prior to receiving the experimental treatment.

Table 2

The results of the gender-based t-test of significance for post-test scores of higher secondary school students in the UNIQUE strategy group regarding spiritual intelligence

Gender	No of Respondents	Mean Value	Standard Deviation	t-value	P value
Boys	25	92.67	3.78	1.77	0.73
Girls	25	97.34	1.68		

Source: Primary data

The p-value is not statistically significant at any significance level ($p>0.05$). This indicates that there is no significant difference between the Spiritual intelligence post-scores of Boys and Girls in higher secondary school who are members of the UNIQUE Strategy Group.

Practical Implications of the Study

The present research aimed to improve students' spiritual intelligence by creating value-based ways for teaching them at the higher secondary level. The study's pedagogical implications were drawn from these results and interpretations. It is crucial to include deductions based on these findings to the curriculum used in schools. The results of this study showed that the recently created value-based techniques, namely the UNIQUE Strategy is highly beneficial in raising higher secondary school students' levels of spiritual intelligence. There is a pressing demand and requirement for value education among today's youth. Value-based solutions that work to break up the monotony of value education sessions are desperately needed. The gender difference doesn't mark any peculiarly on their Spiritual Intelligence.

Conclusion

The present study's findings and discussions demonstrated that the newly established value-based strategy, namely the UNIQUE Strategy is highly helpful in boosting Spiritual Intelligence among Higher Secondary School Students. If the findings of the study are used by other researchers to improve current value education procedures and to perform more extensive research in this critical field, the investigator will consider his or her efforts to be sufficiently rewarded.

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Effectiveness of Merrill's Instructional Design on Process Skills among Ninth Standard Students

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Abstract

Education is regarded as the aggregate of all the processes by which a person develops abilities, attitudes and other forms of behavior of practical values in the society which he lives. Theoretical knowledge in Science subject is good in learning the facts and concepts. But the application of those theories can be attained through the active participation of students through various class activities. Merrill's Instruction Design is useful for educators who wish to embrace the positive aspects of basic process skills like inquiry, exploration, communication, inferring and also the success of their students. This approach will result in the students learning, doing, and implementing a lesson topic into their everyday lives. The findings of the study revealed the effectiveness of Merrill's Instructional Design on Process Skills among ninth grade students which have wider implications in the teaching learning process.

Key Words : *Theoretical knowledge, Instructional design, Process skills etc.*

Prologue

Educational Research is widely regarded as providing benefits to individuals and to local, regional, national, and international community's involved in the education system. It helps us to diagnose different problems prevalent in our society and education system and to make critical and logical analysis of those problems. Research findings could be beneficial for teachers, teacher educators, administrators, policy makers, parents and other stakeholders involved in the education sector. Research findings could be implemented in classroom teaching learning process to bridge the learning gaps. Learning is important in every stage of a person's life, for social and personal development. Science is an important part of the foundation for education for all children which allows them to explore their world and discover new things. Learning science is a significant part of human culture and represents one of the pinnacles of human thinking capacity. It requires various Process Skills and cognitive skills.

Merrill's Instructional Design is a problem-based theory. Learners use four different phases in this design. The basic definition is that the principles of activation, demonstration, application and integration are necessary to the success of a learner. The science process skills form the foundation for scientific methods. The basic process skills are integrated together when students design and carry out experiments or in everyday life when we all carry out fair test experiments. Integrating the basic science process skills together and gradually developing abilities to design research is increasingly emphasized in successive grade levels, and is an expectation of student's growth and development. Merrill's Instructional design is a way that fosters such a development

Need and Significance of the Study

Our educational system is now a burden for the students in the form of its vast syllabus. We learn many things without knowing its application in our future daily life. Even though our educational system focus on Pragmatic view of education, the students get less opportunity to explore themselves due to the lack of time to complete this vast syllabus. So teacher's role for preparing students is very important. Various instructional designs help teachers to teach in most appropriate methods. Science is a subject which requires lots of hands on experiences. Students should be trained to use all techniques in order to develop their process skills. This helps them to nurture scientific interest and also to create scientific attitude.

Theoretical knowledge in Science subject especially in Chemistry is good in learning the facts and concepts. But the application of those theories in daily life can be attained through the active participation of students through various class activities. Merrill's Instruction Design is useful to educators when the instruction is in need of a change. We must implement a positive change in response to the level of success their students are having. It is important that teachers realize students need more than just lecture and assessment. This theory is useful for educators who wish to embrace the positive aspects of basic process skills like inquiry, exploration, communication, inferring and also the success of their students. This approach will result in the students learning, doing, and implementing a lesson topic into their everyday lives.

Merrill's Instructional Design lies in the extreme focus on the learner. The principles are aligned with the learner's success in mind. The four phases encourage the teacher to organize instruction in a way that best engages and encourages the student in the lesson. The First Principles will give the learner the opportunity to practice the lesson and implement what was learned into future experiences. Hence students develop process skills in all stages of development and thereby the achievement in Chemistry can also be tremendously improved by proper understanding.

Research Questions

The investigator identified a gap existed in the reviewed studies and therefore fair questions aroused in the mind of investigator which are discussed below:

i. How Merrill's Instructional Design affect the Process Skills of Ninth standard students?

ii. What will be the gender wise effect of Merrill's Instructional Design on Process Skills?

Statement

In the present study the investigator tried to find out the answers to these questions, the investigator conducted a research study which was stated as, 'The Effectiveness of Merrill's Instructional Design on Process Skills among Ninth Standard Students'.

Operational Definition of the Key Terms

Merrill's Instructional Design

Merrill's Principles of Instruction is an instruction design model focusing on problem-solving, activation, demonstration, application and integration. Merrill's principles highlight that learning is promoted when: Learning is problem-centred and learners are engaged in solving real-world. Existing knowledge is activated as a foundation for new knowledge. Merrill's five principles of instruction are:

i. Problem centred
ii. Activation
iii. Demonstration
iv. Application
v. Integration

In the present study, the investigator operated the variable through lesson transcripts based on Merrill's Instructional Design, which is prepared by the investigator.

Process Skills:

Process skills are the things that we do when we study and investigate. Observing, classifying, communicating, measuring, inferring and predicting are among the basic process skills used by scientists, teachers and students when doing science.

In the present study, the investigator selected only four basic Process Skills such as classification, observation, inference, measuring and the scores obtained by the students in Process Skills test, which is prepared and analysed by the investigator itself, is considered as Process Skills.

Objectives

1. To study the effect of Merrill's Instructional Design on Process Skills of Ninth standard students.
2. To study the effect of Merrill's Instructional Design on Process Skills of boys in Ninth standard.
3. To study the effect of Merrill's Instructional design on Process Skills of girls in Ninth standard.

Hypotheses

1. The gain scores on Process Skills of experimental group are significantly higher than that of control group.
2. The gain scores on Process Skills of experimental group boys are significantly higher than that of control group.
3. The gain scores on Process Skills of experimental group girls are significantly higher than that of control group.

Methodology

In the present study the investigator tried to examine the Effectiveness of Merrill's Instructional Design on Process Skills among Ninth standard students. The research was conducted using experimental method and the investigator selected the pre-test and post-test non-equivalent group design which is claimed under Quasi Experimental Design.

Variables

In the present study the investigator selects four variables for the study: - two independent variables and one dependent variable.

i. Independent Variables

Merrill's Instructional Design for experimental group Constructivist Approach of Learning for control group.

ii. Dependent Variable

Process Skills.

Population and Sample Used for the Study

In the present study all the Ninth standard students of Idukki District who studied Kerala State syllabus during the academic year 2022 -23 is considered as the population.

Among the population the investigator selected Sixty students of standard Nine in Idukki District who studied Kerala State syllabus during the academic year 2022 -23 as sample.

Tools Used for the Study

i. Facilitative Tools:

1. Lesson transcripts based on Merrill's Instructional Design, which is prepared by the investigator.
2. Lesson transcripts based on Constructivist Approach of Learning, which is prepared by the investigator.

ii. Evaluative Tools:

1. A test on Process Skills which was prepared and item analyzed by the investigator.

Statistical Techniques Used

The statistical tools used for the present study for arriving meaningful analysis and interpretations of the research work is given below:

i. Descriptive Statistics

Mean, Standard deviation

ii. Inferential Statistics

t'test

Scope of the Study

David Merrill has synthesized and distilled Merrill's Instructional Design through a lifetime of research, practice and synthesis. This design increases the efficiency and effectiveness of instruction. Most importantly, instructional designers and educators who use these principles will increase student learning and satisfaction by engaging them in solving meaningful problems andtasks.

To investigate the effectiveness of Merrill's Instruction Design on Achievement in Chemistry and Process skills among Ninth standard students, the investigator used this design as the instructional strategy in the experimental group. Merrill's Instruction Design provides a clear framework and prescriptions for utilizing active learning strategies, including research-based instructional strategies. According to this design, instructional activities should be centered on real-world problems or tasks. Furthermore, instruction should follow a four-phase cycle of instruction that activates students' previous knowledge, demonstrates new knowledge to the students, has the students apply their new knowledge, and encourages them to integrate that knowledge into their live. This approach provides a useful framework for incorporating active learning because it supports and incorporates many active learning strategies. It also provides a systematic process for implementing these strategies. In addition, a growing body of research shows support for these design, suggesting that the use of Merrill's Instructional Design may increase student learning if implemented into a teaching strategy in Chemistry.

A significant benefit of Merrill's Instructional Design is that it gives us the framework to discover more about your learners are and how they learn. It also helps us to identify the knowledge and skills students need to demonstrate by the end of the sequence or program: the learning goals or outcomes. This also creates strategies to deliver the learning experience in ways that are as relevant and effective as possible. Setting up guidelines for evaluating how the program has met its goals is another way to ensure that students spend time on the most valuable and relevant concepts.

The goal of the study is to help the students to improve their process skills. The finding should be used in the school where the studies conducted to find ways and means to improve the educational system which withdraw the students from learning. The result will also help the students to determine the benefits of using Merrill's Instructional Design. This also helps the students in improving their process skills. The study will provide background on the strategy to be recommended to the teachers and will motivate them to use the appropriate strategy for effective teaching

Analysis and Interpretation

Hypothesis I

The first hypothesis of the study was: 'The gain scores on Process Skills of experimental group are significantly higher than that of control group'. To analyse, the research hypothesis was changed into null hypothesis as: 'The gain scores on Process Skills of experimental group are not significantly higher than that of control group'.

Table 1

Number (N), Mean (M), Standard Deviation (SD) and 't' value of Gain Scores on Process Skills among Experimental and Control Group

Group	N	M	SD	't' value	Result
Experimental group	30	8	4.0853	8.58	Sig. at 0.01 level
Control Group	30	1.4	1.03724		

It was found that the't' value 8.58 is higher than that of the theoretical value 2.66 at 0.01 level, with the df= 59. This showed that there is a significant difference between control group and experimental group on the gain scores of Process Skills. So the null hypothesis was rejected and the research hypothesis was retained

Hypothesis II

The second hypothesis of the study was: 'The gain scores on Process Skills of experimental group boys are significantly higher than that of control group'. To analyse, the research hypothesis was changed into null hypothesis as: 'The gain score on Process Skills of experimental group boys are not significantly higher than that of control group'.

Table 2

Number (N), Mean (M), Standard Deviation (SD) and 't' value of Gain Scores on Process Skills among Boys of Experimental and Control Group

Group	N	M	SD	't' value	Result
Experimental group	15	7.4	4.2895	5.77	Sig. at 0.01 level
Control Group	17	1.6470	1.1147		

It was found that the' t' value 5.77 is higher than that of the theoretical value 2.76 at 0.01 level, with the df= 29. This showed that there is a significant difference between control group and experimental group on the gain scores of Process Skills among boys of Ninth standard. So the null hypothesis was rejected and the research hypothesis was retained.

Hypothesis III

The third hypothesis of the study was: 'The gain scores on Process Skills of experimental group girls are significantly higher than that of control group'. To analyse, the research hypothesis was changed into null hypothesis as: 'The gain scores on Process Skills of experimental group girls are not significantly higher than that of control group'.

Table 3

Number (N), Mean (M), Standard Deviation (SD) and 't' value of Gain Scores on Process Skills among Girls of Experimental and Control Group

Group	N	M	SD	't' value	Result
Experimental group	15	8.6	3.9242	6.78	Sig. at 0.01 level
Control Group	13	1.0769	0.8623		

It was found that the' t' value 6.78 is higher than that of the theoretical value 2.76 at 0.01 level, with the df= 29. This showed that there is a significant difference between control group and experimental group on the gain score of Process Skills among girls of Ninth standard. So the null hypothesis was rejected and the research hypothesis was retained.

Major Findings

1. Merrill's Instructional Design is very effective on Process Skills among Ninth standard students.
2. The instructional material based on Merrill's Instructional Design is effective in the case of boys of standard Nine.
3. The instructional material based on Merrill's Instructional Design is effective in case of girls of standard Nine.

Implications

The present study was basically intended to develop Process Skills through Merrill's Instructional Design among Ninth standard students. The findings of the study have wider implications in the teaching learning

process, which are expected to help the curriculum developers and teacher concerned in the field of education to realize the need and significance of incorporating Process Skills in teaching learning process. The investigator also expects that the teaching community in whole and researchers would be benefitted from the present study.

Delimitations of the Study

1. The study delimited to those English medium students in Idukki district only.
2. The study delimited to only those students who are studying in Kerala State Syllabus.
3. The content for instructional materials delimited to Chemistry subject only.
4. The study was delimited to only one school only.
5. Process Skills were delimited to observation, inference, classification and measuring only.

Limitations of the Study

Experimental method is considered to be the most scientific and objective method for studding behavior. It is observation under controlled conditions. In this method the investigator tries to study the cause and effect relationships regarding human behavior by performing experiments. But there occurs lot of limitations during the study.

The major limitations of the present study are given below:

1. Lack of technological support in the classroom.
2. Lack of previous knowledge in subject matter due to online classes during covid pandemic.
3. The presence of vast curriculum and overburden of teachers to complete the syllabus.
4. Lack of time to complete the present study.

Epilogue

Merrill's Instructional Design views every student with a perception that the power of scientific thinking and Process Skills may considered to be essential tool for the welfare and meaningful of students. This design of teaching threw light to facilitate learning as well as Achievement in Chemistry. This method aided students in improving Process Skills in a more meaningful way. This design will also support curriculum planners to develop new curriculum. This effective teaching strategies is useful for teachers to make informed and intelligent choice of teaching and to excel in their field.

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Understanding the Essence of Self-Regulated Learning Models through Zimmerman

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Abstract

Self-regulated learning (SRL) is a comprehensive framework within educational psychology that encompasses cognitive, metacognitive, behavioural, motivational, and emotional/affective aspects of learning. This umbrella term incorporates a wide range of variables, including self-efficacy, volition, and cognitive strategies, providing a holistic approach to understanding and enhancing the learning process. SRL involves active engagement in cognitive processes, awareness and control of one's thought processes, purposeful behavioural actions, and the interplay of motivation and emotions. The study of SRL has become crucial in educational psychology, as it sheds light on how individuals can regulate their own learning experiences, leading to more effective and lifelong learning.

Key Words : Self-regulated Learning, Triadic Model, Cyclical Phases, Social Interactions, Learning Goals, Cognitive Abilities etc.

Introduction

In the intricate landscape of educational psychology, the concept of self-regulated learning (SRL) stands as a multifaceted framework encompassing cognitive, metacognitive, behavioural, motivational, and emotional/affective dimensions. Originating from the collaborative efforts of prominent educational psychologist Barry J. Zimmerman, SRL delves into the intricacies of how individuals actively engage in their learning process, steering their cognitive efforts towards effective and autonomous knowledge acquisition. This comprehensive review embarks on an exploration of Zimmerman's seminal contributions to SRL, particularly focusing on his Triadic Model, Cyclical Phases Model, and the lesser-known Multi-Level model. These models unravel the dynamics of self-regulated learning, providing educators and learners with invaluable insights into the nuanced interplay of environmental, behavioural, and person-level factors that shape the learning journey.

Zimmerman's intellectual journey, encapsulated in his review of career milestones, reveals a trajectory marked by cognitive modelling research and collaboration with influential figures like Albert Bandura. The

subsequent evolution of his work into the realm of SRL emphasizes the importance of understanding how individuals assimilate cognitive models and become proficient learners across diverse tasks. As one of the foremost contributors to the field, Zimmerman introduces three distinct models, each offering a unique lens into the complexities of self-regulated learning. The Triadic Model, discussed in detail, emerges as a foundational piece intertwining SRL within Bandura's triadic model of social cognition, emphasizing the interconnectedness of environment, behaviour, and person-level factors.

Navigating through Zimmerman's Cyclical Phases Model, this article explores the dynamic nature of the learning process. The model, introduced in the 2000 handbook, presents an iterative cycle comprising forethought, performance, and self-reflection phases. Each phase contributes to a continuous and adaptive learning journey, highlighting the significance of metacognition and goal-setting. Additionally, the article sheds light on the lesser-explored Multi-Level model, introduced by Zimmerman in 2000, which outlines the stages through which students develop self-regulatory competency. The ensuing exploration of the benefits, challenges, and strategic interventions proposed by Zimmerman provides a holistic understanding of the transformative potential of SRL models. In essence, this article serves as a comprehensive guide to unravelling Zimmerman's impactful contributions, offering educators and learners alike a roadmap for fostering autonomy, motivation, and reflection in the pursuit of lifelong learning.

Unravelling Zimmerman's Self-Regulated Learning Models

Zimmerman (2013) conducted a comprehensive review of his career, contextualizing his work within the framework of socio-cognitive theory, which posits that individuals acquire knowledge through observation and social interaction. Zimmerman's intellectual journey began with cognitive modelling research, a collaborative effort with Albert Bandura and Ted L. Rosenthal. Over time, Zimmerman shifted his focus to understanding how individual learners assimilate cognitive models, ultimately becoming proficient in various tasks. As one of the foremost contributors to the field of self-regulated learning (SRL), Zimmerman introduced three models of SRL (Panadero and Alonso-Tapia, 2014).

Triadic model of SRL

The Triadic Model of Self-Regulated Learning (SRL), a pioneering contribution by Zimmerman in 1989, stands as a seminal framework in the realm of educational psychology. This model offers a nuanced understanding of the intricate dynamics that govern the self-regulated learning process. Zimmerman's Triadic Model is particularly noteworthy for its illustration of the symbiotic relationships among three pivotal dimensions: environment, behaviour, and person-level factors. As we embark on an exploration of this model, it becomes apparent that it not only provides a roadmap for individuals seeking to enhance their learning but also embeds itself within the broader context of Bandura's triadic model of social cognition. Zimmerman's insightful integration of SRL within Bandura's framework underscores the interconnected nature of

learning, social interactions, and personal attributes.

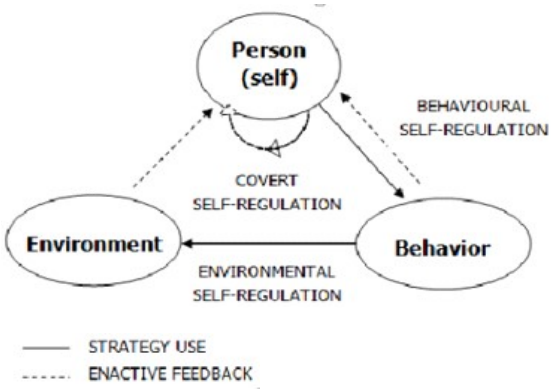
In the context of the Triadic Model, the environment refers to the external context in which learning takes place. This includes the physical setting, resources, and social interactions. Zimmerman emphasizes the significant impact of the learning environment on an individual's ability to self-regulate. Factors such as access to relevant materials, the presence of supportive peers, and the quality of instructional resources all contribute to shaping the learning environment.

The behavioural dimension encompasses the actions and strategies that learners employ during the learning process. This involves the specific steps taken to achieve learning goals, the use of effective study techniques, and the regulation of one's own behaviour to enhance learning outcomes. Zimmerman underscores the importance of proactive engagement in learning activities, emphasizing that self-regulated learners actively shape their behaviour to optimize their learning experience.

This dimension focuses on individual characteristics and internal factors that influence self-regulated learning. It includes aspects such as cognitive abilities, metacognitive skills, motivation, and prior knowledge. Zimmerman recognizes that learners bring a diverse set of personal attributes to the learning process, and these factors play a crucial role in determining how individuals regulate their own learning. For example, a student's motivation to learn, their belief in their capabilities, and their awareness of effective learning strategies all fall within the realm of person-level factors.

Figure 1

Integration within Bandura's Triadic Model of Social Cognition



Zimmerman's Triadic Model of SRL is intricately linked to Albert Bandura's triadic model of social cognition. Bandura's model involves reciprocal determinism, suggesting that behaviour, personal factors, and the environment interact dynamically and influence each other. Zimmerman applies this concept to the realm of self-regulated learning, positing that an individual's ability to regulate their learning is shaped by the ongoing interplay between the learning environment, their behaviour, and their personal attributes.

Cyclical Phases Model of SRL

Zimmerman's Cyclical Phases Model emerges as a pivotal framework in the landscape of self-regulated learning (SRL), offering a comprehensive lens through which to understand the dynamic nature of the learning process. Developed by the distinguished educational psychologist Barry J. Zimmerman and presented in the 2000 handbook, this model posits that effective learning is not a linear journey but an iterative cycle, encompassing three distinct yet interrelated phases. The

Forethought Phase initiates the process, wherein learners set the groundwork for their educational pursuits by establishing goals and formulating a strategic plan. Subsequently, the Performance Phase unfolds as learners actively engage with the learning material, applying cognitive strategies and dynamically adjusting their approach. Finally, the model culminates in the Self-Reflection Phase, inviting learners to critically evaluate their performance, identify areas of success, and pinpoint opportunities for improvement. Zimmerman's Cyclical Phases Model thus paints a vivid picture on the cyclical and adaptive nature of self-regulated learning, underscoring the importance of metacognition and goal-setting throughout the continuous learning journey.

This model not only provides a structured framework for individual learners but also resonates with educators and researchers seeking insights into optimizing teaching and learning environments. As we explore the intricacies of each phase, we gain a profound understanding of how learners actively shape their educational experiences, adapting and refining their strategies in a perpetual cycle of growth and improvement. Let's delve into each phase of Zimmerman's Cyclical Phases Model:

The learning process begins with the Forethought Phase, where learners set the stage for their educational journey. In this initial stage, individuals establish goals, activate prior knowledge, and develop a strategic plan to approach the task at hand. Goal-setting becomes a crucial aspect of this phase, as learners define what they aim to achieve and outline the steps required for success.

Following the Forethought Phase, learners' transition into the Performance Phase. Here, they actively engage with the learning material, employing various cognitive strategies and monitoring their progress. This phase emphasizes the execution of the plan developed in the Forethought Phase. Learners adapt and adjust their strategies as needed, applying metacognitive skills to optimize their learning experience.

Upon task completion, learners enter the Self-Reflection Phase. This stage involves a critical assessment of one's performance, considering both successes and areas for improvement. Zimmerman highlights the importance of self-reflection in enhancing future learning endeavours. Through thoughtful evaluation, learners refine their strategies, identify effective approaches, and recognize areas that may require further attention or modification.

The Cyclical Phases Model underscores the iterative and dynamic nature of self-regulated learning, emphasizing that it is an ongoing process rather than a linear progression. Each phase informs the next, creating a continuous cycle that promotes adaptive and effective learning strategies. Zimmerman's model recognizes the importance of metacognitive processes and motivation throughout the cyclical journey, providing a holistic understanding of how learners regulate their own learning experiences.

Multi-Level model

Zimmerman's third model, now commonly referred to as the Multi-Level model, was introduced in 2000 and outlines the four stages through which students develop their self-regulatory competency (Zimmerman, 2000).

However, for the purpose of this review, the focus will be on the analysis of the Cyclical Phases model. This particular model is chosen due to its alignment with the SRL processes depicted at a comparable level to those found in models proposed by other authors discussed in this review. The Cyclical Phases model, elucidated by Zimmerman, provides a detailed understanding of the iterative and dynamic nature of self-regulated learning, making it a valuable subject for examination within the broader context of SRL frameworks.

Benefits of Self-Regulated Learning models of Zimmerman

Self-regulated learning models, such as those developed by Zimmerman, offer a plethora of benefits for individuals seeking to take control of their educational journey. Zimmerman's models, notably the Cyclical Phases model, provide a structured framework that empowers learners. One of the key advantages lies in the enhanced retention of information. By actively engaging in the learning process, setting goals, and monitoring progress, individuals are more likely to internalize and remember the information, fostering deeper understanding.

Another notable benefit is the cultivation of transferable skills. Zimmerman's models focus on developing not only subject-specific knowledge but also broader skills such as critical thinking, problem-solving, and effective time management. These skills extend beyond the academic realm, equipping individuals to navigate various challenges in their personal and professional lives.

Furthermore, self-regulated learning models contribute to increased motivation. The intrinsic motivation that arises from setting personal goals and witnessing progress fosters a sense of achievement. Learners become more self-driven, taking ownership of their education and developing a lifelong learning mind-set.

Zimmerman's models also emphasize the importance of feedback and reflection. Timely and constructive feedback mechanisms facilitate ongoing improvement. Through self-reflection, individuals can identify areas for enhancement, refine their strategies, and continuously adapt their approaches to learning.

In essence, the benefits of Zimmerman's self-regulated learning models encompass improved retention, the development of transferable skills, increased motivation, and a focus on continuous improvement through feedback and reflection. These models serve as invaluable tools for individuals committed to active and autonomous learning.

Challenges and Strategies for Fostering Self-Regulated Learning

Fostering self-regulated learning, as advocated by Zimmerman, is not without its challenges. One prevalent obstacle is the issue of procrastination, where learners may struggle to initiate or complete tasks in a timely manner. Zimmerman proposes addressing this challenge through strategies such as breaking down tasks into smaller, more manageable steps and establishing realistic deadlines. By providing learners with tools to overcome procrastination, they can develop a more proactive and disciplined approach to their studies.

A second challenge involves the clarity of goals. Zimmerman acknowledges that poorly defined or ambiguous goals can impede the self-regulation process. To combat this, he recommends offering guidance on effective goal-

setting, ensuring that learners comprehend the objectives they aim to achieve. By fostering goal clarity, educators can empower individuals to align their efforts with specific learning outcomes, enhancing the effectiveness of self-regulated learning.

Insufficient feedback poses another obstacle to self-regulated learning. Zimmerman recognizes the importance of timely and constructive feedback for learners to gauge their progress accurately. Strategies to address this challenge may involve incorporating peer assessments, self-assessment tools, or regular feedback sessions. These mechanisms not only guide learners in evaluating their work but also contribute to a continuous improvement mind set within the self-regulation framework.

In response to these challenges, Zimmerman proposes various strategies aimed at empowering learners in their self-regulated learning journey. Encouraging effective goal setting and planning, providing metacognitive training, incorporating motivational strategies, and enhancing self-reflection all play crucial roles in mitigating challenges and fostering a more robust and sustainable approach to self-regulated learning. These strategies collectively contribute to creating an environment where learners can navigate challenges, take ownership of their learning, and develop into more autonomous and effective lifelong learners.

Conclusion

Zimmerman's impactful contributions to the field of self-regulated learning, as exemplified by the Triadic Model of SRL, Cyclical Phases Model of SRL, and Multi-Level model, provide a rich framework for understanding and fostering autonomous learning processes. The Triadic Model intricately weaves together the environmental, behavioural, and person-level factors, elucidating the dynamic interplay influencing self-regulation. The Cyclical Phases Model unfolds a cyclical journey through forethought, performance, and self-reflection, encapsulating the iterative nature of effective learning. Zimmerman's Multi-Level model, though not expounded here, adds another layer, emphasizing the stages through which students acquire self-regulatory competency. Together, these models offer a nuanced understanding of the multifaceted dimensions of self-regulated learning, providing educators and learners with valuable insights to optimize the learning experience.

Exploring the benefits of Zimmerman's Self-Regulated Learning models reveals the transformative potential for individuals. From heightened information retention and the development of transferable skills to increased motivation and a focus on continuous improvement, these models serve as powerful tools for empowering learners on their educational journeys. However, acknowledging the challenges of procrastination, goal clarity, and feedback insufficiency, Zimmerman proposes strategic interventions. By integrating effective goal-setting, metacognitive training, motivational enhancements, and a robust system for self-reflection, educators can guide learners in overcoming challenges and cultivate self-regulated learning as a lifelong skill. In essence, Zimmerman's models not only unravel the complexities of self-regulated learning but also pave the way for a more autonomous, motivated, and reflective approach to knowledge acquisition and skill development.

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Adversity Quotient : What It Is and Why It Matters?

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Abstract

This article explores the concept of Adversity Quotient (AQ) and its importance in personal and professional success. From psychological point of view, to some extent the success of a person depends on proper management of struggling situations. Therefore, high AQ is the need of the hour as it helps to cultivate a state of consistency and makes a person more self-reliant for handling the threats to gain knowledge and adjusting in this world. This article defines AQ and discusses its components, including adaptability, resilience and learning from adversity. It also highlights the benefits of having a high AQ, such as better stress management and problem-solving skills. Overall, the article emphasizes the importance of AQ in today's fast-paced and ever- changing world and encourages individuals to focus on developing this essential skill.

Key Words : *Adversity Quotient, Academic Performance, Social Development, Personality etc.*

Introduction

In life, we all face challenges and obstacles that can be difficult to overcome. Some people seem to handle adversity better than others, and this is where the concept of Adversity Quotient (AQ) comes in. Adversity quotient is a measure of an individual's ability to face and overcome adversity. It is a psychological construct that has gained increasing attention in recent years as a predictor of success in various areas of life, including education, business, and sports. AQ is different from Intelligence Quotient (IQ) and Emotional Quotient (EQ). While IQ measures cognitive abilities and EQ measures emotional intelligence, AQ measures an individual's resilience and ability to adapt to challenging situations.

The Components of AQ

The concept of AQ was first introduced by Paul Stoltz in his book "Adversity Quotient: Turning Obstacles into Opportunities" published in 1997. According to Stoltz, AQ is made up of four key components:

1. Control: The extent to which an individual believes they have control over their circumstances.

2. Ownership: The extent to which an individual takes responsibility for their actions and outcomes.
3. Reach: The extent to which an individual is willing to take risks and step outside their comfort zone.
4. Endurance: The extent to which an individual can persist in the face of adversity.

The Scope of Adversity Quotient

The scope of Adversity Quotient (AQ) is broad and can be applied to various areas of life, including personal, academic, and professional settings. AQ measures an individual's ability to handle adversity, overcome challenges, and achieve success in the face of obstacles. It helps individuals to identify their strengths and weaknesses in dealing with adversity and provides them with strategies to improve their resilience. AQ is used by individuals, organizations, and schools to help people to develop the skills and mindset needed to thrive in challenging situations. It has been shown to be a predictor of success in various fields, including business, sports, and education. The concept of AQ is also being applied in healthcare to help patients cope with chronic illnesses and improve their quality of life. Overall, the scope of adversity quotient is vast, and its application has the potential to benefit individuals and organizations in many different ways. The need for Adversity Quotient (AQ) arises from the fact that life is full of challenges and setbacks, and individuals need to be equipped with the skills and mindset to overcome them. AQ helps individuals to develop resilience, which is the ability to bounce back from adversity and continue moving forward. It enables individuals to face challenges with a positive attitude, learn from their mistakes, and grow stronger through adversities.

The Educational Significance of Adversity Quotient

The educational significance of AQ lies in its ability to predict an individual's success in various areas of life such as to help individuals to develop resilience, overcome challenges, bounce back from setbacks and maintain a positive attitude in the face of adversity. Research has shown that individuals with high AQ are more likely to succeed in their personal and professional lives than those with low AQ. AQ is also important for organizations as it helps them to identify individuals who are better equipped to handle challenging situations and can contribute to the organization's success. AQ is particularly important in today's fast-paced and rapidly changing world, where individuals are constantly faced with new challenges and uncertainties. The ability to adapt to changing circumstances, stay motivated in the face of setbacks, and learn from failures is essential for success in any field. In addition, individuals with a high AQ are more likely to take risks, embrace change, and seek out new opportunities. They are also more likely to be resilient in the face of failure, learning from their mistakes and using them as a stepping stone to future success.

Adversity Quotient and Academic Performance

Adversity quotient (AQ) is a measure of an individual's ability to overcome challenges and adversity. AQ has been found to be positively associated with academic performance. Students with higher AQ tend to have better problem-solving skills, resilience, and motivation, which are all important factors for academic success. Research has shown that students with higher AQ are more likely to persist in the face of academic challenges, such as difficult coursework or low grades. They are also more likely to seek out resources and support when facing academic difficulties, such as tutoring or counseling services. In addition, students with higher AQ tend to have better time management skills and are more likely to set achievable goals for themselves. This can lead to better academic performance as they are able to prioritize their studies and stay focused on their goals.

Adversity Quotient and Social Development

Adversity Quotient (AQ) has also been found to be positively associated with social development. Individuals with higher AQ tend to have better interpersonal skills, communication skills, and emotional intelligence, which are all important for building positive relationships with others. Research has shown that individuals with higher AQ are better able to handle conflict and navigate challenging social situations. They are also more likely to be empathetic and understanding towards others, which can lead to stronger and more meaningful relationships. In addition, individuals with higher AQ tend to have a more positive outlook on life and are better able to cope with stress and anxiety. This can lead to better mental health and overall well-being, which can in turn positively impact their social interactions. Overall, developing a high AQ can be beneficial for social development, as it helps individuals to navigate challenging social situations and build positive relationships with others.

Adversity Quotient and Personality

Adversity Quotient (AQ) has been found to be related to certain personality traits, such as resilience, optimism, and openness to experience. Resilience is the ability to bounce back from difficult situations and adapt to change. Individuals with higher AQ tend to be more resilient, as they are better equipped to handle adversity and overcome challenges. Optimism refers to a positive outlook on life and the belief that things will work out in the end. Individuals with higher AQ tend to be more optimistic, as they have a greater sense of control over their circumstances and believe that they can overcome obstacles. Openness to experience is a personality trait that involves a willingness to try new things, explore new ideas, and take risks. Individuals with higher AQ tend to be more open to experience, as they are more willing to face challenges and learn from their experiences. Overall, AQ is related to certain personality traits that can help individuals to cope with adversity and

navigate challenging situations. Developing these traits can be beneficial for building resilience and achieving success in life.

Implications of Adversity Quotient in Day-to-Day Life

Adversity Quotient (AQ) has several implications in day-to-day life, including:

1. **Coping with Stress**

   Individuals with higher AQ are better equipped to cope with stress and handle difficult situations. They are more likely to remain calm and composed under pressure and find creative solutions to problems.

2. **Building Resilience**

   AQ helps individuals to develop resilience, which is the ability to bounce back from setbacks and adversity. This trait is essential for achieving success in life, as it allows individuals to learn from their experiences and grow stronger.

3. **Taking Risks**

   Individuals with higher AQ are more likely to take risks and try new things. They have a greater sense of confidence in their abilities and are willing to step out of their comfort zone to pursue their goals.

4. **Overcoming Obstacles**

   AQ helps individuals to overcome obstacles and challenges that may arise in their personal or professional lives. They are more likely to persevere in the face of adversity and find ways to overcome obstacles.

How can you improve your Aê? Here are some tips:

1. **Change your mindset**
   Instead of seeing obstacles as roadblocks, try to view them as opportunities for growth and learning.
2. **Practice resilience**
   Develop a practice of bouncing back from setbacks and failures.
3. **Take risks**
   Step outside your comfort zone and try new things.
4. **Build a support system**
   Surround yourself with people who encourage and support you.
5. **Cultivate a positive attitude**
   Focus on the positive aspects of situations and maintain a can do attitude.

Conclusion

In conclusion, By improving our resilience and ability to adapt to challenging situations, we can overcome obstacles and achieve our goals. It is an important trait to develop as it allows individuals to handle stress, build resilience, take risks, and overcome obstacles. A high AQ can lead to a more fulfilling and successful life, both personally and professionally. Therefore, it is important to develop and enhance one's AQ through various strategies such as seeking out challenging experiences, learning from failures, and developing a positive mindset. By doing so, individuals can become better equipped to handle the challenges that life may bring and achieve their goals.

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