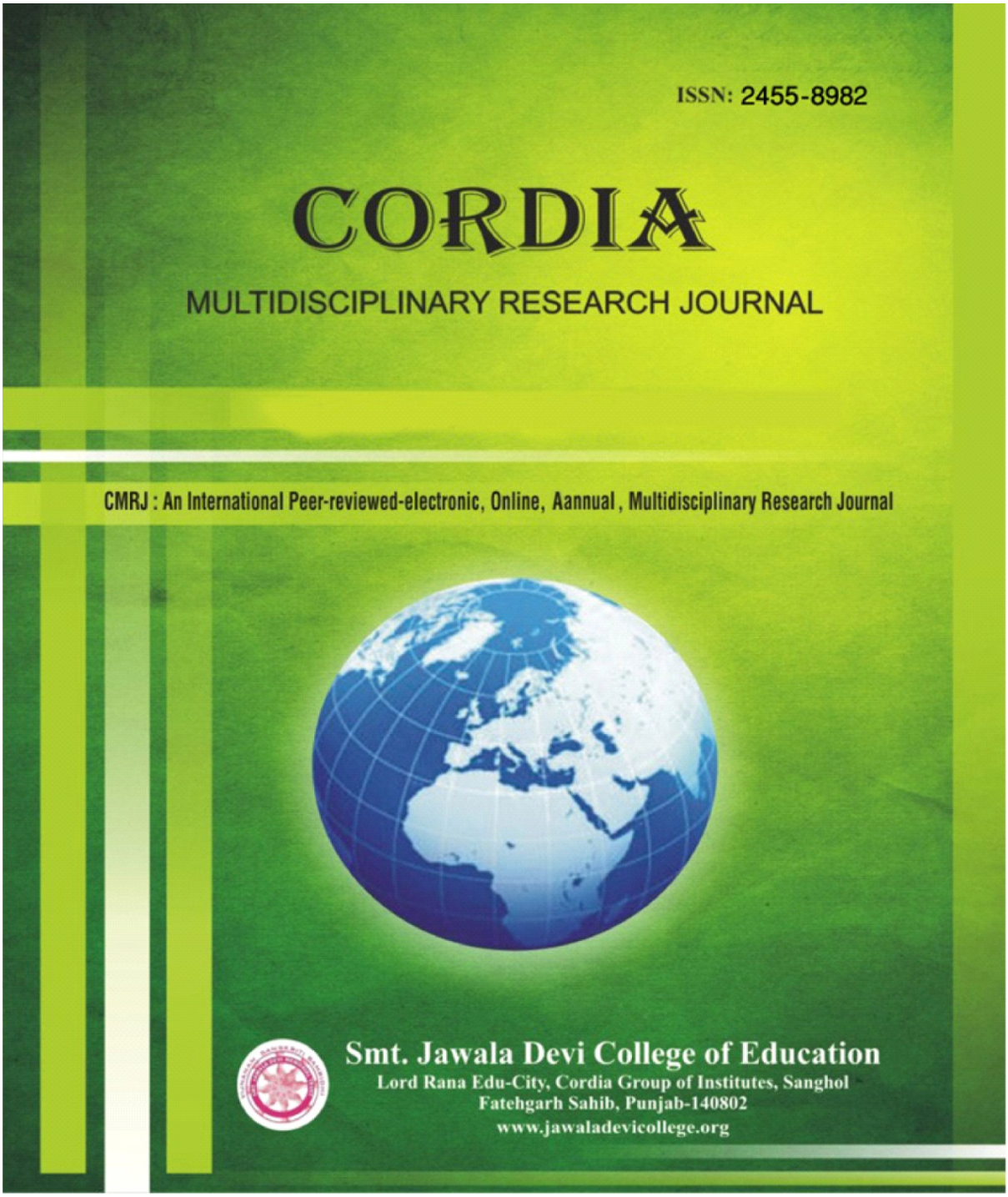
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QUALITY CULTURE IN EDUCATION: SHARING PRACTICES TO PROMOTE QUALITY CULTURE IN TEACHER EDUCATION INSTITUTIONS

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Abstract

Change is conducive to improved quality teaching and learning only to the extent that an appropriate internal organizational support is in place. A good understanding and appreciation of the role of change agents across the institution, based on a mutual respect for the role each plays (from leadership on institutional policies to innovation in faculty teaching practice), is crucial for the success of reforms and building a quality culture. In a healthy Education culture, what's good for the institutions, teachers and for students comes together and becomes the driving force behind what everyone does. Quality assurance refers to the means by which an institution satisfies itself that the standards and the quality of its educational provision can be maintained and enhanced. An important aspect is the cultural context in the organization with its capacity to either facilitate or suppress local quality initiatives. Quality initiative Observation Schemes, Trainings and workshops are the best way to sharing practices, exchange ideas and help to develop an institution.

Keywords: Teacher Education, Quality Culture.

INTRODUCTION

Higher Education institutions have already realized that new trends, demands and developments in this sector require a shift in the quality culture and improvement in learning and teaching. Universities must respond to market requirements, globalization, increased student numbers, funding constraints and calls for greater accountability. These have necessitated increased harmonization and mobility at international level whilst aiming to safeguard standards, improve quality, support diversity and increase transferability and compatibility.The new national law on higher education continues to focus on the value of qualifications in terms of career and reward rather than on a wider range of academic skills, including teaching competency. And there the debate has started: what has traditionally been considered to be quality teaching?

Traditionally, good teaching has meant teacher-centered instruction, a focus on knowledge memorization and student responsibility for their own learning. This is the widespread view that "a college is an institution that exists to provide instruction."Barr and Tagg (1995) However, because of external and internal pressures and developments over time, "subtly but profoundly we are shifting to a new paradigm: a college is an institution that exists to produce learning. This shift changes everything. It is both needed and wanted." Barr and Tagg (1995)

Before we proceed about quality culture in education we start with the discussion of the meaning of culture and quality. Culture is the shared beliefs, values, attitudes, institutions, and behavior patterns that characterize the members of a community or organization. In a healthy Education culture, what's good for the institutions, teachers and for students comes together and becomes the driving force behind what everyone does. The question is- How a quality culture starts with educational institutions which understand and believe the implications of the systems view and know the necessity of serving students in order to succeed. The result of that understanding is a culture where a positive internal environment and the creation of delighted interaction between teachers & students for going together. It is a culture that naturally emphasizes continuous improvement of processes, one that results in a healthy workplace, satisfied students, and a growing, profitable educational system . we can encourage and support the quality movement by emphasizing the importance of quality work. A quality focus and a quality- centered work ethic are powerful and valuable tools which would give students a value-added, competitive edge in the society. Many good practices arc encouraged and taught (and often required).

THE SIX VALUES OF A QUALITY CULTURE

Based on understanding a Education as a system, six values identified on which we can build a successful quality culture. In reviewing these, remember that their importance comes from the changes in behavior that accompany them. The six values identified are:

Value 1: We're all in this together: Institutions, Teachers, Students.

Value 2: No subordinates or superiors allowed.

Value 3: Open, honest communication is vital.

Value 4: Everyone has access to all information on all operations.

Value 5: Focus on processes.

Value 6: There are no successes or failures, just learning experiences.

In developing this list, After reviewing many writers' ideas on what characterizes a culture that supports quality management practices.. The most important point here is that these values are based on a realistic understanding of what Education is. We can't emphasize the word realistic strongly enough. Those values that are consistent with a realistic assessment of how Educational system can operate most successfully to develop quality culture by sharing practices with higher level to lower level of the system.

Accreditation is really about "externally validating" a quality culture – and the defining characteristics of a "quality culture" are not that an institution is "accredited" and has a "quality assurance system" in place. Rather **a quality culture is defined by the way an institution "does business"** – its **purpose** and **the processes it uses to meet that purpose**.

Therefore, Quality culture is an attitude and set of values employed by a institution or a system to improve the levels of quality in its service. This may be to improve the quality of relationships and improve communication between teachers, students or just to improve the attitude of the members of the system. The best way to establish and maintain a positive quality culture is through regular training and educational sessions.

Quality assurance refers to the means by which an institution satisfies itself that the standards and the quality of its educational provision can be maintained and enhanced. An important aspect is the cultural context in the organization with its capacity to either facilitate or

suppress local quality initiatives. Communication is vital to improve quality. Management teams should keep colleagues up-to-date with important corporate changes as this will make the institution function more effectively. It will also improve morale. The institution like university, college & School faced similar challenges with regard to issues such as competition, student numbers and developing international standards, guidelines and quality enhancement. These common pressures "form an inescapable background for any discussion of better university teaching." Ramsden (2008) However, Ramsden is clear that, "external pressures form an inadequate basis for enhancing the quality of teaching. Something else is needed to make teaching better……you must understand what this something is and recognize that every teacher can learn how to do better." Therefore, the University has engaged in a number of quality initiatives and approaches and shared with the other institutions like college & School with the aim of fostering quality teaching and a culture of reflective debate. Different views of what constitutes good teaching and what affects their practices. This is culturally sensitive as well as being linked to wider standards and definitions. How does an institution take account of this diversity and utilize it to improve the quality of learning? One quality initiative such as an Observation Scheme can have a significant impact on the attitudes, awareness and practice of teachers as well as students. How does an institution develop, sustain and maximize the impact of such a procedure and ensure that it continues to support innovative teaching without becoming routine or bureaucratic?

Trainings and workshops are the best way to sharing practices ,exchange ideas and help to develop institution .But the training/ workshops should be conducted for those who are in charge of quality processes at Teacher Education Institutions, whether at the leadership or managerial level .The objectives of the trainings/Workshops should be:

• to build capacity of quality teachers from Teacher Education Institutions across country to develop such internal quality assurance systems that are embedded in the institutional strategies and cultures;

• To promote cooperation and sharing of good practices in the field;

• To raise awareness regarding the importance of internal Quality Assurance and in particular quality culture; and

• To collect feedback on how Quality Assurance agencies can support Teacher Education Institutions in fostering quality cultures.

Such trainings/workshops will explore questions such as: How to build effective communication structures for engaging staff of Teacher Education Institutions their students

in quality culture , to use staff development as a means for enhancing quality and to connect Quality Culture to the decision-making processes at all levels?

In this way there is a need to a focus on individual teachers and differentiated opportunities for reflection, discussion and training as well as on university wide approaches; on dialogue and reflective discussion and on regular opportunities for awareness raising contributes to a positive shift in attitudes and practice. This links to the concept of promoting a total quality culture. But the Question rises: How can an institution devise and push forward strategies which focus on these positive methods for improvement?

For this effective leadership is crucial to quality improvement. Institutional leadership and decision making bodies have a fundamental role to play in shaping the institution's quality culture. Effective leadership is more difficult if it is not coupled with organizational provisions like a specific unit to support quality teaching and learning and to ensure that leadership initiatives are followed through and that the institution's conceptual approach to teaching quality are reconciled with practical realities across disciplines, programmes and departments or schools.

Ensure consistent implementation of institutional teaching and learning strategy

- Ensure that the institution's teaching and learning framework can be easily adapted by each faculty member to reflect their values, ethos and modus operandi and then applied in their own teaching practice.
- Monitor progress in implementing the teaching and learning framework across each level of the institution and regularly report results to heads of departments, deans, programme leaders and institution leaders.
- Develop appropriate platforms for sharing experience and initiatives across the institution.

Establish a specific unit to support teaching and learning

- Establish a specific unit dedicated to quality teaching (e.g. a Teaching and Learning Development Unit) to explain, advocate and support the strategic objective of teaching quality and the effective implementation of the institution's teaching and learning framework.
- Ensure the unit has a clear mandate, well-defined responsibilities and reporting arrangements, and the resources to carry out them out.
- Ensure that the unit is located in the most effective position with the institution to be able to carry out its role effectively, given the institution's context and culture and

use the unit to strengthen connections between institutional leaders and departments, schools and programmes.

Entrust the specific unit with wider responsibilities

- Combine research and service-type activities so the unit can offer technical assistance *and* conceptual reflection and support on teaching and learning strategies, based on a robust evidence base and solid understanding of the literature.
- Develop institutional research on teaching and learning to enable the unit to provide pedagogical resources, disseminate best practices in teaching and learning, and offer professional development opportunities.
- Involve the unit in providing a bridge between teaching and learning and the institution's support services (HR, property management, security management, financial affairs…) to ensure these services are well-aligned with the institution's teaching and learning framework.
- Involve different departments and disciplines in the unit's work, to incorporate diverse experience of teaching and learning and ground operational support on wide-ranging experience and understanding of discipline-specific considerations.
- Stimulate research on teaching and learning improvements and publish outputs nationally and internationally.

In carrying out these objectives, Teacher education institutions, governments, and other stakeholders should have to share best practices, ideas and potential models to meet challenges for the improvement at lower level of the Educational system through networks, studies and research.

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BEST PRACTICES IN TEACHING & LEARNING

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Abstract

Education is an engine for the growth and progress of any society. It not only imparts knowledge, skills and inculcates values, but is also responsible for building human capital which breeds, drives and sets technological innovation and economic growth. In today's era, information and knowledge stand out as very important and critical input for growth and survival. Basically teaching must include two major components sending and receiving information. Ultimately, a teacher tries his best to impart knowledge as the way he understood it. So, any communication methods that serve this purpose without destroying the objective could be considered as innovative methods of teaching. The use of innovative methods in educational institutions has the potential not only to improve education, but also to empower people, strengthen governance and galvanize the effort to achieve the human development goal for the country.

Keywords: Best Practices, Teaching, Learning.

INTRODUCTION

Education is a light that shows the mankind the right direction to serve. If education fails to inculcate self-discipline and commitment to achieve in the minds of student, it is not their fault. We have to convert education into a sport and learning process has to generate interest in the students and motivate them to stay back in the institution than to run away from it. Education should become a fun and thrill to them rather than burden and boredom. The increasing focus on student learning as the central indicator of institutional excellence challenges many tacit assumptions about the respective roles of college students and faculty. In student-centered education, faculty takes on less responsibility for being sources of knowledge, and take on greater responsibility as facilitators of a broad range of learning experiences. For their part, students are called on to take on more responsibility for their own learning. With considerable research on teaching and learning, over the last thirty years many

detailed lists of "best practices in teaching" have been compiled. Most lists of important "best practices" include the following:

- Engage students in active learning experiences
- Set high, meaningful expectations
- Provide, receive, and use regular, timely, and specific feedback
- Become aware of values, beliefs, preconceptions; unlearn if necessary
- Recognize and stretch student styles and developmental levels
- Seek and present real-world applications
- Understand and value criteria and methods for student assessment
- Create opportunities for student-faculty interactions
- Create opportunities for student-student interactions
- Promote student involvement through engaged time and quality effort

"Innovative teaching practices" are characterized by student-centered pedagogy, learning opportunities that transcend the school walls, and the integration of information and communications technology (ICT) into teaching and learning. One of ICT's unique contributions is a set of methods that can support the measurement of those teaching practices across highly divergent schooling contexts, from emerging markets to advanced industrialized countries. Another contribution is the study of the connection between teaching practices and the resulting achievement of students' 21st-century skills.

In the pre-technology education context, the teacher is the sender or the source, the educational material is the information or message, and the student is the receiver of the information. In terms of the delivery medium, the educator can deliver the message via the “chalk-and- talk” method.

(A) MULTIMEDIA LEARNING

I hear and I forget, I see and I believe, I do and I understand. – Confucius

Multimedia, is the combination of various digital media types such as text, images, audio and video, into an integrated multi-sensory interactive application or presentation to convey information to an audience. Currently, many institutions are moving towards problem-based learning as a solution to producing graduates who are creative and can think critically, analytically, and solve problems. Since knowledge is no longer an end but a means to

creating better problem solvers and encourage lifelong learning. The teacher uses multimedia to modify the contents of the material. It will help the teacher to represent in a more meaningful way, using different media elements. These media elements can be converted into digital form, modified and customized for the final presentation.

(B) TEACHING WITH SENSE OF HUMOUR – "HUMOUR AS AN EFFECTIVE MEDIUM OF TEACHING"

Everyone loves a teacher with an infectious sense of humor. Looking at the lighter side of life not only fosters cordial relations between professors and students, but also provides welcome relief while trying to follow a difficult lecture on a complicated subject. When there is a willingness to change, there is hope for progress in any field. Teaching is a challenge. Learning is a challenge. Combining both effectively is a challenge. Being humorous is a challenge. We are convinced both by experience and research that using humor in teaching is a very effective tool for both the teacher and student.

(C) CUSTOMIZED LEARNING

It presents a desirable and doable vision that allows learning systems to leave the Industrial Age, time-based approach to instruction and replace it with an Information Age, learning-based system that:

- Meets every learner at his/her learning level,
- Provides learning opportunities that sync with the learner's most effective learning styles and
- Allows the learner to study and learn skills and concepts using content that is relevant and interesting.

It is a viable option for transforming the current Industrial Age, assembly line delivery system to a system that empowers learners and takes full advantage of available technologies. The Industrial Age system provided a mechanism for batch processing students based on age – it is a time and space based method of mass production. An empowerment learning model allows us to mass customize learning to meet individual learning needs based on what we know about student motivation and learning. It contains

the mantra of "specific" as a specific student can learn specific subjects in a specific classroom on a specific schedule in a specific way from a specific teacher.

(D) ONLINE WORKSHOPS

Online workshops offer a rich multimedia learning experience. It is characterized with collaborative learning, expertise knowledge and sustainable learning. The best feature of online workshop is to engage the students towards learning because today's students are tuning out school as the ways they are asked to learn are dramatically different from the ways they learn in their digital world. But when schools open their doors to digital learning, students' engagement and achievement soar. It is features as:

- Anywhere/anytime
- Trained facilitators
- Access to experts
- Collaborative community
- Learn by doing
- Easy data management
- Integrated assessment
- Customized and scaleable

(E) DIGITAL LEARNING

Digital learning is any type of learning that is facilitated by technology or by instructional practice that makes effective use of technology. Digital learning occurs across all learning areas and domains. It encompasses the application of a wide spectrum of practices including:

- Blended and virtual learning
- Game-based learning
- Accessing digital content
- Collaborating locally and globally
- Assessment and reporting online
- Active participation in online communities
- Using technology to connect, collaborate, curate and create.

(F) VIRTUAL LEARNING

It allows students to connect, interact, share and learn with others outside of their classroom and school using virtual conferencing tools such as Blackboard Collaborate, and Skype. Virtual learning can take place synchronously or asynchronously. In synchronous systems, participants meet in “real time” and teachers conduct live classes in virtual classrooms. Students can communicate through a microphone, chat rights, or by writing on the board. In asynchronous learning, which is sometimes called “self-paced” learning, students are expected to complete lessons and assignments independently through the system. Asynchronous courses have deadlines just as synchronous courses do, but each student is learning at his own pace.

A virtual learning environment can also include students and teachers “meeting” online through a synchronous web-based application. The teacher is able to present lessons through video, PowerPoint, or chatting. The students are able to talk with other students and the teacher, as well as collaborate with each other, answer questions, or pose questions. They can use the tools available through the application to virtually raise their hand, send messages, or answer questions on the screen given by the teacher or student presenter.

CONCLUSION

The above paper reflects the various pathways the teacher can use in his/her classroom to cater the educational needs of the students. Technology in these days governs the whole academic pursuits as it eradicates the element of temporal- spatial from the field of Education. Teaching and learning become more conducive with the help facilitated use of educational technology. These practices act as the roads to the students to become the "smart" citizens of the Twenty first century.

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LEARNING STYLE PREFERENCE AMONG B.Ed. STUDENTS

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Abstract

Learning is the change of behavior of the learners thorough repetition and experiences. A learning style is a method, a person use to learn .It is an individual's unique approach to learn based on his/ her strengths weaknesses and preferences. The purpose of this study is to determine the learning style preference among B.Ed. students. The study is descriptive study. The study is conducted on 120 B.Ed. Students.

Key words: Learning Style, B.Ed. Students

INTRODUCTION

Man has got the power of reasoning which enable him to learn things quickly/ Learning is a lifelong process which pervades our life long process which previews out like from crate to grave .Thought out life we are inspired to learn more and more. Learning influence our lives at every turn Learning helps the learner to develop cognitive affective and psychomotor behavior learning provides how knowledge and experiences. The responsibility of imparting knowledge revolves around the teacher who plans organizes and implements the teaching learning process. In the field the teaching learning process. In the field of education a student adopt various a learning style to learn based on his/ her strengths, weaknesses and preferences. A teacher can use his individual learning style to find what study method environment and activities help the studies to learn best.

LEARNING

Learning is a term used in the sense of modification of behavior of the learner which occurs as a result of training or experience. With the modification in behavior a learner can do what could not be done earlier. Learning is a continuous process that commences at birth and continues till death.

Learning brings about changes in the way we act, think and feel about ourselves, other people and the world around us. Such changes may be permanent or temporary depending on our perceptions of the importance and relevance of the gained knowledge.

Hilgard (1958) defined learning as the process by which an activity originates or is changed through reacting to an encountered situation; provide that the change in activity cannot be explained on the basis of native tendencies, maturation and temporary states of organism.

Crow and Crow (1973) defined learning as the acquisition of habits, knowledge and attitudes. It evolves new ways of doing things and it is operative in an individual's attempt to overcome obstacles or to readjust to new situation. It represents progressive change in behavior.

Crooks and Stain (1991) defined learning as a relatively enduring change in potential behavior that results from experience.

LEARNING STYLE

A learning style is the method a person uses to learn. Learning style is an individual's unique approach to learning based on his/her strengths, weaknesses and preferences.

Learning style is an individual's natural or habitual pattern of acquiring and processing information in learning situations. A core concept is that individuals differ in how they learn. Proponents of the use of learning styles in education recommend that teachers assess the learning styles of their students and adapt their classroom methods to best fit each student's learning style. A teacher can use his individual's learning style to find what study method, environment and activities help the students to learn best.

Keefe (1979) defined learning styles as the pattern of cognitive, affective and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment.

Kolb (1984) defined that learning styles are relatively stable attributes or preferences or habitual strategies used by individual learner to organize and process the information for problem solving.

Sims and Sims (1990) put forward that learning styles are typical ways a person behaves, feels and processes information in learning situation.

Debellow (1990) defined learning style as the way people absorb process and retain information.

Oxford et al. (1991) defined the learning style as the general approaches students used to learn a new subject or tackle a new problem.

Dingliang (1995) defined learning style as the way that a learner often adopts in the learning process, which includes the learning strategies that have been stabilized within a learner, the preference of some teaching stimuli and learning tendency.

REVIEW OF RELATED LITERATURE

Uppal (2009) from her study on learning style among B.Ed. Students of Himachal Pradesh and found that male and female B.Ed. students did not appear to differ significantly with respect to their precision and dynamic learning style. Further results showed that urban and rural B.Ed. Students do not differ significantly with regard to their imaginative and analytic learning style.

Sahoo and Chandra (2013) conducted a study on the learning style of B.Ed. students of IGNOU and found that independent learning style students were found to be significantly larger than that of dependent learning style students of distance mode B.Ed. trainees. Participant learning style students were found to be significantly larger than that of avoidant learning style students of distance mode B.Ed. trainees.

Mohammadi and Thaghinejad (2014) identified the most common learning styles of nursing students in Iran. Kolb's learning styles inventory was used to collect the data. Results concluded that in order to enhance students learning, more attention has been required to different learning styles. It was also recommended for the teachers to pay more attention in student's learning styles and use appropriate teaching methods.

OBJECTIVE OF THE STUDY

To find out the significant difference in visual auditory and kinesthetic learning style preferences among prospective teachers.

HYPOTHESIS OF THE STUDY

There is no significant difference in visual Auditory and kinesthetic learning style Preference among prospective teachers.

METHOD

The study was carried out by employing descriptive survey method of research.

SAMPLE

The sample of the study consisted of 120 B.Ed. Students selected from two education colleges in Punjab.

TOOL USED

VAK Learning style scale by Cheslett & Chapman (2005)

STATICALLY TECHNIQUES USED

Mean standard Deviation and best were employed for the analysis of collected data pertaining to learning style preferences.

ANALYSIS AND INTERPRETATION OF DATA

Table -1 gives the calculated statistics for the comparison of visual, Auditory and kinesthetic learning style preference co prospective teachers.

Learning style Preference	Mean	SD	T-ratio	Significance
Visual	15.28	2.345	0.973	NS
Auditory	15.50	2.167	2.367	Significant
Kinesthetic	16.60	2.03	0.755	NS

Significance = Significance at 0.05 level and NS = Non Significant

The table -1 Shows that obtained 't' ratios for visual 0.973) Kinesthetic (0.755) were found to be non- significant while auditory learning style preference (2.365) was found to be significant .

FINDINGS

The finding shows that B.Ed students prefer auditory learning style than visual or kinesthetic learning style.

EDUCATIONAL IMPLICATIONS

B.Ed. students should focus on all the learning styles which may lead to long terms benefits in teaching learning process t each and every students.

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MANAGEMENT OF DISASTERS CAUSED BY FIRE IN PATIALA CITY

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ABSTRACT

Markets getting congested with shops, crowd and combustible material make various locations in Patiala city more vulnerable to disasters caused by fire. Most of the time, it is seen that no proper fire audit is conducted to large number of the public and private buildings of the city. Further, the location of vulnerable points in the city and their distance from the nearest fire station also defines the vulnerability to big disasters as if the connecting roads to these points are crowded and congested, fire tenders will take more time to reach the fire incident site even if the ground distance is less. It has been observed that maximum loss of life and property due to fire incident occurs due to lack of awareness among common masses. Fire, if controlled timely, can prevent a big disaster. Mitigating the hazard at the very early stage by the first responders, who are the residents of the place, need awareness about the first response to handle such an emergency. It is very much necessary to have a contingency action plan in advance by city administration to mitigate and cope up with any fire emergency in case it develops in Patiala city. The analysis revealed that the coordination between various departments is made at the time of disaster only; nobody is concerned with prior preparation.

Keywords: Disaster Management, Fire

INTRODUCTION

Patiala is said to have been founded in 1762 A.D. by Baba Ala Singh, the founder of Patiala State. Today, in terms of socio-economic and infrastructural development, Patiala city is marching towards a notable landmark. The city has achieved remarkable progress in the field of infrastructure as well as economic development. Although, fire has enabled mankind to improve the conditions of everyday living, developing technology and industry, but at the same time, when a fire-disaster occurs, it burns out the whole infrastructure and disrupts its socio-economic development along with irreparable loss of life and property.

Although, Patiala city has not witnessed any big disaster caused by fire other except that of Rajindera hospital nursery where five infants were charred to death due to negligence of management and technical staff on 1st Feb, 2009. With the development process, the increasing vulnerability and hence threat of fire disaster is also increasing. Recent event of

fire incident in a VIP luggage show room on 8th Dec., 2012 in the heart of the city in Dharampura market was a sight arresting and eye opening scene.

SURVEY OF RELATED LITERATURE

Keith J. Karren (1987) in his study 'First Responder: A Skills Approach', worked out the training skills required during the first few minutes of the incident scene during a disaster. The work consists of case studies, improvisation methods and a skills approach to 'first medical responder' on the sight of incident.

M. Monellis (1992) in his work 'The Management of Mass Burn Casualties and Fire Disasters', studies the fire rescue techniques used in various different communities and bring them together with a commitment to the reduction of fine disasters and improvement of burn therapy.

Rajiv Theodore (2001) in his study 'Pilgrimage and Festival Related Disasters', he worked out with various disasters which are vulnerable during pilgrimage. He took case studies of Kumkh Mela stampedes and extreme weather causing disasters in Amarnath Yatra and fire hazards at various festivals. He further investigates the rehabilitation plans by the government and gives some recommendations.

Dr Sujata Satapathy and Dr Ajinder Walia (2005) in their research work 'A situational Analysis of the Kumbakona, School Fire Tragedy', made the detailed case study of the fire tragedy of 16th July, 2004 in a private school in Kumbakonam in which 93 children died of burns. Further, in their study, they analysed response, relief and rehabilitation management and also assessed the psychosocial impact of the incident.

Herbert Genzmer, Kershner and Christian Schutz (2007), in their publication called, "Major Disasters of the World", analyzed the various disasters like fires which have extracted an enormous toll of human lives in the history of world in a chronological order.

Jain (2008), in his work titled, "A practical guide to Disaster Management", provided the guidelines to general preparedness to any type of disaster, emergency planning, relief shelters, and agencies involved during emergency. He further discussed in detail each type of disaster, namely, Floods and Dam disasters, Cyclones, Drought and Desertification, Earthquakes, Volcanoes, Tsunami and Fire explaining their causes, relief, rehabilitation and damage mitigation measures.

Anthony H . Cordesman (2008), in his publication titled, "Terrorism, Asymmetric Warfare, and Weapons of Mass Destruction", studied various alternate methods that terrorists can adopt to cause mass destruction. He analysed various reports regarding terrorists acquiring incendiaries, IED's, toxic chemicals, radioactive material and their soft targets.

Trivedi, Priyaranjan and Trivedi, Tanuja (2010) in their publication, "Future Disasters", discussed about various threats and hazards present which may result in future disasters and extinction of civilization on earth.

OBJECTIVES OF THE STUDY

1. To investigate the vulnerability of Patiala city to the disasters caused by fire.
2. To examine the level of awareness and preparedness among the common residents of Patiala city about the disasters caused by fire.
3. To study the preparedness level of administration to cope up with disasters caused by fire.
4. To suggest the measures for mitigation of disasters caused by fire in Patiala city.

SCOPE OF THE STUDY

In order to make study manageable and useful, its scope has been confined to cover the following:

1. Geographically, the study is restricted to Patiala city so that vulnerability assessment and resource mapping could be studied intensively. This will make the study more meaningful for administration and society as a whole by providing inputs for development of disaster management plans.
2. The study limits itself to government agencies engaged in planning and disaster management operating in Patiala.
3. The study is more concerned with practice than policies

RESEARCH METHODOLOGY

The present study is based on data collected through fieldwork. Apart from intensive field work, published and unpublished secondary data collected from different offices and libraries of various institutions has also been used for the study.

1. Sources of Data:

Primary Data: Primary data was collected through two sets of structured questionnaires administered personally to the respondents. The first questionnaire comprising fifty multiple choice questions was administered to the common residents of Patiala city to study their level of awareness about the problem under study.

Further, the second questionnaires was administered personally to the respondent employees and officers of different government organizations to study the preparedness of administration and various government agencies which play stakeholders in fire disaster management of Patiala city.

Secondary Data: Secondary data was collected from disaster related journals, books, magazines, published articles, reports and survey data/reports by government and non-government agencies, newspapers and internet by visiting libraries and offices of various institutions like Indian Institute of Public Administration, New Delhi; National Centre of Disaster Management, New Delhi; Economic advisor to Government of Punjab, Chandigarh; Survey of India, Chandigarh; Mahatma Gandhi State Institute of Public Administration, Punjab, Chandigarh; Office of Deputy Commissioner, Patiala; Fire station, Patiala.

2. Sample Size and Sampling Plan

To study the level of awareness among residents in Patiala city, respondents were selected randomly from six different segments of society, viz. students, teachers, house wives, businessmen, employees and senior citizens taking their educational background, and gender into consideration. A total of 300 respondents were selected through stratified sampling method ensuring 50 respondents in each segment. The sample of the study is selected in such a manner so that the whole universe is represented. Further, in order to study the level of preparedness on the part of administration to mitigate and cope up with disasters caused by fire, respondents from government organization making stakeholder of disaster management in Patiala were selected. Twenty respondents each from Deputy Commissioner Office, Fire Service, Health and Family Welfare Department, Civil hospital, Police and their sub departments were personally interviewed by the researcher. Separate questionnaires were administered to different departments according to their role in mitigation, preparation and resource management during fire disaster in Patiala city.

VULNERABILITY TO FIRE

Although till now, no major incident of fire is recorded in Patiala city which may have resulted in mass causalities, yet with the development process, multi-storied buildings, and

new markets are coming up; and it poses a the danger of fire hazards leading to any big disaster. The vulnerability of Patiala city to fire disaster can be analyzed on the basis of the following parameters:

1. Use of proper fire extinguishers at public places and high rise buildings.
2. Escape routes available.
3. Congested markets with combustible materials.
4. Fire audits by fire departments.
5. Traffic routes to vulnerable points.

For the purpose of this research study, a survey of twelve major public places including buildings, shopping complexes, offices, market places and schools was made. Table 1.1 depicts twelve locations in Patiala city which are highly vulnerable to fire disaster.

Table 1.1: Distribution of Major Fire Vulnerable Places in Patiala City

S.No.	Building	Status of Fire Extinguisher	Responsibility Allotted	Escape Routes Available	Fire Audit	Connecting Roads
1.	Omaxe Mall	Available ABC	No	Yes	No	Congested in dawn hours
2.	Big Bazar	Available BC	No	No	No	State High Way
3.	AC Market1	Available BC	No	No	No	Highly Congested Adalat Bazar
4.	AC Market2	Available BC	No	No	No	Highly Congested Adalat Bazar
5.	Govt. Rajindra Hospital	Expired at many places	No	No	No	State High way
6.	Dharam pura Bazar	No fire point	No	No	No	Highly Congested

7.	Adalat Bazar	Fire point at B-Tank	Fire brigade after reaching site	No	No	Highly Congested Bazar

Table- 1.1 (Contd.)

8.	Quila Chowk	No Fire point	No	No	No	Highly Congested Bazar
9.	Mini Sectriate	Available	No	No	No	Wide Road
10.	Shere Punjab Mkt.	No Fire point	No	No	No	Highly Congested Bazar
11.	BDPS (School)	Available but expired	No	No	No	Multiple connecting roads
12.	Y.P.S. (School)	Available	No	No	No	Multiple connecting roads

Source: Primary Survey

As indicated by the table given above, proper fire fighting facilities are not available at most of the public places in Patiala city. Even at places where fire fighting equipments are available, nobody has been pin pointed and given responsibility to use the equipment. Markets are becoming more and more crowded and lavishly decorated with combustible material. The main markets of the city are old designed and no escape routes are available in case of fire. Moreover, all these markets are covered with the web of overhead power lines which due to even a small mistake may cause short circuit leading to heavy fire. An enquiry made from the local shopkeepers revealed that many illegal godowns are used to store crackers and incendiaries during Dussehra and Diwali in the congested markets which if caught fire accidently can put the whole market into ashes and endanger large many human

lives. Escape routes are also not provided in many big public buildings and shopping complexes.

During the events like Kirtan Darbars, Dussehra Mela, Circus, etc., lavish decorations are done in tents and pandals may lead to any mishappening like fire. But the firefighting facilities are not seen within the proximity of such events which mostly are organized at extremely congested places with large number of overhead power lines. We cannot deny that an incident like that of Meerut fire can take place anywhere.

The fire brigade center is located inside the congested Sai Motor Market. The fire fighting personnel when interviewed told that although they remain ready to respond to any emergency, yet the congested lanes and heavy traffic on the roads delay the response time of fire tenders and it may take half to one hour to reach. Adalat Bazar which is just one Km away from their place.

The fire department does not have the authority to carry out routine fire audits. In fact, it is unclear who has the authority to conduct such audit because the city corporation also clarified that it does not have the power to conduct fire audits.

Fire audits seldom take place in most of the Indian cities like Patiala. All such cities are vulnerable to any tragedy like the one that took place at Uphar Cinema in New Delhi or at a fare in Meerut.

AWARENESS AND PREPAREDNESS AMONG COMMON RESIDENTS TO DISASTERS CAUSED BY FIRE

No doubt, fire has enabled mankind to improve the conditions of everyday living, developing technology and industry. But at the same time, it has represented a danger to be defended against.

This historical analysis of fire disasters in the twentieth century shows the need to devote more attention to the control and prevention of fire-related accidents. According to National Fire Protection Association reports, 85% of fire deaths occur in the homes due to lack of safety measures. Having awareness and developing preparedness to some basic first responder skills and practicing Do’s and Don’ts to prevent fire hazard can help to a big disaster.

Although, Patiala city has not witnessed any big disaster caused by fire except the one at Government Rajindera Hospital nursery where many infants were charred to death due to negligence of management and technical staff in the year 2005, yet the vulnerability to such

disasters can never be taken casually. With increasing population and development of more congested residential and commercial areas, the city cannot be declared free from such fire incidents.

The level of awareness and preparedness of the residents of Patiala city is examined taking into consideration the following parameters:

(a) Extent of awareness on fire disasters

(b) Causes of Fire disasters

(c) Response management for fire emergency

Table 1.2 indicates the level of awareness among the residents of Patiala city to fire hazards at home.

Table 1.2: Distribution of Respondents regarding Awareness to Fire Hazard.

Variable → Respondent ↓	Different kinds of fire		Products and items which can be used to curb fire		Precautions while handeling the stove and electrical appliances		Common causes of fire in house	
	No.	%	No.	%	No.	%	No.	%
Students	20	40.00	5	10.00	10	20	15	30
House wives	10	20.00	2	4.00	12	24	12	24
Teachers	23	46.00	15	30.00	20	40	25	50
Employees	27	54.00	20	40.00	28	56	31	62
Shopkeepers	17	34.00	12	24.00	19	38	28	56
Senior citizens	13	26.00	10	20.00	10	20	21	42
Total	110	36.66	64	21.33	99	33	132	44

Source: Primary Field Survey

As indicated by the table about 37% of the residents of Patiala city have awareness about the different kinds of fire. The remaining 63% of residents were not able to distinguish between the fire caused by solid products, chemicals, oils and fuels, electrical short circuiting etc. Out of various subgroups, housewives who always remain exposed to fire while have least awareness (only 20%).

It can also be observed that only 21.33% of residents of Patiala city have awareness about the products that extinguish fire. Out of various subgroups housewives have the least awareness (only 4%).

The table further provides that 33% of the respondents have awareness regarding the precautions to be taken during the handling of gas stoves and electrical appliances. Here, students showed the least awareness (20%) followed by housewives (25%).

It is quite satisfying that 44% of the residents are aware of the common causes of fire in homes. Out of various subgroups, housewives (24%) are least aware of the common causes that result in fire accident at home. Even though a large number of respondents are aware of the causes of fire, yet they are unaware of the precautions to be followed while operating with the appliances involving fire hazard.

Fire, if controlled timely, can prevent a big disaster. Mitigating the hazard at the very early stage by the first responders, who are the residents of the place, need awareness about the first response to handle such an emergency.

It is clear from the table given below that about 87% of the respondents are found to be aware of switching off the gas regulator, if gas smell persists. Out of various subgroups, housewives who remain in the kitchen for most of the time during the day have shown least awareness (72%) followed by shopkeepers (78%) to this first response.

Table 1.3: Percentage Distribution of Respondents regarding their First Response to Fire Hazard at their home.

Variable → Respondents ↓	Switching off gas regulator on smelling LPG in kitchen		In case of electrical fire, switch off the mains		In case of electrical fire use water to control fire		Put water or wrap blanket to a person caught up with fire	
	No.	%	No.	%	No.	%	No.	%
Students	48	96.00	44	88.00	5	10.00	42	84
Housewives	36	72.00	43	86.00	2	4.00	28	56
Teachers	46	92.00	42	84.00	5	10.00	44	88
Employees	46	92.00	47	94.00	0	0.00	45	90

Shopkeepers	39	78.00	26	52.00	11	22.00	36	72
Senior citizens	47	94.00	46	92.00	0	0.00	47	94
Total	262	87.33	248	82.66	23	7.66	242	80.66

Source: Primary Field Survey

Electrical short circuiting, overloading or electricity theft are the main reasons which lead to fire incidents. It has been observed that that about 83% of total respondents, as a first response, switch off the main power supply in case of an electrical fire. Out of total respondents, a small proportion of respondents, i.e., 8% make a decision to use water in case of electrical fire. An analysis of the data w.r.t. various subgroups provides that shopkeepers (22%) showed maximum lack of awareness by using water to control electrical fire. Water should never be used to extinguish electrical fire. It may further escalate the situation and cause more loss. However, senior citizens (100%) know that use of water is wrong method to control electrical fire.

If a person catches fire, it can be controlled either by lowering temperature by showering water on the victim or by stopping oxygen supply to fire by wrapping him in a blanket. Since clothes are solid material and catch fire quickly, the use of Type-A of fire extinguisher is most effective. Water is the best and readily available Type-A type of extinguisher which cools down the fire; and blanket cuts off the oxygen supply and hence, curbs fire. The table reveals that 81% of the respondents are well aware of the technique of saving a victim caught up with fire. Out of various subgroups senior citizens (94%) have maximum awareness, while housewives (56%), who are more vulnerable to fire hazard as they spend most of their time in the kitchen where always highly inflammable hazardous chemicals like LPG, kerosene, etc., remain placed are least aware about the way to control the fire. Hence, housewives are more vulnerable to such incidents of fire.

Such a disaster can be averted easily if we keep some of the precautions in mind to mitigate it. Table 1.4 presents the distribution of respondents already taking safety measures to curb a fire hazard at home.

Table 1.4: Distribution of Respondents already taking Safety Measures to Fire Hazard at their Home.

Variable →	Storage of water at home	Have Fire extinguisher at	Have atleast two exits from	Have emergency

Respondents ↓	to deal with unexpected fire incident		home and work place.		the working room		contact number of fire brigade of Patiala city area	
	No.	%	No.	%	No.	%	No.	%
Students	26	52.00	7	14.00	38	76.00	24	48.00
House wives	16	32.00	8	16.00	20	40.00	11	22.00
Teachers	21	42.00	6	12.00	36	72.00	24	48.00
Employees	31	62.00	6	12.00	44	88.00	35	70.00
Shopkeepers	17	34.00	3	6.00	27	54.00	26	52.00
Senior citizens	38	76.00	2	4.00	40	80.00	20	40.00
Total	149	49.66	32	10.66	205	68.33	140	46.66

Source: Primary Field Survey

Water acts effectively to extinguish fire. The storage of water in buckets, tanks, etc., may help to mitigate the fire at the very initial stage and thus, help in avoiding a big disaster. The table demonstrates that about 50% of the respondents have an arrangement to store water in their houses. Out of various subgroups, senior citizens (76%) are maximum aware, followed by employees (62%). Least awareness for regularly storing water as a safety measure against fire is seen in housewives (32%) even though they spend their maximum time in the kitchen, a place more vulnerable to fire accidents.

At the places which are vulnerable to fire accident, an ABC type fire extinguisher if placed in the proximity of hazard zone can help to curb fire at an initial stage. This type of fire extinguisher is quite effective in controlling all types of fire. Table 1.4 indicates that only 9% of the respondents from Patiala city have ABC type of fire extinguisher at their residence and place of work.

At the time of fire emergency, if exit routes are available in the room, they can help escape through safe passage to safe area. The buildings need to be constructed in such a way that they have at least two exit doors (National Building Code Manual, Part-IV) to escape during any fire incident. As per the response of 68% respondents, two exit routes exist at the place of their work. An analysis of the subgroups bring out that maximum awareness was found among the respondent employees (88%), while housewives (40%) showed minimum awareness with respect to having two exit routes from their working room.

In case of a fire incident, it is required that the fire department is contacted immediately for the relief and rescue operations. Table 1.4 reveals that of the total residents under study in Patiala, only 47% have the telephone number of fire brigade station. Out of various subgroups housewives (22%) were found to be least aware, while employees (70%) showed the maximum awareness in having contact number of fire brigade station which is 101, throughout India.

PREPAREDNESS FOR FIRE EMERGENCY BY PATIALA CITY ADMINISTRATION

A field survey was conducted to investigate the level of preparedness by fire department at Patiala to cope up with any fire disaster if it happens. The preparedness level of the fire dept was investigated by taking the following parameters:

1. Contingency plan by administration along with fire dept.
2. Training of personnel.
3. Adequacy of equipment.

Patiala has emerged as a group-B developing city and is growing very fast. Along with development, hazards , which may give birth to fire disaster also increases. It is very much necessary to have a contingency action plan in advance by city administration to mitigate and cope up with any fire emergency in case it develops in Patiala city.

Table 1.5 indicates the preparedness level to fire disaster by the fire department.

Table 1.5: Preparedness by fire Department to Face Fire Disaster in Patiala

S.No	Preparedness	Execution on Ground	Remarks
1.	Any Disaster Management contingency action plan for Patiala City to face fire disaster.	No	The administration totally depends on fire service.
2.	Coordination with other departments	No	Will be worked out at the time of disaster
3.	Response time to leave for emergency	1 min	Practically tested
4.	Any hazard mapping/resource mapping done of Patiala city for fire hazard	Not Done	

Source: Primary field survey, Patiala Fire Service Dept.,2012.

Table above reveals that till now, no disaster management contingency action plan for any fire emergency in Patiala city has been designed. The administration is totally dependent on fire service and its personnel. Since there is no history of major fire in Patiala city, the administration is also not giving much importance to the improvement in fire services and keeping up a blind eye for preparation to fire emergencies. With the fast development process in Patiala, the hazard of fire has increased manifold and if not taken care, the unforeseen disaster can break all the previous devastation records of our country.

Co-ordination between various departments and administration is the main aspect for the preparedness to any disaster. The survey reveals that there have been no co-ordination between various government departments of Patiala city which could play major stakeholders at the time of fire disaster. The analysis revealed that the coordination between various departments is made at the time of disaster only; nobody is concerned with prior preparation.

The Table further reveals that response time for fire department squad from receiving the call to leaving of their premises is only one minute. Fire tenders and personnel on duty are always kept ready around the clock. This is an excellent response in emergency management. In spite of their quick response time, fire personnel feel lack of latest fire fighting and rescue equipments and fire tenders. Although, available fire tenders which are always kept ready with water, fuel and necessary equipment won't promise to reach at the emergency site well in time due to outdated oversized vehicles and congested streets of old walled city.

As a major contingency plan, hazard mapping is needed. Based on this hazard mapping, resource mapping is prepared so as to get quick response from the nearest relief points available near the disaster site. Analysis reveals that no such preparation in Patiala city has been made either by the administration or the fire service department thus keeping blind eye on the fire hazards present in Patiala city.

It's a very famous old military quote by M.W Wan Swieten, saying that "the more you sweat in training, the less you bleed in the battle"(Source: IMA Manual). The fire personals can give their best only if they are well trained and timely updated with latest techniques and skills. At the same time they need to be coordinate with other departments. Table 1.6 indicates the training aspect of Patiala fire service personals as a preparation to cope up any fire disaster in Patiala city.

Table 1.6: Preparedness by fire service personnel to cope up fire disaster in Patiala city With respect to the aspects of their training needs.

S.No	Preparedness	Execution on Ground
1.	Any Mock Exercise conducted for fire emergency at Patiala city since last 5 years	Never
2.	Any refresher trainings after 5 years	Never
3.	Knowledge of INSARAG marking system	No

Source: Primary field survey, Patiala Fire Service Dept.,2012.

As indicated in the table above, no mock exercise has been conducted in Patiala city since last five years for any fire emergency. Mock exercise gives the simulation of the actual disasterous situation and helps in developing the skills of personals and management system for search, rescue and disaster response.

With a pace of time, in this decade of fast development, new technology is coming up with a very fast pace. The table reveals that fire personnel have not undergone any refresher training to update their knowledge and skills for last 5 years. Lack of refresher trainings make the rescuers lethargic, inefficient and lacking self-confidence.

It is further seen fron the table 1.6 that the none of the fire personals posted at Patiala has knowledge of International Search and Rescue Advisory Group (INSARAG) Markings. International Search and Rescue Advisory Group has standardized the signs and symbols for search and rescue which are accepted universally. When interviewed, none of the fire personnel had even heard of INSARAG markings.

For the success of any search and rescue operation well maintained equipments are needed by professionally trained fire rescue team. To analyze the adequacy of equipment at main and sub-fire-station in Patiala city ground inventory was checked and all the 20 fire service personnel posted at main-station and sub-fire-station were interviewed. Table 1.7 reveals the preparedness of Patiala city fire service personals for adequacy of equipment.

Table 1.7: Preparedness by Fire Service Personnel to Cope up with Fire Disaster in Patiala City

S.No	Preparedness	Execution on Ground	Remarks

1.	Adequacy of equipments	Most of the Equipments are outdated, insufficient, technologically outdated and have already completed their shelf life.	1.One Proximity Suit is there in torned condition 2. Fire tenders available are of old obsolete technology. 3. Equipments completed shelf life and outdated. 4. None of the latest technology equipment after the year 1990 5. All the respondents (20 No's) not satisfied with the adequacy of equipment.
2.	Number of fire tenders available	6	5 at main station 1 at sub station
3.	Fire extinguishers placed at vulnerable points of Patiala city.	No	10 vulnerable points are provided with water points which are not in proper working condition

Source: Primary Field Survey, Patiala Fire Service Dept.

As indicated in the table above, none of the respondents of Patiala fire service was satisfied by the adequacy of equipment. 'Proximity suit', which is a Personal Protection Equipment (PPE) and is a must for every fire person to wear before he enters a building on fire for rescue purpose, was totally torned up and in out of service condition. Its shelf life was also expired

and was never used. The respondents at fire station revealed that most of the rescue equipments are out of order and completed their shelf life. The fire tenders are old enough to be relied upon. The fleet of rescue vehicles is also moving on old technology.

Table further reveals that there are six fire tenders available with fire department. Five fire tenders are located at main fire station near Sai Market while one fire tender is located at the substation, Baran Kuan, Near CPWD rest house at the back of Punjab Pollution Control Board. These old and outdated fire tenders are not enough to cope up any fire emergency in Patiala city. In a congested walled city of Patiala, it is not easy for big vehicles to reach site of emergency well in time after getting a call.

Some of the highly vulnerable and congested areas of city are provided water supply from the nearest water point to cope up with any disaster caused by fire. These supply points can immediately be used to to extinguish fire and also for refilling of fire tenders.

Patiala Fire service has spotted ten vulnerable sites of Patiala city and established water points at these places. Table-1.8 indicates the distribution of various water points at Patiala city and its current operational status.

Table-1.8: Distribution of various water points at Patiala city

S.No	Location	Status
1.	Polo Ground	Non-working
2.	Anardana Chownk	Closed
3.	Quila Chownk	Covered
4.	Bus Stand	Covered (Good water Pressure)
5.	Arya Samaj Chownk	Non-Operational
6.	Passi Road Tubewell	Operational
7.	Tripri (Near Water Tank)	Operational
8.	Model Town (Park near Alora Theatre)	Non-Operational
9.	Ajit Nagar Tubewell	Non-Operational
10.	Kali Mata Mandir (Near city Lake)	Covered with shops

Source: Patiala Fire Service

All these water points were equipped with water source so as to have an immediate access of water to extinguish any fire hazard if develops. But with the pace of time most of the water points have became unoperational due to their non-maintenance. Even at some points, shops

have been built over them and these points have become totally unapproachable. Under such conditions it is difficult to materialize the mitigation of fire hazard cannot be materialized and the city and its administration should remain ready for a great disaster caused by fire.

SUGGESTIONS AND RECOMMENDATIONS

1. All the ten water supply points already available in Patiala city, should be made operative as a first step to preparation for response to fire disaster.
2. Based on Hazard mappings, more water points should be developed inside the congested areas, high rise buildings, market places and colonies. Near each water point, hose pipes with connectors, to provide pressurized long distance water supply, should be provided. Responsibility for maintenance of these water points should be given to a technical team of fire department. At the same time, the residents or shopkeepers near the water points should be given awareness about its importance and use during emergency.
3. The human resource strength of fire department need to be increased and at least five fire sub stations should be established with one squad (6 no.) strength and at least one fire tender at different locations of the city to confirm earliest response.
4. The fire personnel should be given updated refresher trainings at least once a year and should be sent to national fire college as well as in foreign countries to have better understanding of equipment and coordination with international teams.
5. The fire service need to be equipped with latest equipments like SCBA (Self contained Breathing Apparatus), proximity suits and mini fire tenders and motorcycle fire tenders. As Patiala is a congested walled city, mini fire tenders including motorcycle fire tenders are needed to approach site with fire hazard in minimum possible response time.
6. Mock exercise should be conducted periodically on monthly basis for fire emergency at various vulnerable points of city and its report should strictly be send to DC Patiala and fire service headquarters. This will help to reduce response time and understand the real scenario difficulties and keep the fire people active and confident for any response.

Conclusion: This is the time when we should wake up and make our city resilient to disasters caused by fire. The first step towards developing safety and mitigation of fire disasters is creating awareness among common residents of Patiala city. For the purpose

the officials from administration should themselves be given awareness which can be spread in society and communities by selecting some change agents. The second step is to develop preparedness and capacity building to various disasters by govt. and common people for mitigating or coping up, if it strikes. For this, proper human and inventory resources need to be managed well in time and proper coordination and planning be made for its efficient utilization. The third step is to develop proper organization structure of fire department and equip them with latest training, tools and equipment for an efficient response management. Special trained teams need to be build and coordination between various departments for management of any emergency situation in city is to be made.

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INSTRUCTIONAL SUPERVISION IN THE ADMINISTRATION OF SECONDARY EDUCATION

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ABSTRACT

This paper addresses Instructional supervision in the administration of secondary education as a universal remedy for quality assurance highlighting the concepts of instructional supervision, differences between supervision and inspection, quality assurance/total quality management as well as quality in teaching and learning. Instructional supervision is a viable tool for quality output in secondary education. Techniques of instructional supervision were treated like classroom observation, demonstration, workshop, micro-teaching, listening to recordings, guided practice and research also describes the things of supervision. An unsupervised instruction may spoil the standard of education. It is therefore suggested that principles as stimulant should facilitate the implementation of the various sets of instructional activities that will improve the teaching-learning situation in the input-process-output framework. This is geared towards an effective, feasible, vigorous and qualitative educational system.

Keywords:, **Instructional Supervision, Secondary Education, Vigorous, Viable And Quality Assurance.**

INTRODUCTION

A simple way of appreciating education is that it is a tool or a necessary weapon for every human being to acquire for the purpose of navigates to this complex world without which the individual may get lost in it or live in darkness without being blind. It is the biggest instrument for academic progress, social mobilization, political survival and effective national development of any country and constitutes the single largest enterprise in the country.

Secondary education is the education children receive after primary education and before the tertiary stage within the age range of 12 to 18 years. The broad goals are to prepare the individual for useful living within the society and higher education. To be able to effectively

provide education, there is need to ensure that the educational system is reliable. Reliability in terms of educational system can only be enhanced through supervision. Supervision can be divided into two categories. These are instructional and personnel supervision. Instructional supervision has been defined as a set of activities which are carried out with the purpose of making the teaching and learning purpose better for the learner. Personnel supervision on the other hand deals with the set of activities which are carried out by the supervisor with the basic aim of sensitizing, mobilizing and motivating staff in the school towards performing their duties optimally in terms of the achievement of the stated aims and objectives of the educational system. Opined that quality assurance is a proactive means of ensuring quality in any organization. Quality assurance in education aims at preventing quality problems and ensures that the products of the system conform to the expected standards. It is a holistic term that is directed towards education as an entity. According to the authors, it entails the suppliers and consumers and all the various activities put in place to produce quality products and services. The concept of quality assurance in the education system can be looked at from two angles, viz: the internal perspective (within the system) and the external measures (checks and balances by the regulatory agencies). This paper seeks therefore to highlight instructional supervision in the administration of secondary education as a veritable tool for quality assurance. The Concept of Instructional Supervision is that phase of school administration which focuses primarily upon the achievement of the appropriate expectations of educational system. Sees it as those activities which are designed to improve instruction at all levels of the school enterprise and as behaviour officially designed by the organization that directly affects teacher behaviour in such a way to facilitate pupil learning and achieve the goals of the organization. Instructional supervision is basically concerned with supporting and assisting teachers to improve instructions through changing their behaviour. The instructional supervisor does much than inspect.

Instructional supervision is a service activity that exists to help teachers do their job better. An instructional supervisor may not be an official sent from the Ministry or Board of Education. Instructional supervision as a collaborative effort involving a set of activities designed to improve the teaching and learning process. The purpose of supervision is not to find fault or to punish, but rather to work cooperatively with the teacher. Supervision as the element of the administrative process is concerned with efforts to guide the day-to-day activities of the work group by stimulating, directing and coordinating the workers and their

efforts, cultivating good working personal relationships so that they all work towards a more efficient achievement of the task goal.

Supervision and inspection are administrative functions directed towards the efficient achievement of organizational goals. Their central purpose is to enhance productivity and both constitute tools for educational coordination. But the authors still find differences, thus: the words “supervision” and “inspection” are often used to mean the same but they are two different concepts in terms of job content and scope. Supervision is designed to achieve improvement in instruction, resolution of school constraints, maintenance of super ordinate-subordinate cooperation, professionalism and autonomy of staff and achievement of intrinsic motivation while Inspection is carried out specifically to ensure that minimum standards are maintained in the basic activities of teaching and learning. This is with regards to content coverage, resource provision, maintenance of discipline and keeping of statutory records and accounts. It also provides opportunities to access the challenges confronting the school and the level of success in views supervision as one of the basic requirements of administration that concerns itself with the tactics of efficiency and effective management of human and material resources. It is a way to advise, guide, refresh, encourage, simulate, improve and oversee teachers with the hope of seeking their cooperation in order that they may be successful in the task of teaching and classroom management.

Educational supervision is a process to ascertain that the teachers carry out the task of teaching to an expected level according to the stipulated guidelines, which control the educational system. It is a way of persuading workers to abstain from applying wrong methods and procedures in carrying out certain functions of their jobs. Inspection is seen as an instrument with which the political and administrative authorities maintain the necessary contact with the schools, teachers, pupils and the community and so ensure that the system is working satisfactorily. In this sense inspection is to be viewed as fulfilling a controlling, coordinating and communicating role as guardian of education standards. Quality Assurance/Total Quality Management An attempt to eliminate the inadequacies of quality control gave birth to other terminologies such as total quality management or quality assurance. Through a variety of tools and techniques meant to achieve high quality of goals and services. Therefore, Total Quality Management and Quality Assurance are used interchangeably in modern trend to refer to integrative approach of management through the efforts of all, both top and lower employees towards improving the organizational practices that will produce the best output to the satisfaction of customers. Quality management is the

aggregate of all efforts from the top management to the lowest rung of the organizational hierarchy geared towards doing the right things first and all the time and continually striving for improvement.

Each element in the input-process-output framework of education enterprise should be of an acceptable quality to ensure high quality in education. This means that if educational inputs (financial and human resources) such as funding, learner enrolment, quality and quantity of teachers are in the right proportion, learner/teacher ratio, curriculum, textbooks, school materials and facilities etc are adequately, proportionately and timely provided for education delivery, quality management is on course. Similarly when the process of delivering the educational service is monitored, checked, encouraged and improved for efficiency and effectiveness, the end product would be of high quality. At this point, how learning is organized and checked, the content and quality of what is taught, the number of teaching hours and contact hours ascertained, assessment and graduation procedures are determined. After this input and process, the output is now evaluated to ascertain attainment and standards which determine their relevance and fitness have been realized. That is, have the students actually gained the knowledge, skills and attitude required of them (achievement)?. How encouraging is the percentage number of students who completed the course of study and obtained certificate (attainment)? Finally, does the product satisfy societal expectations and customer needs? The feed back or data derived from this input-process-output help the education managers to replan, adjust and improve where necessary for quality outcome so as to measure up with the ever-changing political, social, economic scientific and technological demands. In social service industry like education, productivity is difficult to measure because it is the same students who go in as raw materials that undergoes the transformational process (teaching/learning) and now come out as finished products (graduates) the unit of measurement is behaviourally. Results from an inter-play among a broad range of success factors that have important consequence for effective teacher performance and student learning, such factors include:

1. Basic school facilities such as classroom, standard libraries, well equipped laboratories, staff offices, teaching facilities and so on.

2. Financing such as provision of funds to schools, staff remuneration, school budget and its implementation.

3. Personnel including quality and quantity, quality mind set and orientation among personnel usually resulting from the organizations motivational efforts, staff satisfaction, commitment and morale and so on.

4. The schools organizational environment including climate and leadership.

Instructional Supervision as a Viable Tool for Quality Output in Secondary Education Instructional supervision is an aspect of checking quality output in secondary school hence it is designed to evaluate educational inputs and outputs. The act of teaching and learning is supervised to see if it is achieving the desired objectives. During this supervision, a subject is examined in relation to teaching methods applied, instructional materials available for use and the teacher himself in terms of qualification and training.

SKILLS REQUIRED FOR SUPERVISION

A lot of professional skills are required for supervision in schools. These skills can be classified into eight major groups as stated below:

1) Pedagogical Skills: These include mastery of subject matter, teaching methods, improvisation, presentation of content, preparation of lesson notes, lesson plans and units etc.

2) Evaluation Skills: These include questioning, continuous assessment and examination skills.

3) Disciplinary Skills: These include class control, punishment, use of rules and regulations and maintenance of order.

4) Motivational Skills: Issues bordering on rewards and reinforcement are emphasized.

5) Reportorial Skills: Documentation of report card, class register, log book, attendance book etc.

6) Managerial Skills: These are skills on time management, good use of teaching aids, difficult situation, and students behaviour.

7) Interactive Skills: Creation of rapport, teacher's personality and general characteristics, cooperation etc.

8) Analytical Skills: Possession of mathematical ability, statistical computation and interpretation of data etc.

The importance of acquiring these skills cannot be left to chance or in the hands of charlatans or pedestrian. This informs the need to improve on the skills of school supervisors in order to achieve the objectives of education.

The standard in each subject area is examined that academic inspection should follow the under-mentioned guidelines as in Fig.1 which takes care of input variables (Teacher), process variable (Teaching) and output variables (Achievement).

Table-1

Input variables (Teacher)	Process variables (Teaching)	Output variables (Achievement)
Qualification Experience Textbook in use Syllabus in use Scheme of work Lesson notes Time allotment Books on the subject Availability in library Instructional materials	Teacher demeanour Pupils written work (a) assignments (b) corrections continuous assessment Practice	Standard of subject at certificate examination

The explanation of the variables is as follows:

(a) Input Variables: The supervisor is expected to look at the teacher himself, his qualifications, experience and the materials available to him for use in his subject and also what they have in the library.

(b) Process variables: The supervisor should look into the methods of teaching being used by teacher while delivering his lesson. The pupil's participation in the lesson and the teacher's evaluation methods for continuous assessment

(c) Output variables: Here the supervisor looks at the way the pupils perform in each particular subject in external examination.

Quality output in secondary schools does not connote the number of graduates produced in a session, their grades or even the ones produced within the available budgetary limits, but in

addition, it borders on the quality of such graduates in character and in learning. This is because if quality students are exposed to quality teachers and instruction within an enabling environment, definitely it will yield quality students who will be quality output for tertiary institutions and finally may likely occupy quality positions in the society.

TECHNIQUES OF INSTRUCTIONAL SUPERVISION: Activities that the skilful instructional supervisor can utilize to bring about desirable effect in teacher behavior for achieving teaching effectiveness. They include

1. Classroom observation which involves live observing of a teacher and analysing his or her classroom practices, the teaching - learning process, teachers' personality, student-teacher interactions, lesson note and lesson presentation. All these are observed by the supervisor who is present as a witness.

2. Demonstration: It involves the presentation of a prearranged series of events to a group for their view. This stimulates teachers' growth and group discussion.

3. Teacher visitation: This activity also called "interdicting" or "reciprocal visitations" involves one teacher visiting and observing another teacher in action in another class within the same school (inter-class visitation) or in another school (inter-school visitation). This method enhances proficiency especially if the beginning or inexperienced teacher watches experienced teacher in action.

4. Workshop: The activity involves a small group of people temporarily formed to discuss a specific topic or work on a common problem and trying to find solution(s) to a specific problem in a face-to-face situation.

5. Micro-teaching: It is a teaching situation which is scaled down in terms of time; class size and teaching complexity to allow the teacher focus on a selected teaching strategy. New skills are developed and old ones are refined. Usually it involves a small group of 5-10 pupils where the teacher employs a particular skill within say ten minutes involving content and skill. Emphasis is on the issue of immediate feedback where the teacher is evaluated by the supervisor in form of replaying a recorded lesson or actual discussion (if it was not recorded). When corrections are made the teacher re-teaches the lesson to the same group or a different group for improvement.

6. Recordings: This involves using sound recordings to present ideas to one or more listeners in such way as to help develop understanding or skills. Also the use of visual presentations through the media film, television, or video tape is increasingly important in the supervisory process.

7. Guided Practice: This supervision technique involves individualized or small group manipulative activities. It is an approach in which doing is emphasized rather than talking with practice activities arranged out of context.

8. Research: Research is the systematic and objective collection and analysis of data in order to find solutions to identified problems. Here the supervisor work with and through teachers to finding solutions to problems of teaching/learning that confronts them instead of dictating solutions to or autocratically setting educational problems relating to teaching and teachers.

SOME SUGGESSIONS WHICH FACILITATE THE INSTRUCTIONAL SUPERVISION

1. Principals should give priority to improve instructional supervision process and Instructional supervision should be carried out continuously in the school.
2. All the supervisors should use effective methods of instructional supervision and be Committed to the long term process of educational development.
3. Supervisors' administrative workload should be reduced or decentralized to provide Sufficient time to participate effectively in their instructional supervisory roles.
4. Supervisors should have high professional qualifications and a superior knowledge About curriculum and instructional supervision so as to be better role models and to
5. Provide expert leadership in all areas of the school programme to their teachers and Pupils.
6. All the supervisory staff must be constantly refreshed with quality & appropriate Supervision training.
7. All supervisors require conceptual skills in supervision and for this there should be proper training in order to ensure that they fully understand what their roles and tasks as supervisors.
8. All the supervisory staff should develop positive attitudes towards supervision of Teachers.
9. All the supervisory staff should maintain and use instructional supervision reports to Improve the teaching-learning process and professional development of teachers.

10. Supervisors should create a propitious and facilitating environment for instructional Supervision process in the school.

11. The government should provide more funds to schools to expand physical facilities and human resources which will in turn improve supervision.

CONCLUSION

The concepts of Instructional supervision, differences between supervision and inspection and quality assurance/total quality management were addressed, including quality in teaching and learning and instructional supervision as a viable tool for quality output in secondary education. Also the techniques of instructional supervision were not left out like Summary and Conclusion . It is therefore concluded that the importance of Instructional supervision to quality assurance cannot be over-emphasized as it is still remain unparallel in the process of Education and it constitute a vehicle for the delivery of qualitative education. Quality management entails proper planning, organizing, controlling, coordinating and evaluating by the school managers to achieve quality result. If education managers are unable to properly harness, utilize and develop the necessary educational resources such as finance, personnel, facilities information (data) and time, the system is bound to witness a very poor quality educational output. The need for Instructional supervision for quality assurance is a plea for the cooperation of all educational stakeholders towards a more efficient achievement of the task goal. Therefore quality education can be actualized where the educational system is reliable and this reliability can only be achieved through both instructional and personnel supervision by the principals. The role of the principals is to facilitate the implementation of the various sets of instructional activities that will improve the teaching-learning situation in the input- process - output framework without which the educational endeavours may be an exercise in importune.

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CRITICAL UNDERSTANDING OF ICT

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Abstract

This paper focuses on providing practical experience and reflective engagement on critical issues related to Information and Communication Technologies. The course intends to engage student teachers to understand the role of ICT in education in relation to various policies and curriculum frameworks on ICT and in diverse socioeconomic contexts. It aims to provide a rich learning experience for student teachers through various ICT tools to enable them to engage diverse classroom contexts, to critically assess the quality and efficacy of resources and tools available, to access and suitably modify open educational resources, to develop their own pedagogic materials and pursue lifelong learning to strengthen their professional capabilities.

Key Words: ICT in Education, quality and accessibility of education, learning motivation, learning environment.

INTRODUCTION

Social, economic and technological changes of the past decades are making education and training for all more crucial than ever. Yet, educational systems, to different degrees worldwide, are struggling to afford educational opportunities for all, to provide their graduates with the necessary knowledge and skills for evolving marketplaces and sophisticated living environments, and to prepare citizens for lifelong learning. To meet these challenges, countries have to focus concurrently on expanding access, improving internal efficiency, promoting the quality of teaching and learning, and improving system management.

Critical understanding is a term used commonly in education to define a mode of thinking, described as, ‘an essential tool for participating in democratic processes, at whatever level. Critical understanding develops through analytical and independent thought and is considered an increasingly important element of the education process as students’ progress to higher and further education.

ICT is proving itself as an antidote for the attainment of the aims and objectives of education in the following ways:-

- It avoids the learners from digressing from their field of learning.
- It satisfies the inquisitiveness in the learners.
- It helps the learners to learn vividly without any obscurity.
- It checks the devilment of the users.
- It provides instant platform for the understanding and presenting the concepts before it desiccate.
- It removes the delusions of learners.
- It deference the action of learners by responding to their needs.
- It deciphers the abstract concepts through images or analogies.
- It obeisance to the requirements of the learners.
- It unveils the covert knowledge for its maximum utilisation by the learners.
- It fills in the confidence in the learners to interact and to present themselves.

ICT will become a strong agent for change among many educational practices. Extrapolating current activities and practices, the continued use and development of ICTs within education will have a strong impact on: ICT and teaching learning process; quality and accessibility of education; learning motivation, learning environment and ICT usage and academic performance.

BARRIERS TO INTEGRATE ICT

Lack of competencies

CEO Forum (1999) claim that information and communication technologies will be efficiently used in lessons only if teacher qualification development will be oriented specifically to the needs of the teachers and demands of the system of education.

Limited accessibility

Lack of qualification development is not the only barrier to the integration of technologies into the teaching/learning process. If the teachers are required to use such resources as information and communication technologies, they must have access to these technologies. It is also very important that these technologies function in an indefectible way, i.e., it is important to make overall technical provision.

Lack of support

Easily accessible technical support (maintenance of computer hardware and intranet infrastructure) is an important factor in the school change, integrating constructivist education and information and communication technologies at school. The authors remark that teachers will have no intention to use technologies if they feel they can encounter technical problems (not working software, hardware problems etc.) that can only be repaired in several days.

School principal support is very important as technology integration into the school is related with resource redistribution, purchase of the new equipment, teaching schedule reconsideration, foreseeing teacher time to renew ICT competencies, subject qualification renewal and lesson planning.

Shortage of time

A number of researchers (Cook, 1997, Ang 1998, Glennan and Melmad 1996), and also National Education Association (NEA, 1999-2000) claim that shortage of time is the major and crucial barrier to change in the school culture and integrating ICT into the school and teaching/learning process.

CHALLENGES OF USE OF EDUCATION TECHNOLOGY IN INDIA

Despite early implementation of technologies in Education system, India still faces teething problem for the new technologies in education. Some of them are:

- Not enough or limited access to computer hardware & computer software in education institutes.
- Lack of time in school schedule for projects involving use of technologies.
- Lack of adequate technical support for education institutes.
- Not enough teacher training opportunities are there.
- Lack of knowledge about ways to integrate technologies to enhance curriculum.
- Education technologies integration is not a priority.
- Students and Teachers do not have access to the necessary technology at home.
- There is also a negative facets of new technologies used in education. Many ethical questions and issues arise with this use of the latest technologies in education.

CONCLUSION

As we take up the use of ICTs in education we need to exercise care that we respect and make room for cultural values and differences. The standards that enable convergence and alignment and conceptualization must also protect and nurture divergence. Quality is not served by hegemony or monoculture. Applied with intelligence, diligence, research and commitment, ICTs provide powerful means of improving the quality of education along with significantly improved data for diagnosis and formative evaluation.

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TREND AND INNOVATIVE PRACTICES IN ENVIRONMENTAL EDUCATION

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Abstract

The world has changed so rapidly because of science. A very substantial proportion of the "science knowledge explosion" has derived from work on the means of destruction. It is environmental education which can best help us as individuals make the complex, conceptual connections between economic prosperity, benefits to society, environmental health, and our own well being. The goals of environmental education efforts around the world are similar-to maintain and improve environmental quality and to prevent future environmental problems. It is interdisciplinary, multi-disciplinary and super disciplinary approach. . It will continue to build environmental literacy, to contribute to diverse, thriving communities poised to address current issues and future challenges for the betterment of the environment and humanity by taking the best advantage of innovative methods.

Keywords: Environment Education

INTRODUCTION

The 21st Century will be a time of rapid innovation and technological change that will be spurred on by the grand challenges that we face, including climate change and the demands of an ageing society All experiences of the current deepening crises of environmental degradation, pollution, ecological imbalances, population problems and resources depletion is due to technological advancements. Pre-eminent problem is of environment. Environmental education is vitally important for this. It is this form of environmental education that is seen as having the potential to deliver 'the values transformation necessary to promote sustainable and socially just lifestyle choices.'

ENVIRONMENTAL EDUCATION

Environmental education is "a process aimed at developing a world population that is aware of and concerned about, the total environment and its associated problems, and which has the knowledge, attitudes, skills, motivation, and commitment to work individually and collectively toward solutions of current problems and the prevention of new ones."

The Tbilisi Declaration acclaimed "the important role of environmental education in the preservation and improvement of the world's environment, as well as in the sound and balanced development of the world's communities" (Wisconsin DPI, 1994, p. 157). In addition to establishing overall goals of environmental education, the Tbilisi Declaration established the following objectives of environmental education:

- ***Awareness*** – to acquire an awareness and sensitivity to the total environment and its allied problems;
- ***Knowledge*** – to gain a variety of experiences in and acquire a basic understanding of, the environment and its associated problems;
- ***Attitudes*** – to acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection;
- ***Skills*** – to acquire the skills for identifying and solving environmental problems; and
- ***Participation*** – to encourage citizens to be actively involved at all levels in working toward resolution of environmental problems (UNESCO, 1978).

Environmental education is not only the presentation of information. It also helps learners achieve environmental literacy, which has attitude and behavior components in addition to a knowledge component. Thus, the goal of environmental education is to instill in learners knowledge about the environment, positive attitudes toward the environment, competency in citizen action skills, and a sense of empowerment (Disinger and Monroe, 1994).

ELEMENTS OF ENVIRONMENTAL EDUCATION

- **Relevancy:** Effective environmental education should be relevant to the mission of the agency or organization, to the educational objectives and to the everyday lives of the individual learners.
- **Involvement of Stakeholders**: Environmental education programs involve stakeholders in all stages of the program, from the development of the program to its evaluation. Successful programs bring a coalition of stakeholders together to design, implement and evaluate a program that meets their needs.These stakeholders might be teachers, funders, agency supervisors, community leaders, landowners, extension workers, parents, and curriculum developers.
- **Development of skills among learners**: Effective environmental education empowers learners with skills to help prevent and address environmental issues and with a sense of personal and civic responsibility.

- **More stress on use of "best practices"**:. According to the Wisconsin Department of Instruction, educational programs and curricula should be developed in response to theories of learning, such as Piaget's theory of cognitive development, constructivism, multiple intelligences, and learning styles (1994). In order for environmental education programs to be effective in an educational sense, they must also be congruent with the way people learn .
- **Evaluation techniques**: Evaluation for environmental education should not only in terms of something that is done as or after a program is implemented , but also as something that is done throughout the development, inculcate and implementation of the knowledge and program .

IMPORTANCE OF ENVIRONMENTAL EDUCATION

It is environmental education which can best help us as individuals make the complex, conceptual connections between economic prosperity, benefits to society, environmental health, and our own well being. Ultimately, the collective wisdom of our citizens, gained through education, will be the most compelling and most successful strategy for environmental management. In this way environmental education is important in the following several ways:

- **Environmental education increases student engagement in science:** In our schools, research has shown enormous benefits from environmental education. When integrated into a science curriculum, environmental education demonstrably improves student achievement in science. Such an increase is likely due to the fact that environmental education connects classroom learning to the real world.
- **Environmental education improves student achievement in core subject areas**:When integrated into the core curricula or used as an integrating theme across the curriculum, environmental education has a measurably positive impact not only on student achievement in science, but also in reading (sometimes spectacularly), math, and social studies .
- **Reduced discipline and classroom management problems:** environmental education has a measurably positive impact not only on student achievement in science, but also in reading (sometimes spectacularly), math, and social studies . The

same study found that schools that taught the core subjects using the environment as an integrating context also demonstrated:

- Increased engagement and enthusiasm for learning; and,
- Greater student pride and ownership in accomplishments.

- **Environmental Science and Engineering for the 21st Century:** Even more importantly for many, environmental education employs and enhances critical thinking and basic life skills. The National Science Board of the National Science Foundation confirmed the importance of environmental education to student learning in their 2000 report.
- **Environmental education provides critical tools for a 21st century workforce:** The vast majority of Americans are convinced that the environment will become at least one of the dominant issues and challenges of the 21st century, as the growing needs of the growing global population increasingly presses up against the limits of the earth's resources and ecosystems. As one example on the micro scale, the National Environmental and Training Foundation estimates that environmental education about topics such as energy, water and waste management, improved employee health, cleaner working conditions, and recycling etc.
- **Environmental Education helps address "nature deficit disorder**:A recent study found that children today spend an average of 6 hours each day in front of the computer and TV but less than 4 minutes a day in unstructured outdoor play, leading researchers to discover a new condition specific to this current generation that they have called "nature deficit disorder". This extreme emphasis of indoor time spent in front of screens versus outdoor play and discovery has been correlated with negative psychological and physical effects including obesity, loneliness, depression, attention problems and greater social isolation due to reduced time with friends and family.

  What do increased study of science and nature and its increased outdoor time accomplish? Especially in the very young, it has proved in studies extremely beneficial for cognitive functioning, reduced symptoms of attention deficit disorder, increased self-discipline

WAYS AND MEANS TO PROMOTE ENVIRONMENTAL EDUCATION

1. **Don't need to be an expert:** Environmental education is much more than one "subject"; it involves values education, decision making, communication skills, creativity, and many other subjects and skills. The role of educator is to facilitate learning and to know how and when to get the experts involved if they're needed. By incorporating environmental content into teaching, educator can try new activities and approaches and learn more about environmental issues along with students.
2. **Interdisplinary approach in curriculum:** Environmental education can take many forms. In some school systems, environmental education is carefully integrated throughout the curriculum, relying on a guiding scope and many school systems do not have a school-wide environmental education program at all and instead rely on motivated individuals to incorporate environmental education into their teaching. Finally, many schools do their environmental education after school-in clubs and weekend community activities.
3. **Discovery learning:** In classrooms around the world, teachers lecture, students take notes, and then students are tested on what they've learned. However, in many classrooms experiential or "hands-on" learning is starting to replace or supplement traditional "chalk-talks." Through experiments, simulations, debate, and other participatory activities, students discover concepts on their own. Experiential learning has been shown to increase retention, motivate students to learn, and encourage group cooperation.
4. **Get outside:** Many people argue that students around the world-especially in urban areas-are losing touch with the natural world. In many places, outdoor experiences are not a regular part of instruction; instead of occurring throughout a student's schooling, outdoor experiences are often limited to a few outings in primary grades.Nothing can replace first-hand experiences to help students understand their community, natural systems, and environmental issues.
5. **The built, the technological and the natural:** What is the connection between the "built" environment and the natural environment? The number of people moving to and living in urban areas is increasing at an unprecedented pace in many parts of the world. How does urban living affect people's attitudes about the surrounding environment? How is technology controlling natural and human environments?

6. **Get "real":** Getting students into the community to look at the natural and built environment can make environmental education programs more relevant to the lives of students.. It's also important to be sensitive to the realities of the environmental problems facing in the community. Many of students and their families may be directly or indirectly responsible for the environmental problems that students investigate. Although educator shouldn't shy away from discussing environmental problems because of this.
7. **Value system:** Environmental education is inextricably linked to values. As children mature, the value system they develop influences the choices and decisions they make regarding all aspects of their lives, including environmental issues. Values also add consistency to a person's life, which helps to build a better self-concept. So, diversity in values system creates problems for environmental education.
8. **Development of sense of motivation:** An environmental education program can do much to help empower students to improve the quality of their lives and the lives of others. And this empowerment can lead to increased feelings of pride and self respect. But education system lacking behind to achieve this level in schools to promote environmental education.
9. **Moving towards environmentally responsible behaviour:** Many environmental educators feel that the road to environmentally responsible behavior is a continuum that begins with environmental awareness and knowledge and ends with students becoming actively dedicated to improving and maintaining environmental quality. But this is only possible if it there are some co-curricular activities in curriculum.

Technology forecasting is an instrument used in many countries around the world, to anticipate future developments and prepare for technological and skills changes to come. The notion of one planet and global interdependence is a dominant theme of sustainable development. Falk (1972), for instance, asserts that the values underpinning sustainable development include 'the unity of mankind and the unity of life on earth, with particular recognition that the future of man and the planet are tied to one another'. He argued the need for a 'new world order' based on 'harmony within limits, harmony among human groups and harmony between man and nature'.

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IMPACT OF ABACUS CALCULATIONS ON SPATIAL ABILITY OF PRIMARY SCHOOL STUDENTS IN BARNALA

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Abstract

Learning is that the forgoing steps of human life, which starts from the cradle and goes until the grave. So, it's essential to provide meaningful learning to the child in the initial period of his life. If this learning is related to inventive visualization then students can learn the concept with more contemplation. The ability to visualize things helps the children to retain the concepts in their minds comprehensively. For budding, abstract thinking among learners' spatial ability plays a crucial role. It helps to transfigure, transform and recollect figurative and non-figurative information. The present research paper focused on developing the spatial ability among learners in a group of 180 primary school students which were divided into two groups i.e. control group and experimental group (90 students in each group). Purposive and Systematic random sampling methods were selected. The outcome of the study based on the Spatial Ability test performance with respect to learners age, class and gender exhibited that performance of the experimental group was noteworthy as compared to control group students.

Keywords: Abacus, Spatial Ability, Visualization, Mental-Calculations.

INTRODUCTION

Mathematics has been taken as one of the indispensable cognitive skills in this numerate world. The ability to do well in arithmetical calculations has been considered as a cognitive base for the development of complex mathematics. It assists the learner to remove their mathematical anxiety towards calculations. If Maths is a machine then its operations like additions, subtraction, multiply and division are the tools of it. With the help of Abacus-based Mental Calculations (AMC) an unusual enhancement is found in arithmetic skills. Stigler (1984) in his research found that experts in AMC could compute the large number of calculations having more than 10 digits with an extraordinary speed and accuracy. Unusual computation on virtual abacus not only enhanced students' arithmetic skills but also affect

their mental structure like Spatial Ability. It helps to develop abstract thinking among learners and it aids them in recollecting things, retrieve and transform them. In general, it is the capacity to fabricate, conserve, convert and alter well-structured mental images. An individual with sharpening spatial vision can retrieve the visuals images from his mind easily (Sipus & Cizmesija, 2012).

In detail, spatial ability considers as what an individual perceives and it is the skill of visualizing the creative imaginative images, ideas, or thoughts in mind. It encourages the capacity of recollection and comparing mental figures and alike images of realism (Ormrod, 1995). Spatial abilities are asserted to be leading tools for comprehending and resolving mathematics problems (Hodgson, 1996). Children who are better at visualizing spatial relationships make strengthen arithmetic skills in primary school (Zhang, 2014). Geddes D. & Fortunato, I. (1993) concluded that mathematical geometry broadens the spatial understanding and divergent thinking of the students. It enlarges their logical acuity and ability to resolve problems innovatively. McGee (1979) defined spatial visualization as a capability that involves mental conversion and maneuvering the objects (Tartre, 1990). Spatial skills help to extend the achievements in mathematics and physics areas. It plays a crucial role for students who want to pursue their careers in STEM (Science, Technology, Engineering & Mathematics) (Ramirez et al., 2011). They can imagine the 3-D figures in their mind more precisely and produce better outcomes.

Thurstone (1887-1955) gave his idea on Primary Mental Ability (PMA) that embraces seven factors such as verbal comprehension, word fluency, numerical ability, space visualization, associative memory, perceptual ability, and reasoning (Garmezy & Jones, 1975). Thurston exclaimed that individual intelligence could not be determined by a single factor. For it, multiple factors are required. Therefore, he yielded seven factors of intelligence. Thurstone explained that individuals make use of all these elements in mixed forms. In some domains, Primary mental Abilities are more constructive as compared to others. For instance, in the domain of Engineering and Mathematics, PMA like numerical ability, visual comprehension, reasoning and spatial ability are more helpful, while in learning music the form and function of PMA are usually transformed (http://www.indiana. edu/intell/ lthurstone.shtml). In the same way, in the field of Abacus, students do not depend upon a single element of PMA. They make use of other related PMA of intelligence also. Students use their spatial ability while solving calculations mentally. Numeric ability is employed by the students to execute quantitative numerical calculations accurately and rapidly. In addition to it, Reasoning ability

helps the students to figure out the inferences and simplify the outcomes. Associative memory aids to evoke the digit quickly in the mind while perceptual ability is concerned with the precise visualization of the objects. It can be concluded that while learning any skill, multiple abilities are required by the learner to enhance their capabilities in that particular domain.

REVIEW OF RELATED LITERATURE

Review of literature is an indispensable part of any research. It helps the researcher to trace the loopholes in the previous researches and try to incorporate them in his research. For the present study, the review of literature has explored on Google Scholar to provide a strong authentic base to the research.

Weng, J. et al. (2017) in their study on long-term abacus training has assessed the effect of abacus on topological properties of brain functions. He has outlined the topological brain functions of abacus and non- abacus learners. The mathematical ability of the students was measured with the Chinese version of the Heidelberger Rechentest (CHRT) scale. A total sample of 144 learners was taken of which 72 students were considered as experimental groups and 72 as a control group. The result of the study pointed out that abacus students exhibited higher nodal local efficiency in the right fusiform gyrus (Medial surface of the left cerebral hemisphere) which displayed healthier mathematical ability. It also indicated that long-term abacus training could augment the information processing competence in visual-spatial areas which strengthens their competence at the brain network level.

Barner, D. et al. (2016) has discussed visuo spatial format by using mental- abacus method. A sample of 204 students was selected between the age group 5-7 years. The experiment was executed from June 2010 to March 2013. In between these years, for the reason of drop out total sample was reduced to 183. It was segregated into three groups i.e. experimental, control, and one split half in both groups. Weekly 90 minutes training was imparted to the students. Results revealed that the performance of abacus users was enhanced as compared to the others. They showed precise arithmetic operations even after one year and their spatial visualization also boosted.

Sella, F. et al. (2016) in their study has explored the essential and advanced level testing between mathematicians and non-mathematicians to measure their numerical presentation. A

sample of 38 students was considered which comprised 19 doctorates in mathematics and 19 belonged to humanities. The results of the study indicated that

1. Both of the groups showed equal performance in the numerical Stroop task.
2. Also, mathematicians were better in contrast to non-mathematician. They showed better spatial mapping on positive numbers. However, on a negative number, their performance was down as non-mathematicians.

Thus, the findings of the study exhibited that mathematicians were more exact as compared to non-mathematicians. Their mapping on positive numbers in spatial was better but they failed in the negative numbers task.

Wang, C. et al. (2015) experimented on Chinese children. The main aim of the study was to assess the future effect of abacus training on students' mathematical and ability while completing the tasks. The total sample of 70 primary school students was taken including both control and experimental groups. After starting the abacus training, the mathematical ability was examined for one and three years respectively. The results of the study indicated that:

1. In mathematics ability tasks, arithmetic and visuospatial ability of abacus students were better as compared to the control group.
2. Abacus children were found faster while completing their tasks in numerous conceptual conflict representations, mental sets, and methods.

Thus, it is figured out that with the assistance of abacus-based training, the mathematical ability of students was improved and it helped them in producing better leads to numeracy.

Tosto, G.M. et al. (2014) have tried to seek out explanations why spatial abilities were predicted by mathematical performance. The main aim of the study was to look at the relative heredity and environment role in spatial ability and its association with different mathematical aspects. This study helped to know the links between mathematical and spatial ability. For examining the specified results, a sample of 4174 twins was selected with an average age of 11.56 years. A web-based battery test was accustomed to assess the sample. Jigsaws and Hidden Shapes tests were used for assessing spatial ability. To take hold of it, mathematical ability tests in numerical and non-numerical processes, computation and knowledge tests were used. The results of the study were indicated that:

1. Environmental factors affected mostly within the variety of mathematical ability (~60%) and spatial ability (~70%) at the age of 12 years. The identical effects were found in boys and girls.
2. Genetic factors were affected mostly (about 60%) by observed the association between mathematical and spatial ability.

From the above review, it has vivid that the cognitive content of the abacus and spatial ability have a robust connection between them. However, much work has not touched the realm of primary classes' students' performance. Moreover, studies have through with rest to their age but not much work was done on the gender-wise comparison of the students. Within the dearth above mentioned gaps, the present research was conducted by the researcher to deduce the desired results.

OBJECTIVES

1. To study the distribution of Control and Experimental groups of students in Spatial Ability at the pre and post-test stage.
2. To compare the Spatial Ability between the students of Control and Experimental groups with respect to their
    - Age
    - Class

3. To determine a significant difference between the students of Control and Experimental group at post test level performance in Spatial Ability on primary school girls and boys.

HYPOTHESES

1. (i) There will be no significant difference between the Control and Experimental group in Spatial Ability with respect to their age.

   (ii) There will be no significant difference between the Control and Experimental groups in Spatial Ability with respect to their class.

2. There will be no significant difference between the students of Control and Experimental group at post-test level performance in Spatial Ability on primary school girls and boys.

DELIMITATIONS

1. The study was confined to Primary school students only
2. It was confined to Barnala district of Punjab state only
3. The study was limited to one block i.e. Barnala only

DESIGN OF THE STUDY: The researcher selected Randomized groups which included Pre-test-post-test Design which is a true experimental design. The experimental group was taught through the 'Soroban' Abacus, while the conventional method of teaching opted for the students of the control group.

Three months of interventions were given to both groups.

SAMPLE: District Barnala comprised of three blocks viz. Barnala, Mehal Kalan and Sehna. Out of it, one block Barnala was selected randomly which contained 85 schools. From which, 50% of the schools were selected randomly i.e. total of 43 schools. Out of these 43 schools, 25 schools were selected purposively (those schools were selected who were having students with low academic achievement in mathematics).

In all these 25 schools researcher visited herself and 'Raven Standard Progressive Matrices' (2004) by J.C. Raven was applied on the students to assess the spatial ability of the students. The test comprised 60 non-verbal questions.

The overall numbers of students in these 25 schools were 753. Further, those students were selected who scored less than 25 percentile in the test of Spatial Ability and the number of students came out to be 330.

In addition to it, the Slovin formula was applied by the researcher to determine the final sample size for the study.

$$\text{Slovin's formula} = \frac{N}{1+N(e)^2}$$

Here, N=330, confidence level was 95% and error (e) was 0.05. By applying Slovin's formula a sample size of 180.02 was derived. Therefore, the sample of 180 students was selected through 'systematic random sampling' technique.

Division of the Sample: Total sample comprised 180 students selected from six (6) schools of class 3rd, 4th and 5th. From each school 30 students were taken, 15 students (5 students each from class 3rd, 4th and 5th) were assigned to the experimental group and the other 15 were assigned to the control group. Out of 180 students, 90 students were taken in the category of the control group and 90 as an experiment group (to whom Abacus training was given). Among 90 students, 45 were taken as a group of boys and 45 as a group of girls students.

For the equal distribution of the students, a list of all the 180 students was prepared and a particular serial number assigned to each student. With the help of the 'systematic random sampling' technique, every even number (like 2, 4, 6, 8…etc.) was included in the experimental group and odd numbers (1, 3, 5, 7…etc.) were included in the control group.

Distribution of the sample with respect to their Gender

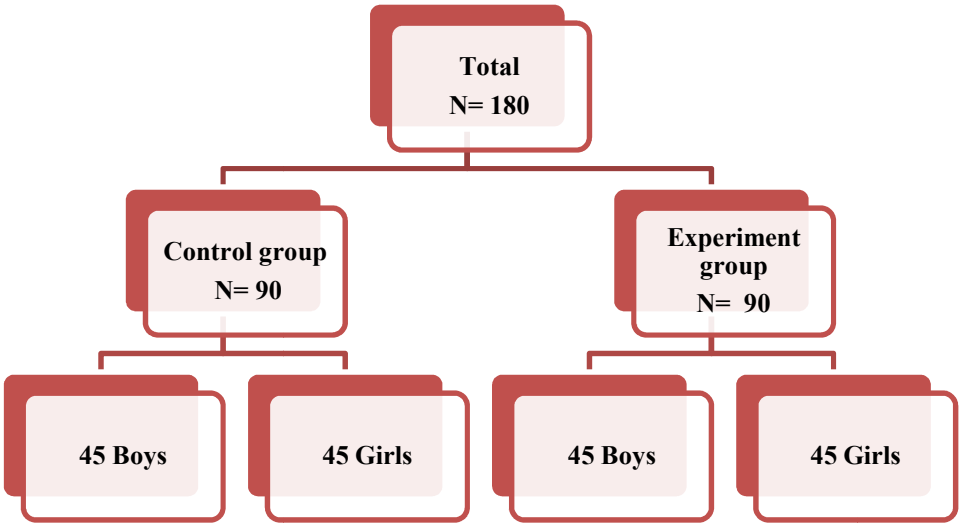


Table 1.1: Distribution of Control group with respect to their age and class

Class	7-8 years	8-9 years	9-10 years	10-11 years	Total
3rd	15 (16.66%)	15 (16.66%)	-	-	30(33.33%)
4th	-	12 (13.33%)	14 (15.56%)	4 (4.44%)	30 (33.33%)
5th	-	-	20 (22.22%)	10(11.11%)	30 (33.33%)
Total	15 (16.66%)	27 (30%)	34 (37.78%)	14 (15.55%)	90(100%)

Table 1.2: Distribution of Experimental group with respect to their age and class

Class	7-8 years	8-9 years	9-10 years	10-11 years	Total
3rd	20 (22.22%)	10 (11.11%)	-	-	30 (33.33%)
4th	-	18 (20%)	9 (10%)	3 (3.33%)	30(33.33%)
5th	-	-	19 (21.11%)	11 (12.22%)	30 (33.33%)
Total	20 (22.22%)	28 (31.11%)	28 (31.11%)	14 (15.56%)	90 (100%)

Statistical technique: - Descriptive Statistics i.e. Mean, Median, Skewness and Kurtosis were used to describe and summarize the data. Inferential Statistics i.e. unpaired t-test was used to analyze students results with respect to their age and class. One-way ANOVA was used to analyze the results of the students with respect to their gender.

Objective 1 - To study the distribution of Control and Experimental groups students in Spatial Ability at pre and post test stage.

Table- 1.3: Control group Pre and Post-test score of Spatial Ability

S.No.	Variable	Test	N	Mean	Median	Skewness	Kurtosis
(a)	Spatial Ability	Pre	90	23.73	23.73	.742	.434
(b)		Post	90	26.45	25.00	.167	-.190

Table 1.3 (a) unveil the normal distribution curve of control group students in Spatial ability at the pre-test stage. The number of students in the control group was 90. Values of Mean and Median were 23.73 and 23.73. According to the categorization of scores, students of the control group were under the category of 'below average in intellectual capacity'. The value of Skewness was .742 i.e. it was normally distributed. Kurtosis was found as .434 viz. It was platykurtic (as >.263). The observation leads to the conclusion the control group score of spatial ability at the pre-test stage was normally distributed.

Table 1.3 (b) depict the distribution of scores of control group students in spatial ability at the post-test phase. Values of Mean, Median and Standard Deviation were 26.45, 25.00 and 13.55 respectively. The values revealed that students of the group were under the category of 'Intellectually Average'. The value of Skewness was .167, showing the data normally distributed. Kurtosis value was -.190 i.e. <.263, it was leptokurtic. The observation leads to

the conclusion that the control group score of spatial ability at post-test stage was normally distributed.

Table- 1.4: Experimental group Pre and Post-test score of Spatial Ability

S.No.	Variable	Test	N	Mean	Median	Skewness	Kurtosis
(a)	Spatial Ability	Pre	90	24.48	20.00	.907	.093
(b)		Post	90	48.10	50.00	.183	-.927

Table 1.4 (a) reveals the distribution of pre-test scores for the spatial ability of experimental group students. The value of mean and Median was 24.48 and 20.00 respectively. According to categorization, students of the group were under the category of 'below average in intellectual capacity'. The skewness value was .907 i.e. data normally distributed. Kurtosis value was .093 i.e. <.263, it was leptokurtic. The observation leads to the conclusion that the experimental group score of spatial ability at the pre-test stage was normally distributed.

Above mentioned Figure 1.4 (b) shows the description of post-test scores of the experimental group for spatial ability. Values of Mean and Median were 48.10 and 50.00 respectively i.e. students of the group were under the category of 'Intellectually Average'. Skewness was .183 i.e. data were normally distributed. Kurtosis value was found -.927<.263 i.e. it was leptokurtic. The observation leads to the conclusion that the experimental group score of spatial ability at the post-test stage was distributed normally.

Further, for the homogeneity of the groups, initially, the Raven Standard Progressive Matrices test was conducted on the selected sample of students. Only those students were taken by the researcher who performed lesser in their spatial ability test i.e. 25 percentile.

Objective 2 (i) : To compare the Spatial Ability between Control and Experimental group with respect to their Age.

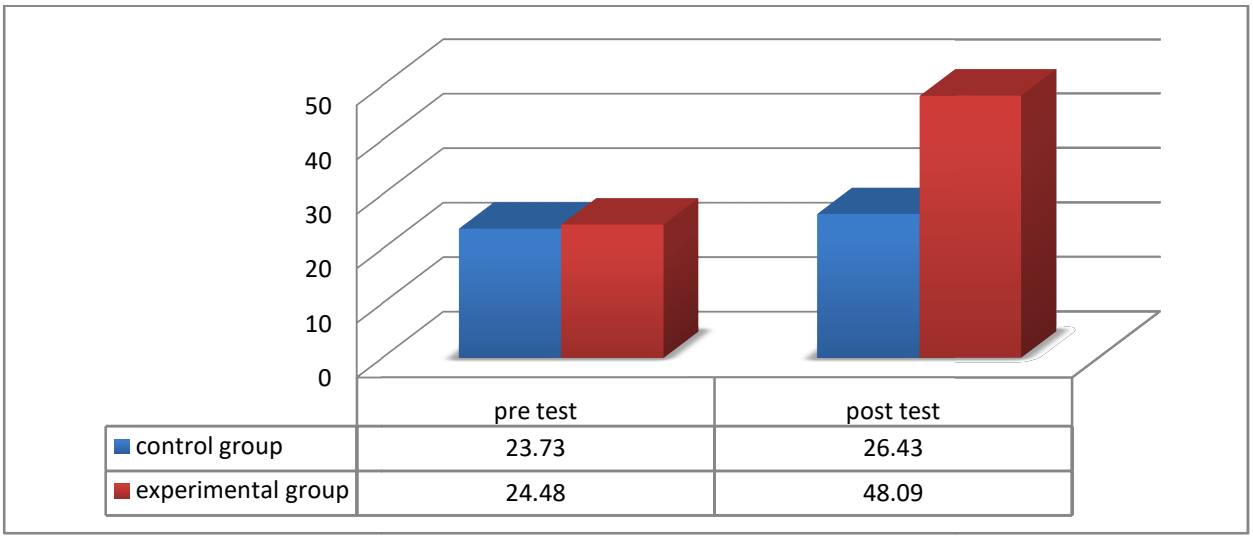
The aim of framing the above objective was to contrast the spatial ability test performance of Control and Experimental groups w.r.t. to their age. An independent sample of means (unpaired t-test) was used to measure the significant difference between Control and Experimental group.

Table 2: Showing Mean difference of Control and Experimental groups in Spatial Ability

Pre-test mean values		t-value	p-value	Post-test mean values		t-value	p-value
Control N= 90	Experimental N= 90			Control N= 90	Experimental N= 90		
23.73	24.48	.333	.470	26.43	48.09	8.26	.000**

** Significant at 0.01 level

Figure 2: Showing mean difference of Control and Experimental groups in Spatial Ability



Above given Table and figure 2 exhibit the Control and Experimental groups' performance for spatial ability test at pre and post-test stages. A total sample of 180 students was taken i.e. 90 in each group. The mean value difference of the students of the Control and Experimental groups in the pre-test was .75 and the t-value was .333 i.e. not-significant at .05 level ($p>.05$). At the post-test level mean score difference of both groups was 21.66. t-value of the group came out as 8.26 i.e. significant at .01 level ($p<.01$). The difference in mean scores revealed that after going through the intervention huge improvement was found among experimental group students i.e. with learning through Abacus, the ability to visualize things in mind improved among Experimental group learners whereas not much variation was found with conventional method among the students of the control group.

Table 2.1: Showing Mean difference of Control and Experimental groups in Spatial Ability w.r.t. age group

Age group	Pre-test mean values		t-value	p-value	Post-test mean values		t-value	p-value
	Control	Experimental			Control	Experimental		
7-8 years	30.87	29.72	.226	.823	33.58	71.24	5.89	.000**
8-9 years	28.24	20.67	1.67	.10	30.85	44.27	2.69	.010 *
9-10 years	16.27	18.02	.47	.63	19.25	41.59	4.68	.000*
10-11 years	12.24	12.74	.090	.93	12.81	36.38	2.62	.014 *

*Significant at 0.05 level

** Significant at 0.01 level

Figure 2.1: Showing mean difference of Control and Experimental groups in Spatial Ability w.r.t. age group

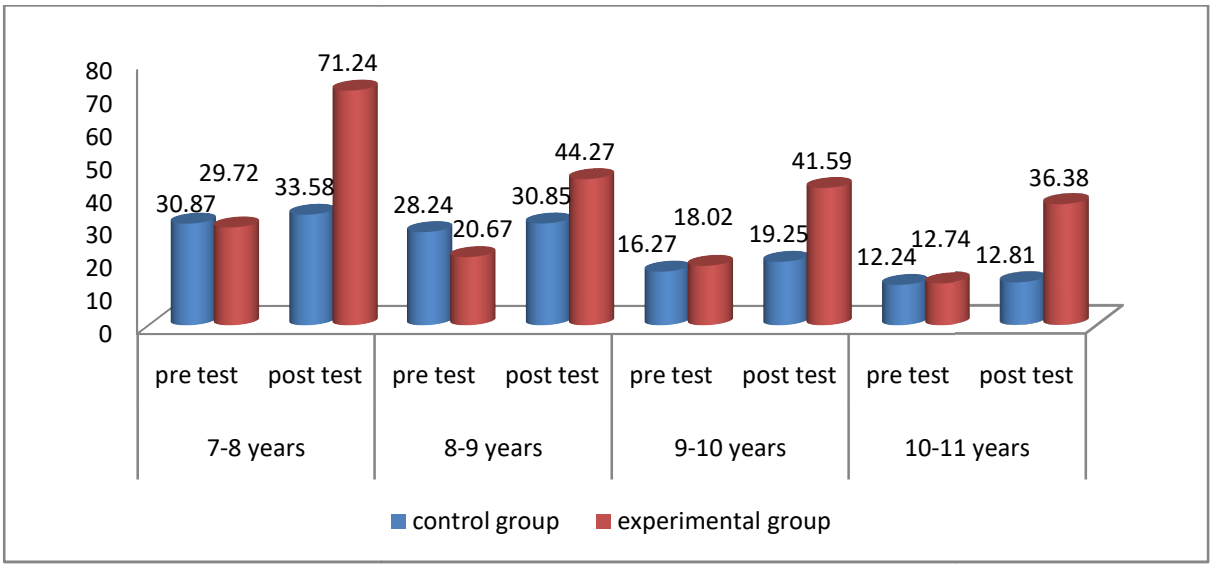


Table and figure 2.1 show the spatial ability performance difference between the Control and Experimental group with respect to their age. For the age group 7-8 years At a large extent, Spatial ability performance difference was found among experimental group learners. The difference in their pre and post test mean was 1.15 and 37.66 for the students of the control and experimental groups. It means that the performance of the experimental group students was found outstanding in comparison to the students of control group.

For the age group of 8-9 years at pre-test, calculated Mean difference in pre and post test performance was 7.57 and 13.42. It means that the ability to imagine things in mind increased among students of experimental group after learning the Abacus method.

Further, Mean difference at Pre and Post-test difference for control and experimental group figured out as 1.75 and 22.34 respectively. It meant that for age group 9-10 years Abacus training revealed a positive effect on spatial ability of students. The students of experimental group found more capable to imagine the things in their brain.

For the students of age group 10-11 years, Mean difference at pre and post test level for both control and experimental group were .5 and 23.57 respectively i.e. working memory of the experimental group was much improved as compared to the students of control groups. The result of the present study is supported by Matis-Guiu, J.A. et al. (2015). In their research work, they found a positive effect of Abacus training on the students of the experimental group. They were able to imagine the things in their mind and produced better results as compared to non-Abacus students. Similarly, Frank et al., 2011 found that Abacus learning affected the working memory of the students. Working memory assisted the students to perform better in different numeric and linguistic tasks by visualizing the things in their brains.

Thus **H_{01} (i), "There will be no significant difference between the Control and Experimental group in Spatial Ability with respect to their age**" stands rejected for the age groups 7-8 years, 8-9 years, 9-10 years, and 10-11 years at the post-test stage. However, at the pre-test stage, it was accepted for the age groups 7-8 years 8-9 years, 9-10 years and 10-11 years.

So, it is evident that the hypothesis was rejected at the post-test stage for all age groups. The difference in mean score made it clear that students of the experimental group grow more in the matter of spatial ability. As Abacus affects the working memory of the students and regular mental practice of solving the sums helped them to imagine the things better in their mind which was not found with the teaching of the conventional method.

Objective 2 (ii): To compare the Spatial Ability between Control and Experimental groups, with respect to their class.

The leading aim for framing the above objective was to explore the Class-wise difference between students of Control and Experimental groups in spatial ability tests. An Independent t-test was used to evaluate the spatial ability difference between Control and Experimental groups.

Table 2.2: Showing Mean difference of Control and Experimental groups in Spatial Ability w.r.t. class wise

Class wise	Pre-test mean values		t-value	p-value	Post-test mean values		t-value	p-value
	Control	Experimental			Control	Experimental		
3rd	28.58	36.16	1.90	.069	31.07	61.00	6.59	.000**
4th	23.9	17.14	1.68	.10	26.97	40.65	2.28	.032*
5th	14.51	15.33	.26	.79	16.49	35.77	3.32	.003**

**Significant at .01 level

*Significant at .05 level

Figure 2.2: Showing mean difference of Control and Experimental groups in Spatial Ability w.r.t. class

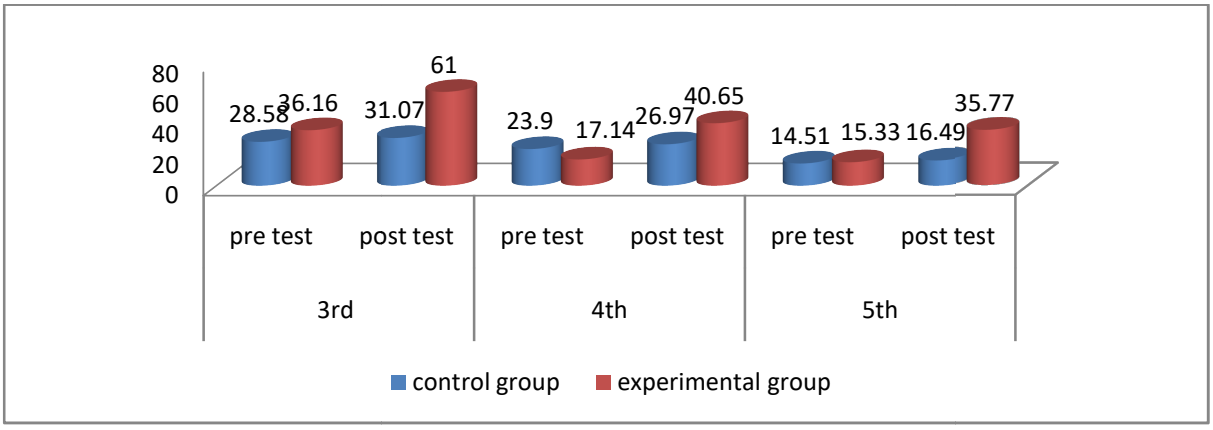


Table and figure 2.2 disclose the contrast between the students of Control and Experimental groups in their performance for spatial ability test in class 3rd. The outcome of the scores revealed that students of the experimental group perform tremendously at the post-test stage as compared to the students of a control group. Difference in Mean values at pre and post-test for control and experimental groups were 7.58 and 29.93 respectively. After getting the intervention, performance of experimental group was increased approximately double as compared to their pre-test results. On the other hand, little difference was found in control group at pre and post-tests.

In addition to it, students of class 4th pre and post test performance differentiation in between control and experimental group figured out as 6.76 and 13.68, correspondingly. As a result, with the help of the Abacus method, the thinking pattern to imagine the things virtually in mind was improved among the students of the experimental group.

Further, for the students of class 5th, the Mean difference in both group performance at pre and post test level came out as .82 for the students of the control group and 19.28 for the experimental group. It is obvious that with the help of interventions, the performance of the students increased as compared to pre-test. However, students of experimental group exhibited immense upgrading as compared to the control group i.e. by envisioning the virtual Abacus in mind at the time of computation spatial visualization of the students enlarged.

This finding has been supported by a study by Hatta & Miyazaki (1990) that found in their similar study that Abacus students were faster as compared to non-Abacus learners in the matter of visual processing of mental images. Similarly, Hatano & Osawa (1983) explored that Abacus learners could store the digits in their visuospatial working memory more frequently as compared to non-Abacus learners and Wu.T.S. (2007) showed that long-term practice of Abacus improves the cognitive functioning and it increases the efficiency of virtual tasks. Similarly, in the context of this Chen, M.S. et al. (2011) in which they found that with the help of Abacus learning students were able to produce better results.

Thus **H_{01}(ii), "There will be no significant difference between the Control and Experimental groups in Spatial Ability with respect to their class**," was rejected for post-test performance for all classes i.e. 3rd, 4th and 5th. However, it was accepted for the pre-test stage for all three classes i.e. 3rd, 4th and 5th.

Hence from the above result, it was figured out that the hypothesis was rejected for the post-test stage. It was found that after learning through conventional and Abacus method, students improved in visualizing the things in their brain as compared to their pre-test performance. But the mean difference of both groups also showed that experimental group more as compare to control group because Abacus based mental calculations helped in holistic brain development of the students which was not done by the normal classroom method. So, the Abacus method was found more interesting as compared to the routine classroom method.

Objective 3:- To determine significant difference of Control and Experimental group at post test performance in Spatial Ability on primary school girls and boys students.

The above objective was formulated to explore the impact of Spatial Ability on primary school students with respect to their gender on experimental and control group students at the post-test stage. One way ANOVA was used to deduce the required result from the data.

Figure 3.1: - Showing mean difference of Control and Experimental groups in Spatial Ability w.r.t. gender

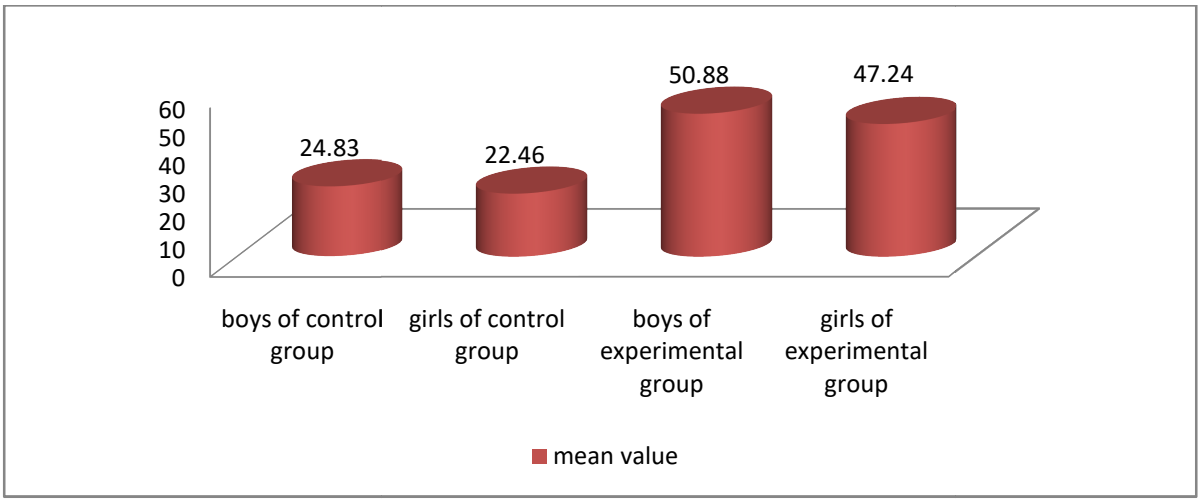


Table 3.1 (a) Showing mean difference of Control and Experimental groups in Spatial Ability w.r.t. gender

Variable	Groups	Mean value	p-value
Spatial Ability	Boys of Control group at post test level	24.83	.000**
	Boys of experimental group at post test level	50.88	

Table 3.1 (a) highlights that Mean score of Control group boys was 24.83 and Mean value of the boys of experimental group was 50.88. The result was found significant at .01 level. It is apparent from the mean value that the experimental group of boys performed superior as compared to the boys of the control group boys. The abacus method worked upon the working memory of students and it enhanced their ability to visualize things in their mind.

Table 3.2 (b)

Variable	Groups	Mean value	p-value
	Girls of Control group at post test	22.46	.000**

	level		
	Boys of experimental group at post test level	50.88	
Spatial Ability	Girls of Control group at post test level	22.46	.005**
	Girls of experimental group at post test level	47.24	

Table 3.2 (b) showed the Mean values of the girls of Control, experimental group boys and girls were 22.46, 50.88 and 47.24 respectively. Calculated result was found significant at .01 level. It means that significant improvement was found in students of experimental group (both boys and girls). With the help of Abacus training their imagination skill was developed. They were able to keep the thing in their mind in a better way as compared to the girls of control group.

Table 3.3 (c)

Variable	Groups	Mean value	p-value
Spatial Ability	Boys of experimental group at post test level	50.88	.000**
	Boys of control group at post test level	24.83	
	Boys of experimental group at post test level	50.88	.000**
	Girls of Control group at post test level	22.46	
	Boys of experimental group at post test	50.88	.005**

	level		
	Girls of experimental group at post test level	47.24	

Further, Table 3.3 (c) revealed the Mean value of the boys of Experimental group 50.88 and concerning it, the mean value of the control group boys, control group girls and experimental girls group was 24.83, 22.46, and 47.24 respectively. The result was found at the .01 level. but, the highest mean score of experimental group boys depicted that their ability to visualize the things in their mind was better as compared to other students.

Table 3.4 (d)

Variable	Groups	Mean value	p-value
Spatial Ability	Girls of experimental group at post test level (47.24)	47.24	.005**
	Girls of control group at post test level (22.46)	22.46	
	Girls of experimental group at post test level (47.24)	47.24	.009**
	Boys of experimental group at post test level (50.88)	50.88	

**Significant at .01 level

Table 3.4 (d) unveiled the Mean value of the Girls students of Experimental group. It came out as 47.24, corresponding to its mean value of Girls of the control group and boys of the experimental group which were derived as 22.46 and 50.88 respectively. It was found significant at the .01 level. Performance of experimental boys group was higher among all. It means that they were more active and attentive during the span of learning.

From the above discussion, it could be concluded that at post level performance of all the four groups was improved. But, a good deal of enhancement was found in the students of

boys of an experimental group whose means score in higher corresponding to all the other three groups i.e. students of the control group boys and girls, and the girls' students of the experimental group. The reason for it can be that during the period of learning, they were more conscious as compared to others. The working memory of the experiment group students was more ameliorated as compare to control group students. With the help of Abacus learning, the activity of visualizes the things in the right hemisphere of the brain enhanced. The right hemisphere of the brain is responsible for better visualization (Tanaka, 2012). Similarly, Ku.Y.et al (2012) explored brain activity by EEG and fMRI. They found that while doing the calculations mentally students' visual motor activity of the brain increased. Therefore, with the aid of AMC students ability to imagine the things in their minds can be increased.

Thus, **H_{02}**, "There will be no significant difference between Control and Experimental group at post test level performance in Spatial Ability on primary school girls and boys students" stand rejected for the students of all four groups. As their performance was enhanced in contrast to their pre test level.

KEY FINDINGS OF THE STUDY

1. Students of experimental group with different age groups i.e. 7-8 years, 8-9 years, 9-10 years and 10-11 years manifested superb performance in spatial ability task. Mean values for the Spatial Ability of experimental group students came out higher as compared to the students of the control group. The reason for this improvement among experimental group students was learning through Abacus which affects their working memory and eases them to capture the images from their mind efficiently. Whereas, for the students of the control group it was noticed that they were unable to capture the images in their abstract thinking. Their capability to imagine the virtual image in the brain was poor as compared to the students of experimental group.
2. Students of different classes (3^{rd}, 4^{th} and 5^{th}) who were taught through Abacus method exhibited out of the ordinary scores in Spatial Ability in contrast to the students who were taught through conventional method of teaching. The capability of mental visualization among students of primary classes was enhanced through the Abacus method. However, the control group students did not bump into such an experience.
3. Performance of boys and girls students from both groups i.e. control and experimental at post test level was found improved. Boys of the experimental group showed

noteworthy improvement in their spatial vision as compared to others. After going to Abacus learning, they were more capable to retrieve the images in their mind. With the helping of this new innovative method i.e. Abacus they were more attentive and exhibited more interest in learning.

EDUCATIONAL IMPLICATIONS

1. The study revealed that Abacus is helpful for students holistic brain development. Abacus learning involves students attention and intention. So, it should be a vital part of the school curriculum.
2. It is recommended that suitable training should be given to in-service as well as pre-service teachers on the working of the abacus. It will help them to impart mathematical knowledge to the students.
3. It is a skill that permanently remains in their mind. It can be retained through regular use and practice.
4. Early implementation of the Abacus method at the initial level of learning helps the teachers and parents to prepare their children for the competitive world.
5. Many pieces of research proved that the effect of the Abacus is not limited to spatial ability area only. It supports the students to fabricate their interest in other domains also.
6. With the advancement of special ability, students' power to think virtual thoughts can be increased. It helps them further in better vocational.

CONCLUSION

Childhood is the stage when we can provide a strong base to a child's brain development. It is the time when their skills are on the path of underdevelopment. Therefore, it is imperative for the parents as well teachers to identify the strength and weaknesses of their child or students and try to improve them by providing suitable guidance. By improving the Spatial visualize ability of the students through the Abacus, we are allowing them to visualize the world precisely, modify their surroundings based upon their perception and rebuild the aspects of their visual experiences.

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Virtual Classroom Platforms for Effective Learning Experiences

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Abstract

There are quite a lot virtual classroom software that various organizations can deploy for isolated training or learning. They recommend functional features including easy course creation, live video conferencing, breakout sessions, recordings, data visualization and localization. These features are generally present like a face-to-face learning environment in a virtual context. Similar to the conventional method of teaching and learning, this system of online learning allow participants to offer the elements of personal interaction, which a live-time, face-to-face classroom can recommend. The online environment also imparts students and teachers with a degree of flexibility essential to prepare learners for educational and employment opportunities.Virtual class room platforms are however using a blended learning approach, including both face-to-face and online lectures that provided flexibility for the distant learners and learner-earners (students employed outside of their studies), numerous of whom worked in schools as teacher assistant as well as those who just preferred to work from home.

Key words: Virtual classroom, Virtual Platform, Online learning, Localization.

INTRODCUTION

Virtual classroom learning is now a well established and emergent practice in almost all educational organizations due to advancement in information communication technology (ICT). These platforms surpassed the barriers of space and time and made the students-teachers and parents stay connected from anywhere in and around the world. Odd as it may sound, one don't need to discontinue learning and training, all the credit goes to modern technology. Students as well as employees can leverage virtual classroom software and continue with their assignments and projects from home. For this, teaching community need to take lead and set up software applications so that learning doesn't stop.

What is Virtual Classroom Platform?

Before starting how to opt for the best virtual classroom platform for any institute, it's imperative to clear what virtual classroom software is? It implies that one should have clear

understanding of the difference between a video conferencing apps and actual virtual classroom software?

In video conferencing apps, one can join from anywhere with their webcam and share the screen. Is that a classroom? Is that the finest way to engage the learners? Probably not. Video conferencing apps facilitate some basic things, but they do not recommend the flexibility nor direction of purpose-built apparatus for online teaching like the best virtual classroom software.

How to opt the Best Virtual Classroom Platform?

People in training and development exploit online classroom platforms a lot more nowadays. Teachers in the K-12, higher learning and tutoring spaces have also stated their use of virtual learning platforms. So it becomes imperative to know how to choose the best virtual classroom software for a particular purpose?

For this one should have to to understand what is important to him, his facilitators or teachers, and his learners and students. The paramount way to do this is to first come up with the key stakeholders on what a person really need to convey an amazing learning experience. It is recommended to create a list of attributes that one absolutely "must have" along with a list of those characteristics that are "nice to have". Then start comparing the virtual classroom platforms that emerge across to see where they land. It's extremely important to test all preferred online classroom software before making a decision.

THE BEST VIRTUAL CLASSROOM SOFTWARE FOR ONLINE TEACHING

1. ProProfs Virtual Classroom

ProProfs virtual classroom software is the most simplest cloud-based application for executing online learning. As a versatile LMS with virtual classroom, one can use it to dispose diverse types of eLearning programs. Add admins, allow self-enrollment of learners, share courses, track progress - all from a single administrative dashboard. This virtual classroom software comes up with integral testing & assessment software such as Quiz Maker and Survey Maker.

Attributes:

- **User Administration**

Manage any number of learners from around world. Formulate multiple classrooms, initiate multiple groups, and assign different courses. Strengthen multilingual and localization support to teach in different linguistic regions.

- **Course Builder**

Easily construct a virtual classroom and put up online training courses, tests, and exams to gear up training or teaching. Utilize pre-existing material or choose from the ProProfs course library.

- **Self-Help**

Offer a self-help or self-service system inside the virtual classroom so that learners can by far find themselves the information they yearn for. Incorporate a knowledge base of FAQs, manuals, and help centers.

- **Reports & Analytics**

Get admittance to delightful learner reports and statistics. View details by individual, group, or course. Use these insights to improve participation, engagement, and course quality continually.

2. Electa Live

Electa Live is one of the other best online teaching and training software. Using it, one can generate his own online courses and tutorials, and systematize live online classes, lectures, and meetings. Here the host can interact and attend in online classes and web conferences. Both teachers and students can get the ultimate experience inside the Electa Live virtual classroom.

Attributes:

- **Screen-Sharing**

Easy screen-sharing feature take the virtual classroom experience to the next level with Electa Live. It Share contents on your screen with learners situated in distant places by using this platform.

- **Crystal Clear Audio**

Electa Live comes incorporated with multiple speakers that produce clear audio quality. Its refined VoIP functions even on low bandwidths. No extra charges for audio conferencing. All this makes Electa Live one of the best software for virtual teaching.

- **Online Polls & Surveys**

Add online polls and surveys with predefined answers to virtual classroom. Take regular opinion polls to determine what learners think about teaching method or the courses and perk up the process with their feedback.

- **Guided Web Tour**

Take learners to diverse websites on the internet. Make available the resources they necessitate and support them in learning. Navigation is easy and safe.

3. eTrainCenter

eTrainCenter provides all the tools one must have to create online virtual classrooms and connect with learners in real-time. One can connect in synchronized distance learning with audiovisual, online whiteboards, screen sharing, breakout rooms, and much more. Learners can converse with each other with the help of built-in instant messaging. Record live classes for quality control or documentation.

Attributes:

- **Test Chat & Session Notes**

Grease instant messaging or text chat with audio to facilitate communication. It helps to facilitate or stop text messaging in the online classroom.

- **Content Upload**

Upload PowerPoint slides and share documents, web pages and even the desktop on the fly with remote learners. One can also share YouTube videos all at the same time.

- **Live Video Sessions**

Improve virtual online classroom learning experience with live classes. Manage live group discussions and team meetings with video conferencing tools that run even on lower bandwidths.

- **Breakout Sessions & Recordings**

Divide a class into smaller groups with the help of breakout rooms. Let the learners collaborate and learn individually. Record live sessions for the purpose of quality control.

4. SAP Litmos

SAP Litmos is another cloud-based LMS for uninterrupted learning with a user base of more than 21 million. It combines classroom, virtual, mobile, social, and eCommerce in an spontaneous and secure platform. The task automation system permits users to deploy quicker and smarter corporate training, from course formation to assignment, tracking, and selling.

Attributes:

- **Anywhere, Anytime, Any Device**

SAP Litmos enables employees to learn anytime, anywhere, and on any device. It, therefore, caters to the ever-changing nature of modern workplaces and learner preferences.

- **Scalability**

SAP Litmos readily manages to accommodate a large number of participants. This enables one to train varied workforces at the global level. It offers unlimited flexibility in how to develop, administer, and deliver online learning programs.

- **Gamification**

SAP Litmos allows game elements in learning. Keep learners engaged and motivated with badges and points. Provide clear learning paths. Build a healthy competition among groups.

- **Rapid Implementation**

SAP Litmos deploys rapidly, in minutes to be exact. Whether someone want to use it as individual software or incorporate with other systems such as CRMs and ERPs. It ends up saving loads of time in getting the application up and running.

5. Edvance360

Edvance360 is a learning executive system with integrated characteristics that allow to create a virtual classroom easily. The virtual online classroom training software provides exclusive solutions for different markets - from K-12 education to corporate training. Intended with inputs from foremost educational experts, Edvance360 can be used to multitude modular courses.

Attributes:

- **Notification Agents**

Remind learners of overdue assignments or upcoming events. Inform them when they have updated a grade in their grade book. Guarantee ongoing learning conformity and achieve better results.

- **Mobile Version**

Edvance360 provides free mobile apps for both Android and iPhone users, making it one of the best free remote classroom software. This helps them access the whole Edvance360 platform. Fundamental virtual classroom apparatus such as email, calendar, alerts, and social network come equipped with the mobile version.

- **Real-Time Chat**

One will find real-time chat across all training types and communities. The chat logs are involuntarily saved and can review them easily. Unlike other LMSs, Edvance360 chat enjoys full ADA compliance features; including ensuring that readers do not start over from the beginning of the chat every time a user submits a chat.

- **Calendar**

Each participant can administer their own personal calendar. Any items programmed on a training calendar automatically displays on the homepages of the administrators. One can also create system-wide calendars or calendars for selected groups of people only.

6. Blackboard Collaborate

For a simple and reliable online classroom solution, Blackboard Collaborate is best to use. It can help meet up all online teaching and web conferencing needs. A vigorous toolset enables to unite with one learner or an entire class. On-demand learning and the ability to reach out to learners, no matter where they are, characterized Blackboard Collaborate. It, thus, serves as one of the best in-house and remote classroom software.

Attributes:

- **Learning Management System**

Blackboard classroom provides a high-tech learning management system and online classroom platform for easiness of learning & development administration. It is driven by the needs of K-12 students and supports competency-based, personalized, and mastery learning.

- **Integrations**

The virtual classroom software supports flawless integration with numerous productivity tools that teachers and corporate trainers frequently use. They include Dropbox, OneDrive, Google, and any other tool of their choice.

- **Personalized Learning Designer**

Set up custom-made learning paths for each student. Offer exclusive learning experiences based on their performance. Make out learners who are struggling with mastering a particular topic and organize an robotic remedial plan.

- **Analytics & Data Visualization**

Integrated analytics and data visualization assist teachers and training administrators in making data-driven L&D decisions. They can follow and scrutinize classroom learning with ease.

7. WizIQ

WizIQ is one of the world's largest, cloud-based virtual classroom software platforms. More than 400,000 educators use it to deploy different learning services. Bring in live teaching or training by utilizing HTML5 Virtual Classroom based on WebRTC. The classroom is suitable for enterprises, teachers, trainers, colleges, universities, and test prep companies.

Attributes:

- **High-Definition Video Conferencing**

Organize video conferencing with a high-quality audiovisual system. Bring alive online classroom experience with a 5-way audio-video layout and inherent speaker recognition on a full-screen conference mode.

- **Integrated Library**

The integrated library at WizIQ supports all types of files. Upload, organize, and store any content in the cloud. Allows learners access them from anywhere and at any time. Eliminate the hassle of physically carrying or transferring data.

- **API and Plugins**

API and Plugins from WizIQ permit integrating any website to the live class functionality. Deliver live classes right from LMS. Allow learners register in to the integrated system using a single ID and password.

- **Easy Administration**

Use any browser to admittance WizIQ virtual classroom software. Administer learning or training activities for live sessions easily. Allot roles and permissions to attendees and manage classroom sessions with powerful in-class features.

8. LearnCube

LearnCube is an immense solution for online schools and teachers. It’s ideal for connecting instructors with learners who live in remote areas. Some call it the Skype for online teaching. It is one of the best online classrooms and people use it for tutoring, teaching, and training.

Attributes:

- **Download-Free**

Deliver quality audio video through the real-time communication framework WebRTC. People no longer need to download software applications and spend time teaching learners how to use them.

- **Interactive Whiteboard**

Make use of interactive and modern whiteboards for collaborative learning. One can type in, draw, and load content easily on the whiteboard.

- **Video Recording**

Record live classroom sessions. Both instructors and learners can revert to them for review purposes. This way, one can improve their teaching quality and learning styles.

- **Custom Branding**

LearnCube permits to white-label the virtual classroom with logo, color, and domain. This is significant since a generic online classroom software doesn't offer much support for branding.

9. VEDAMO

VEDAMO is an eLearning platform in the cloud developed in association with professors and researchers from various universities. Exclusively designed to meet the requirements of distance education, this remote classroom platform offers an inclusive solution for creating, administrating, and managing online educational services. The interactive classroom makes a useful tool for effective online tutoring.

Attributes:

- **Live Online Classes**

Carry out live online classes regardless of where the learners are located. Interact with them just like in a real, face-to-face classroom.

- **Online Academy**

Create one's own online academy to manage learners, courses, and content. Offer training to university students and professionals.

- **Online Whiteboard**

Share all kinds of resources on the whiteboard and discuss them with learners during live sessions. Engage the participants in different collaborative activities with the help of the tool.

- **Breakout Rooms**

Create sub-rooms within the online learning session for virtual classroom training. Interact with participants in the main virtual classroom, and assign small individual tasks in the breakout rooms.

10. Adobe Connect

Adobe Connect is a web conferencing and desktop sharing software useful for creating online training modules and collaborative learning experience. It is the most feature-rich, extensible, and secure web conferencing product on the market. The virtual classroom provides solutions for rapid training anytime, anywhere, and on virtually any device.

Attributes:

- **Mobile Learning**

Train learners on any of the popular mobile devices with this online teaching software. Host, share files, and use whiteboards on the go; no need to tie yourself to a desktop. Promote learner experience-driven learning.

- **Persistent Room**

Create virtual classroom once by choosing the right layouts, content, whiteboard, chat, and note, and reuse it repeatedly. Room templates ensure easy and quick setup of the rooms. One can easily reset a room for the next training session.

- **Engaging Content**

Rapidly create and share content using online authoring tools including Adobe Captivate and Adobe Presenter. Add quizzes and simulations to the virtual classrooms. Manage immersive learning using backstage tools.

- **Extension Offerings**

Widen the core capabilities of Adobe Connect by integrating with learning management system, convention meeting pods, advanced authentication systems, and more.

CONCLUSION

Commencing anywhere across the globe, learners are one just one click away from learning with their fellow being. Virtual classroom platforms will offer a chance to keep everyone focused and occupied with high quality, real time audio and video, and suites of two-way tools to help a learner transport diverted viewers into more active learners. When a person is aware of what are his desires and what he actually want, then it makes it easier for him to discover these platforms as well as others with a consistent perspective. It must be keep in mind that the best virtual classroom software for online teaching is going to provide you not only a reliable experience, but it's going to give pleasure to your facilitators and learners. Education is believed to be engaging and fun, collaborative and interactive. Choosing the right virtual classroom software for any association is going to enable that association to transmit knowledge to his learners more efficiently and create more booming outcomes.

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Educational Leadership: Barriers and Remedies

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Abstract
Educational leaders' roles are seldom well defined. Principals often regard teacher leaders as a source of extra help in a school that is strapped for human resources. As a result, many teacher leaders spend their time as apprentices or assistants in administration—supervising the cafeteria, subbing for absent staff, or overseeing the logistics of testing—rather than using their instructional expertise to improve teaching at the school. Although some currents buoy concepts such as decentralization and professionalism that undergird shared leadership, equally powerful, if not stronger, currents support the movement to centralization and to the hardening of the hierarchical forms of schooling that "are having a challenging effect on the teaching profession and on the inclination and ability of teachers to assume broad leadership within their schools." School culture in which classroom teachers are fully empowered partners in shaping policy, creating curriculum, managing budgets, improving practice, and bringing added value to the goal of improving education for children"

Keywords: *Barriers, Educational Leadership, Remedies etc*

Educational leadership is usually the responsibility of school administrators and principals, who strive to create positive change in educational policy and processes. They are trained to advance and improve educational systems and create and enact policies. Educational leaders focus on improving educational programming. They hire and manage teachers and staff, prepare budgets, set curriculum standards and set school-wide policies. Typical positions for educational leaders in administrative settings are:

- Principal
- Superintendent
- Academic Dean
- Director
- Head of school
- Department Chair
- Provost

- President

Educational leadership draws upon interdisciplinary literature, generally, but ideally distinguishes itself through its focus on pedagogy, epistemology and human development. Numerous educational leadership theories and perspectives have been presented and explored, such as: (a) Instructional Leadership; (b) Distributed Leadership; (c) Transformational Leadership; (d) Social Justice Leadership; and (e) Teacher Leadership. Educational leadership refers to the type of leader or style of leader based on essential elements such as capabilities, practices, and approaches. The three components help in understanding leadership types as a theory.

Characteristics of Educational Leadership	**Concepts of Educational Leadership**	**Activities or Practices of Educational Leaders**
Behaviors, Styles, Leadership traits,	Management vs. Leadership, Power, Coercion, Conceptual frameworks	Approaches, Ways of Leading

Educational leadership is a collaborate process that unites the talents and forces of teachers, students and parents. The goal of educational leadership is to improve the quality of education and the education system itself. The primary purpose of educational leadership is to ensure academic success through process, material and training improvements.

KEY PRINCIPLES FOR EDUCATIONAL LEADERSHIP

1. Educational leadership creates a vision of academic success for all students. This is important because there has always been a historical gap between students on different socio-economical levels and high and low achieving students.
2. Educational leadership strives to maintain a safe and receptive learning environment. That is, a healthy school environment provides comfortable, orderly and structured classrooms.
3. Educational leadership delegates responsibility to others. This means that teachers, parents and even students are empowered to take responsibility and accept accountability.
4. Instructional methods and curriculum content must be continually improved.
5. The field of education must borrow and adapt modern management tools, processes and techniques.

Educational leadership is the science of helping students achieves academic success through managing and improving educational programs. Educational leaders work with students of all ages and strive to help them reach their academic goals. Overall, competent and dedicated professionals are needed to provide excellent educational leadership in schools across the country. The barriers were determined by collecting data in each school community in six ways:

1. Individual and small group interviews
2. Total staff meetings
3. Focus group meetings
4. Classroom observations, campus wide monitoring, and shadowing the principal
5. Examination of school improvement plans and student achievement data at each school
6. Data from training, providing technical assistance, or coaching site administrators and teachers in some of the schools

The following words introduce in a nutshell the major areas requiring improvement in these low-performing schools:

1. Leadership
2. Support
3. Planning
4. Curriculum, instruction, and assessment
5. Data utilization
6. Attitudes
7. Conflicts
8. School climate
9. Accountability

Ten Barriers In Five Categories

Category Weak Instructional Leadership

Barriers Principal doesn't successfully engage staff in developing consensus on school vision, mission, goals, objectives, culturally responsive standards, plans with benchmark indicators, or efforts to improve sense of efficacy regarding the

	achievement of equity
	Insufficient time spent on classroom observation, and few efforts to address instructional areas needing improvement, except when it is time for annual evaluations
Category	**Insufficient Support for Instructional Staff**
Barriers	District staff provide little training or assistance to school site administrators or designated teacher leaders on strategies for improving instructional performance with underachieving students of color
	Districts provide limited training or guidance for school site staff who teach special needs students (not special education) significantly below grade level, and no help to site administrators on how to improve school climate/work environment
Category	**Teaching Problems**
Barrier	Many new and veteran teachers demonstrate low expectations, their students have low time on task and student engagement; students' life experiences not tapped; even when on task, many students do not understand what they are doing, why they are doing it, or what successful efforts would look like
Category	**Toxic School and School Community Climate**
Barriers	Teacher conflicts among staff at same grade level, within same department or school wide, negatively impact cohesion and morale; there is a lot of within- and across-group distrust and/or fear among certificated, classified, and parent stakeholders
	Stakeholder strengths not adequately utilized and staff input not sought on major decisions affecting them; communication, collaboration, problem solving, and conflict management not facilitated within/across stakeholder groups
	Administrators and staff do not proactively reach out to parents on a regular basis unless their children are in trouble; parents are generally not viewed as partners, and their leadership is not nurtured

Category	**Limited Accountability**
Barriers	Few efforts by administration to increase staff 's sense of urgency and commitment; many teachers have a low sense of efficacy (i.e., belief in their ability to teach all students to high levels); some teachers do not follow through on district/site initiatives or directives related to improving instruction, and experience no consequences Students' socioeconomic status, parent values, the district administration, board of education, or state politicians are frequently blamed for low student achievement, with no personal responsibility taken

BARRIERS FOR EDUCATIONAL LEADERSHIP

In the absence of any professional framework or established set of differentiated responsibilities to provide guidance or legitimacy for their roles, Educational leaders' offers of advice often strained their relationships with other teachers. When no established process existed for choosing leaders, colleagues often saw appointments as acts of favouritism by the principal. They raised objections on the basis of claims of seniority, the default mechanism for distributing special rights and privileges among teachers. No amount of skill, enthusiasm, or determination in these educational leaders could fundamentally change the structure of schooling or culture of teaching. Multiple issues that could all be considered valid barriers to effective school leadership:

- Unclear roles at the board or administrator level
- Failure to make a distinction between governance and management
- Failure to define and demand excellence from both board and staff leaders
- Failure to intentionally mentor leaders for the future
- Failure to define how the desired results of the temple, home, and school differ
- Failure to discipline ourselves to consistently think about preparing our students for the future rather than the present or the past
- Failure to create a challenging yet supportive environment for learning
- More and more tasks have been added to school leaders' workload.
- Most of the leadership tasks are carried out by one individual
- Insufficient preparation and training
- Principals don't have time to get into classrooms because they spent far too much time in their offices "*doing discipline.*

- Leadership has been seen as going to the dark side.

REMEDIES FOR EDUCATIONAL LEADERSHIP

Educational leadership introduces important changes in the work of individuals and essential transformations in relationships in schools. In addition to new structures, it requires a web of supporting conditions to take root and blossom. Educational leadership under six broad dimensions: (1) values and expectations, (2) structures, (3) training, (4) resources, (5) incentives and recognition, and (6) role clarity

1. Healthy Relationship: Principals' efforts alone will not enable teacher leaders to succeed. The success or failure of teacher leaders will depend on their relationships with their colleagues. Teacher leaders need professional development that prepares them to respond to colleagues' resistance respectfully while helping these teachers improve their practice.
2. Supporter: Principals can build support for a teacher leader's role by explaining its purpose, establishing qualifications and responsibilities, encouraging applicants for the position, and running a fair selection process. They can work with the schedule and available resources to incorporate the work of teacher leaders into the structure of the school and provide common planning time, substitute coverage for peer observations, and use of faculty meetings for professional development. They can guarantee that teacher leaders are not diverted to take on administrative tasks. Because school culture is so crucial to the success of these roles, teachers must see the principal's practices and priorities as reinforcing a new set of norms that promote collaborative work, bridge classroom boundaries, and recognize expertise.
3. Avoid Provoking: The coping strategies often helped educational leaders avoid provoking other teachers' fears, deflect opposition, and diminish tensions when they arose.
4. Supervisor: Educational leaders are expected to make periodic classroom visits and advise fellow teachers about their practice. But this model does little to change business as usual. The classroom teacher remains isolated and in charge, while the teacher leader arrives only occasionally as a visitor.

5. Leadership is not the dark side: It is actually a great opportunity to create relationships with students, staff and families, as well as raise our own self-efficacy, and build collective efficacy among others.

CONCLUSION

Leaders in low-performing schools did not attempt structural and cultural changes contributing to equity as part of their instructional leadership role, and some did not have the discretion to undertake such initiatives because of district-level micromanagement. Teacher leadership was very unevenly nurtured and utilized to help achieve school goals. Most administrators were preoccupied with just maintaining the semblance of an orderly environment. Educational leaders whom interviewed coped with a traditional school organization and a teaching culture that prized and protected norms of egalitarianism, seniority, and autonomy. The role of educational leaders must be introduced deliberately and supported fully. Informal roles with unpredictable funding will never be taken seriously. To be viable, the role of Educational leaders must have well-defined qualifications, responsibilities, and selection processes. True leadership requires the ability to create and maintain an environment where others can succeed. This means you have to get out of the way and let your team do its work.

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