# "Impact of multimedia and e-education on the academic performance of school going children"

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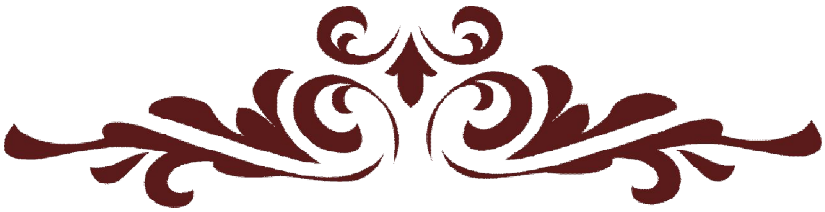

# *THIS THESIS IS DEDICATED TO MY FAMILY & MY SU-PERVISOR*

# CANDIDATE'S DECLARATION

I**,** hereby declare that this doctoral work entitled **"Impact of multimedia and e-education on the academic performance of school going children"** submitted by me under the supervision of Prof. Sunita Mishra**,** Dean**,** School for Home Science, Department of Human Development and Family Studies, Babasaheb Bhimrao Ambedkar University, Lucknow . It is an outcome of my noble and original research work. I also declare that thesis or any part of thesis has not been previously submitted to any other degree to this or any other university and also undertaken that the thesis is essentially free from all kinds of plagiarism.

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# CERTIFICATE

This is to certify that the thesis titled **"Impact of multimedia and e-education on the academic performance of school going children"** submitted by **Ms. Chanchal Rana** is an original research work and has not been previously submitted in part or full for the award of any other degree or diploma to this or any other university.

The thesis submitted to Babasaheb Bhimrao Ambedkar University, Lucknow satisfies all the requirements as stipulated in the *Doctor of Philosophy (Ph.D) regulations -1999 as amended in 2008/2010/2013* and it is fit for submission and evaluation for the award of the degree of Doctor of Philosophy of the University.

Date:

Supervisor

Head of the Department

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The award of degree Doctor of Philosophy is one of the hardest deserving achievements. In this regard, I am grateful to the University and express my deep sense of gratitude to its **Hon'ble Vice-Chancellor** for delivering this great opportunity to me.

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# ABSTRACT

This study focused on the impact of multimedia e-Education on academic performance. The study relates to school children's delivered using traditional lectures and multimedia and e-Education based methods. Multimedia and e-Education has been revealed in this study have a positive impact on academic performance contrary to the expectations of this study.

The paper also examines the data for the presence of interaction effects between multimedia e-Education study hours and socio-demographic characteristics. This is undertaken to identify whether or not personal-characteristic-related learning style differences influence the extent to which students benefit from multimedia and e-Education. It is found that, after controlling for other factors, students benefited less from other teaching material than benefited more by multimedia and e-Education.

The methodology that was employed in this study was systematic random sampling for students under traditional study mode and purposive sampling in identification of students under the e-learning study mode. It is concluded that in order to improve teaching effectiveness and academic performance, students should consider aiming to develop multimedia e-Education teaching strategies that encourage greater engagement and also take into consideration the different learning styles found within the student body.

The study recommends that critical factors such as institutional issue, management issue, pedagogical factors, technological issue, interface design issue, evaluation issue, and resource support issue and the factors within each issue have not yet been investigated with detail coverage. It further suggests that there is need to carry out detail research involving student's performance based on survey questionnaires involving various learning institutions which will ultimately give a better understanding of impact of multimedia and e-Education aspects within implementation process.

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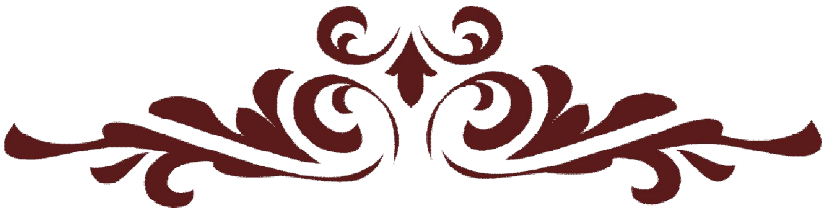


# CHAPTER-1
# INTRDUCATION

# CHAPTER -1

# INTRODUCTION

## 1.1 Background of the Study

***"Education is the most powerful weapon which you can use to change the world"***

**(Nelson Mandela)**

The importance of education, especially in developing nations, is expending because of progressing pressure to make up with the created world regarding, for example, global competitiveness (Hawkins, 2002).

**Man has strived for excellence in all spheres of life. This desire has given birth to new inventions and innovations in all walks of life. The world of education has also been influenced by an increase in the use of technology (Bruce & Levin, 2001).**

Consistently, a greater amount of the world's people turned out to be connected to the network, its transfer speed increases and its utilization becomes more coordinated to everything that in the globe. Connectivity to this network has ends up key to opportunity, achievement and fulfillment for people. Much the same as technology has changed the world, it is presently changing the learning and teaching environment **( Owino Stephen Odhiambo , 2013).**

However, in the context of education, technology also refers to the process of applying the tools for educational purposes. In other words, "educational technology is a combination of the processes and tools involved in addressing educational needs and problems, with an emphasis on applying the most current tools: computers and their related technologies" **(Roblyer & Edwards, 2000).**

A broad scope of learning approaches exists as of now, which use data and information communication technology (ICT) **(Owino Stephen Odhiambo , 2013).** ICT is a various arrangement of

technological instruments andassets used to convey, and manage data. **(Admin & Kpangban, 2010; as cited in Shilpa Singh, 2016).**

It is not just include hardware devices associated with computers, and software applications, yet in also interactive computerized substance, web and other satellite communication devices, radio and television services, web based content repositories, interactive forums, learning administration frameworks, and management information systems. **(National Policy on Information and Communication Technology (ICTs) in school education, MHRD, 2012 as cited in Shilpa Singh , 2016).**It is currently considered as critical to "modernize educational frameworks based on information and communication technologies"(**UNESCO, 2002; as cited in Orhun, 2003).**

Multimedia and e- Education signifies the utilization of ICT by teachers and learners **(Owino Stephen Odhiambo, 2013).**The explosion of multimedia devices in light of the development of a quicker and more proficient world wide web has prompted to the profusion of multimedia devices and learning objects in the educational environment. While it gives that the expansion of multimedia exercises to e-Education is beneficial and can help with making material accessible to a extensive scope of learning. This electronic media content is frequently delivered via the Internet by personal computer. Moderately new type of educational technology that means to transform educational substance into an entertaining and interactive experience **(Mast Kimberly; as cited in http://hdl.handle.net/10150/556151)**.

There is little systematic investigation into the general effectiveness of e-education as a learning medium despite the great enthusiasm for it. It recognizes that while there is much more work to be done, an variety of e-education courses aimed for making sustainable development a reality have been created and exhibit how e-education can achieve thousands if not a millions of minds and potentially plant the seeds of change **(Stephenson, 2001).**

## 1.2 Multimedia and e-Education

Students learn in many different ways. Some are visual learners, while others are auditory or kinaesthetic learners. Visual learners learn visually by means of charts, graphs, and pictures. Auditory learners learn by listening to lectures and reading. Kinaesthetic learners learn by doing. Students

can prefer one, two, or three learning styles. The VAK learning styles suggests that most people can be divided into one of three preferred styles of learning. These three styles are as follows, (and there is no right or wrong learning style) **(Abbas Pourhosein Gilakjani, 2012):**

**Visual :** visual learning style has a preference for seen or observed things, including pictures, diagrams, demonstrations, displays, handouts, films, flip-chart, etc **(Abbas Pourhosein Gilakjani,2012).**

**Auditory:** auditory learning style has a preference for the transfer of information through listening: to the spoken word, of self or others, of sounds and noises **(Abbas Pourhosein Gilakjani, 2012).**

**Kinesthetic**: kinaesthetic learning style has a preference for physical experience - touching, feeling, holding, doing, practical hands-on experiences. People commonly have a main preferred learning style, but this will be part of a blend of all three. Some people have a very strong preference; other people have a more even mixture of two or less commonly, three styles. There is no right or wrong learning style. The point is that there are types of learning that are right for our own preferred learning style **(Abbas Pourhosein Gilakjani,2012).**

Learning is an individual activity characterized by internal mental processes; learning is mediated by intrapersonal dialogue; learning is facilitated by interpersonal dialogue; dialogue is enabled by structural and human resources; and that dialogue and learning outcomes are related. Dialogue in their model could be face-to-face or mediated by either synchronous or asynchronous media.

Five self-regulatory attributes are seen as especially important for slearner (on-line) success. They are: motivation which incorporates self-efficacy and goal orientation; Internet self-efficacy; time management; study environment management; and learning assistance management **(Lynch & Dembo, 2004)**.A high sense of self-regulatory efficacy enhances task performance efficacy, which in turn motivates further self-regulation in pursuit of further academic attainment. Self-regulated learners also are aware of the important role other people, either peers or teachers, can play in their learning **(Hara & Kling, 2000).**

A multimedia product is a combined use of several media as text, images, audio and full motion video to present information in computer application. It means that any other media where every type of information can be represented, stored, transmitted and processed digitally through words, pictures, sounds and motion videos in addition to traditional media (i.e. Text, images, audio and video).Text, images, audio and video are known as multimedia components. The combination of these components is multimedia.

**Text** gives the vital information. Text acts about as the keystone tying the majority of the other media components together. It is well written text that makes a multimedia communication wonderful **(Young, 2002; as cited in http://eprints.ibu.edu.ba).**

**Sound** is utilized to provide emphasis a transition from one page than on to the next. Sound synchronized to screen show, empowers teachers to present lots of information at once. An extraordinary advantage is that the sound doccument can be stopped and begun effortlessly. (**Young, 2002; as cited in Deniz Ekinci et.al. 2009).**

**Video** is representation of data by utilizing the representation capacities of video can be prompt and ground breaking. While this is not in doubt, it is the capacity to pick how we see, and associate, with the substance of computerized video that gives new and energizing potential outcomes to the utilization of digital video in education **(Young, 2002).**

## 1.3 Multimedia

**"Multimedia is the use of variety of imaginative and communicative medium."**

**"Multimedia system endeavor to take the best favorable position of human sense in order to facilitate communication" ( Blattner and Dannenberg ).**

Communication is the fundamental need of human beings. Human share their feelings, emotions views with someone and in return they seek some from others .communication is not just about dispensing the information. The information has to be communicated received and understood by the receiver and also should be allowed to take part in the process directly. It is a continuous

process till the objectives are achieved. Communication has mainly three parts namely source, destination and medium.

According to Von Wodtke 1993 **"Includes the integration of more than one medium into some type of communication….Most commonly, however, this term presently refers to the incorporation of media ,for example text, sound, graphics, animation, video, imaging, and spatial demonstrating into a computer system" (Jonassen, 2000 ;as cited in http://eduscapes.com).**

As the name implies, interactive multimedia is the joining of numerous types of media. This incorporates words (for example; spoken text or printed text) and pictures (for example; photos, animation, illustrations, and video). Multimedia is more than one concurrent presentation medium (for e.g. on CD Rom or a website).although still images are a different medium than text.web pages often contain multimedia element of different types and formats.

## 1.3.1 Definition of multimedia

| ***TERMS*** | ***DEFINITION*** |
|---|---|
| **Multimedia** | Presenting words (for example; printed message or spoken message) and pictures (for example; illustrations, photos, animation, or video) |
| **Multimedia learning** | Building mental portrayals from words and pictures. |
| **Multimedia instruction** | Presenting words and pictures that are planned to advance learning. |

***Source: https://slideplayer.com***

The term multimedia conjures up a variety of meanings. You might think of sitting in a room where images are presented on one or more screens and music or other sounds are presented using speakers – that is, multimedia as a "live" performance. Alternatively, you might think of sitting in front of a computer screen that presents graphics on the screen along with spoken words from the

computer's speakers – that is, multimedia as an online lesson. Other possibilities include watching a video on a television screen while listening to the corresponding words, music, and sounds, or watching a PowerPoint presentation along with listening to the speaker's corresponding commentary **(Richard E. Mayer; as cited in http://assets.cambridge.org).**

## 1.3.2 Multimedia Learning

Multimedia learning happens when individuals build mental representations from words (for example; spoken text or printed text) and pictures (for example; graphics, photos, animation, or video).

As we known human mind has double channel and they separate information, processing channels for visual and verbal materials. These channels have limited capacity. For active processing: learning requires generous cognitive processing in the verbal and visual channel. Multimedia is to make; boost the utilization of both channels, balance the processing load of both channels, utilize one channel to share the burden of the other, prime related ideas and information to structure learning, thus learning through understanding, learning by doing, learning while enjoying learning when you have to know at using Multimedia framework **(Young, 2006; as cited in eprints.ibu.edu.2009).**

## 1.3.3 Multimedia Instruction

Multimedia instruction (or a multimedia learning environment) includes presenting words and pictures that are deliberated to help learning.In the 1980s and 1990s, the concept of multimedia took on a new meaning, as the capabilities of satellites, PCs, sound and video converged to make new media with enormous potential. Combined with the advances in hardware and software programming , these innovations were able to provide enhanced learning facility and with thoughtfulness regarding the particular needs of individual users (**http://eprints.ibu.edu.ba 16/09/2018).**

The educational quality of multimedia is that it utilizes the natural information processing capabilities that we already possess as humans. Our eyes and ears, in related to our brain, form a imposing system for changing meaningless sense data into information. The old saying that "a picture is

worth a thousand words" frequently understates the case particularly concerning moving pictures , as our eyes are profoundly adjusted by advancement to identifying and deciphering movement **(Sherin, 2002; as cited in http://eprints.ibu.edu.ba 16/09/2018 ).**

Yet the preceding situation seems to have been the inspiration for a number of so-called "multimedia" educational products that take little advantage of the many aspects of the combination of images and sounds to bring about an effective educational experience. The use of multimedia technology will not magically transform these previously mentioned instructors in to master teachers. Instructors who effectively use existing aids such as films, slides, videos, audiotapes, overhead projectors, and so on, will welcome the multimedia advantage of combining different media into one package **(multimedia sound & video, José Lozano 1988)**

### 1.3.4 E-Education

The term ―E-Education‖ refers to the application of internet technology to the delivery of the learning experiences (**Grimes, 2009).** E-learning can be very stimulating with the use of various new multimedia technologies; the Internet can be used to improve the quality of learning by facilitating access to resources and services, as well as remote exchange and collaboration **(Alonso, Lopez, Manrique, & Vines, 2005).**

E-education is electronic mode of knowledge and skill transmission. The concept computerized teaching and learning have given birth to computer-aided instruction (CIA). This process represents the combination of both knowledge and skill impartation. Access to electronic materials through the internet is flexible, ensures broad feasibility and accessibility of educational opportunities **(Yeleye Olusegun OAdesanya , Uche Kingsley, Idogwu).**

**E-education can be defined in terms of communication, interaction and collaboration tools with less emphasis on the information and more on the delivery of the information. The exchange of information and interaction between students and instructors that utilizes computerized communication systems as an environment for communication is also defined as e-education (Bermejo, 2005).**

In e-learning framework, students are able to interact anytime from wherever with various instructional material (text, sound, pictures, video etc.) through internet. Moreover learners can communicate with educator and classmates both individually and as a group discussion with the utilization of message boards, instant message exchanges and video conferencing **(Al-Ammari and Hamad, 2008).**

**E-education just as learning and communication practice across computers and networks or so for as that concerned some other electronic sources (Roffe, 2002; Schank, 2002; and Sambrook, 2003).**

The delivery method for e-education utilizes either asynchronous communication or synchronous communication **(Murphy, Rodriguez- Manzanares, & Barbour, 2011).**

Asynchronous online teaching involves students working on a prescribed curriculum with the aid of an instructor's. The tools that can support this form of communication include pre-recorded lectures, e-mail, discussion forums, on-line quizzes and tests, and social media such as blogs or wikis.

Synchronous communication or synchronous e-education relies on videoconferencing, audio conferencing, and/or online discussion **(Bernard et al., 2004)**

## 1.4 Theoretical Framework

The focal point of this study is based upon the different learning styles theories of multimedia and e-education learning, and how students gain information in an unexpected way. Cognitive theory, facilitation theory and constructivist theory are three famous information process and learning theory concepts which are used as a representation as a scientific categorization for learning.

According Eccles (1999) developing a system of best practices worked around these learning theories can help instructors in encouraging improved student readiness and instruction presented within multimedia and e-education environment of higher education.

Information processing theories described human brain as similar to a computer and human learning as similar to how computer processes information (Chandler & Sweeler, 1991). There are three main storage structures in the memory system:

- Sensory register, which registers stimuli in the memory system
- Short-term memory (STM), which serves as temporary storage
- Long-term memory (LTM) where information is permanently stored

Short-term memory can only hold five to nine chunks of information (Miller, 1956) before it is processed in LTM. Not all the information stored in the LTM can be retrieved. Retrieval is more likely when appropriate cues are provided in the encoding process **(Driscoll, 1994).**

### 1.4.1 Cognitive Theory

Cognitive theory offers three theory-based assumptions about how individuals learn from words and pictures: the double channel assumption, the limited capacity assumption, and the active processing assumption.

**Dual Channel Assumption**. To start with , the human cognitive system comprises of two distinct channels for representing and manipulating knowledge: a visual-pictorial channel and a sound related -verbal channel **(Baddeley, 1986, 1999; Paivio, 1986).**

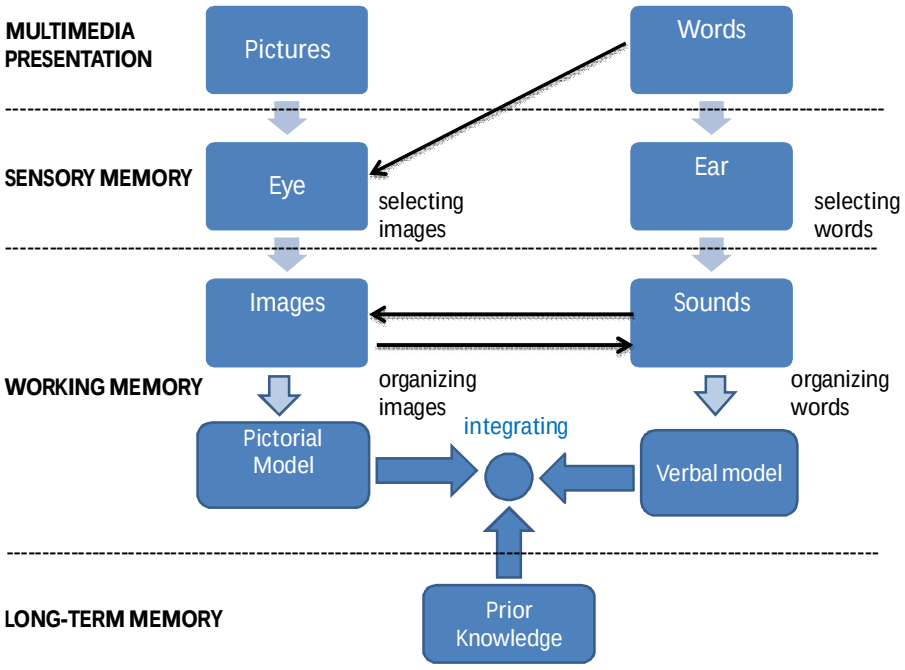
**Limited Capacity Assumption.** Each channel in the human intellectual system has a constrained limit with respect to holding and manipulating knowledge **(Baddeley, 1986, 1999; Sweller, 1999).**

**Active Processing Assumption.** Meaningful learning happens when students take part in active processing inside the channels, including selecting applicable words and pictures, arranging them into coherent pictorial and verbal models, and coordinating them with each other and appropriate information **(Mayer, 1999, 2001; Wittrock, 1989).**

### 1.4.2 Mayer's cognitive theory

Mayer's cognitive theory of multimedia learning which underscores that learners comprehend more deeply from words and pictures than from words alone. Nevertheless, simply including words to graphics is not an operative way to achieve multimedia learning.

Cognitive theory of multimedia learning and cognitive load theory give information about learning from words and visuals. According to these theories suggested, there are two distinct channels in the human information processing system, one of them processes information presented in a visual format and the other processes information presented in an auditory or verbal format **(Issa et al., 2011).**




***Source: Reprinted from Figure 3-2 in Mayer (2001).***

The cognitive theory of multimedia learning is best exemplified in this figure. Theory of multi-media learning based on these three basic ideas about how the human mind works. The right column of the figure represents the auditory-verbal channel and the left column the visual-

pictorial channel. Words enter the cognitive system through the ears (if the words are spoken), and pictures enter though the eyes. In the cognitive process of selecting words, the learner pays attention to some of the words, yielding the construction of some word sounds in working memory. In the cognitive process of selecting images, the learner pays attention to some aspects of the pictures, yielding the construction of some images in working memory. In the cognitive process of organizing words, the learner mentally arranges the selected words into a coherent mental representation in working memory that we call a verbal model. In the cognitive process of organizing images, the learner mentally arranges the selected images into a coherent mental representation in working memory that we call a pictorial model. In the cognitive process of integrating, the learner mentally connects the verbal and pictorial models, as well as appropriate prior knowledge from long-term memory. The verbal and pictorial models, as well as appropriate prior knowledge from long-term memory.

Visuospatial thinking is involved in this process of knowledge construction mainly through the processes of selecting images, organizing images, and integrating. Verbal thinking is involved through the processes of selecting words, organizing words, and integrating. According to the cognitive theory of multimedia learning, meaningful learning occurs when learners engage in appropriate verbal and visuospatial thinking, as indicated by all of the cognitive processes summarized in Figure 6.2.

In education, verbal modes of instruction have traditionally played a larger role than pictorial modes of instruction. Verbal modes of instruction are based on words and include spoken text (such as lectures and discussions) and printed text (such as the text portion of textbooks or on-screen text). Pictorial modes of instruction are based on pictures and include static graphics (such as photographs, illustrations, figures, and charts) and dynamic graphics (such as animation and video). In spite of the disproportionate emphasis on verbal forms of instruction, advances in computer graphics and the proliferation of pictorial representations on the World Wide Web have led to an increasing interest in exploiting the potential of pictorial forms of instruction as aids to meaningful learning (Pailliotet andMosenthal, 2000).

### 1.4.3 Constructivism Theory

Constructivism is the theory that people construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences. When learners encounter something new, they reconcile it with previous knowledge and experience. They may change what they believe, or they may discard the new information as irrelevant. In the classroom, the constructivist view of learning means encouraging students to use active techniques such as experiments and real-world problem solving using authentic data if possible, and to create knowledge and reflect on their understanding.

Constructivism modifies the role of the teacher so that teachers help students to construct knowledge rather than reproduce a series of facts. The constructivist teacher provides tools such as problem-solving and inquiry-based learning activities like in e-learning setup so that students can formulate and test their ideas, draw conclusions and inferences, and convey their knowledge in a collaborative learning environment. The teacher must understand the students' preexisting conceptions and guide the activities to address this knowledge and then build on it. Constructivist teachers encourage students to assess how the activity is helping them gain understanding. By questioning themselves and their strategies, students become expert learners as they learn how to learn, with the use of computers online and/or offline. The students then have the tools necessary to become life-long learners.

The teaching-learning method in e-education is assumed to be self-directed learning (SDL), which is supported by the educational philosophy of constructivism. According to constructivism theory, e-education is an active information process because knowledge generation is accomplished through individual experience, maturity and interaction with one’s environment.

### 1.4.4 Facilitation Theory (The Humanist Approach)

Learning theory developed by Carl Rogers. One of the basic premises of this theory is that learning is possible because human beings have a "natural eagerness to learn" and they are responsible for and at the center of the learning process (person-centered learning). E-education is possible only

because individuals signed up in it are self-driven and eager to learn despite their location in relation to learning institutions. The role of the teacher is to act as a facilitator- no amount of effort on the part of the teacher can guarantee success, unless the learner has a desire and predisposition to learn.

Rogers's Facilitation Theory is the notion that learning involves changing one's self-concept. Such changes may involve discovering one's strengths or weaknesses. Learners in the e-learning setup have to perceive the possibility that there is in the e-education system for knowledge acquisition. A freshly perceived self-concept has a consolidating impact on learning in that it allows the learner to attack a target skill with confidence or with an adjusted 'updated' approach.

## 1.5 Objectives of the Study

i. To explore the use of multimedia method and e-education in schools of Lucknow city.

ii. To asses the impact of multimedia methods & e-education provided by the schools on the academic performance of the students.

iii. To assess the attitude of teachers & students towards e-education & use of multimedia in their studies.

iv. To compare the multimedia methods & e-education facilities provided by the different schools (including CBSE, ICSC, UP board).

v. To study the available software for multimedia and e-Education to improve the academic performance of the students.

### 1.6 Hypothesis of the Study

Ho1: There is no significant relationship between categories of board across gender

Ho1: There is no significant relationship between categories of board across Age

Ho1: There is no significant relationship between categories of board across class

H0 1: There is no significant relationship between gender and academic performance

H0 1: There is no significant relationship between board and academic performance

H0 1: There is no significant relationship between awareness and academic performance

H0 1: There is no significant relationship between productivity and academic performance

H0 1: There is no significant relationship between learning process and academic performance

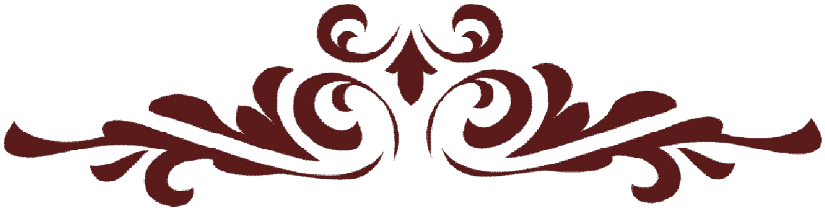
H01: There is no correlation between Awareness, Productivity & Learning Process and academic performance.

H01: There is no significant relationship between Awareness, Productivity & Learning Process and academic performance.

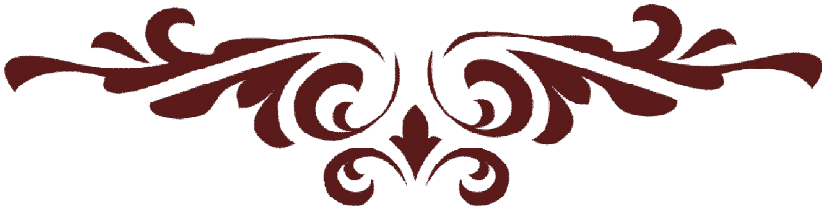
## 1.7 Rational of the study

The media has demonstrated potentially profound effects, both positive and negative, on children's cognitive, social, and behavioral development. Multimedia & e-education has become an increasingly popular learning approach in education due to the rapid growth of internet and the massive opportunities in global education.

The main focus of this study is effects on multimedia tools and their support the e-education environment. The present study about the role and impact of multimedia & e-education in children's educational performance an analysis on the collected data has been made to find out the advantages of multimedia and e-education resources and their impact on educational development of the school going children's.



# CHAPTER-2
# LITERATURE REVIEW



# CHAPTER-2

# LITERATURE REVIEW

This chapter reviews various studies which have shown the inter-relationships among the measures of multimedia and e-Education inputs pertinent to academic performance.

**2.1 The role of multimedia method and e-education**

**2.2 The role of using multimedia methods & e-education**

**2.3 Attitudes towards e-education & use of multimedia**

**2.4 Impact of multimedia methods & e-education**

**25 Comparison of multimedia facilities vs. traditional mode facilities**

## 2.1 THE ROLE OF MULTIMEDIA METHOD AND E-EDUCATION

**Mayer and Moreno (2003)**, provide a cognitive theory of multimedia learning that is relevant in examining multitasking and academic performance. They argue that human memory is both limited in its ability to process information coming from multiple channels and that meaningful learning requires substantial cognitive processing. They suggest that when processing demands exceed processing capacities, a situation of cognitive overload results, which diminishes meaningful learning. Thus, multitaskers cannot perform effectively due to the multiple cognitive demands simultaneously placed upon them.

**According to Oliver, Herrington, Herrington, & Sparrow (1996),** "multimedia appears to be an environment that supports the forms of exploration and activity required" for learning theoretical approaches in real life situations. This is in line with how authentic activities can be incorporated into online modules by using multimedia as a technological support, since authentic activities require learners to apply theoretical knowledge into real context.

**Cairncross & Mannon (2001)** believe that the learning process can be enhanced through integrating multimedia as it provides users control over the delivery of information and supports interactivity. They also stress that "multimedia can support multiple representations of the same piece of information in a variety of formats" which gives learners an authentic learning environment by providing multiple roles and perspectives.

**Whitaker (1995)** points out clearly that technology as something to expand human potential rather than substitute for it and which enhances the thought process rather than cripples it.

**Nwokedi (2007),** Posits that lack of searching skills is still hindering good use of Internet. He asserts that acquisition of Internet skills can lead to discovery of valuable research and teaching resources, which would in turn cause the users to use the Internet to enhance their research and learning capabilities. Internet access ability would be expected to stimulate regular use of the Internet and minimize the perceived barriers to its use.

**Beichner (1994),** found out that the multimedia have a positive effect on the knowledge and emotions of the students who study scientific subjects.

## 2.2 THE ROLE OF USING MULTIMEDIA METHODS & E-EDUCATION

**Kearsley (2002)**, studies show that students who learn from animation have greater self-esteem and motivation. His studies also show that students may retain information and sustain the learning process increases.

**According to Reeves (1998),** animation learning can stimulate more than one sense at a time and that may be more attention-getting and attention-holding. Animation has been the focus of recent attention and interest and become more and more popular. Although animation seems to attract learners' attention and increase their motivation to learn, whether or not instructions using animation can facilitate students learning achievement still remains a question.

**Vanfossen (2001),** points out, there are many supporters who claim that there are many benefits of Internet use in the classroom such as the ability to break down the classroom's physical limitations and expanding students' experiences, development of students' inquiry and analytical skills and expanding students' experiences with visual technologies. It is considered that technology is the main support for the students learning developments and the computers are the main technology support as a tool for effective learning and teaching process.

**Kocoglu and Koymen (2003),** point out those students who use the multimedia technology as designers have higher creative thinking skills than those who do not. In other words, it seems that using multimedia in learning process has a positive effect on students' creative thinking skills.

**Patel. R.(2001),** conducted a study of learning through computer assisted learning material in relation to select production variables and contiguity and it was found the status of the CALM in terms of production variable and contiguity vis-à-vis achievement has been quite higher, expect on a few teaching points where there was need to improve upon graphics, mode of presentation, and animation etc.

**Kearsley (2002),** studies show that students who learn from animation have greater self-esteem and motivation. His studies also show that students may retain information and sustain the learning process increases.

## 2.3 ATTITUDES TOWARDS E-EDUCATION & USE OF MULTIMEDIA

**Asan (2003),** studied elementary school teachers' perceptions and attitudes about specific technologies and the role of technology in education. The results indicated that many teachers were not computer users and the computer literacy level of teachers was very low. 39 % of elementary school teachers in this study did not feel that they were competent in using computer technologies and majority (67 %) of teachers were not familiar with computer technologies.

**Dalwadi N. (2001),** studied the development of computer assisted instruction in science for the students of standard 9th. The study found that computer assisted instruction (CAI) to be an effec-

tive individualized instructional technique for teaching science and was also found students as well as teachers have a positive opinion towards the computer assisted instruction.

**Mehra, Vandana (2007)**, conducted a study on teacher's attitude towards use of computer for emerging technology implementation in educational institutions. The findings of the study revealed that the teachers possessed fairly positive attitude towards computer uses but majority of the teachers needs to be provided training for using computers in instructional settings.

**(Quinones, 2010),** Middle school teacher stated, as educators, we know that students learn better and faster when they are actively engaged in their learning. Digital media can be a great vehicle for student engagement with classroom technology.

## 2.4 IMPACT OF MULTIMEDIA METHODS & E-EDUCATION

**A study conducted by Kasper (1997),** illustrate that teaching English using multimedia such as print, film, video, Internet to students encourage them to write a critical analysis on assignments. Overall, the students' achievement increased significantly. 92 % of the students passed on departmental reading and writing examinations. In addition, their feedback on discussions is very positive. They express confidence in their ability to use English. They attribute this improvement to the multimedia model that the texts teach them English and provide helpful information in other courses and the film and Internet help them make material easier to understand because they see, hear, and read about the topic.

**Anshu (2006),** stated, much has been said and reported about the impact of technology, especially computers, in education. Students using a computer to prepare for laboratories make greater conceptual gains, and are more capable of integrating knowledge.

**Suwana. R. (2004) ,** conducted a study on effectiveness of computer assisted instruction for primary school students: an experimental study. The study revealed that the computer assisted instruction developed by the researcher were significantly effective in learning five topics of Thai subjects to the students.

**Anshu (2006),** studied comparative effectiveness of single medium and multimedia on learning gains of 9th graders in chemistry at different level of academic achievement and intelligence. The result is that the multimedia is as effective as traditional method of teaching in chemistry to develop the knowledge and understanding domain of the students.

**Dwyer,** states that students can gain the knowledge and information that would be impossible to get in traditional ways; besides they could find the opportunity to prepare their own products with multimedia technique. As a result, it could be asserted that the use of multimedia possesses the aim of helping students with different skills and learning styles.

**Semerci (1999),** expresses the fact that the message via multimedia reaches the receivers in various ways and thus, it provides a richer learning environment. The subjects being taught could be transmitted to the students with web-based audio, visuals, video and animations in a way that could not be taught in classrooms authentically with other techniques. This way, closeness to reality could be provided and complete learning could be achieved.

## 2.5 COMPARISON OF MULTIMEDIA FACILITIES VS. TRADITIONAL MODE FACILITIES

**Macedo-Rouet and colleagues (2009)**, compared students' performance and satisfaction using web-based materials – in the form of notes and quizzes – compared to printed ones. They found that students expressed a preference for printed notes, saying that they are easier to read, and that the group working with the printed documents had a higher performance. The author's hypothesis that this may be due to the higher perceived cognitive load of processing web documents.

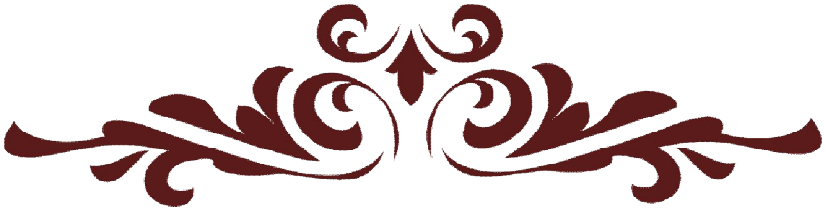
**Hughes and colleagues (2004)**, carried out research with over 650 school students between the ages of 14–18 on their web site preferences. They found that students preferred sites that contributed to academic support (e.g. BBC Bitesize), search engines or sites relating to particular enthusiasms.

**Vernadakis and colleagues (2008)**, In one comparative study of traditional and multimedia methods of teaching the skills of shooting in basketball, found that there was no difference in imme-

diate recall on a written test but that retention and attitudes towards the online methods of teaching were favorable (a possible issue with this study, however, is the use of a written test to evaluate a skill).

**Evans and colleagues (2008)**, used a randomized trial to compare a text format of teaching chemistry students with an interactive multimedia format. The study found that those students using the interactive format had a small, but significant advantage.

**Carvin (2006) and Ogedebe (2012)**, found strong correlations of Internet access with academic performance. Both studies agreed that the use of Internet has improved students' academic performance as Internet assists them to have better preparation for exams. These respondents claim they get relevant information pertaining to their course of study while browsing the Internet.



# CHAPTER-3
# RESEARCH METHODOLOGY

# CHAPTER -3

# RESEARCH METHODOLOGY

This chapter describes the methods that were used in the study. It explains the research design, the study population, sampling method and procedures, data collection procedures and instruments, data analysis. In organize to facilitate systematic approach, under the following sections:

**3.8 Research design**

**3.9 Conceptual framework**

**3.10 Selection of variables**

**3.11 Instruments and developmental tool**

**3.12 Selection of sample**

**3.13 Data collection procedure**

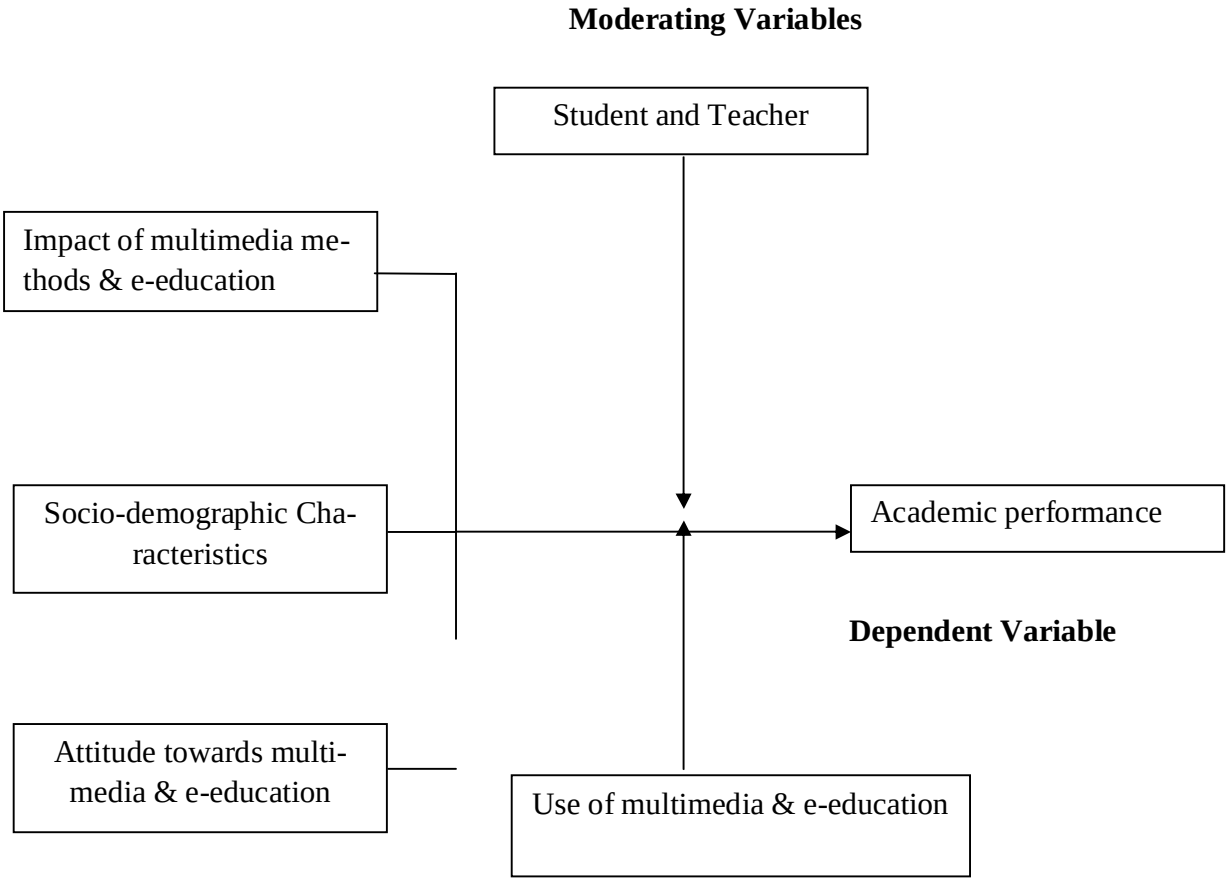
3.14 **Data processing and analysis**

## 3.1 Research Design

The research design was an analytical survey. Analytical surveys also referred to as diagnostic studies attempt to describe and explain *why* certain situations exist. In this approach two or more variables are usually examined to test research hypotheses. The results allow researchers to examine the interrelationships among variables and to draw explanatory inferences. In this study, the researcher sought to establish the socio-demographic characteristics; and level of student engagement effect on academic performances.

## 3.2 Conceptual Framework

This section deals about the conceptual framework for the research .it deals about researcher's own concept to conduct the research in an original way. the conceptual framework was establish on the basis of research topics ,possible area to fulfill the objectives and theoretical framework .science the topic was impact of multimedia and e-Education on the academic performance of school going children so the demand of study was supported to be those factors which exactly fulfill the objectives.



## FIGURE 3.2: CONCEPTUAL FRAMEWORK

The above conceptual framework was used in this study, the independent variables are socio-demographic characteristics that may influence the academic performance of individual. Socio-demographic characteristics include elements such as age, gender and board which play a role in academic performance.

Academic performance is the dependent variable in this study, how does academic performance vary based on the independent variables. Attitude which deals with the overall perception of the learner about learning style and hence influencing performance is the intervening variable. Regardless of the variance of the independent variables, the intervening variable's influence is constant. Teacher – student contact is the moderating variable that provides the interaction effect where it moderates the relations between the independent variables. Academic performance in a multimedia & e-Education setup can be influenced by varied variables either positively or negatively.

## 3.3 SELECTION OF VARIABLES

A variable as the name implies, is something which varies. In other words variables are the characteristics of conditions that are manipulated, controlled or observed by the experiments. Variables under study were categorized into two group's viz dependent variables and independent variables. The schematic presentation of the variables used in the study was given in fig.

**Dependent Variables-** Dependent variables are measures of the changes imposed by the independent variables. In this study the dependent variable was identified academic performance.

**Independent Variable-**Independent variables are what is varied in nature and will effect the other dependent variables like age, income, where researcher has no control over these variables.

## PERSONAL VARIABLES OF STUDENTS

**Gender-** gender was studied as number of boys and girls considered for the present study

**Age –**age was measured in terms of completed year of age at the time of study.

This was divided into two categories with minimum age 11years and maximum 14 years.

**Class –**Three categories were formed and respondents were categorized seventh, eighth and ninth standard.

**Type of school/board:** The schools selected were having either of the board

- **a- ICSE Board (Indian Council of Secondary Education)**
- **b- CBSE Board ( Central Board of Secondary Education)**
- **c- U.P Board (Expand it Uttar Pradesh Board)**

**Personal Variables of Teachers**

**Gender-** gender was studied as number of male and female considered for the present study

**Type of school/board:** The schools selected were having either of the board

- **a- ICSE Board (Indian Council of Secondary Education)**
- **b- CBSE Board ( Central Board of Secondary Education)**
- **c - U.P Board (Expand it Uttar Pradesh Board**

## 3.4 INSTRUMENTS AND DEVELOPMENTAL TOOL

The main instrument of data collection in this study was self constructive or administrative questionnaires. The items in the questionnaire were structured (closed ended). The structured questions measured the subjective responses to clarify the objective responses and at the same time, enhance formulation of recommendations of the study.

## 3.4 .1 RELIABILITY

According to Devellis (1991), as cited by Mugenda, (2004) reliability is the proportion of variance attributable to the time measurement of a variable and estimates the consistency of such measurement over time from a research instrument. It is a measure of the degree to which a research instrument would yield the same results or data after repeated trials.

**Table3.4.1 Reliability Analysis of the Data of the Students**

| Reliability Statistics | |
|---|---|
| **Cronbach's Alpha** | **N of Items** |
| **.976** | **56** |

The purpose of the reliability analysis is to determine whether data are trustworthy or not. Testing reliability is to measure consistency in the data that is defined as "an assessment of the degree of consistency between multiple measurements of a variable". Reliability investigation through Cronbach's Alpha is a method that is frequently used for assessing the consistency of entire scale. Due to its heavy usage, it is generally agreed that Cronbach's Alpha should exceed 0.60 to have reliability. It can be seen from the above table that reliability of the entire data is very good.

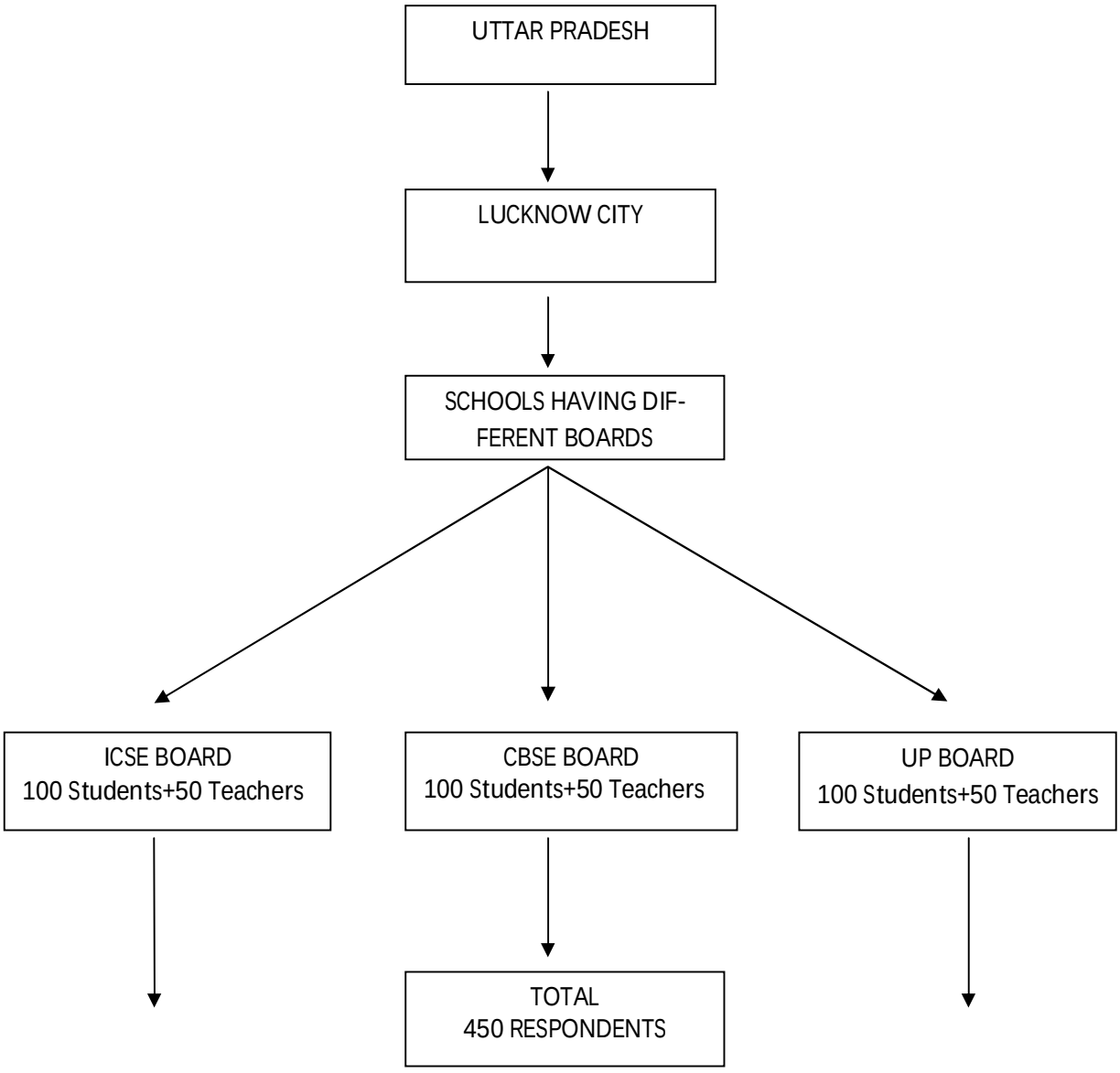
**Table 3.4.2 Reliability Analysis of the Data of the Teachers & Principals**

| Reliability Statistics | |
|---|---|
| **Cronbach's Alpha** | **N of Items** |
| **.808** | **28** |

The value of Cronbach's Alpha is 0.808, hence it can be said that reliability of the entire data is very good.

## 3.5 SELECTION OF SAMPLE

The sample from total 450 respondents to be originally targeted for the study sample. Following this division a total sample of 300 students and 150 teachers were selected in this study.



## 3.6DATA COLLECTION PROCEDURE

The data were collected using two survey questionnaire for students and teachers. To fulfill the intended objective, it is necessary to collect the information as data the steps used for data collection were as follows:

Step I**:** The investigator obtained permission from respective authority (principle of school) to conduct the study.

Step II: The investigator introduces herself to the respondent explained the objectives and steps of the study from

Step III: The questionnaire distributed to students and teachers/principles in all three boards of schools.

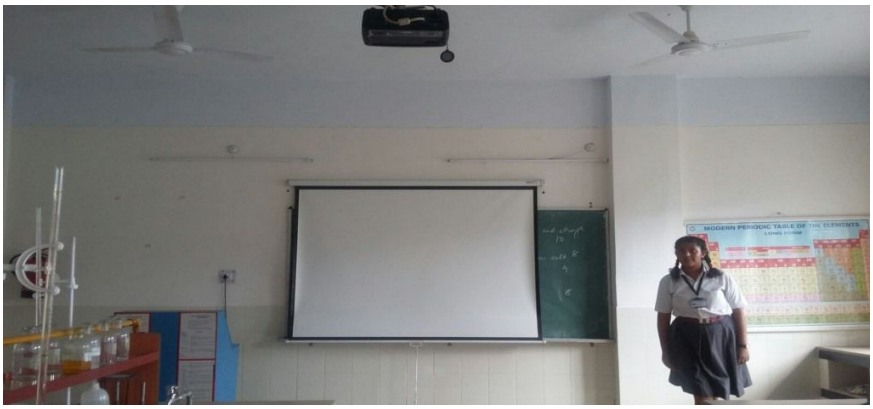
## 3.7 DATA ANALYSIS AND PROCESSING

According to Miles and Huberman (1994) data analysis is an iterative process. Data analysis consists of three activities: Data reduction, Data display, and Conclusion drawing/verification".

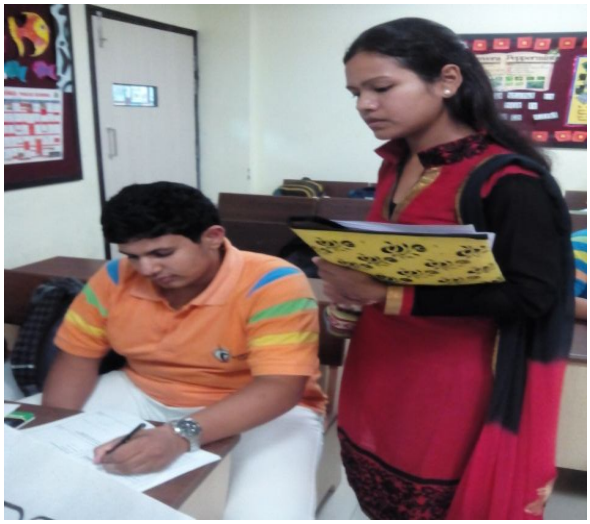
Data reduction, this process is applied to qualitative data and focus remains on selection, simplification and transformation of data. In this continuous process the data is organized throughout the research to draw and finalize a conclusion (Miles and Huberman, 1994). In this research, the data was reduced from critical elements in implementation of multimedia and e-Education to students' academic performance.

In data display the data is displayed in an organized form or the data has to be put into an order to easily draw the conclusion. Tables and graphs are used to indicate distinct frequencies of various factors of educational technology implementation and academic performance.

## DATA COLLECTION FROM DIFFERENT SCHOOLS

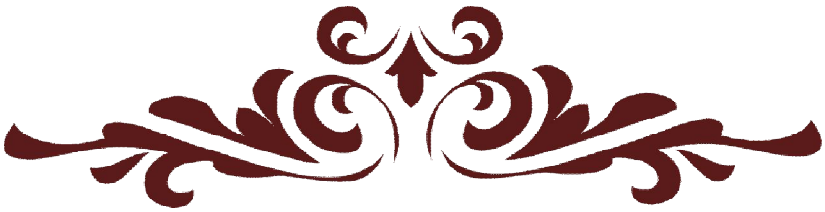


## DATA COLLECTION FROM ICSE BOARD



**DATA COLLECTION FROM CBSE BOARD**

**DATA COLLECTION FROM U.P. BOARD**



# CHAPTER-4
# DATA PRESENTATION, ANALYSIS AND INTERPRE-TATION

# CHAPTER -4

# DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter deals with the data analysis techniques and interpretation of the findings of the impact of multimedia and e-education on academic performance. The finding was intended on answering the study's research objectives. Analyses of the data were presented in form of tables and figures and qualitative analysis done in prose.

**4.1 Description of Socio Demographic Profile of the respondents**

**4.2 Description of available media material in different school**

**4.3Description of use of media material in different school**

**4.4 Description of respondent's application of tools**

**4.5 Description of respondent's attitude towards use of multimedia and e-education**

**4.6 Description of impact on the academic performance of the respondents**

**4.7Description of respondents on the compare of multimedia methods and e-education facilities**

## 4.1 SOCIO DEMOGRAPHIC PROFILE OF THE RESPONDENT

The socio demographic characteristics present the general information of the respondents. In this section, the information of the respondents has been presented through bars, graph charts and tables. The analysis presented in the form of descriptive statistics that is frequency and percentage. In this study found that such information was a clear indicator of factors that may influence one's academic performance.

**Table 4.1: General respondents Profile of children**

| S. No | Characteristics | Frequency (%) |
|---|---|---|
| **1** | **Gender** | |
| | Boy | 178(59.3) |
| | Girl | 122(40.7) |
| **2** | **Age** | |
| | 11-12 Years | 137(45.2) |
| | 13-14 Years | 163(53.8) |
| **3** | **Board** | |
| | ICSE | 100(33.3) |
| | CBSE | 100(33.3) |
| | UP | 100(33.3) |
| **4** | **Class** | |
| | $7^{th}$ | 116(38.3) |
| | $8^{th}$ | 89(29.4) |
| | $9^{th}$ | 95(31.4) |

From the above table 4.1 it can be seen that the number of total respondents was 300 in which 178 (59.3%) respondents were Boys and 122 (40.7%) respondents were Girls , 137(45.2) respondents were 11-12 years old and 163(53.8) were 13-14years old , 100(33.3) respondents were from ICSE board ,100(33.3) respondents were from CBSE board and 100(33.3) respondents were from UP

board while most of respondents 116(38.3) were from 7th class, 89(29.4) respondents were from 8th class and 95(31.4) respondents were from 9th class.

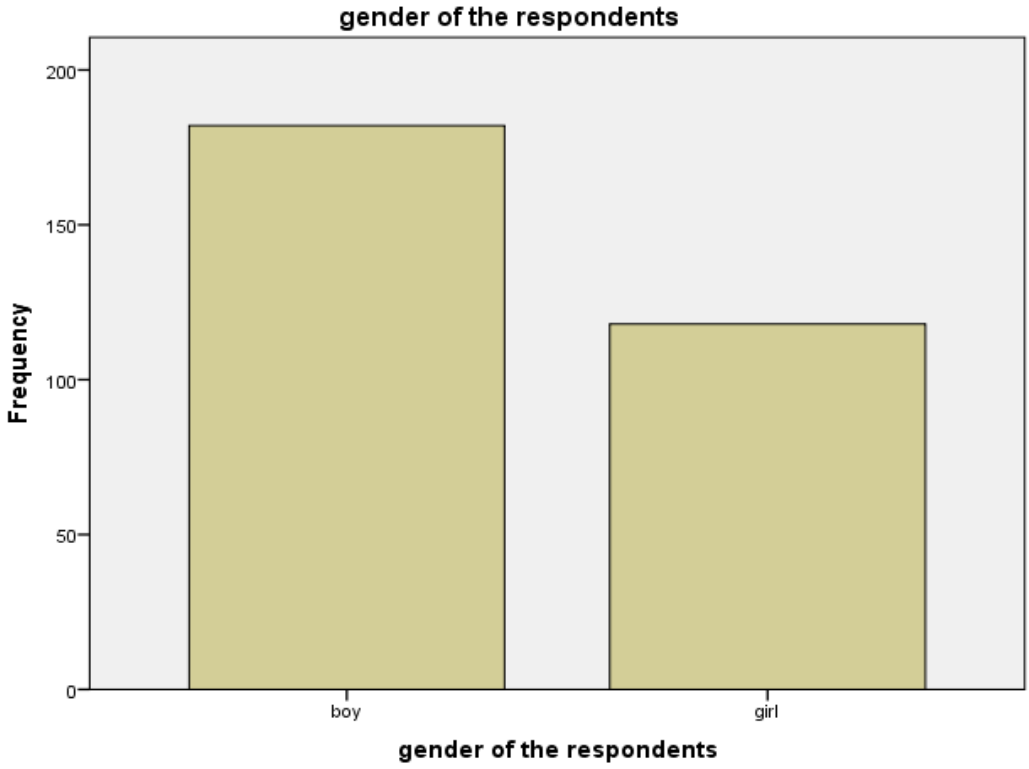



**Fig 4.1 Distribution of Children according to Gender**

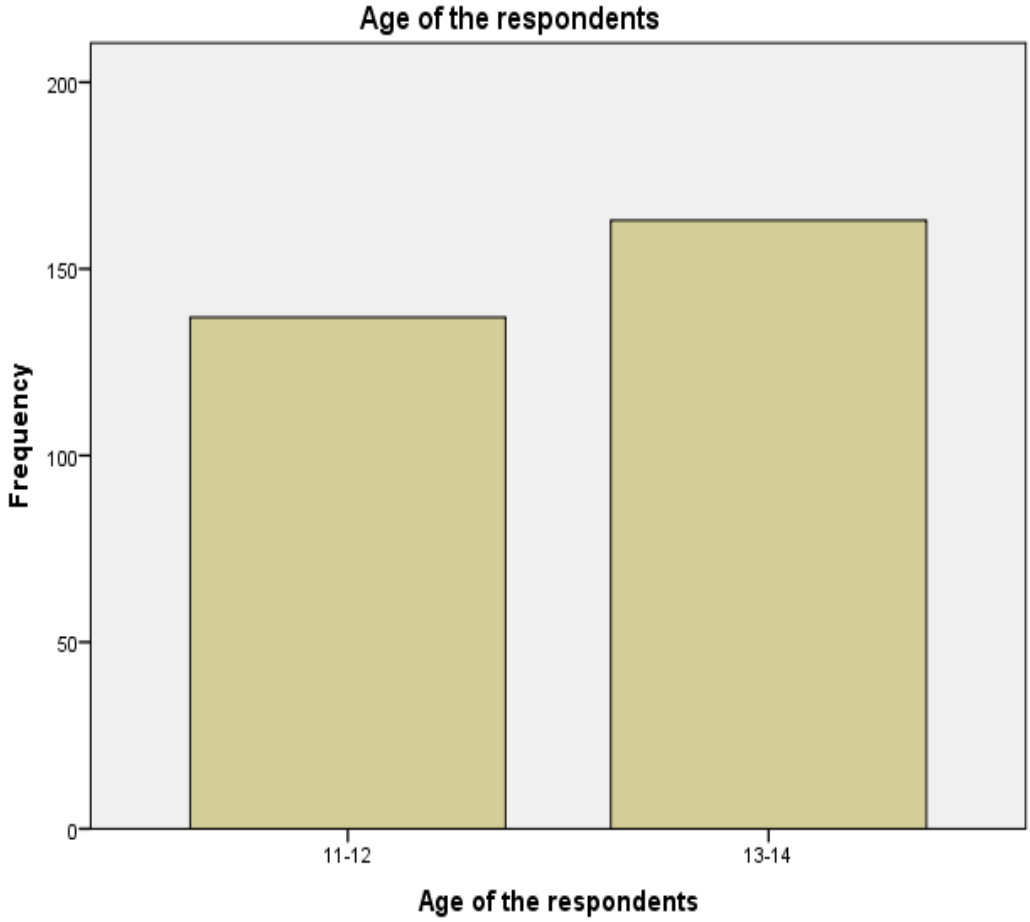



**Fig 4.2 Distribution of Children according to Age**

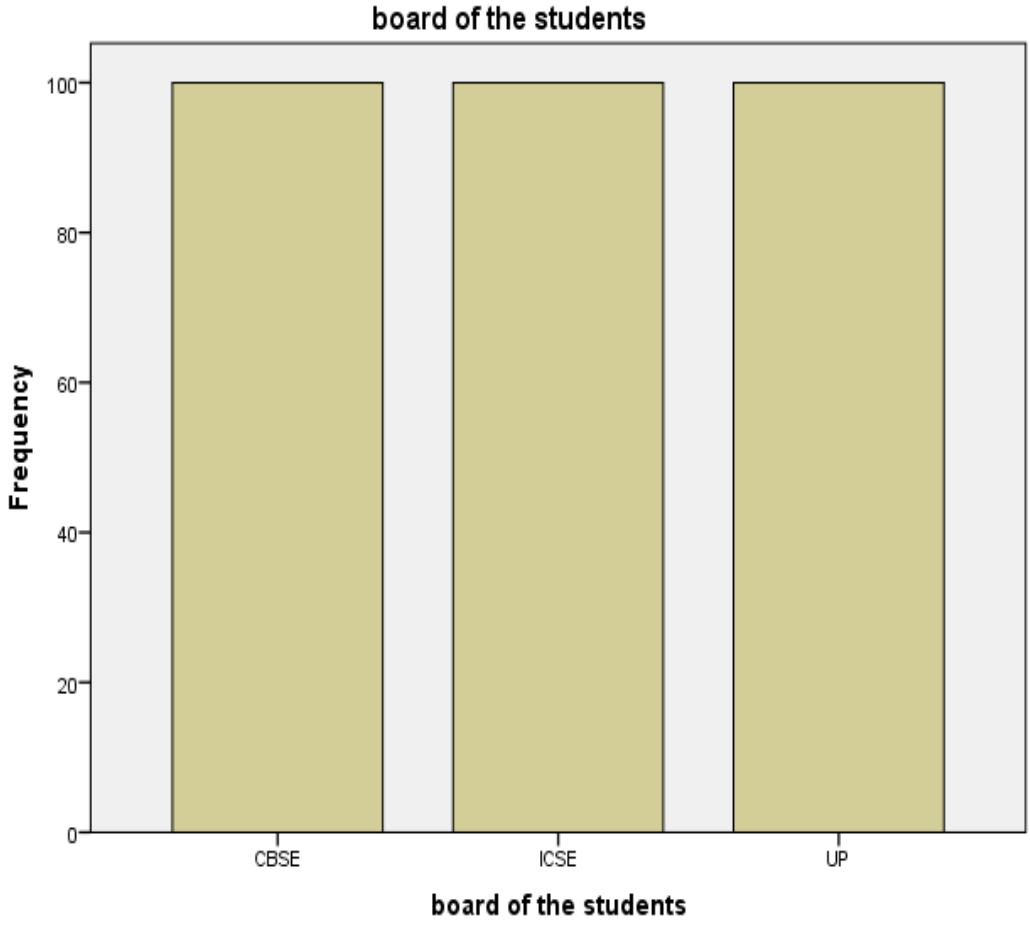



**Fig 4.3 Distribution of Children according to board**

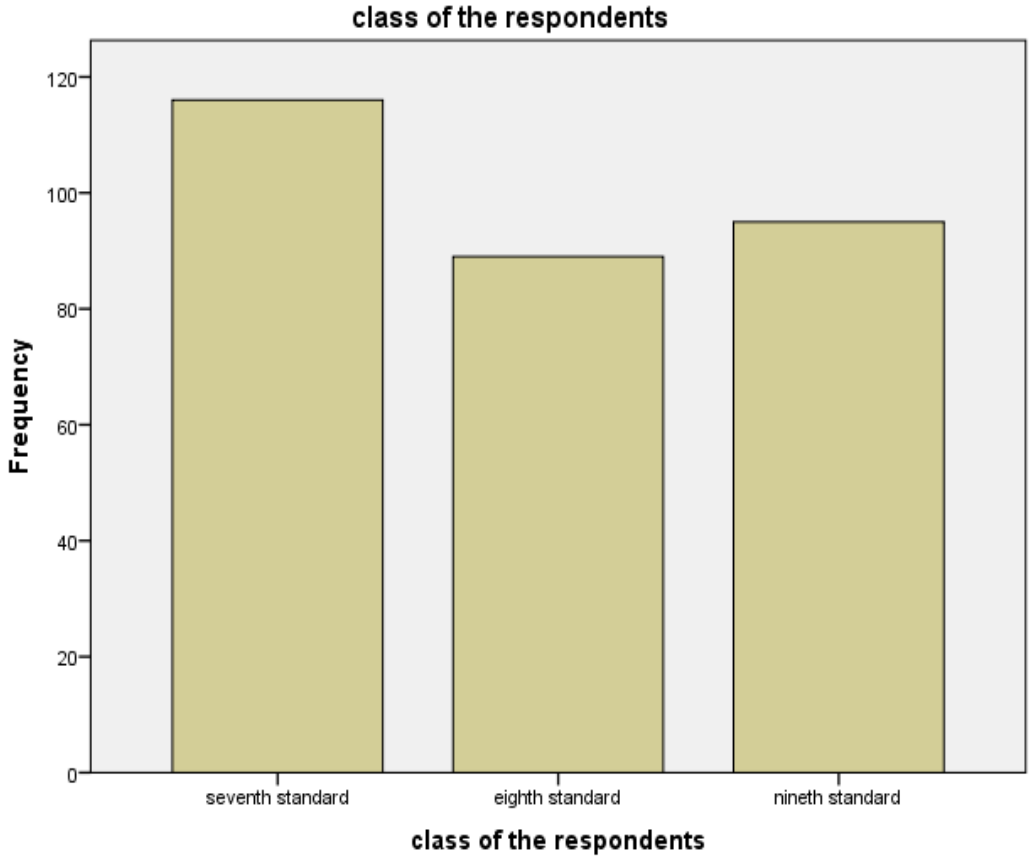



**Fig 4.4 Distribution of Children according to class**

**Table 4.2: General respondents Profile of Teachers**

| S. No | Characteristics | Frequency (%) |
|---|---|---|
| **1** | **Gender** | |
| | Male | 73(48.7) |
| | Female | 77(51..3) |
| **3** | **Board** | |
| | ICSE | 50(33.3) |
| | CBSE | 50(33.3) |
| | UP | 50(33.3) |

From the above table 4.2 it can be seen that the number of total respondents was 150 in which 73 (48.7%) respondents were Males and 77 (51.3%) respondents were females while most of respondents 50 (33.3%) were from ICSE board schools, 50 (33.3%) respondents were from CBSE board schools & 50 (33.3%) respondents were from UP board schools.

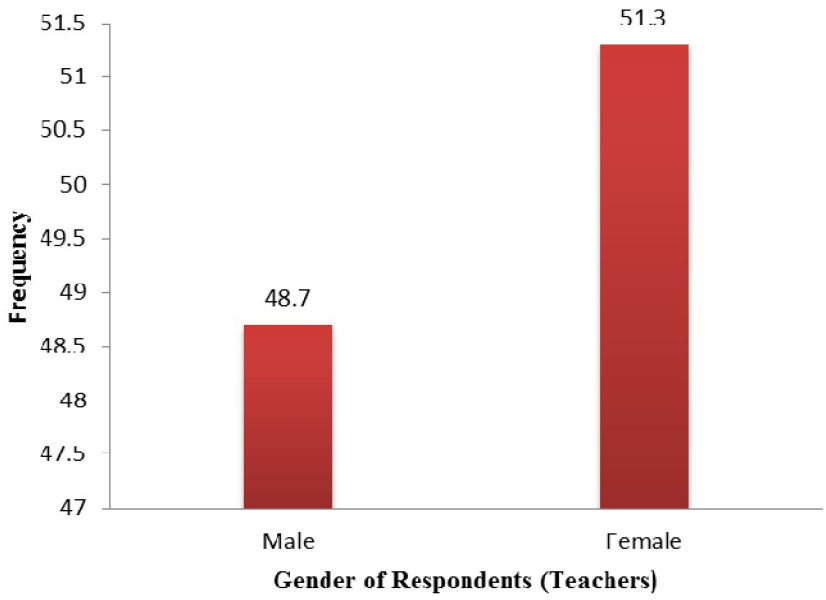



**Fig 4.5 Distribution of Teacher According to Gender**

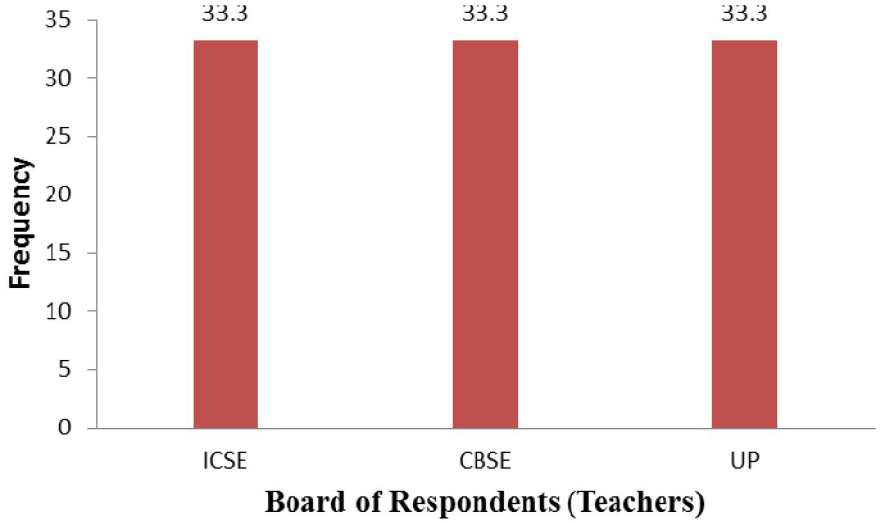



**Fig 4.6 Distribution of Teacher According to Board**

## 4.2 AVAILABLE MEDIA MATERIAL IN DIFFERENT SCHOOL

**Table 4.2.1.: Distribution of available computers in schools on the basis of board.**

| Computers | | | | | |
|---|---|---|---|---|---|
| | | | Computers | | Total |
| | | | Available | Not Available | |
| Board | ICSE | Count | 29 | 21 | 50 |
| | | % within Board | 58.0% | 42.0% | 100.0% |
| | | % of Total | 19.3% | 14.0% | 33.3% |
| | CBSE | Count | 31 | 19 | 50 |
| | | % within Board | 62.0% | 38.0% | 100.0% |
| | | % of Total | 20.7% | 12.7% | 33.3% |

| | | | | | |
|---|---|---|---|---|---|
| | UP Board | Count | 8 | 42 | 50 |
| | | % within Board | 16.0% | 84.0% | 100.0% |
| | | % of Total | 5.3% | 28.0% | 33.3% |
| Total | | Count | 68 | 82 | 150 |
| | | % within Board | 45.3% | 54.7% | 100.0% |
| | | % of Total | 45.3% | 54.7% | 100.0% |

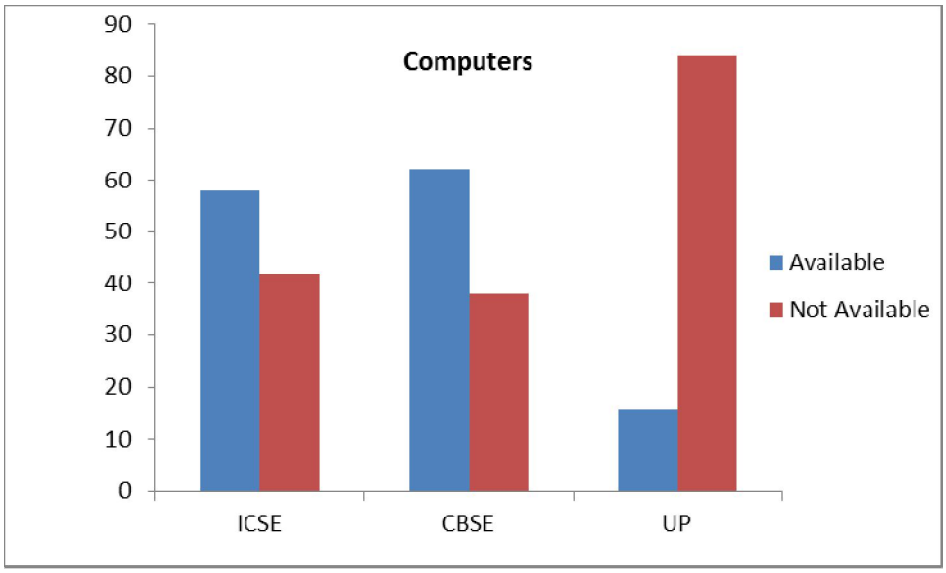



**Fig: 4.2.1 Distribution of available computers**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 58.0% respondents said 'available' and 42.0% respondents said 'not available'.

- In **CBSE board**, out of the total 50 respondents, 62.0% respondents said 'available' and 38.0% respondents said 'not available'.
- In **UP board**, out of the total 50 respondents, 16.0% respondents said 'available' and 84.0% respondents said 'not available'.

From the above table discussed the distribution of available media aids for students in different schools, Results showed that computers, were available in ICSE and CBSE schools, while projectors in UP board schools were not available.

**Table 4.2.2.: Distribution of availabile projectors in schools on the basis of board.**

| **Projectors** | | | | | |
|---|---|---|---|---|---|
| | | | Projectors | | Total |
| | | | Available | Not Available | |
| Board | ICSE | Count | 46 | 4 | 50 |
| | | % within Board | 92.0% | 8.0% | 100.0% |
| | | % of Total | 30.7% | 2.7% | 33.3% |
| | CBSE | Count | 50 | 0 | 50 |
| | | % within Board | 100.0% | 0.0% | 100.0% |
| | | % of Total | 33.3% | 0.0% | 33.3% |
| | UP Board | Count | 30 | 20 | 50 |
| | | % within Board | 60.0% | 40.0% | 100.0% |
| | | % of Total | 20.0% | 13.3% | 33.3% |
| Total | | Count | 126 | 24 | 150 |
| | | % within Board | 84.0% | 16.0% | 100.0% |
| | | % of Total | 84.0% | 16.0% | 100.0% |

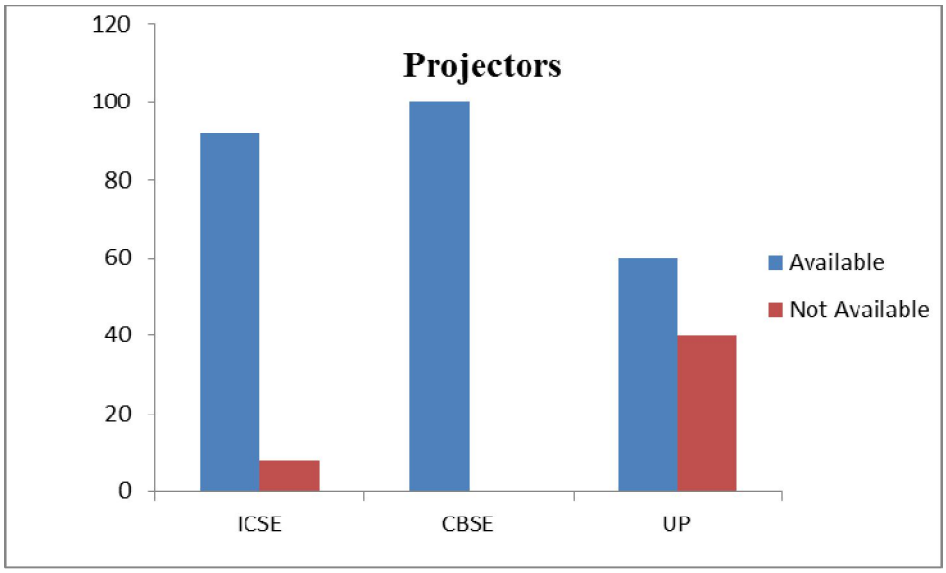



**Fig: 4.2.2 Distribution of available projectors**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 92.0% respondents said 'available' and 8.0% respondents said 'not available'.
- In **CBSE board**, out of the total 50 respondents, 100.0% respondents said 'available' and 0.0% respondents said 'not available'.
- In **UP board**, out of the total 50 respondents, 60.0% respondents said 'available' and 40.0% respondents said 'not available'.

From the above table discussed the distribution of available media aids for students in different schools, Results showed that projectors, was available in ICSE and CBSE schools, while projectors in UP board schools were not available.

**Table 4.2.3.: Distribution of available smart classroom in schools on the basis of board.**

| Smart Classroom | | | | | |
|---|---|---|---|---|---|
| | | | Smart Classroom | | Total |
| | | | Liked | Disliked | |
| Board | ICSE | Count | 18 | 32 | 50 |
| | | % within Board | 36.0% | 64.0% | 100.0% |
| | | % of Total | 12.0% | 21.3% | 33.3% |
| | CBSE | Count | 22 | 28 | 50 |
| | | % within Board | 44.0% | 56.0% | 100.0% |
| | | % of Total | 14.7% | 18.7% | 33.3% |
| | UP Board | Count | 4 | 46 | 50 |
| | | % within Board | 8.0% | 92.0% | 100.0% |
| | | % of Total | 2.7% | 30.7% | 33.3% |
| Total | | Count | 44 | 106 | 150 |
| | | % within Board | 29.3% | 70.7% | 100.0% |
| | | % of Total | 29.3% | 70.7% | 100.0% |

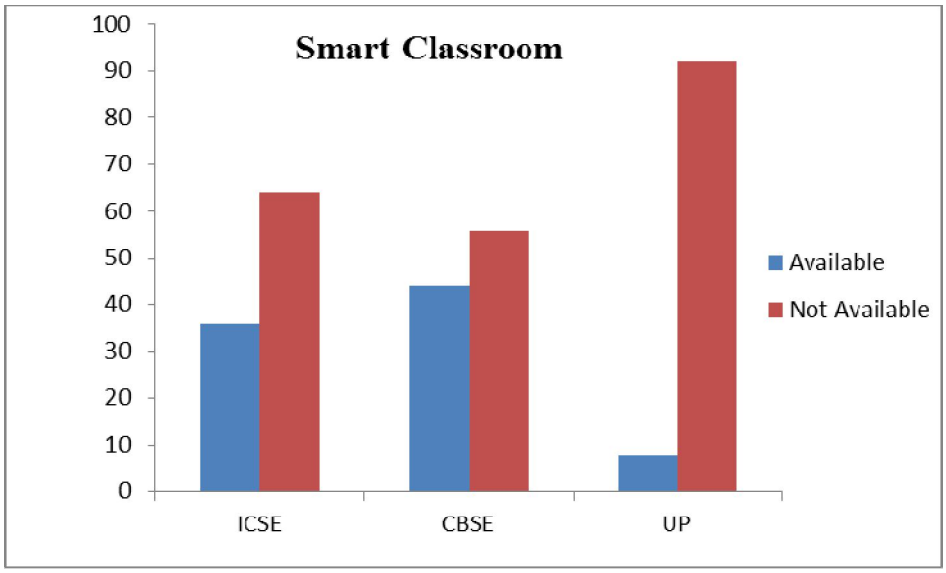



**Fig: 4.2.3 Distribution of available smart classroom**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 36.0% respondents said 'available' and 64.0% respondents said 'not available'.
- In **CBSE board**, out of the total 50 respondents, 44.0% respondents said 'available' and 56.0% respondents said 'not available'.
- In **UP board**, out of the total 50 respondents, 8.0% respondents said 'available' and 92.0% respondents said 'not available'.

From the above table discussed the distribution of available media aids for students in different schools, Results showed that smart classroom, was available in ICSE and CBSE schools , while smart classroom in UP board schools were not available.

## 4.3 DESCRIPTION OF USE OF MEDIA MATERIAL IN DIFFERENT SCHOOL

**Table 4.3.1: Distribution of use of still images in schools on the basis of board.**

| Still images (graphics, illustrations, photos, Films, Animation ) | | | | | |
|---|---|---|---|---|---|
| | | | Still images (graphics, illustrations, photos, etc.), Films & Animation | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 46 | 4 | 50 |
| | | % within Board | 92.0% | 8.0% | 100.0% |
| | | % of Total | 30.7% | 2.7% | 33.3% |
| | CBSE | Count | 50 | 0 | 50 |
| | | % within Board | 100.0% | 0.0% | 100.0% |
| | | % of Total | 33.3% | 0.0% | 33.3% |
| | UP Board | Count | 17 | 33 | 50 |
| | | % within Board | 34.0% | 66.0% | 100.0% |
| | | % of Total | 11.3% | 22.0% | 33.3% |
| Total | | Count | 113 | 37 | 150 |
| | | % within Board | 75.3% | 24.7% | 100.0% |
| | | % of Total | 75.3% | 24.7% | 100.0% |

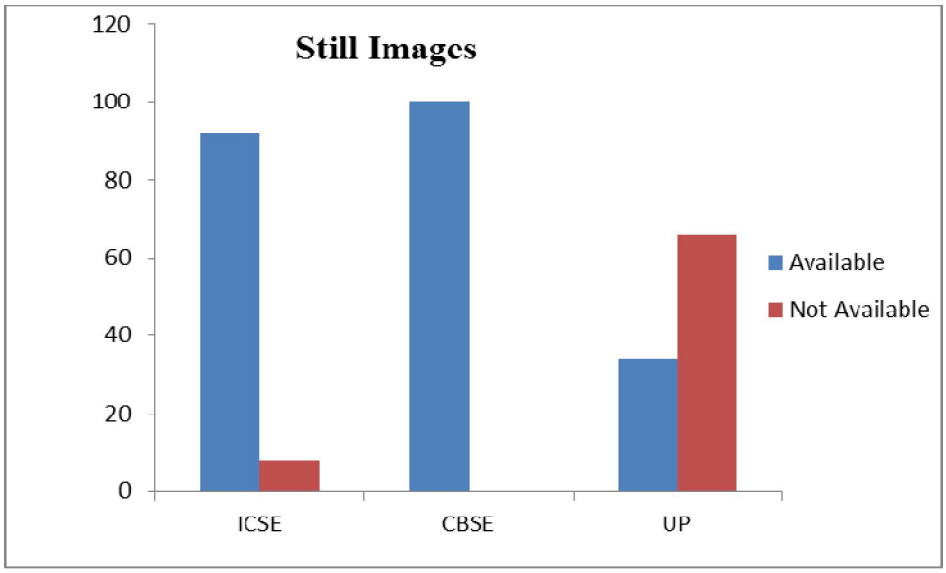



**Fig: 4.3.1. Distribution of use of still images**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 92.0% respondents said 'yes' and 8.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 100.0% respondents said 'yes' and 0.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 34.0% respondents said 'yes' and 66.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were use that 'Still images (graphics, illustrations, photos, etc.), Films & Animation' But the majority of the respondents from UP Board schools were not use.

**Table 4.3.2: Distribution of use of multimedia presentation in schools on the basis of board.**

| Multimedia presentation (PPTs, PPS, Poster, Collage etc.) | | | | | |
|---|---|---|---|---|---|
| | | | Multimedia presentation (PPTs, PPS, Poster, Collage etc.) | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 46 | 4 | 50 |
| | | % within Board | 92.0% | 8.0% | 100.0% |
| | | % of Total | 30.7% | 2.7% | 33.3% |
| | CBSE | Count | 50 | 0 | 50 |
| | | % within Board | 100.0% | 0.0% | 100.0% |
| | | % of Total | 33.3% | 0.0% | 33.3% |
| | UP Board | Count | 14 | 36 | 50 |
| | | % within Board | 28.0% | 72.0% | 100.0% |
| | | % of Total | 9.3% | 24.0% | 33.3% |
| Total | | Count | 110 | 40 | 150 |
| | | % within Board | 73.3% | 26.7% | 100.0% |
| | | % of Total | 73.3% | 26.7% | 100.0% |

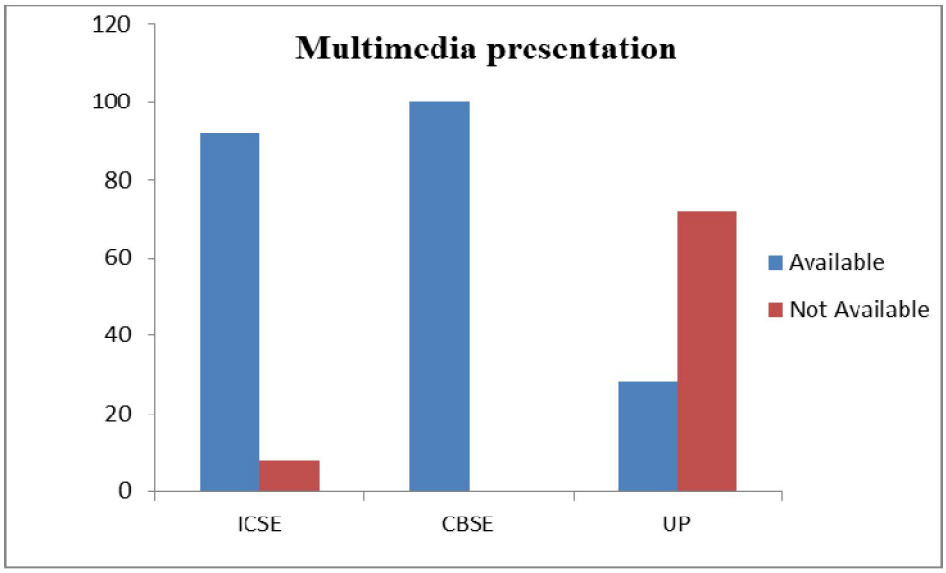



**Table 4.3.2: Distribution of use of multimedia presentation**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 92.0% respondents said 'yes' and 8.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 100.0% respondents said 'yes' and 0.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 28.0% respondents said 'yes' and 72.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were use that 'Multimedia presentation (PPTs, PPS, Poster, Collage etc.)' But the majority of the respondents from UP Board schools were not use.

## 4.4 DESCRIPTION OF RESPONDENT'S APPLICATION OF TOOLS

**Table 4.4.1 Distribution of respondents (Students) on the basis of category of board across gender**

| S.NO | Category of Board | Respondents N=300 | |
|---|---|---|---|
| | | **Boys ( N=150)** | **Girls (N=150)** |
| 1 | ICSE | 54(29.7) | 46(39.0) |
| 2 | CBSE | 67(36.8) | 33(28.0) |
| 3 | UP | 61(33.5) | 39(33.1) |

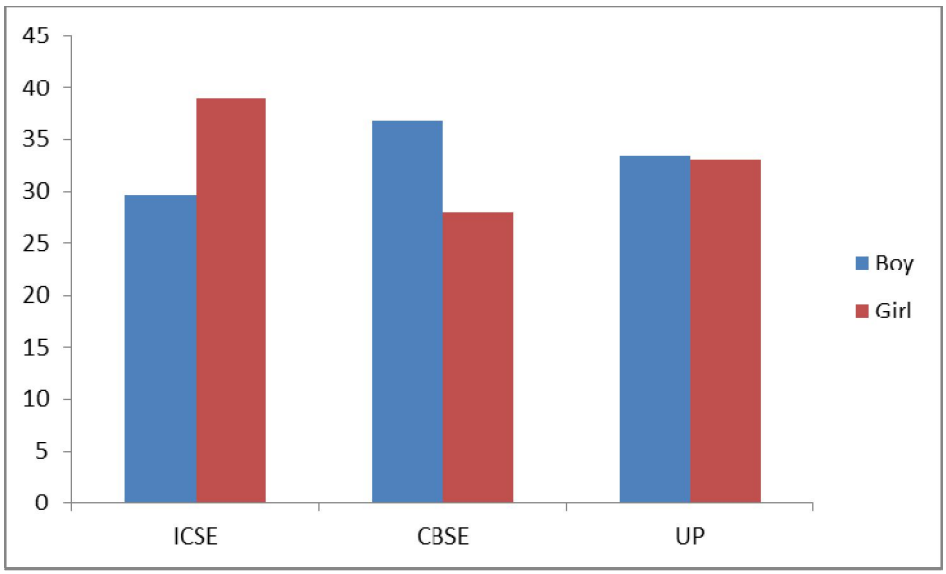



**Fig: 4.4.1 Distribution of category of Board across Gender**

From the above table no 4.4 discussed the distribution of respondents on the basis of category of board, Results showed that (29.7%) of the boys and (39.0%) of girls were ICSE board While (36.8%) of boys and (28.0%) of girls were CBSE board and (33.5%) boy and (33.1%) girls were UP board.

**Ho1: There is no significance relationship between categories of board across gender**

**Table 4.4.2 Distribution of respondents (students) on the basis of category of board across gender**

| Gender | Category of board | | | DF | Chi square | Conclusion |
|---|---|---|---|---|---|---|
| | ICSE | CBSE | UP | | | |
| Boy | 54 | 67 | 61 | 2 | 0.170 | N.S |
| Girl | 46 | 33 | 39 | | | |

p>0.05

From the above table no 4.4 p-value (0.170) was found non- significant at 0.05 level of significance thus null hypothesis was accepted, which means that category of board was not influenced by gender.

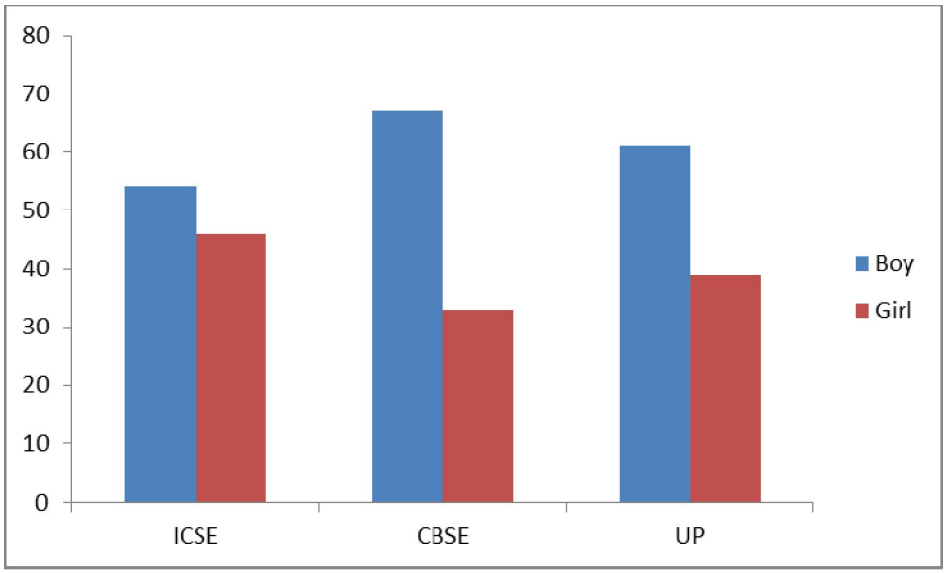



**Fig: 4.4.2 Distribution of category of board across gender**

**Table 4.4.3 Distribution of respondents (students) on the basis of category of board across age.**

| S.NO | Category of Board | Respondents N=300 | |
|---|---|---|---|
| | | 11-12 year (N=150) | 13-14 year (N=150) |
| 1 | ICSE | 36(26.3) | 64(39.3) |
| 2 | CBSE | 57(41.6) | 43(26.4) |
| 3 | UP | 44(32.1) | 56(34.4) |

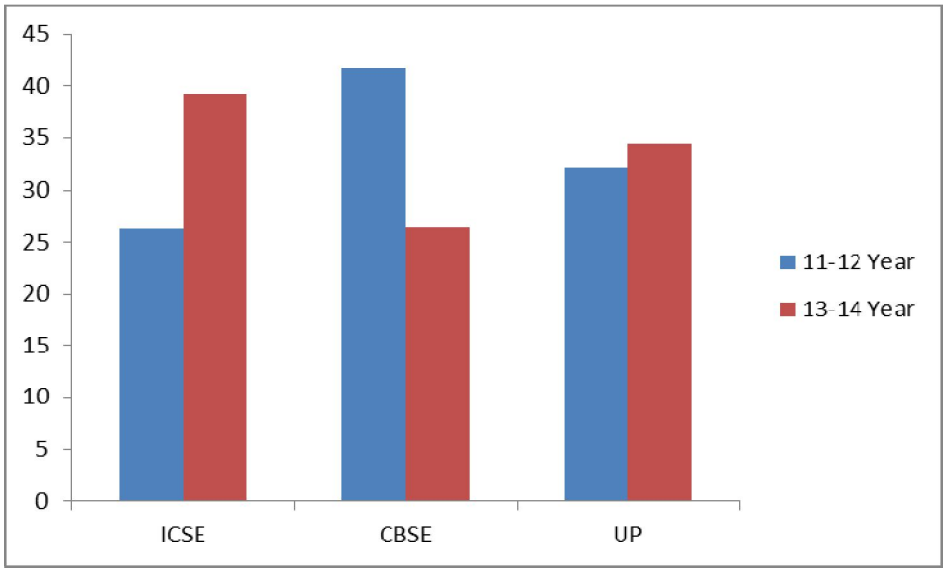



**Fig: 4.4.3 Distribution of category of board across age**

From the above table no 4.5 showed distribution of respondents on the basis of category of board in different Age group, Results showed 26.3% respondents belonging to age of 11-12 years and 39.3% respondents belonging to age group of 13-14 years were ICSE board While 41.6% respondents belonging to age of 11-12 years and 26.4% respondents belonging to age group of 13-14 years were CBSE board While 32.1% respondents belonging to age of 11-12 years and 34.4% respondents belonging to age group of 13-14 years were UP board.

**Ho1: There is no significance relationship between categories of board across Age**

**Table 4.4.4 Distribution of respondents (students) on the basis of category of board across Age**

| Age | Category of board | | | Df | Chi square | Conclusion |
|---|---|---|---|---|---|---|
| | ICSE | CBSE | UP | | | |
| 11-12 year | 36 | 57 | 44 | 2 | 0.011 | N.S |
| 13-14 year | 64 | 43 | 56 | | | |

p>0.05

From the above table no 4.4 p-value (0.011) was found non- significant at 0.05 level of significance thus null hypothesis was accepted, which means that category of board was not influenced by age group.

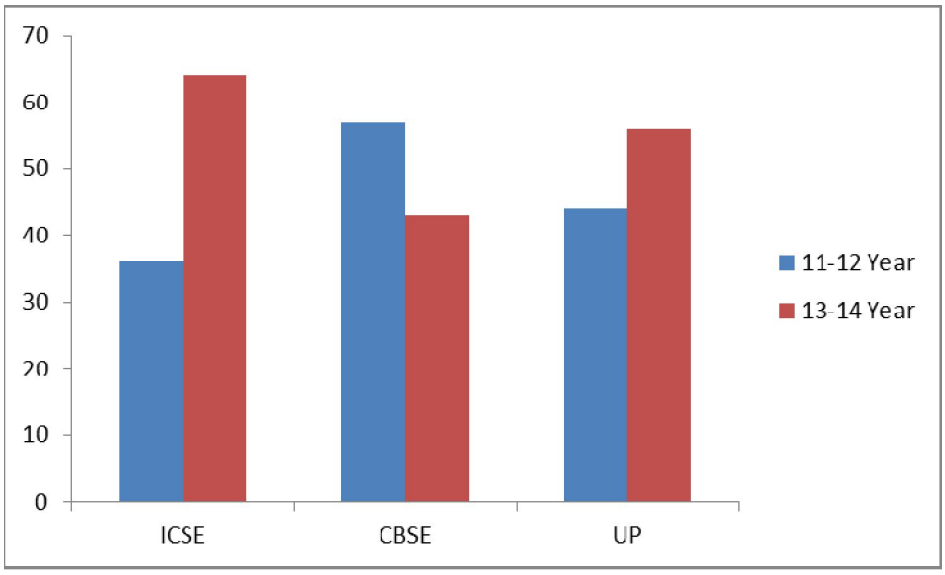



**Fig: 4.4.4 Distribution of category of board across age**

**Table 4.4.5 Distribution of respondents (students) on the basis of category of board across class.**

| S.NO | Category of Board | Respondents N=300 | | |
|---|---|---|---|---|
| | | 7th | 8th | 9th |
| 1 | ICSE | 30(25.9) | 58(50.0) | 36(37.9) |
| 2 | CBSE | 58(50.0) | 27(30.3) | 15(15.8) |
| 3 | UP | 28(24.1) | 28(31.5) | 44(46.3) |

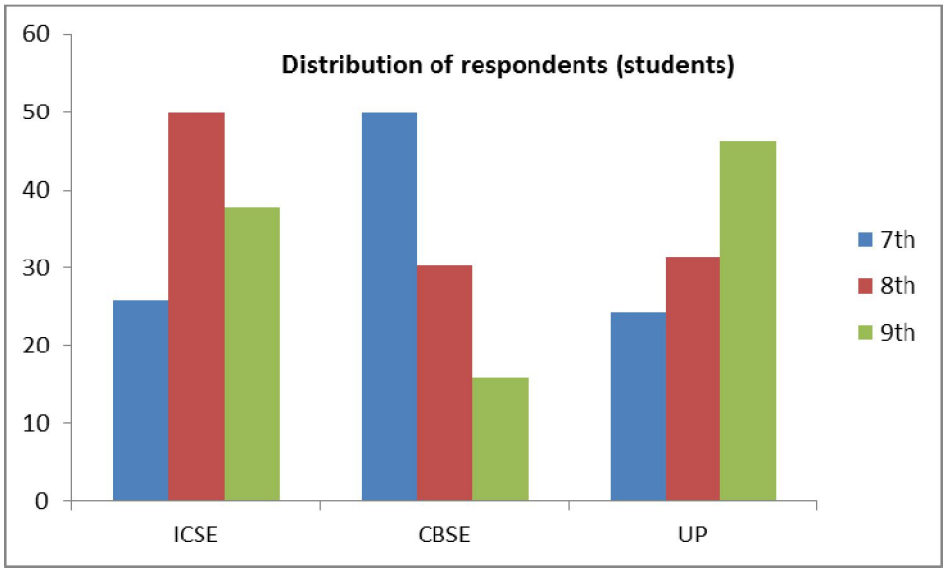



**Fig: 4.4.5 Distribution of category of board across class**

From the above table no 4.5 showed distribution of respondents on the basis of category of board in different class, Results showed 25.9% respondents were from 7th class , 50.0% respondents were from 8th class and 37.9% were from 9th class in ICSE board while 50.0% respondents were from 7th class , 30.0% respondents were from 8th class and 15.8% were from 9th class in CBSE board while 24.1% respondents were from 7th class , 31.5% respondents were from 8th class and 46.3% were from 9th class in UP board .

**Ho1: There is no significance relationship between categories of board across class**

**Table 4.4.6 Distribution of respondents (students) on the basis of category of board across class**

| Class | Category of board | | | df | Chi square | Conclusion |
|---|---|---|---|---|---|---|
| | ICSE | CBSE | UP | | | |
| 7th | 30 | 58 | 36 | 2 | 0.000 | Sig |
| 8th | 58 | 27 | 15 | | | |
| 9th | 28 | 28 | 44 | | | |

P<0.05

From the above table no 4.6 p-value (0.000) was found significant at 0.05 level of significance thus null hypothesis was rejected, which means that category of board was influenced by class.

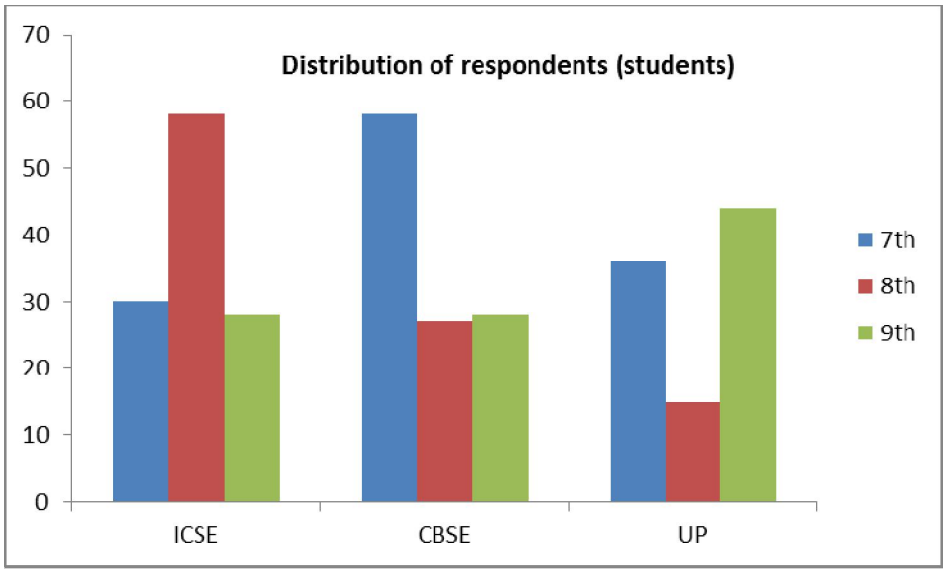



**Fig: 4.4.6 Distribution of category of board across class**

## 4.5 DESCRIPTION OF RESPONDENT'S ATTITUDE TOWARDS USE OF MULTIMEDIA AND E-EDUCATION

**H0 1: There is no significant relationship between awareness and gender**

**Table 4.5.1: Distribution of respondents (students) on the basis of awareness across gender**

| Effect of Multimedia and e-education on the Awareness | | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Min. | Max. |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Lower Bound | Upper Bound | | |
| Use tools for studies. | Boys | 178 | 2.61 | 1.303 | .098 | 2.41 | 2.80 | 1 | 5 |
| | Girls | 122 | 2.57 | 1.396 | .126 | 2.32 | 2.82 | 1 | 5 |
| | Total | 300 | 2.59 | 1.339 | .077 | 2.44 | 2.75 | 1 | 5 |
| How to use tools for studies. | Boys | 178 | 2.43 | 1.211 | .091 | 2.25 | 2.61 | 1 | 5 |
| | Girls | 122 | 2.47 | 1.194 | .108 | 2.25 | 2.68 | 1 | 5 |
| | Total | 300 | 2.45 | 1.202 | .069 | 2.31 | 2.58 | 1 | 5 |
| Comfortable educational technology | Boys | 178 | 2.45 | 1.285 | .096 | 2.26 | 2.64 | 1 | 5 |
| | Girls | 122 | 2.48 | 1.362 | .123 | 2.24 | 2.73 | 1 | 5 |
| | Total | 300 | 2.46 | 1.314 | .076 | 2.31 | 2.61 | 1 | 5 |
| Motivated and explore the topic. | Boys | 178 | 2.42 | 1.252 | .094 | 2.23 | 2.60 | 1 | 5 |
| | Girls | 122 | 2.43 | 1.330 | .120 | 2.20 | 2.67 | 1 | 5 |
| | Total | 300 | 2.42 | 1.282 | .074 | 2.28 | 2.57 | 1 | 5 |
| Understand the topic better | Boys | 178 | 2.46 | 1.208 | .091 | 2.28 | 2.63 | 1 | 5 |
| | Girls | 122 | 2.39 | 1.283 | .116 | 2.16 | 2.62 | 1 | 5 |
| | Total | 300 | 2.43 | 1.237 | .071 | 2.29 | 2.57 | 1 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Graphics help you to understand better. | Boys | 178 | 2.36 | 1.122 | .084 | 2.19 | 2.53 | 1 | 5 |
| | Girls | 122 | 2.25 | 1.072 | .097 | 2.06 | 2.45 | 1 | 5 |
| | Total | 300 | 2.32 | 1.102 | .064 | 2.19 | 2.44 | 1 | 5 |
| Solve the challenging problems. | Boys | 178 | 2.40 | 1.117 | .084 | 2.23 | 2.56 | 1 | 5 |
| | Girls | 122 | 2.43 | 1.185 | .107 | 2.21 | 2.64 | 1 | 5 |
| | Total | 300 | 2.41 | 1.143 | .066 | 2.28 | 2.54 | 1 | 5 |
| Helpful for class discussion. | Boys | 178 | 2.40 | 1.081 | .081 | 2.24 | 2.56 | 1 | 5 |
| | Girls | 122 | 2.36 | 1.029 | .093 | 2.18 | 2.55 | 1 | 5 |
| | Total | 300 | 2.38 | 1.058 | .061 | 2.26 | 2.50 | 1 | 5 |
| First search for a book to find information for a school project before search for a Web Site. | Boys | 178 | 2.49 | 1.241 | .093 | 2.31 | 2.67 | 1 | 5 |
| | Girls | 122 | 2.54 | 1.349 | .122 | 2.30 | 2.78 | 1 | 5 |
| | Total | 300 | 2.51 | 1.284 | .074 | 2.36 | 2.66 | 1 | 5 |
| Preferred the Web Assisted activity instead of the Paper Assisted activity. | Boys | 178 | 2.46 | 1.194 | .089 | 2.28 | 2.63 | 1 | 5 |
| | Girls | 122 | 2.43 | 1.171 | .106 | 2.22 | 2.64 | 1 | 5 |
| | Total | 300 | 2.45 | 1.183 | .068 | 2.31 | 2.58 | 1 | 5 |
| Uncomfortable using internet than the books. | Boys | 178 | 3.40 | 1.404 | .105 | 3.20 | 3.61 | 1 | 5 |
| | Girls | 122 | 3.28 | 1.439 | .130 | 3.02 | 3.54 | 1 | 5 |
| | Total | 300 | 3.35 | 1.417 | .082 | 3.19 | 3.51 | 1 | 5 |

**Table 4.5.2: Distribution of students on the basis of awareness across gender**

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| **Effect of multimedia and e-education on the aware-ness** | | **Sum of Squares** | **DF** | **Mean Square** | **F** | **Sig.** |
| Use tools for studies. | Between Groups | .079 | 1 | .079 | .044 | .835 |
| | Within Groups | 536.308 | 298 | 1.800 | | |
| | Total | 536.387 | 299 | | | |
| How to use tools for studies. | Between Groups | .087 | 1 | .087 | .060 | .807 |
| | Within Groups | 432.060 | 298 | 1.450 | | |
| | Total | 432.147 | 299 | | | |
| Comfortable educational technology | Between Groups | .085 | 1 | .085 | .049 | .825 |
| | Within Groups | 516.512 | 298 | 1.733 | | |
| | Total | 516.597 | 299 | | | |
| Motivated and explore the topic. | Between Groups | .025 | 1 | .025 | .015 | .901 |
| | Within Groups | 491.211 | 298 | 1.648 | | |
| | Total | 491.237 | 299 | | | |
| Understand the topic better | Between Groups | .275 | 1 | .275 | .179 | .672 |
| | Within Groups | 457.255 | 298 | 1.534 | | |
| | Total | 457.530 | 299 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Graphics help you to understand better. | Between Groups | .805 | 1 | .805 | .662 | .416 |
| | Within Groups | 362.112 | 298 | 1.215 | | |
| | Total | 362.917 | 299 | | | |
| Solve the challenging problems. | Between Groups | .054 | 1 | .054 | .041 | .839 |
| | Within Groups | 390.516 | 298 | 1.310 | | |
| | Total | 390.570 | 299 | | | |
| Helpful for class discussion. | Between Groups | .106 | 1 | .106 | .094 | .759 |
| | Within Groups | 334.811 | 298 | 1.124 | | |
| | Total | 334.917 | 299 | | | |
| First search for a book to find information for a school project before search for a Web Site. | Between Groups | .197 | 1 | .197 | .119 | .730 |
| | Within Groups | 492.773 | 298 | 1.654 | | |
| | Total | 492.970 | 299 | | | |
| Preferred the Web Assisted activity instead of the Paper Assisted activity. | Between Groups | .031 | 1 | .031 | .022 | .882 |
| | Within Groups | 418.116 | 298 | 1.403 | | |
| | Total | 418.147 | 299 | | | |
| Uncomfortable using internet than the books. | Between Groups | 1.146 | 1 | 1.146 | .570 | .451 |
| | Within Groups | 599.401 | 298 | 2.011 | | |
| | Total | 600.547 | 299 | | | |

From the above cross tabulation it can be seen that the number of total respondents was 300 in which 178 (59.3%) respondents were Boys and 122 (40.7%) respondents were Girls.

It can be concluded that **there is no significant difference between groups** (**Boys and Girls**) for all the variables of multimedia and e-education having impact on the academic performance of school going children; as the **value of significance** comes out to be **more than 0.05.**

**H0 1: There is no significant relationship between productivity and gender**

**Table 4.5.3 Distribution of respondents on the basis of productivity across gender**

**Descriptives**

| **Effect of Multimedia and e-education on the Productivity** | | **N** | **Mean** | **Std. Deviation** | **Std. Error** | **95% Confidence Interval for Mean** | | **Min.** | **Max.** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | **Lower Bound** | **Upper Bound** | | |
| Vast scope of acquiring knowledge | Boys | 178 | 1.98 | .732 | .055 | 1.87 | 2.09 | 1 | 3 |
| | Girls | 122 | 1.96 | .765 | .069 | 1.82 | 2.10 | 1 | 3 |
| | Total | 300 | 1.97 | .745 | .043 | 1.89 | 2.06 | 1 | 3 |
| Better understanding of the topic | Boys | 178 | 2.19 | 1.007 | .075 | 2.04 | 2.34 | 1 | 5 |
| | Girls | 122 | 2.17 | 1.089 | .099 | 1.98 | 2.37 | 1 | 5 |
| | Total | 300 | 2.18 | 1.039 | .060 | 2.07 | 2.30 | 1 | 5 |
| Encourages self-learning process | Boys | 178 | 2.03 | .926 | .069 | 1.90 | 2.17 | 1 | 5 |
| | Girls | 122 | 2.08 | 1.088 | .098 | 1.89 | 2.28 | 1 | 5 |
| | Total | 300 | 2.05 | .994 | .057 | 1.94 | 2.17 | 1 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Self-motivating | Boys | 178 | 2.30 | 1.007 | .076 | 2.15 | 2.45 | 1 | 5 |
| | Girls | 122 | 2.20 | 1.012 | .092 | 2.02 | 2.39 | 1 | 5 |
| | Total | 300 | 2.26 | 1.009 | .058 | 2.15 | 2.38 | 1 | 5 |
| Communication with teachers and other students becomes easy | Boys | 178 | 1.46 | .500 | .037 | 1.39 | 1.53 | 1 | 2 |
| | Girls | 122 | 1.49 | .502 | .045 | 1.40 | 1.58 | 1 | 2 |
| | Total | 300 | 1.47 | .500 | .029 | 1.42 | 1.53 | 1 | 2 |
| Gives a sense of achievement | Boys | 178 | 1.94 | .875 | .066 | 1.81 | 2.07 | 1 | 5 |
| | Girls | 122 | 1.98 | .975 | .088 | 1.80 | 2.15 | 1 | 5 |
| | Total | 300 | 1.96 | .915 | .053 | 1.85 | 2.06 | 1 | 5 |
| Easy to seek help of other students. | Boys | 178 | 2.10 | .986 | .074 | 1.96 | 2.25 | 1 | 5 |
| | Girls | 122 | 2.16 | 1.004 | .091 | 1.98 | 2.34 | 1 | 5 |
| | Total | 300 | 2.12 | .992 | .057 | 2.01 | 2.24 | 1 | 5 |
| Easy to seek help of teachers. | Boys | 178 | 2.26 | 1.070 | .080 | 2.11 | 2.42 | 1 | 5 |
| | Girls | 122 | 2.31 | 1.129 | .102 | 2.11 | 2.51 | 1 | 5 |
| | Total | 300 | 2.28 | 1.093 | .063 | 2.16 | 2.41 | 1 | 5 |
| Easy to seek help of other subject experts. | Boys | 178 | 2.22 | 1.064 | .080 | 2.06 | 2.38 | 1 | 5 |
| | Girls | 122 | 2.30 | 1.176 | .106 | 2.08 | 2.51 | 1 | 5 |
| | Total | 300 | 2.25 | 1.110 | .064 | 2.12 | 2.38 | 1 | 5 |
| Helped to enhance perfor- | Boys | 178 | 2.12 | 1.066 | .080 | 1.97 | 2.28 | 1 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| mance and to get good grades. | Girls | 122 | 2.24 | 1.150 | .104 | 2.03 | 2.44 | 1 | 5 |
| | Total | 300 | 2.17 | 1.101 | .064 | 2.04 | 2.30 | 1 | 5 |
| To make much more productive. | Boys | 178 | 1.93 | 1.012 | .076 | 1.78 | 2.08 | 1 | 5 |
| | Girls | 122 | 1.99 | 1.153 | .104 | 1.79 | 2.20 | 1 | 5 |
| | Total | 300 | 1.96 | 1.070 | .062 | 1.84 | 2.08 | 1 | 5 |
| Improve quality of education. | Boys | 178 | 1.69 | .707 | .053 | 1.58 | 1.79 | 1 | 4 |
| | Girls | 122 | 1.75 | .816 | .074 | 1.61 | 1.90 | 1 | 4 |
| | Total | 300 | 1.71 | .753 | .043 | 1.63 | 1.80 | 1 | 4 |
| Improves collaboration skills. | Boys | 178 | 2.16 | .952 | .071 | 2.02 | 2.30 | 1 | 5 |
| | Girls | 122 | 2.21 | 1.038 | .094 | 2.03 | 2.40 | 1 | 5 |
| | Total | 300 | 2.18 | .986 | .057 | 2.07 | 2.30 | 1 | 5 |
| Improves concentration towards studies. | Boys | 178 | 2.53 | .952 | .071 | 2.39 | 2.67 | 1 | 5 |
| | Girls | 122 | 2.59 | 1.002 | .091 | 2.41 | 2.77 | 1 | 5 |
| | Total | 300 | 2.55 | .971 | .056 | 2.44 | 2.66 | 1 | 5 |

**Table 4.5.4 Distribution of respondents on the basis of productivity across gender**

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| **Effect of multimedia and e-education on the productivity** | | **Sum of Squares** | **DF** | **Mean Square** | **F** | **Sig.** |
| Vast scope of acquiring knowledge | Between Groups | .042 | 1 | .042 | .076 | .783 |
| | Within Groups | 165.745 | 298 | .556 | | |
| | Total | 165.787 | 299 | | | |
| Better understanding of the topic | Between Groups | .026 | 1 | .026 | .024 | .877 |
| | Within Groups | 322.891 | 298 | 1.084 | | |
| | Total | 322.917 | 299 | | | |
| Encourages self-learning process | Between Groups | .169 | 1 | .169 | .170 | .680 |
| | Within Groups | 294.978 | 298 | .990 | | |
| | Total | 295.147 | 299 | | | |
| Self-motivating | Between Groups | .702 | 1 | .702 | .689 | .407 |
| | Within Groups | 303.495 | 298 | 1.018 | | |
| | Total | 304.197 | 299 | | | |
| Communication with teachers and other students becomes easy | Between Groups | .070 | 1 | .070 | .280 | .597 |
| | Within Groups | 74.717 | 298 | .251 | | |
| | Total | 74.787 | 299 | | | |
| Gives a sense of achievement | Between Groups | .072 | 1 | .072 | .086 | .770 |
| | Within Groups | 250.364 | 298 | .840 | | |
| | Total | 250.437 | 299 | | | |
| Easy to seek help of other students. | Between Groups | .216 | 1 | .216 | .219 | .640 |
| | Within Groups | 294.221 | 298 | .987 | | |
| | Total | 294.437 | 299 | | | |
| Easy to seek help of teachers. | Between Groups | .163 | 1 | .163 | .136 | .713 |
| | Within Groups | 356.754 | 298 | 1.197 | | |
| | Total | 356.917 | 299 | | | |
| Easy to seek help of other subject experts. | Between Groups | .418 | 1 | .418 | .339 | .561 |
| | Within Groups | 367.832 | 298 | 1.234 | | |
| | Total | 368.250 | 299 | | | |
| Helped to enhance performance and to get good grades. | Between Groups | .943 | 1 | .943 | .777 | .379 |
| | Within Groups | 361.387 | 298 | 1.213 | | |
| | Total | 362.330 | 299 | | | |
| To make much more productive. | Between Groups | .254 | 1 | .254 | .221 | .639 |
| | Within Groups | 342.183 | 298 | 1.148 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Total | 342.437 | 299 | | | |
| Improve quality of education. | Between Groups | .342 | 1 | .342 | .602 | .438 |
| | Within Groups | 169.005 | 298 | .567 | | |
| | Total | 169.347 | 299 | | | |
| Improves collaboration skills. | Between Groups | .182 | 1 | .182 | .187 | .666 |
| | Within Groups | 290.734 | 298 | .976 | | |
| | Total | 290.917 | 299 | | | |
| Improves concentration towards studies. | Between Groups | .279 | 1 | .279 | .295 | .588 |
| | Within Groups | 281.868 | 298 | .946 | | |
| | Total | 282.147 | 299 | | | |

From the above cross tabulation it can be seen that the number of total respondents was 300 in which 178 (59.3%) respondents were Boys and 122 (40.7%) respondents were Girls.

It can be concluded that **there is no significant difference between groups** (**Boys and Girls**) for all the variables of multimedia and e-education having impact on the academic performance of school going children; as the **value of significance** comes out to be **more than 0.05.**

**H0 1: There is no significant relationship between learning process gender**

**Table 4.4.5 Distribution of respondents on the basis of learning process across gender**

| **Descriptives** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Effect of multimedia and e-education on learning process** | | **N** | **Mean** | **Std. Deviation** | **Std. Error** | **95% Confidence Interval for Mean** | | **Min.** | **Max.** |
| | | | | | | **Lower Bound** | **Upper Bound** | | |
| Fast means of getting information. | Boys | 178 | 1.56 | .823 | .062 | 1.43 | 1.68 | 1 | 5 |
| | Girls | 122 | 1.66 | .868 | .079 | 1.51 | 1.82 | 1 | 5 |
| | Total | 300 | 1.60 | .842 | .049 | 1.50 | 1.70 | 1 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Help to learn many new things and improve my learning. | Boys | 178 | 1.79 | .726 | .054 | 1.68 | 1.90 | 1 | 5 |
| | Girls | 122 | 1.75 | .745 | .067 | 1.61 | 1.88 | 1 | 5 |
| | Total | 300 | 1.77 | .733 | .042 | 1.69 | 1.86 | 1 | 5 |

**Table 4.5.6 Distribution of respondents on the basis of learning process across gender**

| **ANOVA** | | | | | | |
|---|---|---|---|---|---|---|
| **Effect of multimedia and e-education on learning process** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| Fast means of getting information. | Between Groups | .840 | 1 | .840 | 1.186 | .277 |
| | Within Groups | 211.160 | 298 | .709 | | |
| | Total | 212.000 | 299 | | | |
| Help to learn many new things and improve my learning. | Between Groups | .155 | 1 | .155 | .287 | .592 |
| | Within Groups | 160.432 | 298 | .538 | | |
| | Total | 160.587 | 299 | | | |

From the above cross tabulation it can be seen that the number of total respondents was 300 in which 178 (59.3%) respondents were Boys and 122 (40.7%) respondents were Girls.

It can be concluded that **there is no significant difference between groups** (**Boys and Girls**) for all the variables of multimedia and e-education having impact on the academic performance of school going children; as the **value of significance** comes out to be **more than 0.05.**

**H0 1: There is no significant relationship between awareness and board**

**Table 4.5.7 Distribution of students on the basis of awareness across board**

| Descriptives | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Effect of multimedia and e-education on the awareness** | | **N** | **Mean** | **Std. Deviation** | **Std. Error** | **95% Confidence Interval for Mean** | | **Minimum** | **Maximum** |
| | | | | | | **Lower Bound** | **Upper Bound** | | |
| Use tools for studies. | ICSE | 100 | 1.61 | .490 | .049 | 1.51 | 1.71 | 1 | 2 |
| | CBSE | 100 | 2.59 | 1.264 | .126 | 2.34 | 2.84 | 1 | 5 |
| | UP Board | 100 | 3.58 | 1.273 | .127 | 3.33 | 3.83 | 1 | 5 |
| | Total | 300 | 2.59 | 1.339 | .077 | 2.44 | 2.75 | 1 | 5 |
| How to use tools for studies. | ICSE | 100 | 1.74 | .441 | .044 | 1.65 | 1.83 | 1 | 2 |
| | CBSE | 100 | 2.41 | 1.264 | .126 | 2.16 | 2.66 | 1 | 5 |
| | UP Board | 100 | 3.19 | 1.228 | .123 | 2.95 | 3.43 | 1 | 5 |
| | Total | 300 | 2.45 | 1.202 | .069 | 2.31 | 2.58 | 1 | 5 |
| Comfortable with tools used in the class. | ICSE | 100 | 1.66 | .755 | .076 | 1.51 | 1.81 | 1 | 3 |
| | CBSE | 100 | 2.18 | .999 | .100 | 1.98 | 2.38 | 1 | 5 |
| | UP Board | 100 | 3.55 | 1.313 | .131 | 3.29 | 3.81 | 1 | 5 |
| | Total | 300 | 2.46 | 1.314 | .076 | 2.31 | 2.61 | 1 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Motivated to explore the topic more. | ICSE | 100 | 1.64 | .482 | .048 | 1.54 | 1.74 | 1 | 2 |
| | CBSE | 100 | 2.32 | 1.238 | .124 | 2.07 | 2.57 | 1 | 5 |
| | UP Board | 100 | 3.31 | 1.331 | .133 | 3.05 | 3.57 | 1 | 5 |
| | Total | 300 | 2.42 | 1.282 | .074 | 2.28 | 2.57 | 1 | 5 |
| Understand the topic better. | ICSE | 100 | 1.58 | .496 | .050 | 1.48 | 1.68 | 1 | 2 |
| | CBSE | 100 | 2.36 | 1.133 | .113 | 2.14 | 2.58 | 1 | 5 |
| | UP Board | 100 | 3.35 | 1.226 | .123 | 3.11 | 3.59 | 1 | 5 |
| | Total | 300 | 2.43 | 1.237 | .071 | 2.29 | 2.57 | 1 | 5 |
| Graphics help to understand better. | ICSE | 100 | 1.89 | .840 | .084 | 1.72 | 2.06 | 1 | 4 |
| | CBSE | 100 | 2.12 | .998 | .100 | 1.92 | 2.32 | 1 | 5 |
| | UP Board | 100 | 2.94 | 1.162 | .116 | 2.71 | 3.17 | 1 | 5 |
| | Total | 300 | 2.32 | 1.102 | .064 | 2.19 | 2.44 | 1 | 5 |
| Help to solve the challenging problems. | ICSE | 100 | 1.70 | .461 | .046 | 1.61 | 1.79 | 1 | 2 |
| | CBSE | 100 | 2.23 | .993 | .099 | 2.03 | 2.43 | 1 | 5 |
| | UP Board | 100 | 3.30 | 1.185 | .118 | 3.06 | 3.54 | 1 | 5 |
| | Total | 300 | 2.41 | 1.143 | .066 | 2.28 | 2.54 | 1 | 5 |
| Helpful for class discussion. | ICSE | 100 | 1.71 | .456 | .046 | 1.62 | 1.80 | 1 | 2 |
| | CBSE | 100 | 2.46 | 1.123 | .112 | 2.24 | 2.68 | 1 | 5 |
| | UP Board | 100 | 2.98 | 1.044 | .104 | 2.77 | 3.19 | 1 | 5 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | 300 | 2.38 | 1.058 | .061 | 2.26 | 2.50 | 1 | 5 |
| First search for a book to find information for a school project before search for a Web Site. | ICSE | 100 | 2.18 | 1.218 | .122 | 1.94 | 2.42 | 1 | 4 |
| | CBSE | 100 | 2.18 | 1.058 | .106 | 1.97 | 2.39 | 1 | 5 |
| | UP Board | 100 | 3.17 | 1.311 | .131 | 2.91 | 3.43 | 1 | 5 |
| | Total | 300 | 2.51 | 1.284 | .074 | 2.36 | 2.66 | 1 | 5 |
| Preferred the Web Assisted activity instead of the Paper Assisted activity. | ICSE | 100 | 1.61 | .490 | .049 | 1.51 | 1.71 | 1 | 2 |
| | CBSE | 100 | 2.26 | 1.001 | .100 | 2.06 | 2.46 | 1 | 5 |
| | UP Board | 100 | 3.47 | 1.087 | .109 | 3.25 | 3.69 | 1 | 5 |
| | Total | 300 | 2.45 | 1.183 | .068 | 2.31 | 2.58 | 1 | 5 |
| Uncomfortable using internet than the books. | ICSE | 100 | 3.01 | 1.460 | .146 | 2.72 | 3.30 | 1 | 5 |
| | CBSE | 100 | 3.58 | 1.499 | .150 | 3.28 | 3.88 | 1 | 5 |
| | UP Board | 100 | 3.47 | 1.226 | .123 | 3.23 | 3.71 | 1 | 5 |
| | Total | 300 | 3.35 | 1.417 | .082 | 3.19 | 3.51 | 1 | 5 |

**Table 4.5.8 Distribution of students on the basis of awareness across board**

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| **Effect of multimedia and e-education on the awareness** | | **Sum of Squares** | **df** | **Mean Square** | **F** | **Sig.** |
| Use tools for studies. | Between Groups | 194.047 | 2 | 97.023 | 84.173 | .000 |
| | Within Groups | 342.340 | 297 | 1.153 | | |
| | Total | 536.387 | 299 | | | |
| How to use tools for studies. | Between Groups | 105.327 | 2 | 52.663 | 47.858 | .000 |
| | Within Groups | 326.820 | 297 | 1.100 | | |
| | Total | 432.147 | 299 | | | |
| Comfortable with tools used in the class. | Between Groups | 190.647 | 2 | 95.323 | 86.857 | .000 |
| | Within Groups | 325.950 | 297 | 1.097 | | |
| | Total | 516.597 | 299 | | | |
| Motivated to explore the topic more. | Between Groups | 141.047 | 2 | 70.523 | 59.812 | .000 |
| | Within Groups | 350.190 | 297 | 1.179 | | |
| | Total | 491.237 | 299 | | | |
| Understand the topic better. | Between Groups | 157.380 | 2 | 78.690 | 77.864 | .000 |
| | Within Groups | 300.150 | 297 | 1.011 | | |
| | Total | 457.530 | 299 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Graphics help to understand better. . | Between Groups | 60.927 | 2 | 30.463 | 29.960 | .000 |
| | Within Groups | 301.990 | 297 | 1.017 | | |
| | Total | 362.917 | 299 | | | |
| Help to solve the challenging problems. | Between Groups | 132.860 | 2 | 66.430 | 76.558 | .000 |
| | Within Groups | 257.710 | 297 | .868 | | |
| | Total | 390.570 | 299 | | | |
| Helpful for class discussion. | Between Groups | 81.527 | 2 | 40.763 | 47.779 | .000 |
| | Within Groups | 253.390 | 297 | .853 | | |
| | Total | 334.917 | 299 | | | |
| First search for a book to find information for a school project before search for a Web Site. | Between Groups | 65.340 | 2 | 32.670 | 22.690 | .000 |
| | Within Groups | 427.630 | 297 | 1.440 | | |
| | Total | 492.970 | 299 | | | |
| Preferred the Web Assisted activity instead of the Paper Assisted activity. | Between Groups | 178.207 | 2 | 89.103 | 110.293 | .000 |
| | Within Groups | 239.940 | 297 | .808 | | |
| | Total | 418.147 | 299 | | | |
| Uncomfortable using internet than the books. | Between Groups | 18.287 | 2 | 9.143 | 4.664 | .010 |
| | Within Groups | 582.260 | 297 | 1.960 | | |
| | Total | 600.547 | 299 | | | |

From the above cross tabulation it can be seen that the number of total respondents was 300 in which 178 (59.3%) respondents were Boys and 122 (40.7%) respondents were Girls.

It can be concluded that **there is significant difference among groups** (**Boards: ICSE, CBSE & UP Board)** for **all the variables** of multimedia and e-education having impact on the academic performance of school going children; as the **value of significance** comes out to be **less than 0.05.**

**H0 1: There is no significant relationship between productivity and board**

**Table 4.5.9 Distribution of students on the basis of Productivity across board**

| **Descriptives** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Effect of multimedia and e-education on the productivity** | | **N** | **Mean** | **Std. Deviation** | **Std. Error** | **95% Confidence Interval for Mean** | | **Minimum** | **Maximum** |
| | | | | | | **Lower Bound** | **Upper Bound** | | |
| Vast scope of acquiring knowledge. | ICSE | 100 | 1.58 | .516 | .052 | 1.48 | 1.68 | 1 | 3 |
| | CBSE | 100 | 2.00 | .711 | .071 | 1.86 | 2.14 | 1 | 3 |
| | UP Board | 100 | 2.34 | .781 | .078 | 2.18 | 2.50 | 1 | 3 |
| | Total | 300 | 1.97 | .745 | .043 | 1.89 | 2.06 | 1 | 3 |
| Better understanding of the topic | ICSE | 100 | 1.54 | .501 | .050 | 1.44 | 1.64 | 1 | 2 |
| | CBSE | 100 | 1.98 | .765 | .077 | 1.83 | 2.13 | 1 | 3 |
| | UP Board | 100 | 3.03 | 1.114 | .111 | 2.81 | 3.25 | 2 | 5 |
| | Total | 300 | 2.18 | 1.039 | .060 | 2.07 | 2.30 | 1 | 5 |
| Encourages self-learning process | ICSE | 100 | 1.61 | .490 | .049 | 1.51 | 1.71 | 1 | 2 |
| | CBSE | 100 | 1.95 | .716 | .072 | 1.81 | 2.09 | 1 | 3 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | UP Board | 100 | 2.60 | 1.310 | .131 | 2.34 | 2.86 | 1 | 5 |
| | Total | 300 | 2.05 | .994 | .057 | 1.94 | 2.17 | 1 | 5 |
| Self-motivating | ICSE | 100 | 1.78 | .416 | .042 | 1.70 | 1.86 | 1 | 2 |
| | CBSE | 100 | 2.44 | 1.067 | .107 | 2.23 | 2.65 | 1 | 5 |
| | UP Board | 100 | 2.57 | 1.183 | .118 | 2.34 | 2.80 | 1 | 5 |
| | Total | 300 | 2.26 | 1.009 | .058 | 2.15 | 2.38 | 1 | 5 |
| Communication with teachers and other students becomes easy | ICSE | 100 | 1.36 | .482 | .048 | 1.26 | 1.46 | 1 | 2 |
| | CBSE | 100 | 1.48 | .502 | .050 | 1.38 | 1.58 | 1 | 2 |
| | UP Board | 100 | 1.58 | .496 | .050 | 1.48 | 1.68 | 1 | 2 |
| | Total | 300 | 1.47 | .500 | .029 | 1.42 | 1.53 | 1 | 2 |
| Gives a sense of achievement | ICSE | 100 | 1.51 | .674 | .067 | 1.38 | 1.64 | 1 | 3 |
| | CBSE | 100 | 1.95 | .757 | .076 | 1.80 | 2.10 | 1 | 3 |
| | UP Board | 100 | 2.41 | 1.045 | .105 | 2.20 | 2.62 | 1 | 5 |
| | Total | 300 | 1.96 | .915 | .053 | 1.85 | 2.06 | 1 | 5 |
| It is easy to seek help of other students. | ICSE | 100 | 1.77 | .423 | .042 | 1.69 | 1.85 | 1 | 2 |
| | CBSE | 100 | 1.90 | 1.087 | .109 | 1.68 | 2.12 | 1 | 5 |
| | UP Board | 100 | 2.70 | 1.049 | .105 | 2.49 | 2.91 | 1 | 5 |
| | Total | 300 | 2.12 | .992 | .057 | 2.01 | 2.24 | 1 | 5 |
| Easy to seek help of | ICSE | 100 | 1.71 | .456 | .046 | 1.62 | 1.80 | 1 | 2 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| teachers. | CBSE | 100 | 2.15 | .999 | .100 | 1.95 | 2.35 | 1 | 5 |
| | UP Board | 100 | 2.99 | 1.243 | .124 | 2.74 | 3.24 | 1 | 5 |
| | Total | 300 | 2.28 | 1.093 | .063 | 2.16 | 2.41 | 1 | 5 |
| Easy to seek help of other subject experts. | ICSE | 100 | 1.78 | .440 | .044 | 1.69 | 1.87 | 1 | 3 |
| | CBSE | 100 | 2.18 | 1.019 | .102 | 1.98 | 2.38 | 1 | 5 |
| | UP Board | 100 | 2.79 | 1.402 | .140 | 2.51 | 3.07 | 1 | 5 |
| | Total | 300 | 2.25 | 1.110 | .064 | 2.12 | 2.38 | 1 | 5 |
| Helped enhance performance and to get good grades. | ICSE | 100 | 1.46 | .501 | .050 | 1.36 | 1.56 | 1 | 2 |
| | CBSE | 100 | 2.10 | .859 | .086 | 1.93 | 2.27 | 1 | 4 |
| | UP Board | 100 | 2.95 | 1.242 | .124 | 2.70 | 3.20 | 1 | 5 |
| | Total | 300 | 2.17 | 1.101 | .064 | 2.04 | 2.30 | 1 | 5 |
| Much more productive. | ICSE | 100 | 1.55 | .716 | .072 | 1.41 | 1.69 | 1 | 3 |
| | CBSE | 100 | 1.86 | .876 | .088 | 1.69 | 2.03 | 1 | 3 |
| | UP Board | 100 | 2.46 | 1.321 | .132 | 2.20 | 2.72 | 1 | 5 |
| | Total | 300 | 1.96 | 1.070 | .062 | 1.84 | 2.08 | 1 | 5 |
| Improve quality of education. | ICSE | 100 | 1.71 | .456 | .046 | 1.62 | 1.80 | 1 | 2 |
| | CBSE | 100 | 1.42 | .622 | .062 | 1.30 | 1.54 | 1 | 3 |
| | UP Board | 100 | 2.01 | .969 | .097 | 1.82 | 2.20 | 1 | 4 |
| | Total | 300 | 1.71 | .753 | .043 | 1.63 | 1.80 | 1 | 4 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Improves collaboration skills. | ICSE | 100 | 1.59 | .726 | .073 | 1.45 | 1.73 | 1 | 3 |
| | CBSE | 100 | 1.90 | .798 | .080 | 1.74 | 2.06 | 1 | 3 |
| | UP Board | 100 | 3.06 | .750 | .075 | 2.91 | 3.21 | 2 | 5 |
| | Total | 300 | 2.18 | .986 | .057 | 2.07 | 2.30 | 1 | 5 |
| Improves concentration towards studies. | ICSE | 100 | 2.33 | .739 | .074 | 2.18 | 2.48 | 2 | 4 |
| | CBSE | 100 | 2.50 | 1.020 | .102 | 2.30 | 2.70 | 1 | 5 |
| | UP Board | 100 | 2.83 | 1.064 | .106 | 2.62 | 3.04 | 1 | 5 |
| | Total | 300 | 2.55 | .971 | .056 | 2.44 | 2.66 | 1 | 5 |

**Table 4.5.10 Distribution of students on the basis of Productivity across board**

| **ANOVA** | | | | | | |
|---|---|---|---|---|---|---|
| **Effect of multimedia and e-education on the productivity** | | **Sum of Squares** | **DF** | **Mean Square** | **F** | **Sig.** |
| Vast scope of acquiring knowledge | Between Groups | 28.987 | 2 | 14.493 | 31.466 | .000 |
| | Within Groups | 136.800 | 297 | .461 | | |
| | Total | 165.787 | 299 | | | |
| Better understanding of the topic | Between Groups | 117.207 | 2 | 58.603 | 84.610 | .000 |
| | Within Groups | 205.710 | 297 | .693 | | |
| | Total | 322.917 | 299 | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Encourages self-learning process | Between Groups | 50.607 | 2 | 25.303 | 30.732 | .000 |
| | Within Groups | 244.540 | 297 | .823 | | |
| | Total | 295.147 | 299 | | | |
| Self-motivating | Between Groups | 35.887 | 2 | 17.943 | 19.862 | .000 |
| | Within Groups | 268.310 | 297 | .903 | | |
| | Total | 304.197 | 299 | | | |
| Communication with teachers and other students becomes easy | Between Groups | 2.427 | 2 | 1.213 | 4.980 | .007 |
| | Within Groups | 72.360 | 297 | .244 | | |
| | Total | 74.787 | 299 | | | |
| Gives a sense of achievement | Between Groups | 40.507 | 2 | 20.253 | 28.654 | .000 |
| | Within Groups | 209.930 | 297 | .707 | | |
| | Total | 250.437 | 299 | | | |
| Easy to seek help of other students. | Between Groups | 50.727 | 2 | 25.363 | 30.909 | .000 |
| | Within Groups | 243.710 | 297 | .821 | | |
| | Total | 294.437 | 299 | | | |
| Easy to seek help of teachers. | Between Groups | 84.587 | 2 | 42.293 | 46.125 | .000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Within Groups | 272.330 | 297 | .917 | | |
| | Total | 356.917 | 299 | | | |
| Easy to seek help of other subject experts. | Between Groups | 51.740 | 2 | 25.870 | 24.275 | .000 |
| | Within Groups | 316.510 | 297 | 1.066 | | |
| | Total | 368.250 | 299 | | | |
| Helped me to enhance my performance and to get good grades. | Between Groups | 111.740 | 2 | 55.870 | 66.217 | .000 |
| | Within Groups | 250.590 | 297 | .844 | | |
| | Total | 362.330 | 299 | | | |
| More productive. | Between Groups | 42.807 | 2 | 21.403 | 21.215 | .000 |
| | Within Groups | 299.630 | 297 | 1.009 | | |
| | Total | 342.437 | 299 | | | |
| Improve quality of education. | Between Groups | 17.407 | 2 | 8.703 | 17.013 | .000 |
| | Within Groups | 151.940 | 297 | .512 | | |
| | Total | 169.347 | 299 | | | |
| Improves my collaboration skills. | Between Groups | 120.087 | 2 | 60.043 | 104.390 | .000 |
| | Within Groups | 170.830 | 297 | .575 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Total | 290.917 | 299 | | | |
| Improves concentration towards studies. | Between Groups | 12.927 | 2 | 6.463 | 7.130 | .001 |
| | Within Groups | 269.220 | 297 | .906 | | |
| | Total | 282.147 | 299 | | | |

From the above cross tabulation it can be seen that the number of total respondents was 300 in which 178 (59.3%) respondents were Boys and 122 (40.7%) respondents were Girls.

It can be concluded that **there is significant difference among groups** (**Boards: ICSE, CBSE & UP Board)** for **all the variables** of multimedia and e-education having impact on the academic performance of school going children; as the **value of significance** comes out to be **less than 0.05.**

**H0 1: There is no significant relationship between learning process and board**

**Table 4.5.11: Distribution of students on the basis of learning process across board**

| Descriptives | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | | Minimum | Maximum |
| | | | | | | Lower Bound | Upper Bound | | |
| Fast means of getting information. | ICSE | 100 | 1.24 | .429 | .043 | 1.15 | 1.33 | 1 | 2 |
| | CBSE | 100 | 1.24 | .429 | .043 | 1.15 | 1.33 | 1 | 2 |
| | UP Board | 100 | 2.32 | .994 | .099 | 2.12 | 2.52 | 1 | 5 |
| | Total | 300 | 1.60 | .842 | .049 | 1.50 | 1.70 | 1 | 5 |
| Help to learn many new things and improve learning. | ICSE | 100 | 1.61 | .490 | .049 | 1.51 | 1.71 | 1 | 2 |
| | CBSE | 100 | 1.71 | .456 | .046 | 1.62 | 1.80 | 1 | 2 |
| | UP Board | 100 | 2.00 | 1.044 | .104 | 1.79 | 2.21 | 1 | 5 |
| | Total | 300 | 1.77 | .733 | .042 | 1.69 | 1.86 | 1 | 5 |

**Table 4.5.12: Distribution of students on the basis of learning process across board**

| **ANOVA** | | | | | | |
|---|---|---|---|---|---|---|
| | | **Sum of Squares** | **DF** | **Mean Square** | **F** | **Sig.** |
| Fast means of getting information. | Between Groups | 77.760 | 2 | 38.880 | 86.020 | .000 |
| | Within Groups | 134.240 | 297 | .452 | | |
| | Total | 212.000 | 299 | | | |
| Help to learn many new things and improve learning. | Between Groups | 8.207 | 2 | 4.103 | 7.998 | .000 |
| | Within Groups | 152.380 | 297 | .513 | | |
| | Total | 160.587 | 299 | | | |

From the above cross tabulation it can be seen that the number of total respondents was 300 in which 178 (59.3%) respondents were Boys and 122 (40.7%) respondents were Girls.

It can be concluded that **there is significant difference among groups** (**Boards: ICSE, CBSE & UP Board)** for **all the variables** of multimedia and e-education having impact on the academic performance of school going children; as the **value of significance** comes out to be **less than 0.05.**

**H0 1: There is no significant relationship between board and academic performanceTable 4.5.13 Distribution of respondents (teachers) on the basis of board those having impact on the encourage students to use multimedia and educational technologies for learning.**

| **I encourage students to use multimedia and educational technologies for learning.** | | | | | |
|---|---|---|---|---|---|
| | | | I encourage students to use multime-dia and educational technologies for learning. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 44 | 6 | 50 |
| | | % within Board | 88.0% | 12.0% | 100.0% |
| | | % of Total | 29.3% | 4.0% | 33.3% |
| | CBSE | Count | 43 | 7 | 50 |
| | | % within Board | 86.0% | 14.0% | 100.0% |
| | | % of Total | 28.7% | 4.7% | 33.3% |
| | UP Board | Count | 17 | 33 | 50 |
| | | % within Board | 34.0% | 66.0% | 100.0% |
| | | % of Total | 11.3% | 22.0% | 33.3% |
| Total | | Count | 104 | 46 | 150 |
| | | % within Board | 69.3% | 30.7% | 100.0% |
| | | % of Total | 69.3% | 30.7% | 100.0% |

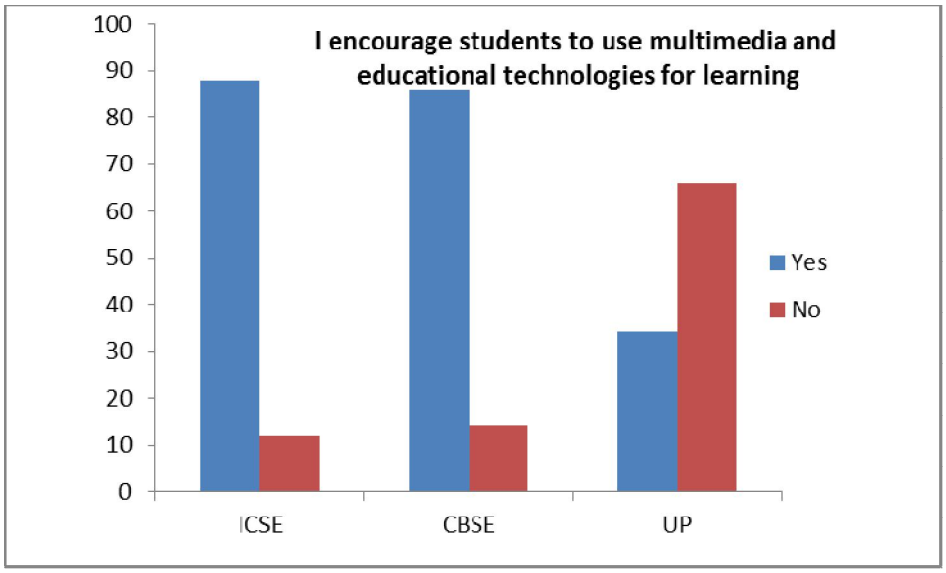



**Fig 4.5.13 Distribution of respondents (teachers) on the encourage students to use multimedia and educational technologies for learning.**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 88.0% respondents said 'yes' and 12.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 86.0% respondents said 'yes' and 14.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 34.0% respondents said 'yes' and 66.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'I encourage students to use multimedia and educational technologies for learning.' But the majority of the respondents from UP Board schools were not satisfied.

**Table 4.5.14 Distribution of respondents (teachers) on the basis of board those having impact on the students are aware and use multimedia and educational technologies for learning**

| **Students are aware and use multimedia and educational technologies for learning** | | | | | |
|---|---|---|---|---|---|
| | | | Students are aware and use multimedia and educational technologies for learning | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 43 | 7 | 50 |
| | | % within Board | 86.0% | 14.0% | 100.0% |
| | | % of Total | 28.7% | 4.7% | 33.3% |
| | CBSE | Count | 38 | 12 | 50 |
| | | % within Board | 76.0% | 24.0% | 100.0% |
| | | % of Total | 25.3% | 8.0% | 33.3% |
| | UP Board | Count | 30 | 20 | 50 |
| | | % within Board | 60.0% | 40.0% | 100.0% |
| | | % of Total | 20.0% | 13.3% | 33.3% |
| Total | | Count | 111 | 39 | 150 |
| | | % within Board | 74.0% | 26.0% | 100.0% |
| | | % of Total | 74.0% | 26.0% | 100.0% |

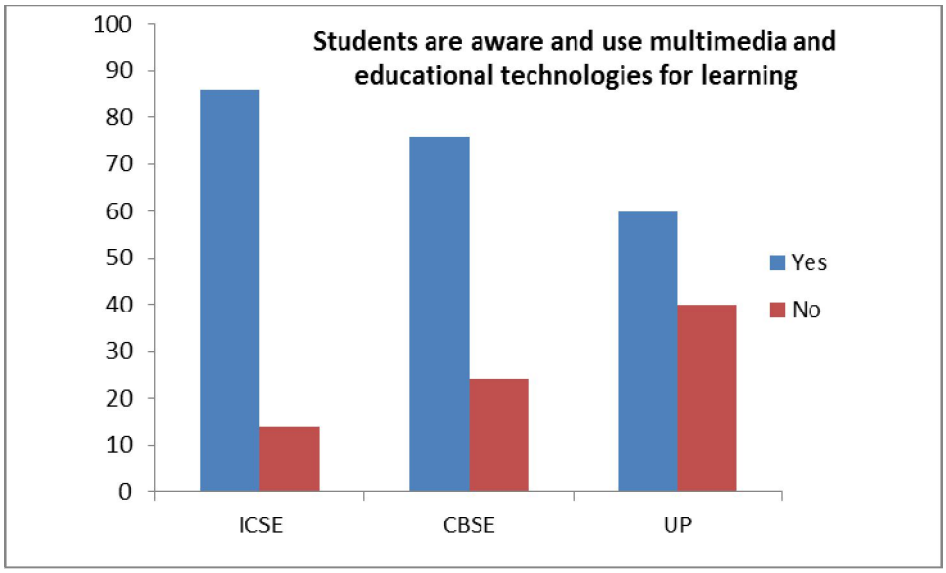



**Fig 4.5.14 Distribution of respondents (teachers) on the students are aware and use multimedia and educational technologies for learning**

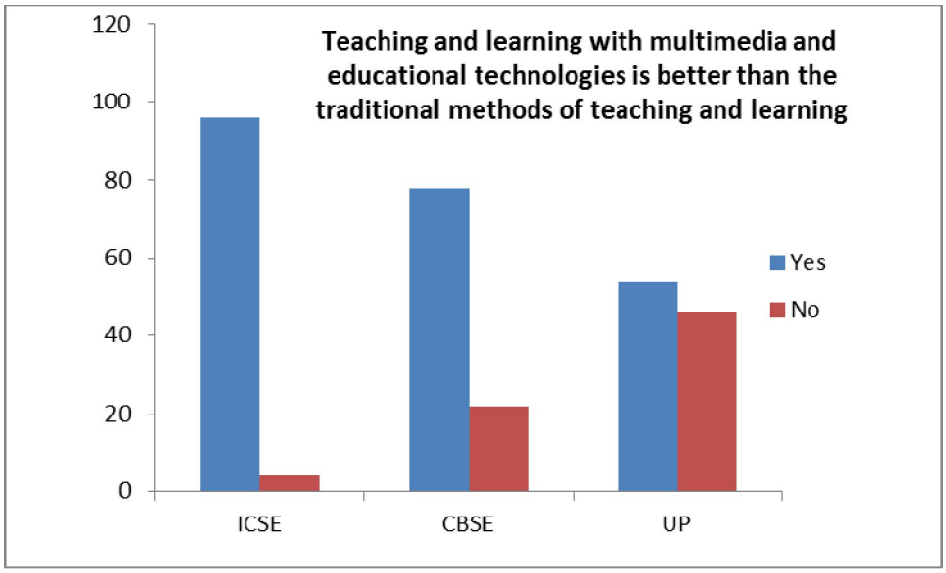
From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 86.0% respondents said 'yes' and 14.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 76.0% respondents said 'yes' and 24.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 60.0% respondents said 'yes' and 40.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'Students are aware and use multimedia and educational technologies for learning' but the majority of the respondents from UP Board schools were not satisfied.

**Table 4.5.15 Distribution of respondents (teachers) on the basis of board those having impact on the teaching and learning with multimedia and educational technologies is better than the traditional methods of teaching and learning.**

| **Teaching and learning with multimedia and educational technologies is better than the traditional methods of teaching and learning.** | | | | | |
|---|---|---|---|---|---|
| | | | Teaching and learning with multimedia and educational technologies is better than the traditional methods of teaching and learning. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 41 | 9 | 50 |
| | | % within Board | 82.0% | 18.0% | 100.0% |
| | | % of Total | 27.3% | 6.0% | 33.3% |
| | CBSE | Count | 39 | 11 | 50 |
| | | % within Board | 78.0% | 22.0% | 100.0% |
| | | % of Total | 26.0% | 7.3% | 33.3% |
| | UP Board | Count | 27 | 23 | 50 |
| | | % within Board | 54.0% | 46.0% | 100.0% |
| | | % of Total | 18.0% | 15.3% | 33.3% |
| Total | | Count | 107 | 43 | 150 |
| | | % within Board | 71.3% | 28.7% | 100.0% |
| | | % of Total | 71.3% | 28.7% | 100.0% |




From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 82.0% respondents said 'yes' and 18.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 78.0% respondents said 'yes' and 22.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 54.0% respondents said 'yes' and 46.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'Teaching and learning with multimedia and educational technologies is better than the traditional methods of teaching and learning.' But the majority of the respondents from UP Board schools were not satisfied.

**Table 4.5.16 Distribution of respondents (teachers) on the basis of board those having impact on the use of educational technology during teaching enhances learning of the students.**

| Use of educational technology during teaching enhances learning of the students. | | | | | |
|---|---|---|---|---|---|
| | | | Use of educational technology during teaching enhances learning of the students. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 48 | 2 | 50 |
| | | % within Board | 96.0% | 4.0% | 100.0% |
| | | % of Total | 32.0% | 1.3% | 33.3% |
| | CBSE | Count | 39 | 11 | 50 |
| | | % within Board | 78.0% | 22.0% | 100.0% |
| | | % of Total | 26.0% | 7.3% | 33.3% |
| | UP Board | Count | 24 | 26 | 50 |
| | | % within Board | 48.0% | 52.0% | 100.0% |
| | | % of Total | 16.0% | 17.3% | 33.3% |
| Total | | Count | 111 | 39 | 150 |
| | | % within Board | 74.0% | 26.0% | 100.0% |
| | | % of Total | 74.0% | 26.0% | 100.0% |

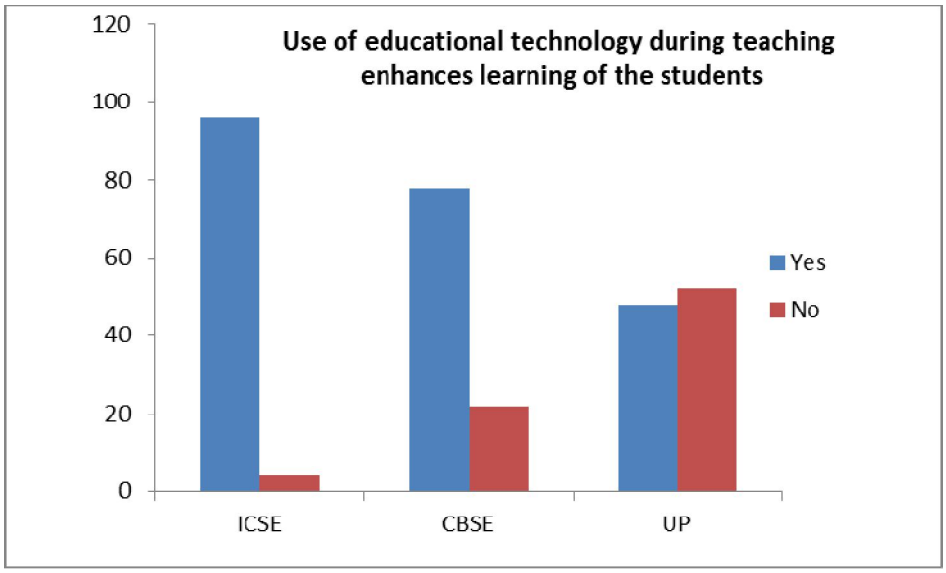



**Fig 4.5.16 Distribution of respondents (teachers) on the use of educational technology during teaching enhances learning of the students**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 96.0% respondents said 'yes' and 4.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 78.0% respondents said 'yes' and 22.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 48.0% respondents said 'yes' and 52.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'Use of educational technology during teaching enhances learning of the students.' But the majority of the respondents from UP Board schools were not satisfied.

**Table 4.5.17: Distribution of respondents (teachers) on the basis of board those having impact on the educational technology is essential for the effective teaching**

| Educational technology is essential for the effective teaching. | | | | | |
|---|---|---|---|---|---|
| | | | Educational technology is essential for the effective teaching. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 45 | 5 | 50 |
| | | % within Board | 90.0% | 10.0% | 100.0% |
| | | % of Total | 30.0% | 3.3% | 33.3% |
| | CBSE | Count | 42 | 8 | 50 |
| | | % within Board | 84.0% | 16.0% | 100.0% |
| | | % of Total | 28.0% | 5.3% | 33.3% |
| | UP Board | Count | 16 | 34 | 50 |
| | | % within Board | 32.0% | 68.0% | 100.0% |
| | | % of Total | 10.7% | 22.7% | 33.3% |
| Total | | Count | 103 | 47 | 150 |
| | | % within Board | 68.7% | 31.3% | 100.0% |
| | | % of Total | 68.7% | 31.3% | 100.0% |

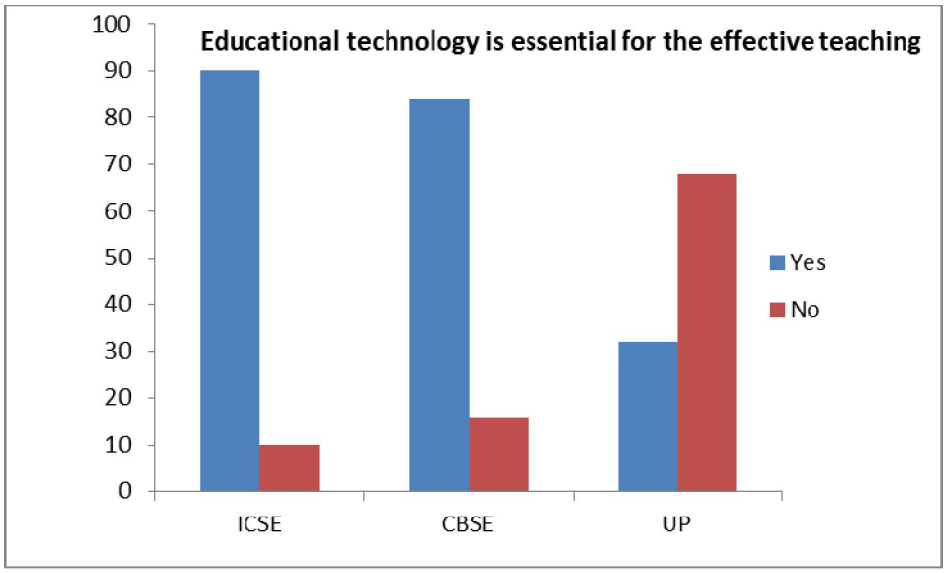



**Fig 4.5.17 Distribution of respondents (teachers) on the educational technology is essential for the effective teaching**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 90.0% respondents said 'yes' and 10.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 84.0% respondents said 'yes' and 16.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 32.0% respondents said 'yes' and 68.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'Educational technology is essential for the effective teaching.' But the majority of the respondents from UP Board schools were not satisfied.

## 4.6 DESCRIPTION OF IMPACT ON THE ACADEMIC PERFORMANCE OF THE RESPONDENTS

**H01: There is no correlation between Awareness, Productivity & Learning Process and academic performance.**

**Table 4.6.1: Correlation between Awareness, Productivity & Learning Process and academic performance.**

| **Correlations** | | | | | |
|---|---|---|---|---|---|
| | | **Academic Performance** | **Awareness** | **Productivity** | **Learning Process** |
| Pearson Correlation | **Academic Performance** | 1.000 | **0.713** | **0.795** | **0.713** |
| | **Awareness** | 0.713 | 1.000 | 0.910 | 0.789 |
| | **Productivity** | 0.795 | 0.910 | 1.000 | 0.863 |
| | **Learning Process** | 0.713 | 0.789 | 0.863 | 1.000 |
| Sig. (1-tailed) | Academic Performance | . | 0.000 | 0.000 | 0.000 |
| | Awareness | .000 | . | .000 | .000 |
| | Productivity | .000 | .000 | . | .000 |
| | Learning Process | .000 | .000 | .000 | . |
| N | Academic Performance | 300 | 300 | 300 | 300 |
| | Awareness | 300 | 300 | 300 | 300 |
| | Productivity | 300 | 300 | 300 | 300 |
| | Learning Process | 300 | 300 | 300 | 300 |

The correlation matrix presented in above table shows that there is a positive correlation among the three dimensions- Awareness, Productivity & Learning Process and Academic Performance. The correlation analysis shows that 3 independent variables are significant at the 0.000 level, which is lower than the 0.05 confidence level for the study. The correlation among Awareness, Productivity

& Learning Process indicates that there was a significant and positive correlation with one another also.

Hence from the aforementioned results we can say that our sub H1 is accepted and H0 is rejected because it was found that there was positive correlation between 3dimensions (Awareness, Productivity & Learning Process and Academic Performance.

**H01: There is no significant relationship between Awareness, Productivity & Learning Process and academic performance.**

**Table 4.6.2 Description of the impact of Awareness, Productivity & Learning Process on academic performance.**

| **Regression Coefficients[a]** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Correlations | | | Collinearity Statistics | |
| | | B | Std. Error | Beta | | | Zero-order | Partial | Part | Tolerance | VIF |
| 1 | (Constant) | 0.289 | 0.072 | | 3.998 | 0.000 | | | | | |
| | Awareness | **-.008** | 0.011 | -.064 | -.758 | **0.449** | 0.713 | -.044 | -.027 | 0.173 | 5.794 |
| | Productivity | **0.148** | 0.020 | 0.763 | 7.430 | **0.000** | 0.795 | 0.396 | 0.261 | 0.117 | 8.572 |
| | Learning Process | **0.035** | 0.023 | 0.104 | 1.498 | **0.135** | 0.713 | 0.087 | 0.053 | 0.255 | 3.925 |
| A. Dependent variable: academic performance. | | | | | | | | | | | |

- **Awareness:** From the above table, it can be seen that in case of academic performance, awareness for Multimedia and e-education plays very important role. The value of unstandardised (β) coefficients for awareness is -0.008, it means that one unit positive change in awareness, while holding other variables constant, would result in the decrease of dependent variable 'academic performance' by 0.008 unit. Hence, it can be concluded that as the value of coefficient is significant, Dimension, Awareness has insignificant relationship with dependent variable. So, we can say that our Alternate H1 rejected and H0 is accepted.
- **Productivity:** From the above table, it can be seen that in case of academic performance, Productivity through multimedia and educational technologies plays very important role. The value of unstandardised (β) coefficients for Productivity is 0.148, it means that one unit positive change in Productivity, while holding other variables constant, would result in the increase of dependent variable 'academic performance' by 0.148 unit. Hence, it can be concluded that as the value of coefficient is significant, Dimension, Productivity has significant relationship with dependent variable. So, we can say that H1 is accepted and (H0) is rejected.

  This result is because of the lesser use of Multimedia and e-education technologies in the class among the students of UP board that again affected the entire data negatively.

**Learning Process:** From the above table, it can be seen that in case of academic performance, Learning Process through multimedia and educational technologies plays very important role. The value of unstandardised (β) coefficients for Learning Process is 0.035, it means that one unit positive change in Learning Process, while holding other variables constant, would result in the increase of dependent variable 'academic performance' by 0.035 unit. Hence, it can be concluded that as the value of coefficient is significant, Dimension, Learning Process has Positive but insignificant relationship with dependent variable. So, we can say that H1 is rejected and H0 is accepted .This result is because of the lesser use of Multimedia and e-education technologies in the class among the students of UP board that again affected the entire data negatively.

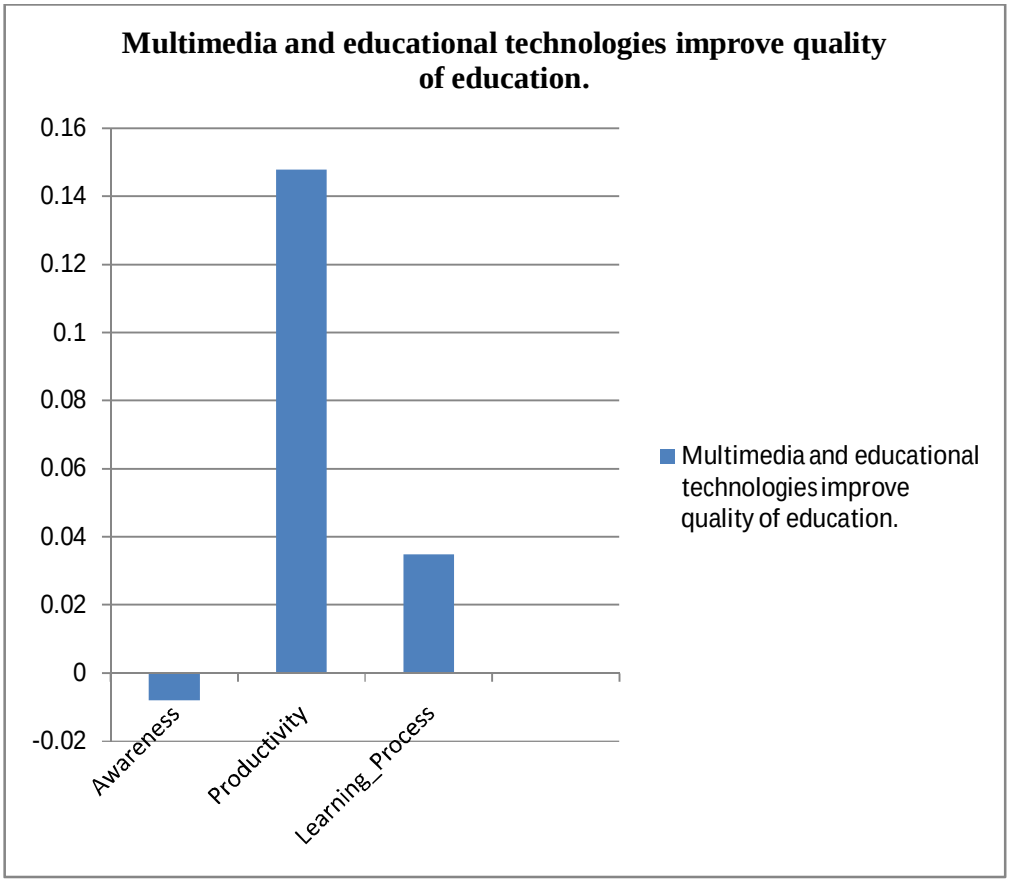



**Fig 4.6.2 Description of Awareness, Productivity & Learning Process on academic performance.**

## 4.7 DESCRIPTION OF RESPONDENTS ON THE COMPARE OF MULTI-MEDIA METHODS AND E-EDUCATION FACILITIES

**Table 4.7.1 Distribution of acceptability of computers in schools on the basis of board.**

| **There are enough computers in the school.** | | | | | |
|---|---|---|---|---|---|
| | | | There are enough computers in the school. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 41 | 9 | 50 |
| | | % within Board | **82.0%** | **18.0%** | **100.0%** |
| | | % of Total | 27.3% | 6.0% | 33.3% |
| | CBSE | Count | 39 | 11 | 50 |
| | | % within Board | **78.0%** | **22.0%** | **100.0%** |
| | | % of Total | 26.0% | 7.3% | 33.3% |
| | UP Board | Count | 29 | 21 | 50 |
| | | % within Board | **58.0%** | **42.0%** | **100.0%** |
| | | % of Total | 19.3% | 14.0% | 33.3% |
| Total | | Count | 109 | 41 | 150 |
| | | % within Board | 72.7% | 27.3% | 100.0% |
| | | % of Total | 72.7% | 27.3% | 100.0% |

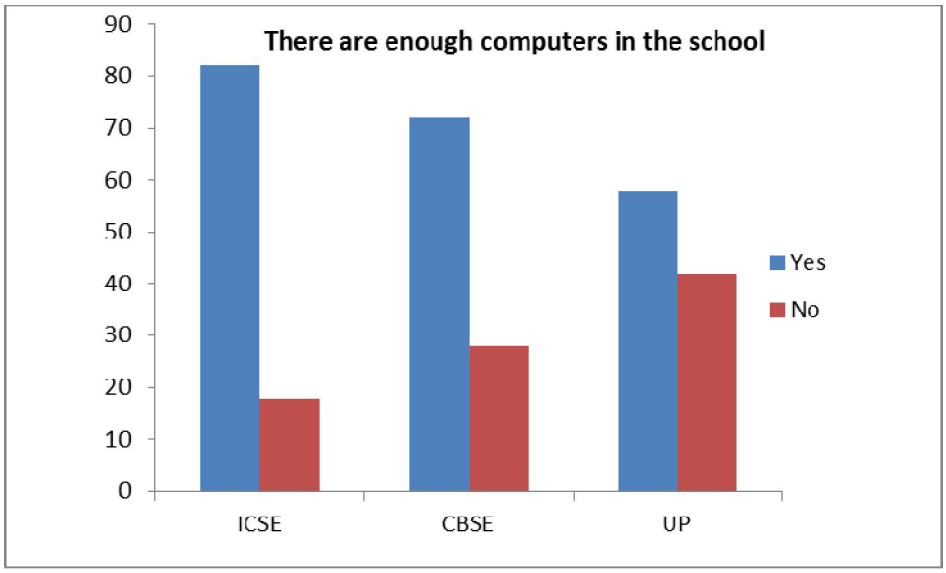



**Fig 4.7.1 Distribution of acceptability of computers**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 82.0% respondents said 'yes' and 18.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 78.0% respondents said 'yes' and 22.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 58.0% respondents said 'yes' and 42.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'There are enough computers in the school.' But the majority of the respondents from UP Board schools were not satisfied.

**Table 4.7.2 Distribution of acceptability of educational software in schools on the basis of board.**

| There are educational software's for teaching. | | | | | |
|---|---|---|---|---|---|
| | | | There are educational software's for teaching. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 41 | 9 | 50 |
| | | % within Board | 82.0% | 18.0% | 100.0% |
| | | % of Total | 27.3% | 6.0% | 33.3% |
| | CBSE | Count | 36 | 14 | 50 |
| | | % within Board | 72.0% | 28.0% | 100.0% |
| | | % of Total | 24.0% | 9.3% | 33.3% |
| | UP Board | Count | 29 | 21 | 50 |
| | | % within Board | 58.0% | 42.0% | 100.0% |
| | | % of Total | 19.3% | 14.0% | 33.3% |
| Total | | Count | 106 | 44 | 150 |
| | | % within Board | 70.7% | 29.3% | 100.0% |
| | | % of Total | 70.7% | 29.3% | 100.0% |

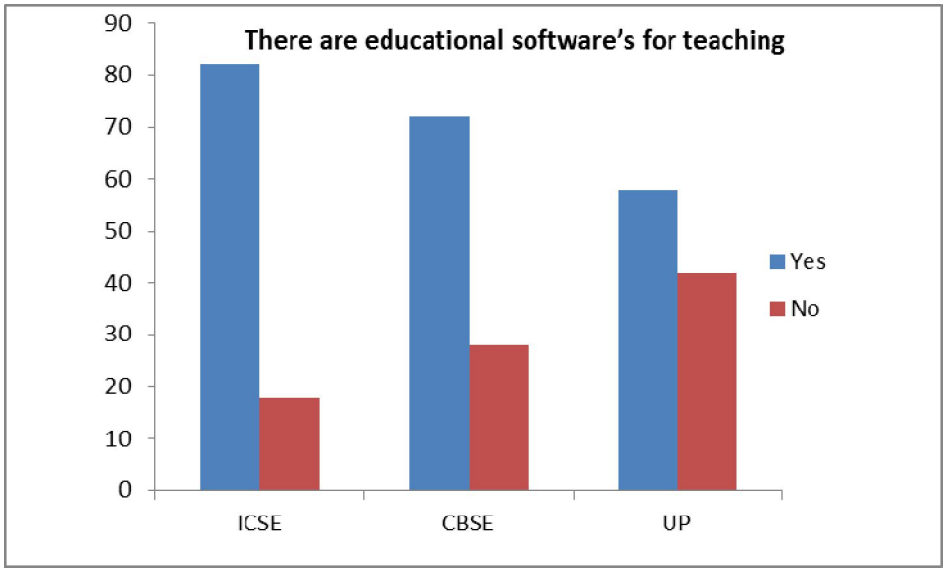



**Fig 4.7.2 Distribution of acceptability of educational software**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 82.0% respondents said 'yes' and 18.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 72.0% respondents said 'yes' and 28.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 58.0% respondents said 'yes' and 42.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'There are educational software's for teaching' But the majority of the respondents from UP Board schools were not satisfied.

**Table 4.7.3 Distribution of acceptability of speed of internet in schools on the basis of board.**

| All the computers have high speed internet connection. | | | | | |
|---|---|---|---|---|---|
| | | | All the computers have high speed internet connection. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 46 | 4 | 50 |
| | | % within Board | 92.0% | 8.0% | 100.0% |
| | | % of Total | 30.7% | 2.7% | 33.3% |
| | CBSE | Count | 50 | 0 | 50 |
| | | % within Board | 100.0% | 0.0% | 100.0% |
| | | % of Total | 33.3% | 0.0% | 33.3% |
| | UP Board | Count | 20 | 30 | 50 |
| | | % within Board | 40.0% | 60.0% | 100.0% |
| | | % of Total | 13.3% | 20.0% | 33.3% |
| Total | | Count | 116 | 34 | 150 |
| | | % within Board | 77.3% | 22.7% | 100.0% |
| | | % of Total | 77.3% | 22.7% | 100.0% |

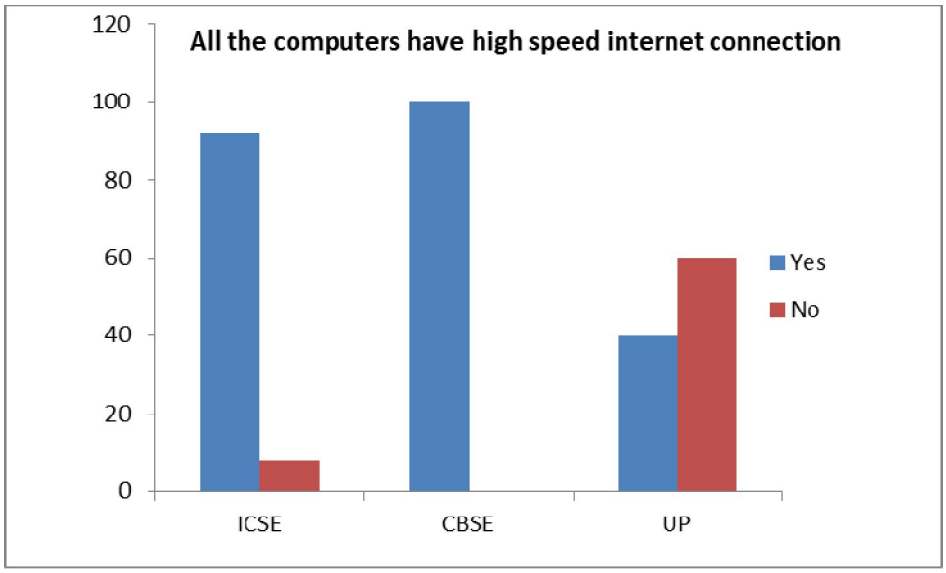



**Fig 4.7.3 Distribution of acceptability of speed of internet**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 92.0% respondents said 'yes' and 08.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 100.0% respondents said 'yes' and 0.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 40.0% respondents said 'yes' and 60.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'All the computers have high speed internet connection.' But the majority of the respondents from UP Board schools were not satisfied.

**Table 4.7.4** Distribution **of acceptability of well equipped classroom in schools on the basis of board.**

| **There are well equipped classrooms and multimedia facilities are available for teaching.** | | | | | |
|---|---|---|---|---|---|
| | | | There are well equipped classrooms and multimedia facilities are available for teaching. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 47 | 3 | 50 |
| | | % within Board | 94.0% | 6.0% | 100.0% |
| | | % of Total | 31.3% | 2.0% | 33.3% |
| | CBSE | Count | 50 | 0 | 50 |
| | | % within Board | 100.0% | 0.0% | 100.0% |
| | | % of Total | 33.3% | 0.0% | 33.3% |
| | UP Board | Count | 16 | 34 | 50 |
| | | % within Board | 32.0% | 68.0% | 100.0% |
| | | % of Total | 10.7% | 22.7% | 33.3% |
| Total | | Count | 113 | 37 | 150 |
| | | % within Board | 75.3% | 24.7% | 100.0% |
| | | % of Total | 75.3% | 24.7% | 100.0% |

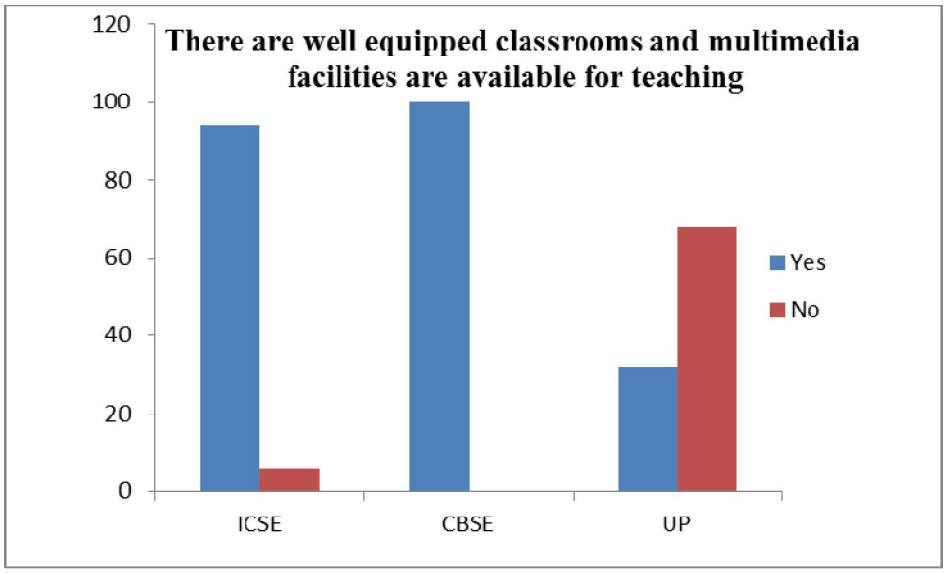



**Fig 4.7.4 Distribution of acceptability of well equipped classroom**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 94.0% respondents said 'yes' and 6.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 100.0% respondents said 'yes' and 0.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 32.0% respondents said 'yes' and 68.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'There are well equipped classrooms and multimedia facilities are available for teaching.' But the majority of the respondents from UP Board schools were not satisfied.

**Table 4.7.5 Distribution of acceptability of sufficient budget and investment in e-learning in schools on the basis of board.**

| **There is sufficient budget and investment in e-learning.** | | | | | |
|---|---|---|---|---|---|
| | | | There is sufficient budget and investment in E-Learning. | | Total |
| | | | Yes | No | |
| Board | ICSE | Count | 50 | 0 | 50 |
| | | % within Board | 100.0% | 0.0% | 100.0% |
| | | % of Total | 33.3% | 0.0% | 33.3% |
| | CBSE | Count | 43 | 7 | 50 |
| | | % within Board | 86.0% | 14.0% | 100.0% |
| | | % of Total | 28.7% | 4.7% | 33.3% |
| | UP Board | Count | 17 | 33 | 50 |
| | | % within Board | 34.0% | 66.0% | 100.0% |
| | | % of Total | 11.3% | 22.0% | 33.3% |
| Total | | Count | 110 | 40 | 150 |
| | | % within Board | 73.3% | 26.7% | 100.0% |
| | | % of Total | 73.3% | 26.7% | 100.0% |
| | | | | | |

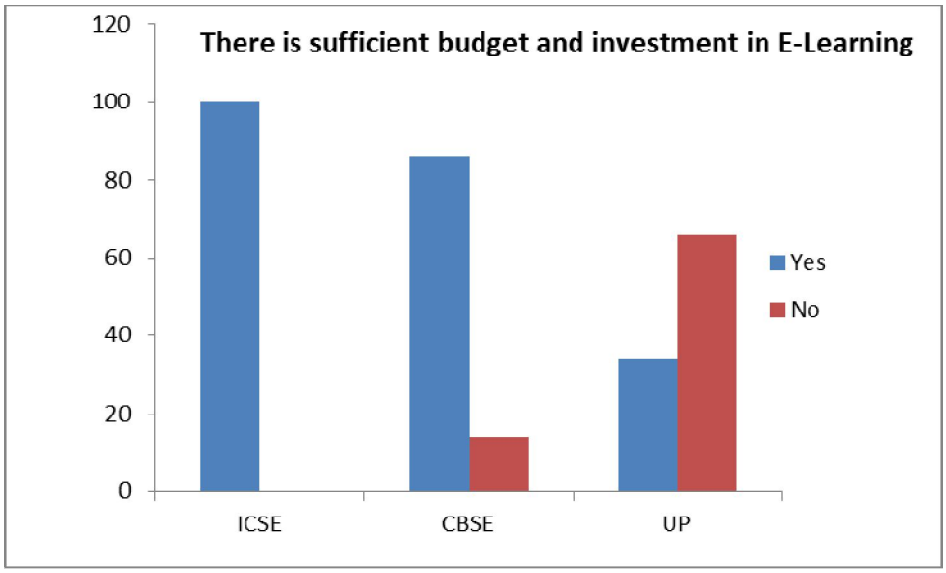
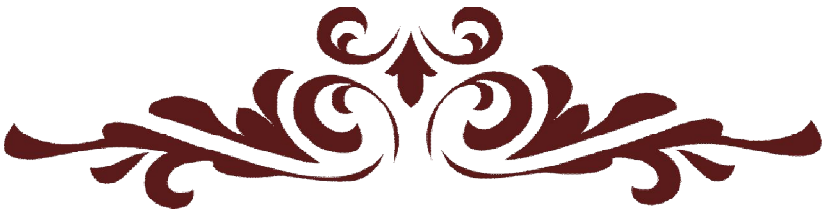



**Fig 4.7.5 Distribution of acceptability of sufficient budget and investment in e-learning**

From the above table, it can be seen that there were total 150 respondents (teachers and principals). 50 respondents were from ICSE, 50 respondents from CBSE and 50 respondents from UP Board).

- In **ICSE board**, out of the total 50 respondents, 100.0% respondents said 'yes' and 0.0% respondents said 'no'.
- In **CBSE board**, out of the total 50 respondents, 86.0% respondents said 'yes' and 14.0% respondents said 'no'.
- In **UP board**, out of the total 50 respondents, 34.0% respondents said 'yes' and 66.0% respondents said 'no'.

From the above results, it was found that respondents from ICSE and the respondents of CBSE were satisfied that 'There is sufficient budget and investment in E-Learning.' But the majority of the respondents from UP Board schools were not satisfied.



# CHAPTER-5
# SUMMARY AND CONCLU-SIONS

# CHAPTER -5

# SUMMARY OF FINDINGS, CONCLUSIONS AND RECCOMEN-DATIONS

This chapter summarizes the whole research process. A brief summary of the whole study is given. It also provides a summary of the main findings of the study, conclusions of the study, recommendations and suggestions for further research.

## 5.1 SUMMARY OF FINDINGS

- It was found that the number of total respondents was 300 in which (59.3%) respondents were Boys and (40.7%) respondents were Girls.
- The findings of the study show that majority of students (45.2%) were 11-12 year old and (53.8%) were 13-14 year old.
- It was found that the number of total respondents were 300 in which 100 (33.3%) respondents were from ICSE board, 100 (33.3%) respondents were from CBSE board and 100 (33.3%) respondents were from UP board.
- The findings also show that (38.3 %) respondents were from 7th Class and (29.4%) were from 8th. Class and (31.4 %%) respondents were from 9th Class.
- The findings of the study show that majority of teachers (48.7%) were males and (51.3%) were females.
- The findings also show that (33.3%) respondents were from ICSE board schools, (33.3%) were from CBSE board schools & (33.3%) were from UP board schools.
- Regarding availability computer In ICSE board (58.0%) respondents said ‘available’ and (42.0%) respondents said ‘not available’. In CBSE board (62.0%) respondents said ‘availa-

ble' and (38.0%) respondents said 'not available'. In UP board (16.0%) respondents said 'available' and (84.0%) respondents said 'not available'.

- Regarding availability of projector In ICSE board (92.0%) respondents said 'available' and (8.0%0 respondents said 'not available'. In CBSE board (100.0%) respondents said 'available' and (0.0%) respondents said 'not available'. In UP board (60.0%) respondents said 'available' and (40.0%) respondents said 'not available'.
- Regarding availability of smart classroom In ICSE board 36.0% respondents said 'available' and 64.0% respondents said 'not available'. In CBSE board 44.0% respondents said 'available' and 56.0% respondents said 'not available'. In UP board 8.0% respondents said 'available' and 92.0% respondents said 'not available'.

Regarding usability of Multimedia presentation In ICSE board 92.0% respondents said 'yes' and 8.0% respondents said 'no'. In CBSE board 100.0% respondents said 'yes' and 0.0% respondents said 'no'. In UP board34.0% respondents said 'yes' and 66.0% respondents said 'no'.

- Regarding usability of Multimedia presentation (PPTs, PPS, Poster, Collage etc.) In ICSE board 92.0% respondents said 'yes' and 8.0% respondents said 'no'. In CBSE board100.0% respondents said 'yes' and 0.0% respondents said 'no'.In UP board 34.0% respondents said 'yes' and 66.0% respondents said 'no'.
- Regarding category of board (29.7%) of the boys and (39.0%) of girls were ICSE board While (36.8%) of boys and (28.0%) of girls were CBSE board and (33.5%) boy and (33.1%) girls were UP board.

- Regarding category of board (26.3%) respondents belonging to age of 11-12 years and (39.3%) respondents belonging to age group of 13-14 years were ICSE board While (41.6%) respondents belonging to age of 11-12 years and (26.4%) respondents belonging to age group of 13-14 years were CBSE board While (32.1%) respondents belonging to age of 11-12 years and (34.4%) respondents belonging to age group of 13-14 years were UP board.

- Regarding category of board (25.9%) respondents were from 7th class, (50.0%) respondents were from 8th class and (37.9%) were from 9th class in ICSE board while (50.0%) respondents were from 7th class , (30.0%) respondents were from 8th class and (15.8%) were from 9th class in CBSE board while (24.1%) respondents were from 7th class , (31.5%) respondents were from 8th class and (46.3%) were from 9th class in UP board .

- It was found that there is no significant difference between gender for the variables of awareness, productivity and learning process on the academic performance of school going children; as the value of significance comes out to be more than 0.05.

- It was found that there is significant difference among Boards (ICSE, CBSE & UP Board) for the variables of awareness, productivity and learning process having impact on the academic performance of school going children; as the value of significance comes out to be less than 0.05.

- It was revealed that gender was a factor that influenced the academic performance. Majority (59.3 percent) of respondent those who were male while the majority (40.7 percent) of those who were female having impact on the academic performance. It can be concluded that there is no significant difference between groups (Boys and Girls) for all the variables of multimedia and e-education having impact on the academic performance of school going children.

- It was revealed that (59.3%) respondents were Boys and 122 (40.7%) respondents were Girls. It can be concluded that there is significant difference among groups (Boards: ICSE, CBSE & UP Board) for all the variables of multimedia and e-education having impact on the academic performance of school going children.

- On comparing the study correlation among Awareness, Productivity & Learning Process (Independent variables) indicates that there was a significant and positive correlation with one another also.

## 5.2 CONCLUSION

In this study highlights the impact of multimedia and e-education learning on the academic performance of children's. Many students are not well ready to take the challenge of studying through multimedia and e-education learning, because of the unexpected complexities of the information and communication technologies.

A major contribution of this study was to identify the major factors of the impact of multimedia and e-education learning on the academic performance of school going children. It can be concluded that, multimedia and e-Education related learning methods have contributed to the enhancement of the academic performance of students at the school levels. It can be concluded that with the help of Multimedia and e-Education learning has the great positive influence on the quality of education.

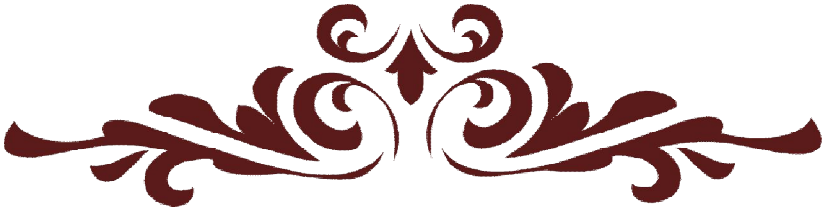
As the analysis of data gathered on four hundred fifty people, has shown that, It can be said that multimedia and e-education related learning methods have contributed to the enhancement of the academic performance of students at the schools levels.

## 5.3 RECCOMENDATIONS

This research study analyzed a number of various extraordinary purposes of perspectives about the effect of multimedia and e-education on academic performance of school going children. In spite of the fact that it was found that specific issues have not yet been properly addressed to multimedia and e-education usage forms, as the prime focal point of the research socio demographic characteristics, attitude and perception of student and teacher and impact of the multimedia methods and e-education in schools The following are the recommendations of this study:

i. Critical factors, for example, institutional issue, administration issue, educational variables, mechanical issue, interface configuration issue, assessment issue, and resource support issue and the factors within each issue have not yet been investigated with detail coverage.

ii. The need to do detail research including contextual investigations based on surveys questionnaire including different learning organizations which will ultimately give a better understanding of impact of multimedia and e-education aspects within implementation process.



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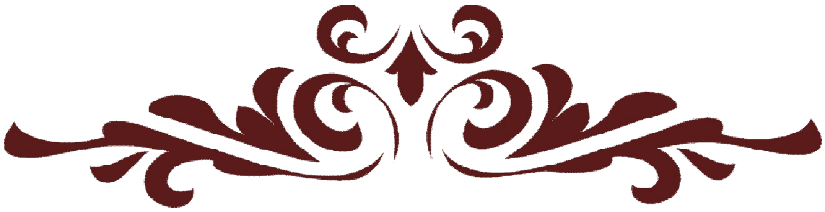

# *Appendix*

# *QUESTIONNAIRE*

# APPENDIX

## QUESTIONNAIRE

## ON

## IMPACT OF MULTIMEDIA AND E-EDUCATION ON THE ACADEMIC PERFORMANCE OF SCHOOL GOING CHILDREN

**FOR STUDENTS:-**

**GENRAL INFORMATION :**

1. Name-

2. Age -

3. Gender -

   a. Boy ( )
   b. Girl ( )

4. Class -

5. School-

6. Address -

7. Phone No.-

## SPECIFIC INFORMATION :

Some Statements related to 'Impact of multimedia and e-education on the academic performance of school going children' are given below, which asks about your attitude towards some statements. Please, carefully read each statement and express your views with regard to each by ticking appropriate choice. There are five choices namely **Strongly Agree (1), Agree (2), Undecided (neither agree nor disagree) (3), Disagree (4), and Strongly Disagree (5)**. Kindly

do not omit any item. Give your responses as truthfully as possible. I shall be grateful to you.

| S.NO | STATEMENTS | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| | **Effects of multimedia and educational technologies on the awereness of Students** | **1** | **2** | **3** | **4** | **5** |
| V 1. | I know about multimedia and e-learning (educational technology) tools (text, audio, video, graphics,internet and animation)? | **1** | **2** | **3** | **4** | **5** |
| V 2. | I use multimedia and e-learning (educational technology) tools for my studies. | **1** | **2** | **3** | **4** | **5** |
| V 3. | I am learning, how to use multimedia and e-learning (educational technology) tools for my studies. | **1** | **2** | **3** | **4** | **5** |
| V 4. | I have been taught by my teachers, how to use multimedia and e-learning (educational technology) tools for my studies. | **1** | **2** | **3** | **4** | **5** |
| V 5. | Multimedia and e-learning is useful in studies. | **1** | **2** | **3** | **4** | **5** |
| V 6. | I am comfortable with multimedia and e-learning (educational technology) tools used in the class. | **1** | **2** | **3** | **4** | **5** |
| V 7. | Educational technology motivated me to explore the topic more. | **1** | **2** | **3** | **4** | **5** |
| V 8. | I understand the topic better after using the educational technology tools. | **1** | **2** | **3** | **4** | **5** |
| V 9. | I think that digital photos/clips and videos used were increas- | **1** | **2** | **3** | **4** | **5** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | ing my understanding of the topic. | | | | | |
| V 10. | The graphics in the multimedia and e-learning application are clear and help you to understand better. | **1** | **2** | **3** | **4** | **5** |
| V 11. | Educational technologies help to solve the challenging problems. | **1** | **2** | **3** | **4** | **5** |
| V 12. | I prefer to learn from a book rather than from an educational technology source. | **1** | **2** | **3** | **4** | **5** |
| V 13. | I feel that educational technologies helpful for class discussion. | **1** | **2** | **3** | **4** | **5** |
| V 14. | The time spent on educational technologies should be better spent on other traditional educational tools (books). | **1** | **2** | **3** | **4** | **5** |
| V 15. | If given a choice, I would first search for a book to find information for a school project before search for a Web Site. | **1** | **2** | **3** | **4** | **5** |
| V 16. | If given a choice, I would get most of diagrams for school projects from a text book than a internet. | **1** | **2** | **3** | **4** | **5** |
| | | | | | | |
| V 17. | I preferred the Web Assisted activity instead of the Paper Assisted activity because it had animation and sound. | **1** | **2** | **3** | **4** | **5** |
| V 18. | I felt more uncomfortable using internet than the books. | **1** | **2** | **3** | **4** | **5** |
| V 19. | I found the internet more boring and distracting. | **1** | **2** | **3** | **4** | **5** |
| V 20. | Classroom teaching must encourage the use of educational technologies. | **1** | **2** | **3** | **4** | **5** |

| | | | | | | |
|---|---|---|---|---|---|---|
| V 21. | I preferred the graphics on the Web Site better than the graphics on the books. | **1** | **2** | **3** | **4** | **5** |
| V 22. | I feel frustrated when I try to use educational technologies. | **1** | **2** | **3** | **4** | **5** |
| V 23. | Learning from internet is enjoyable because it includes topic related games and movies. | **1** | **2** | **3** | **4** | **5** |
| | **Effects of multimedia and educational technologies on the Productivity of Students** | **1** | **2** | **3** | **4** | **5** |
| V 24. | I like learning with the multimedia and e-learning (educational technology) tools as it improves our knowledge. | **1** | **2** | **3** | **4** | **5** |
| V 25. | Vast scope of acquiring knowledge | **1** | **2** | **3** | **4** | **5** |
| V 26. | Easy accessibility of knowledge | **1** | **2** | **3** | **4** | **5** |
| V 27. | Better visuals/graphical representation | **1** | **2** | **3** | **4** | **5** |
| V 28. | Better understanding of the topic | **1** | **2** | **3** | **4** | **5** |
| V 29. | Easy to make notes | **1** | **2** | **3** | **4** | **5** |
| V 30. | Encourages self-learning process | **1** | **2** | **3** | **4** | **5** |
| V 31. | Self-motivating | **1** | **2** | **3** | **4** | **5** |
| V 32. | Provides better understanding of the topic | **1** | **2** | **3** | **4** | **5** |
| V 33. | Communication with teachers and other students becomes easy | **1** | **2** | **3** | **4** | **5** |
| V 34. | Using multimedia and e-learning (educational technology), gives a sense of achievement | **1** | **2** | **3** | **4** | **5** |

| | | | | | | |
|---|---|---|---|---|---|---|
| V 35. | It is easy to seek help of other students. | **1** | **2** | **3** | **4** | **5** |
| V 36. | It is easy to seek help of teachers. | **1** | **2** | **3** | **4** | **5** |
| V 37. | It is easy to seek help of other subject experts. | **1** | **2** | **3** | **4** | **5** |
| V 38. | Searching matter through internet is easier than asking teachers. | **1** | **2** | **3** | **4** | **5** |
| V 39. | It helped me to enhance my performance and to get good grades. | **1** | **2** | **3** | **4** | **5** |
| V 40. | I feel confident in studying in the digital environment. | **1** | **2** | **3** | **4** | **5** |
| V 41. | Educational technologies make me much more productive. | **1** | **2** | **3** | **4** | **5** |
| V 42. | Multimedia and educational technologies improve quality of education. | **1** | **2** | **3** | **4** | **5** |
| V 43. | I prepare my notes by using multimedia and educational technologies and internet. | **1** | **2** | **3** | **4** | **5** |
| V 44. | Using educational technologies would make subject matter more interesting. | **1** | **2** | **3** | **4** | **5** |
| V 45. | It improves my collaboration skills. | **1** | **2** | **3** | **4** | **5** |
| V 46. | It improves concentration towards studies. | **1** | **2** | **3** | **4** | **5** |
| | **Effects of multimedia and educational technologies on the Process of Learning** | **1** | **2** | **3** | **4** | **5** |
| V 47. | Educational technologies save time and effort | **1** | **2** | **3** | **4** | **5** |
| V 48. | Educational technology is a fast means of getting information. | **1** | **2** | **3** | **4** | **5** |

| | | | | | | |
|---|---|---|---|---|---|---|
| V 49. | Educational technologies enhance the efficiency of the process of learning. | **1** | **2** | **3** | **4** | **5** |
| V 50. | sharing information becomes easy | **1** | **2** | **3** | **4** | **5** |
| V 51. | Educational technologies help me to learn many new things and improve my learning. | **1** | **2** | **3** | **4** | **5** |
| V 52. | Educational technology is a faster way of getting information as compared to reading books. | **1** | **2** | **3** | **4** | **5** |

# UESTIONNAIRE FOR TEACHERS / PRINCIPALS

# ON

# 'IMPACT OF MULTIMEDIA AND E-EDUCATION ON THE ACADEMIC PERFORMANCE OF SCHOOL GOING CHILDREN'.

**GENRAL INFORMATION:**

1-Name- 2-Age-

3-Gender- Male ( ) Female ( )

4-Name of the School-

5-Type of School-

a) U.P Board ( ) C.B.S.E Board ( ) I.C.S.C Board ( )

6-Designation- Teacher ( ) Class Teacher ( ) Vice Principal ( )

Principal ( ) Other Administrative Position ( )

7- Years of Experience

1 – 10 ( ) 11- 20 ( ) 21 – 30 ( ) 31 and above ( )

7-Educational Qualification

Graduation ( ) Post Graduation ( ) PhD ( ) Others ( )

Some Statements related to 'Impact of multimedia and e-education on the academic performance of school going children' are given below, which asks about your attitude towards some statements. Please, carefully read each statement and express your views with regard to each by ticking appropriate choice.

| S. no | statements | Yes | No |
|---|---|---|---|
| VS 1. | There are enough computers in school. | | |
| VS 2. | There are educational soft wares for teaching. | | |
| VS 3. | All the computers have high speed internet connection. | | |
| VS 4. | There are well equipped classrooms and multimedia facilities are available for teaching. | | |
| VS 5. | There is sufficient budget and investment in E-Learning. | | |
| VS 6. | I know and use the multimedia and educational technologies in teaching. | | |
| VS 7. | I encourage students to use multimedia and educational technologies for learning. | | |
| VS 8. | Students are aware and use multimedia and educational technologies for learning | | |
| VS 9. | Teaching and learning with multimedia and educational technologies is better than the traditional methods of teaching and learning. | | |
| VS 10. | Positive effects of multimedia and educational technologies on Productivity of teachers and Students | | |
| VS 11. | Educational technologies make me much more productive. | | |
| VS 12. | Multimedia and educational technologies improve quality of education. | | |
| VS 13. | Teachers prepare teaching notes by using internet. | | |
| VS 14. | Positive effects the Process of Teaching and Learning | | |
| VS 15. | Educational technologies save time and effort | | |
| VS 16. | Use of educational technology during teaching enhances learning of the students. | | |
| VS 17. | Educational technology is essential for the effective teaching. | | |
| VS 18. | Educational technology is a faster way of getting information as compared to reading books. | | |
| VS 19. | The use of educational technology increases learning speed of students. | | |
| VS 20. | Educational technologies increase students' self-confidence and self-study. | | |

- **USE OF MEDIA MATERIALS IN THE LEARNING PROCESS IN SCHOOL**

| S. no | Material | Yes | No |
|---|---|---|---|
| VS 21. | Projectors | | |
| VS 22. | Still images (graphics, illustrations, photos, etc.), Films & Animation | | |
| VS 23. | Multimedia presentation (PPTs, PPS, Poster, Collage etc.) | | |
| VS 24. | Laptop | | |
| VS 25. | Smart Classroom | | |