

TEACHING THROUGH MEDIA & TECHNOLOGY

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Abstract

There are two major approaches to using media and technology in Teaching.

1. **Teachers can teach “from” media and technology:** Teaching “from” media and technology is often referred, in terms, such as instructional television, computer-based instruction and or integrated Teaching systems
2. **They can teach “with” media and technology:** Teaching “with” technology is referred, in terms, such as cognitive tools and constructivist Teaching environments.

Regardless of the approach, media and technology have been introduced into Teaching because it is believed that they can have positive effects on teaching and learning. The purpose of this Paper is to summarize the effectiveness and impact of media and technology in Teaching.

In this Paper, media is defined as “all means of communication in whatever format it is” and is referred including symbol systems as diverse as print, graphics, animation, audio, and motion pictures.

Technology is defined as “any object or process of human origin that can be used to convey media” and is including phenomena as diverse as books, films, television, and the Internet.

With respect to education, *media* are the symbol systems that teachers and students use to represent knowledge; *technologies* are the tools that allow them to share their knowledge representations with others. Unfortunately, it is common to confound the meanings of media and technology in education, and they are often used synonymously.

Keywords: Educational Media and Technology, Teaching styles, Indian Education System, Teaching and Learning.

Media and Technology

Media has many definitions ranging from “a particular form of communication” as in “print versus video” to “the industry that provides news and entertainment” as in “the media.” Media is defined as “all means of communication, whatever its format”. In this sense, media include symbol systems as diverse as print, graphics, animation, audio, and motion pictures. Technology has many definitions ranging from “the application of the scientific method to solve problems as in ‘the technology of space exploration’” to “the things or processes which embody knowledge or craft within a culture as in ‘the technology of writing’.” Technology is defined as “any object or process of human origin that can be used to convey media.” In this sense, technology includes phenomena as diverse as books, films, television, and the Internet.

In teaching, *media* are the symbol systems that teachers use to represent knowledge; *technologies* are the tools that allow them to share their knowledge representations with others.

Unfortunately, it is common for practitioners and experts alike to confound the meanings of media and technology in teaching, and they are often used synonymously.

Although most educators are comfortable enough to use the term “media” and expect others to understand its meaning, it lacks a commonly accepted definition. Instead, there is a general, somewhat vague understanding that it refers to various audio and/or visual communication technologies which have come to be used by educators. Books and other print materials are, of course, media too, yet it is usually understood from the context – including the present context – that they are not part of the topic under discussion.

The confounding of media (a symbol system) with technology (a delivery system for media) is unlikely to go away in popular discourse about education any time soon, but the distinction between media and technology must be clarified as unambiguously as possible if their impact is to be understood. These lines clarify this distinction:

Against the popular belief, computer-based technologies cannot be regarded as “media,” because the variety of programs, tools, and devices that can be used with them is neither limited to a particular symbol system, nor to a particular class of activities. In this light, “the computer” is in fact a “multifaceted invention” of many uses, a symbolic tool for making, exploring, and thinking in various domains. It is used to represent and manipulate symbol systems – language, mathematics, music – and to create symbolic products – poems, mathematical proofs, compositions.

Teaching Style

Use of media and technology as “Teaching Aids” in teaching is called “educational communication,” i.e., the deliberate and intentional act of communicating content to students with the assumption that they will learn something “from” these communications. In educational communications, information or knowledge is encoded visually or verbally in the symbol systems (media) that are enabled by various technologies. For example, animation is a form of media that can be delivered to students via a variety of technologies such as the World Wide Web. Within a web-based science shaping students' learning via prescribed communications and interactions, media and technology are given directly to learners to use for representing and expressing what they know. Teachers themselves function as designers using media and technology as tools for analyzing the world, accessing and interpreting information, organizing their personal knowledge, and representing what they know to others.

Productivity Tools and Cognitive Tools

It is necessary to highlight differences between this new conception and earlier perspectives of using computers and other technologies to support teaching that have not been as successful as promised. In 1980, Taylor described the three major roles of computers in education as “tutor, tool, and tutee.”

The computer as productivity tool in the sense defined by Taylor has enjoyed some success, especially when used to support writing. However, other software tools such as spreadsheet, database, and computer-aided design (CAD) programs have failed to improve teaching as much as promised by proponents of the

technology as tool approach because they have been largely used in the context of traditional “instructivist” pedagogy. Goodlad described the teacher-directed, text-dominated, curriculum that characterizes most instructional practice in schools. Ironically, software tools have often been regarded as objects for study in themselves and subjected to the same instructivist pedagogy that limits intellectual growth by students in areas such as science, mathematics, and social studies.

For example, although computer-aided design (CAD) software has revolutionized professional practices and dramatically increased productivity in engineering, architecture, and other design fields, it has had little impact in education. Industrial arts teachers now called “technology educators” have enthusiastically adopted CAD software into their classrooms and labs, but instead of engaging students in authentic tasks, they often “teach” students the command sets for the software outside of meaningful contexts. Students end up failing to perceive the relevance and value of CAD programs within the design professions or how to apply the software within their own design projects. “No important impact can be expected when the same old activity is carried out with a technology that makes it a bit faster or easier; the activity itself has to change”.

Constructivist Teaching

Teaching has gone through a “paradigm shift.” Constructivist teaching is gradually gaining the same respect and attention. Constructivism concerns the process of how students create meaning and knowledge in the world as well as the results of the constructive process. How students construct knowledge depends upon what they already know, their previous experiences, how they have organized those experiences into knowledge structures such as schema and mental models, and the beliefs they use to interpret the objects and events they encounter in the world.

For constructivists, the ultimate nature of reality does not matter as much as its local nature, i.e., a person’s unique and shared constructions of reality. According to constructivism, a teacher cannot map his/her own interpretations of the world onto students because they do not share a set of common experiences and interpretations. “Reality” resides in the mind of each knower who interprets the external world according to his/her own experiences, beliefs, and knowledge. People

are able to comprehend a variety of interpretations and use them in arriving at their own unique interpretations of the world. The mind filters input from the world in making its interpretations, and therefore each learner conceives of the external world somewhat differently.

Whereas instructivists emphasize the transmission of standardized interpretations of the world by teachers and the educational media and technology they use as well as standardized assessments to test the degree to which students' understandings match accepted interpretations, constructivists seek to create learning environments wherein learners use cognitive tools to help themselves construct their own knowledge representations. Cognitive tools and the goals, tasks, pedagogies, resources, and human collaboration integral to their use enable learners to engage in active, mindful, and purposeful interpretation and reflection.

Teaching with Multimedia

There are many different types of computer-based cognitive tools, including databases, spreadsheets, semantic networks, expert systems, multimedia/hypermedia construction software, computer-based conferencing, collaborative knowledge construction environments, computer programming languages, micro worlds, and interactive learning environments, multimedia construction software programs and therefore deserve special attention.

Multimedia is the integration of more than one medium into some form of communication or experience delivered via a computer. Most often, multimedia refers to the integration of media such as text, sound, graphics, animation, video, imaging, and spatial modelling into a computer system. Employing relatively inexpensive desktop computers, users are now able to capture sounds and video, manipulate audio and images to achieve special effects, synthesize audio and video, create sophisticated graphics including animation, and integrate them all into a single multimedia presentation. Individuals with very little experience are becoming their own multimedia artists, producers, and publishers. Multimedia presentations are engaging because they are multimodal. In other words, multimedia can stimulate more than one sense at a time, and in doing so, may be more attention-getting and attention-holding.

Education System in India

Education in India today is nothing like it was in Pre-Independence and Post-Independence Era. Education System in India today went through a lot of changes before it emerged in its present form. Present education system in India is also guided by different objectives and goals as compared to earlier time. Present system of education in India, however is based upon the policies of the pre-Independence era. After independence, it was on 29th August 1947, that a Department of Education under the Ministry of Human Resource Development was set up. At that time the mission was the quantitative spread of education facilities. After, 1960's the efforts were more focused to provide qualitative education facilities. The National Policy on Education was formulated in 1968. It was formulated to promote education amongst India's people. During 1987-88, it was Operation Blackboard which aimed to improve primary education by providing at least 2 rooms, 2 teachers and essential teaching aids like blackboard, chalk, duster etc. Teaching through Media and Technology is the part of Educational Technology (ET), that is, the efficient organization of any teaching system adapting or adopting methods, processes, and products to serve identified educational goals. This involves systematic identification of the goals of education, recognition of the diversity of teachers/learner's needs, the contexts in which teaching/learning will take place, and the range of provisions needed for each of these. The challenge is to design appropriate systems that will provide for and enable appropriate teaching-learning systems that could realize the identified goals. The key to meeting this challenge is an appreciation of the role of ET as an agent of change in the classroom, which includes not only the teacher and the teaching-learning process but also systemic issues like reach, equity, and quality.

Over the past decades, educational technology in India has taken two routes:

1. The first route involved a large number of experiments aimed at the qualitative improvement of schools, adopted the systems approach to analyze the problems plaguing the particular situation, and have evolved a range of solutions. These have included the development of flexible systems, alternative curricula, multilevel organization of classes; low-cost

teaching-learning materials, innovative activities, continuous support systems for teacher training, etc. While many of these experiments have demonstrated intrinsic merit, they have been restricted to pockets of intense practice and have failed to influence the larger school system.

2. The second route is government sponsored schemes such as the Educational Technology (ET) Scheme and the Computer Literacy and Studies in Schools (CLASS) and their present-day analogues, including partnerships with global players. This included the supply of radio-cum-cassette players, colour televisions, microcomputers, present-day computer labs, and even satellite-receiving terminals. These schemes have largely remained supply-driven, equipment-centered, and disseminative in design. Scant attention has been paid to the development of the entire support system that would establish ET as a reliable, relevant, and timely intervention, and despite clear indications of the necessity for this action.

Information and Communication Technologies (ICTs) have brought in a convergence of the media along with the possibility of multi-centric participation in the content generation and disseminative process. This has implications not only for the quality of the interchange but also for drastic upheavals of centre-dominated mindsets that have inhibited qualitative improvement.

Modern ET has its potential in schools, in the teaching of subjects, in examinations, in research, in systemic reforms, and, above all, in teacher education, overcoming the conventional problems of scale and reach through online, anytime, anywhere. There exists today a well-established publishing industry, including desktop publishing, with know-how and capabilities in producing kits, teaching aids, etc. There also exist production capabilities for audio and video, multimedia, broadcast channels, Internet connectivity, trained manpower, and institutions with these mandates that can be leveraged to address the challenges of education.

Alternative models of education such as distance and open-learning, on-demand education, and other such flexible models of learning, will have to be tried and tested. Flexible systems, futuristic curricula, and a twenty-first-century career

orientation have become a necessity for today's young people. There is an urgent need to convince the educational system, which should play an important role in engineering the teaching-learning situation and to make it a more meaningful experience for both teachers and their pupils.

Torevitalizing and reorienting existing resources

- Capitalize on the existence of a large number of institutions and facilities, nationwide networks, and trained, professional, and creative manpower in the area of ET. Re-engineer and convert all of these into a potent system.
- Encourage these institutions to take up new roles, including action research, data collection, in-service training of teachers, networking to establish and coordinate nationwide efforts in education, evaluation research, developing models for interactive classes, interactive multimedia, teleconferencing, video conferencing, and in leading the process whereby materials can be generated by teachers, parents, and children at every level.
- Recognize the potential of ICT and the Internet, promote universal access, facilitate participatory forums, and develop communities and interest groups.
- Invest in continuous, on-demand teacher training and support, research and content repositories, value-added distance education and online campuses, all of these steps aimed at increasing access to, and equity and quality of education.

In systemic reforms

- Ensure that technology is used in an equitable and democratic manner to enhance the self-worth and self-image of the poor and the disadvantaged.
- Counter the tendency to centralize, promote plurality and diversity.
- Ensure opportunities for autonomous content generation by diverse communities.
- Shift focus from fixed to flexible curricula, with competencies and skills identified rather than specific factual content.
- Deploy ET to enhance openness in curriculum transactions.

- Work towards transforming all schools into ICT-rich environments.
- Create opportunities for administrators and educational leaders in the school system to become ET savvy and to be able to use ICTs competently.

In refreshing skills of in-service teachers

- Create a system of lifelong professional development and support, especially for educational leaders and managers such as headmasters and principals.
- Encourage ICT literacy for official and personal use to build comfort and later creativity in educational work.
- Support the development of and nurture teachers' self-help groups / professional development groups both on the ground and online. In pre-service teacher education
- Introduce teachers to flexible models of reaching curriculum goals.
- Introduce use of media and technology-enabled methods of learning, making them inherent and embedded in the teaching-learning process of teachers.
- Train teachers to evaluate and integrate available materials into the learning process.
- Enable trainee teachers to access sources of knowledge and to create knowledge.

In school education

- Move from a predetermined set of outcomes and skill sets to one that enables students to develop explanatory reasoning and other higher-order skills.
- Enable students to access sources of knowledge and interpret them, and to create knowledge rather than be passive users.

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- Promote flexible models of curriculum transaction.
- Promote individual learning styles.
- Encourage use of flexible curriculum content, at least in primary education, and flexible models of evaluation.

In research

- Create a framework to identify the generic skills (problem identification and troubleshooting, for instance) needed for the new initiatives to be undertaken in ET.
- Acquire knowledge on how learning takes place in ICT-rich learning environments, optimizing learning paths for learners with different learning styles coming from a variety of social backgrounds, including gender differences.
- Examine the possibilities of mobile technologies for learning purposes.

The Indian perspective on ET essentially requires looking at the scenario related to the evolution of ET in the country and the periodic changes carried out in policies and curricular concerns. This look at the development of ET in India and the current scenario, which involves efforts from both the Government and Non-Government organizations, should provide several pointers towards how ET could be used fruitfully now, and in the future, to attain the desired educational goals and to enhance meaningful learning in the rapidly changing world of the 21st century. These issues and concerns are discussed in the succeeding pages. While looking at policy changes and research findings, ET is construed differently in different programmes and by different agencies.

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