

**TECHNOLOGY BASED INNOVATIONS IN INTERDISCIPLINARY RESEARCH****RAJESHREE GAHININATH JAYBHAYE**

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**Abstract**

*In recent years, educational institutions have invested heavily in computers and related infrastructure, to give technology in the hands of students, teachers and administrators. Technological changes and curricular developments are constantly bringing forth new opportunity and challenges for researchers . Researchers need some specific technology based skills for quality research .Researchers should select some innovative topics based on technology. Researchers should have Interdisciplinary approach while selecting research topic and during the research work. Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice.*

**Key words** *Technological Changes, Challenges for researchers , technology based Skills, innovative topics , Interdisciplinary approach , Interdisciplinary research.*

The twenty first century has witness the growth of a range of technological applications in education system which includes simulations, games and materials delivered by the World Wide Web. Apart from that a number of educational providers have launched various forms of virtual schools, where the educational content is delivered by the computer to a more geographically distant learner. In recent years, educational institutions have invested heavily in computers and related infrastructure, to give technology in the hands of students, teachers and administrators. Development in the field of Science, education, psychology, technology has

revolutionized the role of a researchers. Instructional technology is one of the effective innovations in teaching-learning process & research. It is highly individualized and systematic strategy. Thus, the effect of the modern technological ideas is an important factor on the part of 'research' related to education system.

There are changes in several areas that have significantly impacted the direction of modern education Individuals going for teaching & research profession are facing many problems due to globalisation and technological development. They should be aware about the following challenges.

### **Challenges in 21<sup>st</sup> century**

- Information Explosion.
- Emergence of Cognitive Science.
- Inclusive Education.
- Diversity in learning styles.
- Resource Management.
- Content Management System.
- Technology Management. Education.
- Distance Learning –On-Demand.
- Organizational learning.
- Global Economy.
- Project-Oriented Education.

Utilization of technologies for education is crucial in improving the quality of teaching , learning and research. Technologies for education may be classified in terms of broadcasting media, printing media and non-traditional including products and services that provide information using computer or the internet. Teacher, Teacher-educators and Researchers are of prime importance in tapping the potential offered by information and communication technologies (ICT) to enhance the scope and quality of education and educational research. These principal actors hold the key to revolutionised teaching, learning and research process that takes place at schools, colleges and in the community.

In today's world teachers, teacher educators, researchers need to get acquainted not only with subject specific expertise and effective teaching methodologies, research methodologies but also with the capacity to assist students to meet the demand of the emerging

knowledge based society. Researchers should therefore be familiarize with new forms of information and communication technology and should have the ability to use the technology in meaningful, authentic task that develops higher order thinking skills and specific technology based skills.

Ongoing professional development is necessary to help teachers, teacher educators, researchers to learn not only how to use new technology but also how to provide meaningful instruction and research activity using technology in educational research.

To cope with the fast changing and volatile environment, researchers need to adopt strategies ,skills that would address the issue of internal efficiency, external competitiveness and being a leader in the global educational field.

Here is a comprehensive listing of the technology skills that every researcher should have because as computer and associated technologies continue to change and evolve , researchers must continue to strive for excellence in their research work.

### **Technology based skills required for researchers.**

- Knowledge of current educational needs.
- Supportive and shared leadership.
- Shared values and visionary approach .
- Collective learning and the application of that learning.
- Shared practices .
- Openness to improvement .
- Writing, Typing clearly .
- Systematizing and organizing data competency.
- Organization ,Presentation of material.
- Group culture .
- Conflict resolution.
- Student advising and mentoring ability.
- Self Motivation .
- Diversity
- Balancing work and family
- Corporate planning.

- Policy decision.
- Forecasting.
- Master of contents and Research methods.
- Skilled management of competencies.
- Evaluation by using new technology based tools and technique.
- Innovations in Research .
- Managerial discipline.
- Proper selection & use of Technology.
- Self-assessment.
- To handle Formative& Summative assessment projects .
- Ethical awareness.
- Ability for using learning logs to develop meta-cognitive skills
- Using multi-media/video to develop students' perceptions of learning
- Ability for using mind-mapping to promote understanding .
- Socialization .

Technological changes and curricular developments are constantly bringing forth new opportunity for research. Perhaps more than ever before, educational innovations are being advocated in classroom organisation, in teaching materials and procedures, and in the application of technical, technological devices and equipments. Such innovation as computer-assisted instruction, teaching by television, Internet programmed instruction, e- learning , M-learning , modified alphabets, new subject matter concepts and approaches, flexible scheduling, and team teaching need to be carefully evaluated through the research process.

The practice of research at all levels carries inherently with it a certain amount of chaotic activities resulting in frequent back tracing and repetition steps .While these events form an essential part of innovations at times , they need to be kept under checks and controls with maintaining traceability for the research results to be repeatable and meaningful.

The choice of suitable problem is always difficult. Few beginners posses that problem awareness, and the more experienced researcher hesitate at this stage. It is serious responsibility to commit oneself to a problem that will inevitably require much time and energy that is so academically significant. What are the most likely sources to one may go for suitable research problem or from which one may develop a sense of problem awareness?

In view the vision of researchers as articulated above, the following technology based innovative topics for research relating to perception of teachers' role, and philosophy, purpose and practice of education can be taken .

**Technology based some innovative topics for research:**

- 1) Development of computer assisted programs & self-instructional program on different subjects and testing of its effectiveness through research.
- 2) Interdisciplinary approach in research.
- 3) E-content development through research for e-learning and action based learning.
- 4) Application of learning theories through research.
- 5) Effectiveness of digital classrooms & digital material.
- 6) Implementation of new courseware material for different levels.
- 7) Use of innovative research tools, techniques, strategies, research design in research.
- 8) Knowledge management by using technology.
- 9) Need of E-learning management system, M-learning system.
- 10) Research on Online education.
- 11) Educational software development.
- 12) Educational software testing.
- 13) Effectiveness of web based learning.
- 14) Research on 3D based models.
- 15) Development of Animated films & its effectiveness.

Identifying aims and objectives, planning and learning environment, exploring and structuring the subject matter, selecting appropriate teaching strategies, Instructional strategies , Models of teaching and learning media, evaluating the worth wholeness of learning system and using the insights gained from evaluation to improve the effectiveness for the future. These are specific concerns of computer assisted instructional strategies & tools for researchers . This type of research topics has its scopes for the development of course content, curriculum, the development of teaching learning methods, models, techniques as per the needs and objectives of course and national objectives of Education.

No one can predict the issues that science and society will consider most pressing in the decades to come. But if we look at some high-priority issues of today—such as world hunger,

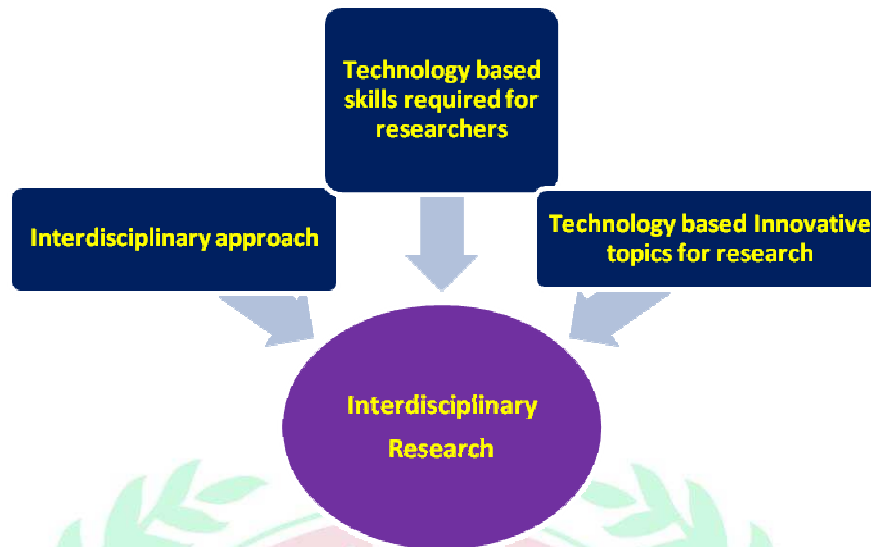
biomedical ethics, sustainable resources, homeland security, and child development and learning—and pressing research questions, such as the evolution of virulence in pathogens and the relationship between biodiversity and ecosystem functions, we can predict that those of the future will be so complex as to require insights from multiple disciplines. What research strategies are needed to address such a future? To what extent will interdisciplinary research (IDR) and interdisciplinary education be among the strategies? Just what is IDR?

The interdisciplinary approach has become an important and challenging technique in the research. The interdisciplinary approach synthesizes more than one discipline and creates teams of teachers and research students that enrich the overall educational research experiences. The interdisciplinary approach provides many benefits that develop into much needed lifelong learning skills that are essential to a student's future learning. Interdisciplinary techniques are not only important for a student to learn any one single discipline or solve problem in a synthesized manner, but it also enriches a student's lifelong learning habits, academic skills, and personal growth.

The interdisciplinary approach is a team-taught enhancement of student performance, an integration of methodology and pedagogy, and a much needed lifelong learning skill. Students who have the skills that interdisciplinary courses provide are so valuable to our future that they are now sought out by colleges and Universities. The Interdisciplinary approach has been used in many ways and at all levels of Educational research.

Interdisciplinary research (IDR) can be one of the most productive and inspiring of human pursuits—one that provides a format for conversations and connections that lead to new knowledge. As a mode of discovery and education, it has delivered much already and promises more—a sustainable environment, healthier and more prosperous lives, new discoveries and technologies to inspire young minds, and a deeper understanding of our place in space and time.

Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research practice.



IDR is pluralistic in method and focus. It may be conducted by individuals or groups and may be driven by scientific curiosity or practical needs. Interdisciplinary thinking is rapidly becoming an integral feature of research as a result of these powerful “drivers”: the inherent complexity of nature and society, the desire to explore problems and questions that are not confined to a single discipline, the need to solve societal problems, and the power of new technologies.

The need to accelerate the adoption of interdisciplinary approaches is even more compelling in an era with increasingly complex problems in education, vast data sets, and powerful research tools. Many of the most interesting and important problems in education can be answered only through collaborative efforts. The increasing complexity of education demands that concepts and methods from different disciplines be merged. Calls for education to contribute even more substantially to human well-being re-emphasize that interdisciplinary research can no longer be an optional pursuit -- it must be front and center in any discussion of the future of education System.

## **Conclusion**

An important emphasis of this paper is that researchers should be aware about the challenges of 21<sup>st</sup> century. Basic technological skills should be made pre-known before starting any research work. Researcher should have select technologically sound and innovative topics for research work. They should have interdisciplinary approach while choosing topic and during research work. They should not select repetitive routine research topics. Research is never meant to be a

mono-dimensional and static process. Instead, it must feed on the capabilities of technology and the limitless potential of the mind to develop and expand into a strategic, creative routine of society. Interdisciplinary research must be carried out for betterment and advancement of future education system.

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