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Research and Innovation: Pillars of 21st Century Education

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Abstract:
Research is a critical component of education. Development of a nation depends upon innovations, advancement in ideas and processes, which ultimately lead to its economic growth. Innovation and development depend upon the quality of education and quality of education depends upon research. Research in education improves an academic body of knowledge which has a direct impact in the educational systems. The results of research can lead ideally to change the methods, policies and strategies in educational practices. This paper explores the concept of research in the field of education, offering the relationship between the two, challenges, benefits and suggestions to promote innovations in research.

Keywords: Education, Research, Challenges, Innovation, Suggestions.

Introduction

During the last century, knowledge has been a key factor in development, and societies that are able to produce, select, adapt, and commercialize knowledge have better chances of achieving sustained growth and better quality of life. In a developing country like India where a large chunk of population remains not only below poverty line, but also backward in several aspects of quality life, education system assumes an important role in contributing significantly to better living standard. Over the last few decades, education of India has witnessed an amazing development reflecting a fluctuating trend of quantitative expansion and qualitative deterioration. Quality in education has been an issue of global concern in recent years. It is directly linked with the economic development, skill and knowledge generation. It has substantial role to play in developing skills and preparing intellectual manpower for catering the needs of society as well as creation of knowledge through research. Human beings conduct research every day. They do so in many different ways and in many different settings. One important area is education. Universities are expected to carry out research with a greater magnitude. The key function of the universities is not only teaching but also creating academically acceptable and high quality research workers. It is well accepted phenomena that without quality research a university is just another under graduate college.

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Best and Kahn (1993) describe research as "the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles, or theories, resulting in prediction and possibly ultimate control of events" (p. 27)(6). Researches in education are done to improve school practices and at the same time to improve those individuals who strive to improve those practices **(Best & Kahn, 1993**)(6). Research refers to the activities related to the acquisition of knowledge or information. It is an activity seeking to gain greater understanding of a phenomenon and is directed towards the solution or elucidation of problem. Research in the field of education is the demand of the day because it is directly linked with social and economic development, skill and knowledge generation over various subjects. It has been felt that without proper research, it will be difficult to stand for country in its own feet in the arena of globalization and internationalization. Change in every aspect of human life has posed serious questions on the relevance of research in education and its ability to cater to the multifaceted needs of the society as of today. Problems and difficulties in the field of education necessitate purposeful and sustained research efforts. Reforms, progress and excellence in research require competent and dedicated team of researchers. In addition to that, proper and systematic planning, actions according to the plan, review and feed-back time to time for minimizing the errors are some of the important facts for ensuring quality research in the field of education.

Research and Education

Researches in education are an invention and innovation which are future oriented and designed to benefit others rather than the researchers themselves. Research requires well defined vision and perspective. Researches in education should be based on developing a bond between research and education. Both should be dependent upon each other. Research should extend the boundaries of education and education in turn should nurture creativity and innovative outlook among researchers. Strengthening of this collaboration between 'Research' and 'Education' may help to improve the academic health of the nation.

There has been a strong focus on research in education over the past 20 years. There now needs to be a sustained emphasis on creating 'research-rich' and 'evidence-rich' (rather than simply 'data-rich') programmes in education. Educational researchers need to be equipped to interrogate data and evidence from different sources, rather than just describing the data or trends in attainment.(7)

The aim of research in education should not be limited to individual academic pursuit merely used to earn a livelihood. Knowledge acquired, skills learnt and theories proved must be used for educational, social, economic and political transformations in society. A well educated population, equipped with the relevant knowledge and appropriate degrees are essential for economic and social development in this age. Making the researcher and country self-reliant is the need of the time. University should not only focus much on the number of PhDs produced rather its prime objective needs to be creation of knowledgeable and skilled person who can meet the need of the society and strengthen the research output of the society. Interdisciplinary research needs to be encouraged, which is felt as the core of university research at the present time. Learner and supervisor should not be very skeptical towards adopting of interdisciplinary kind of learning and research. No doubt university is a place for both teaching and research. Research should be in such a manner which can make a person viable for the society.

Importance of Research in Education

Conducting research in an educational setting should be an important aspect of every educator's professional life. Research is seen as a primary and a vital function of a

university and, therefore, of the higher education systems worldwide. Academic research through universities forms an important component of the technological base of a country. Knowledge is enough to make productive career but nowadays competition is so tough that higher education is must to make a mark at higher level. From the individual researcher's perspective we investigate topics about which we are curious or passionate; as well, we do research because it is an integral part of the academic role and a central factor in academic promotion. Individually and collectively, educational research is a part of a quest for meaning. Conceptions of knowledge, like linguistic and conceptual meaning, are both personal and contextually based. In recent years some educational researchers have focused on epistemological meanings too.

Development of nation depends upon innovations, advancement in ideas and processes, which ultimately lead to its economic growth. Innovation and development depends upon the quality of education its institution provides. The fundamental guiding principle of qualitative education is a greater focus on better quality of research and innovation in higher education. The aim is to reconcile the apparently conflicting goals of achieving mass access to higher education with high quality standards. Research is a critical component of higher education. It improves the quality of undergraduate and post-graduate education, and can also be vastly helpful in improving the quality of teachers who are recruited into the higher education system. Research will help to understand any subject and its principals in much better and easier way which will encounter new questions and search for answers of those questions will lead you to learn new theories of any subject. Research means trying something out of the box. Research is not always a concept that practitioners, managers and policy makers respect. Too often it is seen as an academic activity conducted by others – to the profession, not with the profession. Research professionals are always learning, finding out things, analyzing information, adapting their behavior according to information received, looking to improve and adapting to modern demands. Practitioners have to comply with policy.

When it is done such things it will separate one from other students which will surely attract attention of your tutors as well which in turn benefit extreme need of help from someone who is more knowledgeable than the other. Teachers can adapt it to fit the individual needs of their own pupils. As teachers are accountable, the public must have faith in the profession – and attitudes to education vary across many social groups – so the performance of teachers can be demonstrated through the publication of research findings. Too often research looks backwards and there are lessons to learn.

Research contributes in education through:

- The content of educational programmes and policies can be taken from research-based knowledge and scholarship, emanating from a range of academic disciplines and epistemological traditions.
- Research can be used to inform the design and structure of education programmes at all levels and in all courses.
- Teachers and teacher educators can be equipped to engage with and be discerning consumers of research.
- Teachers and teacher educators may be equipped to conduct their own research, individually and collectively, to investigate the impact of particular interventions or to explore the positive and negative effects of educational practice.

At present, there are pockets of excellent practice in the field of education in different parts of our country, including some established models and some innovative new programmes based on the model of 'research-informed clinical practice'. However, in each of states and in different types of educational institutions there is no coherent and

systematic approach to uniform teaching and learning from the beginning of primary education to higher education.

Interdisciplinary research: The purpose of research in education is to reflect critically on the effectiveness of personal and professional practice. It is to contribute to the development of 'good' rather than 'correct' practice. Missing from the instrumental and technical ways of evaluating teaching and researching are the kinds of educative relationships that permit the asking of moral and ethical questions about the 'rightness' of actions. When based upon educative (as distinct from managerial) relations, evaluative practices become concerned with breaking down structured silences and narrow prejudices. Evaluation of research in technical education is not primarily about the counting and measuring of things. It entails valuing – and to do this we have to develop as connoisseurs and critics. We have also to ensure that this process of 'looking, thinking and acting' is participative.

Looking at the technology trends, it is seen that some of the most significant technologies of the future are likely to be at the intersection of disciplines that are now just beginning to flourish. Technology, unlike science, is a group activity; it is not based on an individual intelligence but interacting intelligence of many. Both these determine the manner in which academic research in the country should be organized. This requires the formation of inter-disciplinary teams within the higher education institutions. Such teams could also include researchers from other institutions and public research laboratories and also from the industry. Understanding of the linkages between pure and applied research, appreciating the need for an effective mechanism for technology transfer for its commercialization, existence of a proper IPR regime, importance of interdisciplinary research – all would help in providing a foundation for shaping public policy for supporting academic researching the country.

Challenges in Research in Education

The Indian academic research story needs to be rewritten. There are inherent systemic problems that plague the research environment. Less than 1% of the total students enrolled in higher education are pursuing Ph.D. and this is not in pace with the overall growth of students in higher education. The overall quality of doctoral studies in many institutes is questionable. With large faculty vacancies and a poorly qualified faculty, the quality of research in higher education institutes, including the IITs, which have a 20% vacancy, is diluted. A survey conducted by the UGC shows that a quarter of the faculty in Indian higher education institutions spends less than five hours per week on research. The quantum of extramural support given by Indian agencies to higher education institutes is insignificant compared to the funding received by other leading institutes abroad.(2)

The learning and teaching experience is based upon research and evidence, but it runs the risk of being any one of theory, ideology, convenience and prejudice. Education should serve to liberate, and promote democracy and equality of opportunity. Some of the challenges are: (1)

- Researches in education been successful in our task of bettering off the diffusion of scientific knowledge in certain areas; but have not been able to seriously make an impact in the production of knowledge.
- Researchers have not been an excellent channel to communicate with students and teachers about the results of educational research.
- Insufficient interdisciplinary and trans-disciplinary work in educational research; it is thought that educational researchers do not sufficiently orient themselves on other disciplines.

- Lack of coherence and continuity in the context and funding of educational research.

- The diminishing numbers of students in educational sciences; educational sciences are not popular among students in higher education.

- The various committee and agencies of education asserts that knowledge development in educational research doesn't reach practice despite the existence of special institutions with the task to help disseminate results of educational research to schools and policy makers. This gap between educational research and practice is not only a result of lack of good dissemination activities but also of the pressure on university staff to publish internationally in high ranking journals and of insufficient knowledge in practice to articulate good research questions and use insights available from research.

Various forms of research should suit policy makers, planners and implementers of policy. Large scale studies into pupil performance can help to identify trends and enable educational outcomes to be related to social and economic needs. Policy makers want to see the big picture. On the other hand, practitioners want to know why some techniques work and others don't. All professionals need to be able to trust the source of information – and strict research ethics provide that assurance. The profession as a whole needs access to a range of data/evidence types. Teaching does involve creative thinking and experimentation. Individuals and professional groups need to know what works and why. Whether a teacher's action lead to improved pupil performance, increased motivation, commitment, better behavior or not, but it will surely reflect that research is more formal. However, these all need to be connected, and too often research is conducted in isolation of others.

Suggestions to promote Innovations in Research

The importance of research in an educational setting is often overlooked, however. Those in academia often consider research as a way to earn tenure or remain in favor by the university that employs them. Faculty who wish to thrive in the university setting must publish or perish in order to remain employed. Educators often forget that they are failing to fulfill their pedagogical responsibilities if they do not remain current in their field of teaching interest. In lieu of using research to better their teaching practice, research is used simply to hold on to a job **(Hall, 2002)**(5). This is unfortunate because it takes away from the most important aspect of educational research, the improvement of one's practice. Instead of a way to maintain employment, educators should look at research as a way to develop new understanding about teaching, learning, and educational administration. This new knowledge has significance because it will lead to the improvement of educational practice **(Gall, Gall & Borg, 2003)** (4). Research in education is crucial. Educators can improve their practice by taking the time to conduct experiments, action researches, field-based activities and case studies.

Education is changing all over the world and we will be seeing- and perhaps even promoting- more changes in the benefit of the students, the educational systems and the society as a whole. Some of this changes comes from the demands that social systems are placing in education (the demands over quality and pertinence of educational knowledge), some might be explained by the complex changes that arises from the educational system itself (=the complexities derived from the expansion of educational systems, complexities from the administrative-labour organizations, national political conditions, the rigidity of educational systems, etc.); many other comes from the radical technological advances going on, and the speed of change in knowledge and its ability to impact social changes.

Some of the specific suggestions to promote innovation and research in education are: (8)

- **Research Facilities:** A separate common fund for developing sophisticated facilities is necessary for developing research capabilities. Common research facilities should be available to researchers of all universities in the state. The scholars should be given appropriate research scholarships and the universities should be able to build up facilities like well equipped laboratories, language laboratories, libraries, archival collections, etc.

- **Innovative Academic Programmes:** Promoting quality research requires quality research students. For the promotion of research activity, seed money and grants for reasearc projects must be provided. Research publications on acceptance by national and international journals should be considered for funding of full or partial cost of research scholars.

- **ICT:** ICT content development is to be made compulsory at all universities. The research scholars should be motivated to opt for innovative inter-disciplinary research to take advantage of the convergence of technologies.

- **Autonomy and Flexibility:** Freedom should be the in-built criterion for researchers in universities. Both the scholars and supervisors must be given autonomy in taking various decisions. Flexibility in most of the areas may help in creating environment of research.

- **Multidisciplinary Approach:** All disciplines, weather pure science, social science or humanities should work hand-in-hand, so that comprehensive growth of the nation may take place. Universities must provide a common platform to all disciplines and enable the country to face the challenges through multi-dimensional approach. Excellence in all the areas should be the only touchstone criterion of universities.

- **Realization of National Goals:** Our country aspires to achieve qualitative parameters of life by assuring peace, prosperity and health to all its citizens. The purpose of research and its findings must meet our national goals.

However, there is a need to further identify and deliberate on key areas of concern in order to convincingly make our way forward. Research and innovation capabilities needs to be developed along with social accountability. Research should be socially relevant. Institutions of higher education are not only meant for teaching-learning activities rather have an additional responsibility of carry out high quality research work. Most of our institutions have failed on this criterion. Faculties are so engrossed in teaching-learning task that this responsibility has been kept aside. Now research activity is carried out only with the purpose of obtaining a Ph.D. degree because it is one of the eligibility criteria for getting a job in institutions of higher education and has nothing to do with contribution to the existing body of knowledge or solving the problems of the society.

Conclusion

Research subsidies education and education subsidizes research. Most important it makes learning joyful and creative. Learners become achievement oriented. Pursuing research is a long journey. One needs to sustain perseverance and endurance throughout the journey instead of taking it as a burden. It is wise to work with positive aspirations, interests, punctuality, sincerity and commitment. A researcher will only excel in his research, when he takes it as a challenge and move with good academic morality.

Teaching and research are found to be inseparable and mutually supportive to each other. Every professor is to be viewed as a scientists he should be given fund for research at the time of his appointment. Professor should one encouraged to build a research team consisting of junior and senior students along with lab assistants.(3) The culture of institution must have to change in favour of research. Their performance should be measured in terms of what new they have discovered and patented and not how much

they have memorized. They should make the college and source of new knowledge, new theories, and new technologies. Regions, cities and nations develop faster where the institutions lead in knowledge and technology. No society, region or nation prospers without good research. Research earns more money, more endowments, name and fame for the institution. They attract endowments and funds for research.

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