



## The Role of Educational Research in Educational Technology

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### ABSTRACT

*Research is as old as the academic consciousness of human mind. Man has all along tried to look back at his history for better understanding of the evolutionary process leading to every field that he wants to improve like education, educational technology and so on. This article discusses about research and the role of educational research in educational technology.*

**Keywords:** research, educational research, education, educational technology

### Introduction

Educational technology (also called learning technology) is the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources (Richey, 2008). The term educational technology is often associated with, and encompasses, instructional theory and learning theory. While instructional technology covers the processes and systems of learning and instruction, educational technology includes other systems used in the process of developing human capability. Educational Technology includes, but is not limited to, software, hardware, as well as Internet applications and activities.

The research concludes that the use of technology as a learning tool can make a measurable difference in student achievement, attitudes, and interaction with teachers and other students. Interactive, self-directed learning and higher order thinking can be fostered by technology, and that technology can have the greatest benefit when the environment is conducive to such experiences. Research is a structured enquiry that utilizes acceptable scientific methodology to solve problems and create new knowledge that is generally applicable. Scientific methods consist of systematic observation, classification and interpretation of data.

The word research is composed of two syllables, re and search. Re is a prefix meaning again, a new or over again search is a verb meaning to examine closely and carefully, to test and try, or to probe. As it said research is a way of examining your practice...Research is undertaken within most professions. More than a set of skills, it is a way of thinking: examining critically the various aspects of your professional work. It is a habit of questioning what you do, and a systematic examination of the observed information to find answers with a view to instituting appropriate changes for a more effective professional service.

Definition of Research: When you say that you are undertaking a research study to find answers to a question, you are implying that the process;

1. is being undertaken within a framework of a set of philosophies ( approaches);
2. uses procedures, methods and techniques that have been tested for their validity and reliability;
3. is designed to be unbiased and objective.

We need policies that reinforce this knowledge base. Education and training are a prerequisite for a fully functioning "knowledge triangle" (education – research – innovation).

Improving the use and impact of knowledge for developing policy and practice at the national levels would improve the quality and governance of education systems. This in turn would contribute to realizing the main aim of the Education and Training. That said, there is still a need for the further development of educational research strategies and capacities, to address and make best use of the inherent complexity of research –based knowledge, on the basis of which it would be possible to justify increased investment in relevant and high-quality research. Relevant evidence can take many forms, such as experience and evaluation of practice, the results of independent or commissioned scientific analyses, quantitative and qualitative research, basic and applied research, and the development of statistics and indicators. Evidence is only one of the factors contributing to decision-making and will, in any case, always be mediated through complex social and political processes. In particular, education and training are part of the diverse cultural traditions and identities of countries and regions and they interact with a web of other policies.

The relationship between research, policy and practice in education and training was conceptualized in terms of three main dimensions:

- Knowledge creation – the production of research-based-knowledge relating to education and training.
- Knowledge application – the utilization of research and evidence by educational decision makers, practitioners and other end-users.
- Knowledge mediation –the brokerage of such knowledge in terms of making it accessible and facilitating its spread.

It is important to stress that these three sets of knowledge processes were not viewed as separate or distinct in any actual sense. In other words, while the three-fold breakdown was helpful analytically in structuring the preparation of the working paper, the complex nature of the knowledge cycle as a whole system was central to all aspects of this work. This was in recognition of the increasingly blurred boundaries between the communities of educational researchers, policy-makers and practitioners, the increasingly important role of knowledge brokers and mediators within the knowledge system, and the critical significance of wider social influences such as public opinion, the media, and political imperatives and so on ( Skinner,1965).

Types of Research : Research can be classified from three perspectives:

1. Application of research study: From the point of view of application, there are two broad categories of research:

- pure research and
- applied research.

Pure research involves developing and testing theories and hypotheses that are intellectually challenging to the researcher but may or may not have practical application at the present time or in the future. The knowledge produced through pure research is sought in order to add to the existing body of research methods.

Applied research is done to solve specific, practical questions; for policy formulation, administration and understanding of a phenomenon. It can be exploratory, but is usually descriptive. It is almost always done on the basis of basic research. Applied research can be carried out by academic or industrial institutions. Often, an academic institution such as a university will have a specific applied research program funded by an industrial partner interested in that program.

2. Objectives in undertaking the research: From the viewpoint of objectives, a research can be classified as:

- descriptive
- correlation
- explanatory
- exploratory

Descriptive research attempts to describe systematically a situation, problem, phenomenon, service or program, or provides information about, say, living condition of a community, or describes attitudes towards an issue.

Co-relational research attempts to discover or establish the existence of a relationship/ interdependence between two or more aspects of a situation.

Explanatory research attempts to clarify why and how there is a relationship between two or more aspects of a situation or phenomenon.

Exploratory research is undertaken to explore an area where little is known or to investigate the possibilities of undertaking a particular research study (feasibility study / pilot study).

3. Inquiry mode employed: According to Shulman (1986), research on education has and will continue to produce growing bodies of knowledge. This knowledge growth does not naturally occur, rather, "It is produced through the inquiries of scholars - empiricists, theorists, practitioners - and is therefore a function of the kinds of questions asked, problems posed, and issues framed by those who do research." (p. 3). He explains that there are diverse communities involved in research on teaching and these communities can be divided into two general categories of study: quantitative research and qualitative research. The components of these two approaches differ. Philosophical assumptions, methods/types, purposes/goals, question/hypotheses, those being researched, those conducting the research, and data/data analysis are examined.

- Structured approach: The structured approach to inquiry is usually classified as quantitative research. Here everything that forms the research process- objectives, design, sample, and the questions that you plan to ask of respondents- is predetermined. It is more appropriate to determine the extent of a problem, issue or phenomenon by quantifying the variation e.g. how many people have a

particular problem? How many people hold a particular attitude?

- Unstructured approach: The unstructured approach to inquiry is usually classified as qualitative research. This approach allows flexibility in all aspects of the research process. It is more appropriate to explore the nature of a problem, issue or phenomenon without quantifying it. Main objective is to describe the variation in a phenomenon, situation or attitude e.g. description of an observed situation, the historical enumeration of events, an account of different opinions different people have about an issue, description of working condition in a particular industry (Dawson, 2002).

Educational Research: refers to a systematic attempt to gain a better understanding of the educational process with a view to improve its efficiency. It is an application of scientific method to the study of educational problems. In the field of education, we identify research with a better understanding of the individual and a better understanding of the teaching / learning process and the conditions under which it is most successfully carried on. Educational research is an application of the main principles of scientific research to the solution of educational problems. Educational research may result in improvement in teaching, administration or human relations, or an increase in comparative, developmental, historical knowledge and its philosophical, sociological or psychological foundations (Kumar, 2002).

John .W. Best defines educational research as that activity which is directed towards development of a science of behavior in educational situations. The ultimate aim of such a science is to provide knowledge that will permit the educator to achieve his goals in the most effective method. Georg G .Mouly defines educational research as the systematic and scholarly application of the scientific method, interpreted in its broader sense, to the solution of educational problems; conversely any systematically designed study to promote the development of education as a science can be considered as educational research (quoted by Vanaja, 2007).

### Conclusion

The use of information and communication technology (ICT) creates a powerful learning environment and it transforms the learning and teaching process in which students deal with knowledge in an active, self directed and constructive way (Volman & Van Eck, 2001). Technology allows us to better serve the diverse learning styles of our students and educate them for a wider range of intelligence. In this line, the aim of research/evidence based or research/evidence informed practice is promoting economic competitiveness and social cohesion by improving educational resources, structures, and practices. For promoting these two objectives, we need an educational infrastructure that provides all learners with opportunities to obtain an education at the highest level commensurate with their own growth and growth potential (Niemi, 2008). This means that decision-making in education should strategically aim at improvements in education and training, and for this purpose we need research and evidence. A set of activities which involves the systematic collection and analysis of data with a view to producing valid knowledge about teaching, learning and the institutional frameworks within which they occur (Hillage et al., 1998). Research needs to argue for both the advantages and disadvantages of educational technology in educational setting. The literature of education and especially educational technology also reveals that there is a need for more research in these fields.

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