ISSN : 2454-2415

Volume VII, Issue 5

May, 2019

# INTERNATIONAL JOURNAL OF INNOVATIVE KNOWLEDGE CONCEPT

www.ijikc.co.in


SONHIRA PUBLICATION

ISSN: 2454-2415

# International Journal of Innovative Knowledge Concepts

204, 'Om', Chandrangan Swaroop Society, Ambegaon Bk., Near Sinhgad Institute, Pune – 411 046 (India)

## CERTIFICATE

This is to certify that our Editorial, Advisory and Review Board accepted research paper of Dr. / Shri. / Smt. M.N.Mohamedunni Alias Musthafa, Associate Professor, Department of Education, Central University of Kerala, Kasaragod.

The title of the paper is 'Synchronising Quantitative and Qualitative Technological Expansion for Calibrating Quality Research Culture in Education' which is original and innovative. It is done double blind peer reviewed. This article is published in Volume VII, Issue 5, May, 2019.

Mrs. Pramila M. Jamdade
Editor in Chief

Date: 27th May, 2019

ISSN : 2454-2415 Vol. 7, Issue 5, May, 2019

# Synchronising Quantitative and Qualitative Technological Expansion for Calibrating Quality Research Culture in Education

**M.N.Mohamedunni Alias Musthafa[1] and Rini E Stephen[2]**
[1]Associate Professor, Department of Education, Central University of Kerala, Kasaragod
[2]Research Scholar, Department of Education, Central University of Kerala

**Abstract**

Information technology has invaded almost all spheres of human activity. Academic research is experiencing a high-tech makeover, as well, and it matters more than most of us know. Undoubtedly, it is a fact that the technological innovations in the field of research reduce the manual labor and time constraints of the researchers and makes the research activities easier. This easiness due to technological advancement attracts many young scholars to enter into the fields of research since they get support in all stages of their research. There are different technologies for collecting data, reviewing the related literature and analyzing the data.

This paper attempts to explore how the innovative technological practices affect the quantity as well as the quality of the researcher and research, especially the quality dilution in the research in terms of data collection as well as data analysis and interpretation and even research writing. These questions require young researchers critically about the ethical issues concerned with the research related technologies. Therefore, this article analyzes what is currently being done with the research process in education and also other disciplines with or without technology use, and how these affect the self-development of the researcher and quality of research.

Key Words: **Quality Research Culture, Technological Expansion**

## EDUCATIONAL RESEARCH: CONCEPTUAL FRAMEWORK

The process of research is a systematic and careful investigation to find out unknown and to test the knowledge. Research seeks solutions and clarifications through well-planned procedures and relies on evidence. When it enquires solutions for any problems related to education or cleansing of the educational process, then it becomes educational research. Educational Research is the organized application of the controlled and precise method for solving an educational problem, which allows educators to accomplish their goals successfully.

According to Whitney (1927) Educational Research intended to seek solution of education related problems by utilizing philosophical and scientific methods. So education research is to address problems in the education field and to explore solutions for these problems in systematic and scientific procedure. This also helps to clarify, control and forecast complex human behavior in the educational context.

The essential steps involved in educational research include;

- Identification of gap in the knowledge
- Identifying the antecedent causes on the basis of observation, experience and other resources
- Fixing the goals and objectives
- Formulation of tentative assumptions based on the observations
- Gathering of relevant data from the appropriate sample
- Testing of assumptions
- Analyzing and interpreting the data and
- Comparison of the findings and finalization.

In educational research, two broad approaches are qualitative and quantitative methods. Quantitative methods focused on descriptive, assessment and evaluation researches. In addition to these, educational research also encompasses experimental and quasi-experimental research, survey and causal-comparative research in quantitative methods. Qualitative research methods include narrative research, grounded theory, phenomenology, ethnography, symbolic interaction, ethnomethodology,and case study.

Quantitative research studies produce data with the survey, using methods such as opinionnaires, questionnaires or interviews. This sort of research reaches more popular, but the contact with those people is much faster than it is in qualitative research.

Qualitative researches look at attitudes, experiences, and behavior through such methods as interviews or focus groups. It tries to get an in-depth opinion from participants. As it is attitudes, behavior, and experiences, which are important, fewer people take part in the research, but the contact with these people is likely to last a lot longer.

## NEW TECHNOLOGIES & INNOVATIVE PRACTICES IN EDUCATIONAL RESEARCH

All spheres of the society, especially education field are renovated by sophisticated technologies. This in turn opens a great opportunity to the young researchers in their studies for data collection, analysis and publication of the research findings. For both qualitative and quantitative researches, there is various sophisticated technological support for gathering data and analyzing the data qualitatively as well as quantitatively.

In every spheres of human life the technological development makes the complex tasks of daily life easier. In the same way technological development in the fields of research makes the complex analysis easier than the traditional methods.

*In educational research, the technical assistance is available in reviewing the related literature, data collection, organizing the collected data, analysis and the interpretation of the data. There are so many databases available online and the majority of such resource pools were free of cost. Plenty of online journals and open electronic contents are available for research purposes. For collecting data, there are many options like Google forms for gathering data in survey methods. The newsoftware is also available to do the statistical operation precisely. Software like SPSS (IBM), AMOS, R, Microsoft Excel, SAS (Statistical Analysis Software) and Minitab are the most prominently used in the analysis of data in educational research.*

**SPSS, (Statistical Package for the Social Sciences)** is one of the most widely used software package in social science research for statistical assistance. SPSS Statistics is a software package used for interactive statistical analysis. SPSS is a commonly used program for statistical analysis in social science researches. Using SPSS researchers can easily gather descriptive statistics, parametric and non-parametric analyses, as well as graphical representation of results through the graphical user interface (GUI). It also offers the choice to create scripts to automate analysis and to process more advanced statistical processing. **AMOS** is an added SPSS module and is specially used for Structural Equation Modeling, path analysis, and confirmatory factor analysis. It also called the analysis of covariance or causal modeling software.

***R(R Foundation for Statistical Computing)** is a programming language and free statistical software package for statistical computing and graphics that generally used by researchers in the field of human behaviour and social science.*

***SAS** is statistical analysis software that offers options to use either the GUI or to compose scripts for advanced analyses. It is a fine solution that is extensively used in almost all research areas.*

*The **Minitab** software provides an array of basic and advanced statistical tools for statistical data analysis and interpretations. Both GUI and scripted commands are possible which helps beginners as well as users looking to carry out more complex analyses easily.*

In qualitative research, also there are novel ways tocreate, process and analyze the data. Many software packages are accessible to assist the qualitative data analysis.

**Gibbs et al.**,(2002) observed that the growth of information technology increase the opportunities of the researchers through discussion lists, personal web pages, video conferences and text forums to collect data from their sample.

### Computer Assisted Qualitative Data Analysis (CAQDAS)

The technological advancement in the field of research practices expanded the ways of quantitative as well as qualitative researches in collecting data and processing of data which in turn modified the research culture to a different level. Like the statistical innovations for quantitative data analysis, qualitative data analysis also gets technological assistance nowadays.

In 1991, **Fielding and Lee** introduced the term Computer-assisted qualitative data analysis software (**CAQDAS**) denotes the broad range of software now accessible that utilized for a variety of data analysis in qualitative research studies.

**Gobau** (2003) described the GABEK method, which is promoted as a means of boosting decision-making within social organizations by improving the shared understanding and communication of those involved. This is achieved by interviewing individuals or groups about a particular problem or conflict. **The holistic processing of complexity (GABEK)** is a method of qualitative research and text analysis. It is used for understanding and rationalization of large and controversial data of qualitative studies especially in the field of sociology in a holistic manner. It involves steps starting from initial coding to

organizing the data into a conceptual structure based on linguistic gestalt. Causal assumption can also analyze which helps the processing of controversial issues and advances comparative analyses.

Undoubtedly, this innovative technological assistance triggers the research process and provides great relief for the researchers in each stage of their research progress but does this sophistication really enhancing or reducing the research competency of the researcher is a question to be considered very seriously.

**Quantitative expansion of research**

During the past few years, a tremendous hike is visible in the field of research worldwide. One of the reasons behind this increase is the technological advancements which make the research process easier compared to the past. The researchers get multifaceted support for the successful accomplishment of their studies. Indian context is also not different. According to the latest reports of All India Survey on Higher Education under MHRD, there is considerable growth in the enrolment for Ph.D. courses in Indian universities. The following graph illustrates the quantitative growth of research enrolment of Indian universities.

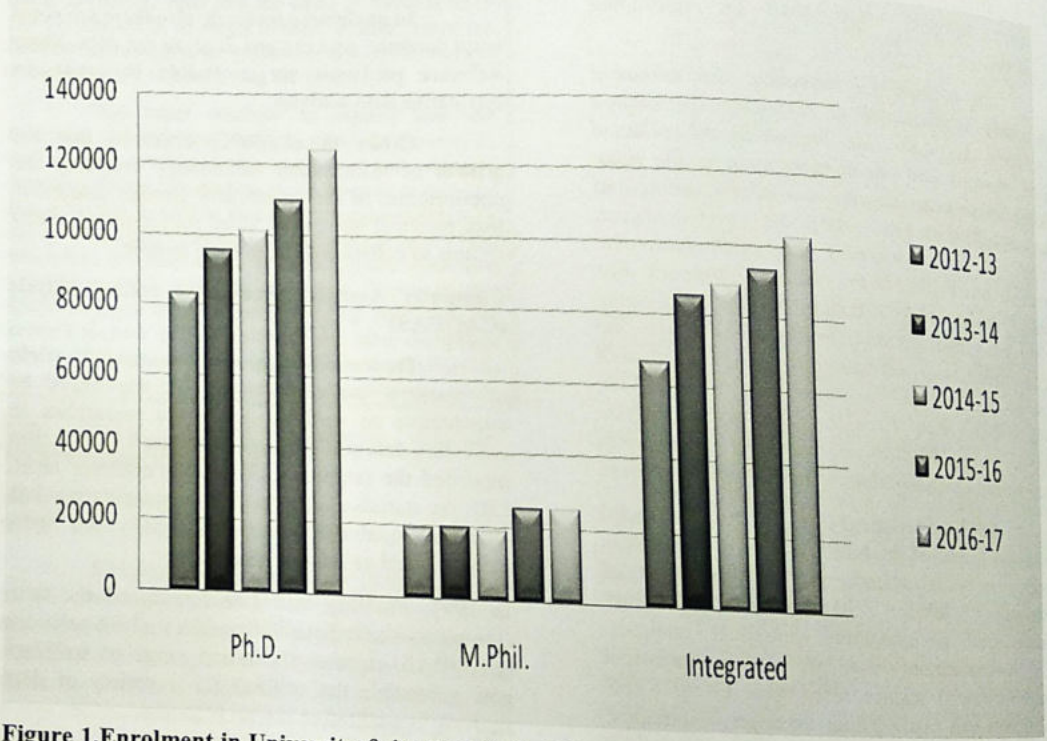


**Figure 1.Enrolment in University & its Constituent Units at Ph.D., M.Phil. and Integrated level (source - AISHE 2016-2017)**

The survey result reveals that research enrolment has increased over the years. The compound annual growth rate of Ph.D. is 8.1 and of M. Phil are 7.3 during the past five years. The enrolment at the Ph.D. level has increased from 82529 to 123712 during the time 2012 to 2017, whereas the enrolment at the integrated level has increased from 66492 to 10193 during these years. The following pie diagram represents the discipline wise out turn of Ph.D. in Indian Universities.

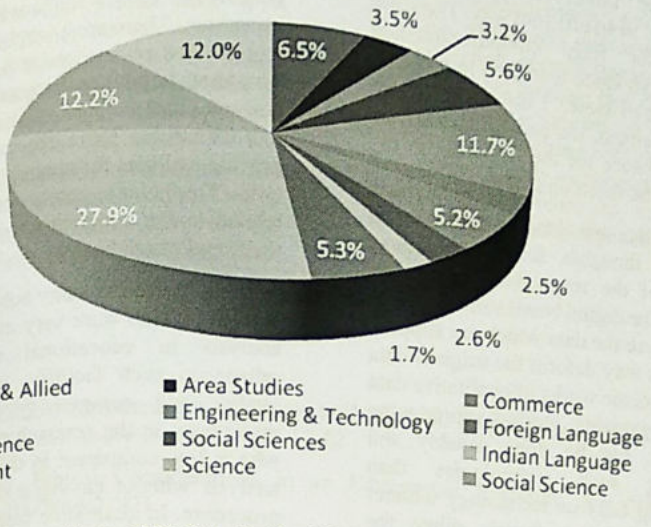


**Figure 2. Discipline wise out turn of Ph.D. in Indian Universities (source- AISHE 2016-2017)**

There is a comparable quantitative expansion of research in terms of the enrolment and completion of research studies not only in India but globally. This tendency is really appreciable since various areas get explored by young scholars. However, there should be a blend between the quantitative expansion and quality concerns of the researches.

## USE OF ADVANCED TECHNOLOGIES AND QUALITY CONCERNS OF RESEARCH

Related studies in the area of contemporary research reveals that along with many significant and useful types of research some undesirable trends also seen in the present research scenario. A range of activities like manipulation of data, duplication, plagiarism etc. has put a question mark on the significance of researches. It's the time to recognize that research is not a mere attempt leading to a degree but a way of molding the education system, intended to improve the life of individuals, community, society and the nation as a whole.

It would be good to point out some general assumptions about the integrity of the process of research before discussing the ethical issues concerned with educational research. It is essential that researchers guarantee the veracity of the intact research process.

The researchers should ensure-

- their research is trustworthy, i.e. it must be valid and reliable
- the research findings are based on ample evidence
- their research questions and arguments can be justified
- they follow the guidelines for conducting research within the selected research paradigm

According to **Howe and Moses** (1999), a matter of integrity of data is a prominent quality concern. They opined that both qualitative and quantitative types of research, the honesty, and integrity of the research are exclusively determined by the genuineness of data, proper data representations, and other issued surrounding research findings. If researchers do not make sure the integrity of their research work, they can be guilty of misconduct should they bring research into ill repute in any way.

**Fielding and Lee** (1998) has keenly examined the history of the advance of qualitative research and how computer assisted technologies influence the researches through detailed interviews with researchers in this area. From the interaction with qualitative researchers using CAQDAS in their studies, they identified that there is a feeling of being isolated from the data. Researchers adopted traditional qualitative data analysis methods were found to be closer to their data and words of their respondents than the researchers utilized technological data analysis. Supporting this assumption, **Roberts and Wilson** (2002) opined that the essence of qualitative research study is the

interpretation of the linguistic materials that collected and observed in an efficient way. There are many limitations for fully computer-assisted qualitative data analysis since it will be in a digital and quantitative point of view. Unlike mechanical tasks like data management, the entire data analysis would increase the chance for the deviation in the final assumptions of the research study.

Qualitative data are obtained from the in-depth exploration of thoughts, feelings, emotions and understanding of the respondent in specific social environment. The digital based software is not ideally suited to analyse the data which are slippery between meanings. It may deform the original data collected. The mechanistic works of qualitative data analysis like data organizing, storing, reproducing and retrieving data, can be done capably and methodically using such technologies than manually. But relying fully on technology without human interpretations will definitely dilute the quality of the research result.

Here comes the relevance of the question does the over-dependence of technological innovations in the research practices would dilute the quality of the educational research. The data collected should be reliable enough since it determines the result of the research. Nowadays the data collection tools such as online forms, opinionnaires,and attitude scales are used for conducting a survey in educational researches. In such mass surveys without any face to face or intimate contact, the opinion marked or rated has a greater chance for deviation from their original views. The researchers are unable to justify the purpose, intention,and relevance of the study to the respondents or sample in such virtual platforms which will definitely reflect in the response also. The researcher also doesn't know the nature of the sample exactly in such conditions. These factors may lead to the falsification of research evidence and findings.

Nowadays e- interviews are commonly used by researchers for the purpose of data collection that might enable them to reduce problems of travel, shortage of time and financial burdens. However the creation and sustenance of rapport between the interviewee and interviewer is a main question. Even though e-mail and video conferencing are forms of conversation that do not accurately reflect the oral forms establish in the usual interviews and conversations.

Issues related to plagiarism are also a prime concern now a day. Plagiarism can be generally conceived as a process of using the research writings, other literary works of others without proper acknowledgment and permission. Here the ethical concern is the academic honesty of the researcher. There are a number of sources available to refer and review research publication which is very much helpful or the researchers but when these resources utilized in an unethical manner it will lead to such issues. There are many soft wares which provide facilities for removing plagiarism on a paid basis. This point to another ethical issue in research related to the competency of the researchers and their intellectual honesty.

There are many sophisticated and reliable software which were very much useful in the data analysis in educational research. But over-relianceon such facilities sometime lead to the quality and competency deterioration of the researchers in the research practices. A researcher who is less competent in this area also can do the analysis without having a clear idea of the exact procedure. In qualitative research also software for qualitative data analysis is available. This also doesn't demand the research competency of the researcher. So there are many ethical aspects in the use of technology in research which related to the reliability of the data collected, the honesty of the research and the competency of the researcher.

## ADDRESSING THE QUALITY ISSUES

Technological innovations have both positive and negative impact on research. Here the technological innovation has a very positive influence in the researches especially educational research in reducing the manual effort, time constraints and in raising the efficiency if we utilize it in the appropriate manner. In every stage of the research from identification of the problem, collecting relevant related literature, collection, analysis and interpretation of data, the technical assistance is inevitable. But if these facilities are misused that will decrease the quality of the entire research.

Such problems can be checked to an extent by making aware the researchers about the research ethics to be practiced while doing research. Before starting the research process the researchers should give a clear conception about the quality practices to be followed in research and the implications of the process in which the researcher is involved. Within every research Institutions, ethical clearance applications should be managed and processed through dedicated structures. Research competency of the researcher is the other important issue. Concerned authority should ensure the essential research proficiency of the researcher so as to avoid relying only on technology for everything in the research process.

## CONCLUSION

Over the past few years, there is a tremendous increase in the number of researches in various disciplines and domains. It is very much desirable that young people are more interested in contributing their knowledge and skills to society through their research works. But along with this quantitative growth of researches should meet the quality and relevance of the research output. That is, there should be synchronization between the quality-quantity paradigms of the researches. Over-dependence on innovative technologies in every sphere of research process may lead the researchers to ethical and quality dilemmas. In each stage like data collection, organizationand analysis of data and research report writing, this threat is prominent. A clear guideline is needed on how to resolve these problems by consulting with experts and authorities. The proper quality parameters have to be set for conducting researches to maintain the balance between the quantity expansion and quality of the research studies.

### References

Punita Govil (2013). Ethical considerations in educational research. *International Journal of Advancement in Education and Social Sciences*, vol.1, no.2, 17-22

Intakhab Khan (2015). Ethical Considerations in an Educational Research: A Critical Analysis, DOI: 10.9734/BJESBS/2016/21821

Gibbs, Graham R.; Friese, Susanne & Mangabeira, Wilma C. (2002). The Use of New Technology in Qualitative Research. Introduction to Issue 3(2) of FQS [35paragraphs]. Forum Qualitative Sozialforschung / Forum: Qualitative Social Research, 3(2), Art. 8, http://nbn-resolving.de/urn:nbn:de:0114-fqs020287.

Lee, Raymond M. & Fielding, Nigel G. (1995) User's Experiences of Qualitative Data Analysis Software. In Udo Kelle (Ed.), Computer-aided qualitative data analysis: theory, methods and practice (pp.29-40). London: Sage.

All India Survey on Higher Education (2016-2017), Government of India, Department of Higher Education, New Delhi.

### Web links

http://dx.doi.org/10.17169/fqs-3.2.859

https://doi.org/10.3991/ijet.v12i05.6939

http://dx.doi.org/10.17169/fqs-3.2.862