CHAPTER 3

REVIEW OF RELATED LITERATURE

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The literature review accomplishes several purposes. It shares with the reader the results of other studies that are closely related to the one being undertaken. It relates a study to the larger, ongoing dialogue in the literature, filling in gaps and extending prior studies - Marshall & Rossman
3.0 Introduction

This chapter deals with review of related literature. It is an attempt to discover relevant literature published in the problem area. It is very much important for any type of research, because it helps researcher to find out the research gaps of the selected topic. It also helps a researcher to know about an over-view concept of procedure of research. The present purpose of this review of related literature is to identify, examine and summarise comparable studies to design and develop the research study on “Perception of Teacher Educators about Information and Communication Technology In Relation to their Value System”.

3.1 Review of Related Studies under Different Categories

Many articles, papers, reports and research works were studied from different sources, ranging from 1958 to 2014 for the present study. Above review has been done chronologically, according to their availability. Some leading selected previous literatures (both national and international) are presented in this context. It has four parts. Part A deals with the ‘Value System of Teachers’; Part B deals with the ‘Scale Construction on ICT Perception’; Part C deals with the ‘Teacher’s Perception about ICT’; and Part D deals with the ‘Impact of Science and Technology on Values and their relations’.

3.1.1 Part A: Review of Literature on Value System of Teachers

Roy Choudhury (1958) studied values among teachers which showed high political and low religious values among them.

Andrews (1966) found significant difference among teachers in eight subject areas on theoretical, economic, aesthetic and political values.
Dixit and Sharma’s (1969) study showed that men teachers scored high on aesthetic, political and social values than women teachers.

Kulshrestha (1971) found that the teachers born in the pro-independent period were interested in social matters than the teachers who were born in the pre-independent period.

Pachaury (1973) found that the predominant values present in the science teachers were creativity, open mindedness, objectivity and experimental verification.

Kaul’s (1973) study on factorial analysis of Sprangerian values possessed by teachers showed that both popular and non-popular teachers differed significantly on all the six values. Popular teachers were predominant in political, social and religious values and non-popular teachers preferred more the aesthetic and economic values.

Singh (1974) also found that the age of teachers influence their religious and political values. Teachers with high social and theoretical values had better professional satisfaction.

Kumari (1981) found that rural women teachers and urban men teachers possessed high morality. The urban women teachers preferred more economic and social values whereas rural women preferred aesthetic, theoretical and religious values.

Huntley and Davis (1983) worked on comparative study of values between businessman and school-college teachers. They found that business people emphasised on economic and political values, while college professors and high school teachers were concerned with social and religious values.

Kumar and Mutha’s (1985) study revealed that the non-effective teachers scored high on political values whereas theoretical values were preferred more by the effective teachers.
Kumari (1987) found that male teachers preferred need affiliation and the values like aesthetic, theoretical and social values and while female teachers preferred need for maintaining order. Urban female teachers preferred economic and social values and have higher potential for moral judgements than rural female teachers who had higher preference for aesthetic and religious values.

Nag (2000) worked on value profile of college-principals. Her study found that college-principals stood relatively high in theoretical, aesthetic and social values and low in political value.

Sing (2004) found that there were significant differences in values between school and college teachers but no significant difference was found in their attitude towards teaching profession.

Toong’s (2007) study showed that values and life satisfaction of school teachers were in-separable ingredients of personality. Overall trend in value pattern showed social values as the most preferred and political values as the least preferred.

Mishra (2009) found that there were significant differences in values of effective and ineffective teachers in respect of their sex, age, subject and place of habitation.

Dhillon and Kaur (2009) found insignificant relationship between teacher effectiveness and value patterns of teachers. There were no significant differences in the value patterns of male-female school teachers and government-private school teachers.

Pattanaik (2012) tried to analyse the teacher’s perception about education and values in the recent times. She stated that the teacher’s “clear perception about education and value is needed in the teaching profession.” She also concluded that “the teacher can perceive to be a misfit in his/her responsibilities because the standard
of education depends on the quality and competence of teacher and their effectiveness.”

Balakrishnan (2012) investigated the value pattern of post graduate teachers in relation to caste system. Investigator was used ‘T.V.I’ (Singh and Ahluwalia, 1981) to collect the data from P.G. teachers of H.S. schools in 5 districts of Tamilnadu. The P.G. teachers’ first preference was social value (S.V.) and it was followed preferences by theoretical value (T.V.), religious value (R.V.), economic value (E.V.), aesthetic value (A.V.), and political value (P.V.) respectively. There was a significant difference among the P.G. teachers belonging to four castes in theoretical, aesthetic and religious values.

Manoharan (2014) conducted a study on value perception among B.Ed. teacher trainees in Karur district. 150 teacher trainees, both male and female were selected as sample through simple random sampling technique. Investigator constructed a ‘Questionnaire on value perception’. There were 30 questions under 5 categories of personal value, social value, moral value, educational value and national value. This tool was properly standardized and highly reliable ($r = 0.87$). The researcher found that majority (69 percent) of B.Ed. teacher trainees had high level of value perception. There were significant differences in the level of value perception among the B.Ed. teacher trainees with respect to their gender, academic stream (science & arts) and locality (rural & urban areas).

3.1.2 Part B: Review of Literature for Scale Construction on ICT Perception

There are various surveys about attitude towards computers, and one of them having high reliability and validity is ‘Selwyn’s computer attitude scale’. Selwyn (1997) developed a scale that is quite appropriate for this study. It is a five-point Likert type scale with 21 items on four components, viz. affective, perceived
usefulness, perceived control and behavioural. This scale was administered to 87 students for formal validation and both the test-retest reliability and internal reliability coefficient of 0.93 and 0.90 respectively computed. Selwyn used an independent criterion measure, ‘computer usage’, to test concurrent validity of the scale and performed spearman’s rank order correlation to test the construct validity. Significant correlations were found between the computer usage with all subscales and the overall scale.

Carter and Leeh (2001) designed a questionnaire to survey teachers’ perception of their change in the use of ICT within their professional practice. 29 items under eight elements were presented in the instrument, including ability, values, information, circumstances, timing, obligations, resistances and yield. Pilot tests were undertaken in England and Korea. Cronbach’s alpha coefficient of item reliability test were from 0.6163 - 0.8294 in Korea and 0.6449 – 0.8389 in England. The study revealed the different propensity of change in the use of ICT between two countries in age, career, education, and equipment and performance group comparisons but there was no evidence of difference in sex, subject, area, and school size, skill, and training groups between two countries.

Kuo (2005) developed, a scale named ‘The Perceptions of the Wireless Laptop Scale’. Construction of the scale was based on the conceptual framework, which refers to Rogers’ five attributes of innovation (1995): relative advantages, compatibility, complexity, trailability, and observability. The scale had 32 items under 5-point Likert Scale format.

Gay, et al. (2006) used a self-administered questionnaire to measure students’ attitudes, experience and reasons for the use of ICT. The first part of the questionnaire sought demographic information; the second part elicited information 1
to 6 on students’ attitude to computer use, which were dichotomously scored yes and no; the third part focused 7 to 12 on students’ usage of computers and other ICT resources, which were also dichotomously scored yes and no; and in the fourth part, students were asked to indicate for which purpose they used the internet and email, on a five point scale ranging from 1 (never) to 5 (daily). The last item on the questionnaire was asked to students by an open-ended question to identify their primary reasons for using internet. The study showed that students were generally favourable towards ICT. Male were more inclined to incorporate ICT in web-based instruction compared to other teaching activities, and older students were more interested in using ICT only as a supplement to teaching activities. University administrators need to address the gender and age differences regarding ICT usages as well as develop strategies to maintain positive student attitudes and high usage of ICT.

‘ICT Usage Survey’ developed by Gulbahar & Guven (2006) was composed of 78 items under 5 parts and a three-point Likert-type scale format was used. The first part of the survey consisted of 24 items regarding teachers’ software use and other instructional tools and materials to find out the self-expertise level of the teachers; while the second part consisted of 9 items about preferences for professional development on information gathering and support; the third part consisted of 8 items about factors that encourage teacher’s usage of technology; in the fourth part, there were 18 items for teachers’ perception of self-efficacy (α = 0.62); and the last part was composed of 19 items regarding barriers that teachers faced during technology utilization in the teaching-learning process. The overall reliability (α) is 0.84. The study focused on the use of ICT tool in primary schools in the social studies subject area. The results showed that although teachers were willing to use ICT resources and
were aware of the existing potential, they were facing problems in relation to accessibility to ICT resources and lack of in-service training opportunities.

**Wong and Hanafi (2007)** developed a questionnaire to measure the attitudes of Malaysian student teachers towards Information Technology. The questionnaire comprised of 23 items under 3 dimensions (viz. Usefulness, Confidence and Aversion) and each item was accompanied by a five-point Likert-type scale format. The questionnaire was validated by course instructor and pilot tested on a group of students. The reliability (0.87) was found by using the Cronbach Alpha test. The study showed no significant difference between male and female student teachers when the pre and post test mean scores were compared. Both genders exhibited the same levels of attitude before and after undergoing the comprehensive IT course. This suggests that the exposure to it did not contribute to any significant gender disparity.

**Russell & Romeo (2007)** conducted a survey to examine the self-perceptions of student teachers to see what they would reveal about student’s understanding of ICTE (Information and Communications Technology in Education). The research was designed to collect their perceptions of ICTE at present and in the future, predictions of teacher’s classroom computer use, and their opinions about their own perception for teaching in computer-related contexts. A five-point Likert type scale was used, ranging from 1 (Definitely Agree) to 5 (Definitely Disagree) and consisted of 14 test items under three areas. 42 respondents out of 47 completed the questionnaire associated with this study. The respondents were predominantly young female (38) and only 4 were male. The survey study found the strong support shown for both computer skills and the place of ICTE in future school education has been tempered by caution about the ways in which schools will be able to change in the future.
Goktas, et al. (2008) developed the questionnaire to measure the ICT Competencies, usage, and perceptions. It includes 13 multiple choice items, 7 items under five-point Likert type scale format and 4 open-ended questions. Questionnaire was developed through literature review, opinion of experts and pilot test. The Cronbach Alpha coefficient of reliability was 0.87. The results indicated that most of the participants expressed positive perceptions about the integration of ICT into teacher education programmes.

Safdar & Jumani (2012) designed a questionnaire as five points Lickert type scale to assess tutors’ and learners’ attitudes and skills to use ICT. Reliability of the questionnaire was 0.86 (Chronbach’s Alpha). SPSS XVII was used for the analysis of collected data. First part of the questionnaire consisted of demographic & other related information and the second part of the questionnaire was divided into 3 segments i.e. attitude, skills, use of these technologies in teaching learning and research. A sample of 500 students and 100 tutors of B.Ed., M.Ed. and MA Education were taken randomly from three separate Regions of Pakistan. Main findings of the study revealed that both teachers and learners had positive attitude towards ICT. Majority of the tutors had adequate ICT skills while majority of the learners had inadequate ICT skills. Majority of the teachers were frequent users of ICT while majority of the learners were infrequent users of it. Only university teachers and research scholars were fluent users of ICT in teaching, learning and research.

3.1.3 Part C: Review of Literature on Teacher’s Perception about ICT

Rathod (2002) conducted a study on perception of B.Ed. students towards ICT in education. The study revealed that 53% of the students had internet awareness, 95% of the students responded that ICT in education was needed at B.Ed. level as a compulsory course.
Goel et al. (2003) conducted a study on the perception of B.Ed. students towards the course ICT in education, a compulsory course at B.Ed. level and to study the development of ICT skills in the learners through ICT in education course. The study has reported stream wise, medium wise and gender wise significant differences in the mean achievement scores.

Tennent’s (2003) study described the experiences and perceptions of computer-based technologies from the perspectives of academic staff and graduates from two pre-service teacher education courses in Queensland University. The research was conducted in two phases using a repeated cross-sectional longitudinal design. 1st phase result revealed that both academic staff and new teachers made little use of technologies in their teaching. The most salient barriers to academic staff technology use included lack of technical advice and support, time and lack of evidence improved student learning and interest. For graduate teachers, barriers to technology use included lack of computers, resources, school funding, proper knowledge and training. In light of new research and building on findings from the 1st phase of data collection, several new questions were added in questionnaires. 2nd phase result indicated that, among academic staff and graduate teachers, there had been considerable increases in knowledge and confidence levels in relation to the technologies along with increased levels of usage. Both groups were significantly more likely than their earlier counterparts to reports. While positive change and innovative application in technology use was evident across the period, continued efforts to support, and integrate technology in pre-service teacher education and learning in schools remains important.

Arkin (2003) examined how teachers perceive the incorporation and use of computer technology resources in language teaching through investigation of
teachers’ attitudes and approaches to using an online supplementary resource in vocabulary instruction in an EFL context. The data was collected through questionnaires distributed to 97 teachers in an English-medium university. The questionnaire results revealed statistically significant differences between teachers who have undergone computer technology training and those who have not in terms of their attitudes toward computers and the use of computer technology resources in language teaching. Based on the above results, a stratified sample of 12 teachers was selected for follow-up interviews and these interviews were used to determine whether positive attitudes or interests led people to undergo training or the reverse. The results also showed that simply introducing computer technology resources does not guarantee teachers’ use of these in practice. The provision of training is seen as a key factor in both changing attitudes and encouraging teachers in incorporating technology into their instruction.

Loveless (2003) studied the interaction between primary teachers’ perception of ICT and their pedagogy. Their perception of ICT was explored in terms of their reported understandings of the nature and purpose of ICT in primary schools. A qualitative, case study approach was used in this investigation on a small group of primary teachers within one school, Carberry Junior School in England. The study was carried out during a 18 month period of significant change in primary schools responding to the UK Government’s National Grid for Learning initiative and its impact on models of access to ICT resources and expectations in teaching and pupil achievement. The study highlights the teachers’ perception of ICT as a social and cultural phenomenon, as an ambiguous area constructed as a discrete subject, curriculum resource and higher-order capability, and as a ‘new’ field in primary schools.
Dhodi (2004) conducted a study on the approaches adopted by the M.Ed. students (future teacher educators) for information gathering through World Wide Web and its utility for the M.Ed. programme. The study revealed that there was a felt need of developing ‘Info-Savvy’ skills, namely asking, accessing, analyzing, applying and assessing in the M.Ed. students. Such objectives could be realized by offering ICT literacy programmes.

Figgaiano and Fasano (2004) conducted a project, ‘Teacher’s perceptions and usage ICT: An issue for Educators’. The study suggested that an adequate preparation is essential for teachers to cope with technology rich classrooms and to develop a more suitable and effective awareness of the usage of ICT.

Shah (2005) found low degree of ICT awareness, Use and Need of Secondary and Higher Secondary Teachers of Vadodara city.

Dhamaji and Panda (2007) found that the P.G. students have more favourable attitude towards the internet. There was no significant difference in the attitude towards internet among male-female, arts-science-commerce P.G. students.

Zayapragassararazan and Ramganesh (2007) found that, only 61.25% of the college teachers had a favourable attitude towards making use of computer and ICT in the teaching-learning process. This study indirectly stressed the need to train teachers at all levels to become e-literate and tertiary level mathematics and science curriculum should also be enriched to use computers and internet.

Wright (2008) explored teacher perception of ICT in a secondary school of Samoa. It was found that teacher perceptions of ICT were mostly positive, but they were hindered by lack of ICT skill and insufficient techno-pedagogical knowledge in their classes. Teachers perceived several obstacles to effective integration of ICTs in classrooms.
Yasemin and Petek (2008) conducted a study on ICT usage in Turkish higher education. It explained 61% of the faculties use ICT, with a good model fit. The faculty members made use of ICT most as a mean of communication and for searching information about the course through the internet.

Palombo (2008) conducted a survey on 125 college professors to examine the status of technology usage at the University level. They were provided a 10 point rating scale consisting of 37 items and a questionnaire containing 9 questions. The investigator found from statistical analysis that while professors are becoming more proficient in using technology, they are not yet at the point of enhancing their pedagogy. The professors confirmed that ‘by expanding the use of technology in their research and in their classrooms, teacher educators can help their students to use technology to enhance learning’.

Yurt & Erdogan (2010) examined the perceptions of pre-service teachers at department of elementary and secondary school mathematics education about using technology in terms of some certain variables in primary mathematics education. The participants were 150 pre-service teachers at elementary and secondary ‘Mathematics Education Program’ at Selcuk University. A standardized perception scale (PSTU) was used for data collection and data were analyzed by SPSS 15.0. There was a significant difference on perceptions of the pre-service teachers about the advantages and necessities of usage of technology when it was examined whether there was difference in perceptions of them related with the variables like their grades in computer course, personal computer or not and the number of application softwares specific to mathematics field that was known. When the difference of perception from the perspective of sex was examined a meaningful difference was not found on the perceptions of pre-service teachers about the advantages, disadvantages and necessity
of usage of technology. Furthermore, when the whole scale was taken into consideration, it was found that pre-service teachers’ attitudes towards using technology at elementary mathematics teaching was positive.

**Felix and Begum (2011)** in their study have found that scholars of teacher education have an increased level of awareness in the use of internet. For M.Ed. students, it is 08.47% and for M.Phil. Students the number goes up to 34.96%. The result revealed that the M.Ed. students have not acquired the skills to browse the e-resources when they have passed out of B.Ed. and M.Phil. Scholars have acquired skills comparatively more than M.Ed. students.

**Chikasanda (2011)** investigated students and teachers perceptions towards technology and technology education with the ultimate aim of developing their beliefs and practices suitable for teaching and learning broad-based technology education and to inform future policy framework for restructuring the school curriculum. An interpretative research methodology was adopted and the teachers were involved in in-depth, one-on-one and semi-structured interviews, group discussions and classroom observations before and after professional development workshops. Findings of the research revealed an effective professional development model focussed on social cultural frameworks of learning that resulted in teachers’ positive perceptions of technology and technology education. They had also shown innovations to implement technology as a consequence of their enhanced technological pedagogical knowledge. The findings of the study have implications for pre-service and in-service teacher education and development, policy change in relation to school curriculum reviews and reforms in Malawi and other developing countries.

**Rampersad (2011)** had done a qualitative study to explore teachers’ perceptions of the contribution of ICT integration to the teaching and learning of Modern Studies
at a single-gender urban secondary school. Four teachers, purposefully selected as sample, were interviewed for the study. The results showed that teachers generally perceived the integration of ICT as having a positive effect on the delivery of Modern Studies. ICT use was associated with enhanced student interest and motivation and increased student engagement. For more effective use of ICT in the classroom, it was recommended that teacher training be oriented towards developing skills in pedagogy related to ICT use and teachers could capitalize on the digital expertise when attempting to integrate technology into their teaching in classroom.

Kumari and Babu (2012) conducted a study to assess the secondary school English language teachers’ knowledge and use of ICT in their English language classrooms. Findings revealed that the level of knowledge of ICT possessed by above teachers was poor and as such, they rarely use ICT in their instruction process.

Tasir et. al. (2012) investigated the relationships among three variables, teachers’ ICT competency, teachers’ confidence level in using ICT, and teachers’ satisfaction on ICT training programmes. Investigators used questionnaire as research tool to collect the needed data from the newly appointed teachers in Malaysian schools, from Faculty of Education. A total of 184 questionnaires had been collected and analyzed. The research finding revealed that Malaysian teachers had a high level of ICT competency, confidence level in using ICT, and satisfaction towards ICT training programmes. The study also showed that the correlation coefficient between teachers’ ICT competency and teachers’ confidence level in using ICT was high \( r = 0.749 \). But both correlation coefficients between teachers’ ICT competency \( r = 0.496 \) and teachers’ confidence level in using ICT \( r = 0.571 \) with teachers’ satisfaction toward ICT training programmes were moderate.
3.1.4 Part D: Review of Literature on Impact of Science and Technology on Values and their Relations

Bloom (1972) reported the changes in values and attitudes of young men as a result of rapid socio-economic changes and fast industrialization process.

Diwakar (1986) elaborated that science, technology and spirituality without reference to human values would not be useful or fruitful. He also emphasized on balanced utility of science, technology and spirituality, together for human community.

Agarwal (1988) focused on the importance of moral values for children and suggest their inclusion in school curriculum in proper way. He observed that the erosion of moral values was mainly due to the impact of technological advancement, mass media etc.

Pushparajan (1990) discussed the causes of value crisis. He remarked that the value crisis is actually the cumulative effect of a trend based on technological revolution, self-alienation, consumerism etc. The various facets of value crisis embody faith, morality, energy, and ecological crisis. To overcome this crisis, he suggests that value education should reach a balanced situation.

Naik (1992) pointed out the needs of humanistic education for 21st century. The importance of specific values (e.g. love, social justice, equality, harmony, peace, humanism etc.) was suggested for the present ‘technological age’. The author concluded that the 21st century should not be the ‘age of technology’ but the ‘age of humanism’.

Kumar (1993) studied the impact of science and technology on the development of social and cultural values among students and teachers. The findings of the study showed that the majority of teachers and students considered science and
technological courses useful, because they had the potential of orienting the teachers and students both to cultural and social values. Further, it was observed that science and technology play a crucial role in inculcating honesty, discipline, creativity, leadership, tolerance, happiness, generosity, friendliness, and scientific attitude.

Swamy (1996) made a study on exploration of the values, value system in science and technology. There are deep moral problems within science, of external forces and constraints in its development, and of dangers in uncontrolled technological change. This has naturally led to a reappraisal of the value system governing science and technology, leading to a critical reassessment of their role in human life. Most of the present problems like pollution, global warming, ecological disasters, hole of the ozone-layer, nuclear waste disposal, toxic chemicals, misuse of genetic engineering etc. have been due to the worst application of modern science and technology. Value-based science education for the public, for the policy-makers, for the bureaucrats, and even for scientists are essential for a healthy value system.

Pathak and Tripathi (1998) emphasized the impact of information technology on values in our contemporary society. The authors raise concerns on the value erosion in industries, where culture of our society is being influenced by the technological advancement. The values that are getting eroded are human values, community and social values, cultural values and institutional values. The authors suggest that these values should be inculcated by organizing symposia, seminars, and special lectures, and encouraging extra-curricular activities. The authors concluded that value education needs to be introduced in higher education.

Sing (2003) has elaborated the impact of internet on several psychological parameters at individual and social level in his research article. Human communication has become more powerful and has encompassed wider areas with the
expansion of internet. Cyber space has greater potential of having multi-dimensional influence on human behaviour. Various emotional expressions find good access on net. This new technology encourages new types of behavioural disorders as ‘Internet Addiction Disorder’ (IAD) and ‘Cyber Crime’ among learners.

**Lata and Chandel (2003)** worked on the influence of media, new cable television (avatar) on attitudes of viewers. They explained the nature of attitudes related to different areas in two age groups—the young and the adult. The difference was observed in the areas of human values and negative tendencies.

**Khan (2003)** identified that the psycho-social implications of cyber culture had many dimensions, having the impact at various levels of society. Interpersonal relations showed qualitative change in the new evolving cultural set up. Various dimensions of cyberspace and their role in restructuring values under psychological and social patterns were dealt here.

**Tuli (2007),** in his paper, deals with the relationship between psychology and technology. The present problem facing humankind is about the irrational distribution of gains of technology. Present world is witnessing an extreme range of diversity of haves and haves-nots. There is psychology of helplessness, and desperation and depression on the faces of major segments of humanity which technology has not been able to serve or rescue. We must technologically develop, but with such sustainable development and prudential plans and approaches which may not cause any harm. Collective as well as individual human values determine the direction of proper ways. Here author discusses the overall impact of technology on values and points out our responsibility.

**Shah (2008)** emphasizes about the new paradigm in higher education due to rapid expansion of ICT. ICT has enriched our teaching-learning opportunities. As a
result, conflict arises between old and new education paradigms. So, there is high need of proper value dimension for quality education. The author suggests a holistic, integrated and humanistic approach for quality education and also expects that ICT can play a very significant role in this context.

3.2 Critical Appraisal of the Previous Literatures

The review of previous literatures (articles, papers, reports and research works) has helped the researcher in various ways. In Part A, 17 national studies and only 2 international studies were taken for reviews; In Part B, 8 international studies were taken for reviews; In Part C, 8 national studies and 11 international studies were taken for reviews; In Part D, 12 national studies and only 1 international studies were taken for reviews. Therefore the total 59 selected leading studies were critically reviewed among which 37 studies were Indian and 22 were foreign. The critical survey of previous related literatures has some real impact on the present work. The previous selected literatures were concerned with the following broad areas:

- Values, Value Pattern and Value System of Teachers;
- Teacher’s Knowledge, Usage, Attitude, Perception, Awareness and Competencies on ICT;
- Impact of Science and Technology on Values and their relations;

All these previous selected literatures have thrown light on the present research work. A few of the highlighted areas are as follows:

i) A maximum number of comparative studies were found on values or value pattern or value system (almost based on Sprangerian classification) of school-college teachers of different genders,
different ages, different educational streams, and different localities. Very few correlated studies were found at teacher education college level.

ii) An interesting feature was observed that majority of the studies used Likert type scale and Cronbach Alpha test as tools construction process. Gender, age, educational stream, area etc. were important factors in this context.

iii) In both national and foreign contexts, majority of studies have been investigated on Knowledge, Usage, Attitude, Perception, Awareness and Competencies of ICT at the level of school, general college and teacher Education College. These studies have reported gender wise and stream wise. These studies highlighted that student and teachers realized the need of ICT in education at their levels.

iv) Majority of researchers used survey research design of descriptive research method in their studies. But qualitative approach was used in little number of studies.

v) Maximum number of research articles and papers considered that science and technology were important determinants of the human civilisation but advancement of these two brings together some ill effects. Some investigators had identified the multi-dimensional effects of ICT on human society, like cyber-crime, Internet Addiction Disorder (IAD) etc. They suggested some optimistic
and humanistic approach for sustainable development of our global society.

vi) The impact of ICT on values and their relation is needed to be studied properly. The need of this type of study was referred in some articles.

Keeping all those observations, objectives, hypotheses and research method were formulated for the present study.