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Effectiveness of Information and Communication Technology in Teaching Methodology: A Case Study on In-Service College Teachers of Khairpur

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Abstract

Background/Objectives: A rapid growth of ICT in teaching and learning has been observed. Teaching and learning become more effective with the use of ICT in and off the classrooms. Methods/Statistical Analysis: This paper presents a case study carried out at college level education. The in-service college faculties are examined with reference to their concern for the function and significance of ICT. The research also questioned the reception of ICT training and awareness level of the in-service teachers working in several colleges at intermediate and undergraduate level. The quantitative research method was used by developing a questionnaire for survey and data collection in 13 colleges of Khairpur. Findings: Students' attention, interest and participation expedite with the help of ICT tools and gadgets. This study aims at finding out drawbacks in teaching methodologies without ICT aids and the possibilities and benefits of the use of ICT for more effective and successful teaching. Relatively, the setbacks have been observed in their teaching methodologies in the absence of literacy of ICT and its aids. Applications/Improvements: The present situation of teaching methods at college level in the sample population is not that much discouraging regarding the use of ICT. However, the improvements are required to make the teaching processes better.

Keywords: Information and Communication Technology, Questionnaire, Survey Design, Teaching Methodology

1. Introduction

ICT has brought science and technology together as the best blend¹. It ranges from computer hardware and software, telecommunication and cell phones, the Internet and Web, wired and wireless networks, digital still and video cameras, robotics and so on. It is a proven and valuable aid to the solution of problems related to business, industry, government, education and many other fields².

ICT is emerged with many branches of knowledge including education³. It adds in the teaching and learning process, it helps teachers convey their idea quite identically to the students very effectively. As a result the classroom environment becomes more interactive and healthy for teaching and learning⁴. This research work explored the use of ICT in teaching methodologies at college level and

the concern of in-service teachers for its use. The colleges of Khairpur were selected as a sample population for research. We enquired about the ICT training programs, the availability of ICT aids, the use of these aids and the concern for the use of ICT on the part of in-service college teachers.

2. Survey Design

Prior to survey design, sample population is to be selected and according to that the survey method is designed. We selected 13 colleges of Khairpur city as our sample population and the teachers of those colleges were given questionnaire. A good survey designed according to the sample population leads to obtaining valid and reliable results especially when the first hand data is collected. We collected the data by putting the questionnaire before the

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in-service college teachers. The questionnaire contained 17 questions relating to the focus points of the research. The survey design helped us plan, program, improve and evaluate the research respectively. We found this survey design split into five strategic phases that assured the reliability of the research and its outcomes. The survey design of Jennifer et al.⁵ was adopted in our research.

2.1 Questionnaire Design

In a quantitative research method, questionnaire is the soul of the research. It helps collect raw data for a particular purpose. It is technically made for obtaining a driven response without any bias. Therefore, the questions are to be developed meeting the need of the research. In this regard, close-ended questions are more helpful than any other. They drive the answer of the respondent to the goal of the researcher. On the other hand open-ended questions mostly receive diverse responses that are very difficult to be summed up for the required goal.

For the development of questionnaire, the careful consideration is important while designing the questionnaire. The stages for questionnaire design are Initial Consideration, Question Content, Phrasing and Response Format, Question Sequence and Layout, Pre-test and Revision, Final Questionnaire. After all the considerations, the questionnaire was developed that contained 17 questions and then it was given to the faculty members of selected colleges of Khairpur.

2.2 Data Collection

After the development of questionnaire, we set off to approach the teachers of the selected colleges of Khairpur. We classified the teachers according to their professional positions. The division of teachers is presented in Table 1. The questionnaire was then distributed among them in confidence and they were given enough time on their own disposal so that we could get maximum of their response to the questions in real sense. After the given time, we collected the questionnaire filled in by the respondents.

 Table 1.
 Respondents Division

Senior Teachers	Science	23
	Arts	11
Junior Teachers	Science	18
	Arts	11
	Total Teachers	51

2.3 Data Analysis

The developed questionnaire included both open and close-ended questions. The close ended questions had only two options for the respondents; YES and NO. On the basis of these responses we calculated the results manually. Apart from these, some close-ended questions had multiple responses according to the nature of the questions and the possible responses. Though, a few questions were put as a venting source for the respondents to create their interest to receive sincere answers, these questions also worked to track our research to the required direction. The analysis was carried out depending on the received responses.

3. Methodology

The basis of the research is question paper. Relatively, quantitative research method is used on the pattern of "what we asked and what we found". This section mainly discusses the received results. Before going through the results, we have to put a glance on the responses that have been given by the respondents. The questions, along with their classification and nature will also be considered as the bases of the responses. Out of 17 questions, we have entertained 11 questions here that stand as the core part of the research.

The experience of the teacher plays important role in good teaching methodology. But well experienced teachers are not inclined to use ICT whereas newly appointed teachers the ratio of which stands 43% approximately use ICT aids in their classes. For this cause we asked "How much teaching experience do you have?" The response to this we received that 5.26% persons were found having teaching experience of less than 1 year, 26.31% had 2-5 years, 10.54% 6 to 10 years and 57.89% more than 10 years. The graphical representation of these figures is given in Figure 1.

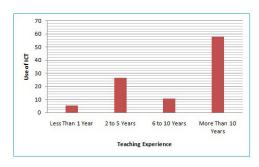


Figure 1. Teaching experience of respondents.

The teaching method is a way to deliver your knowledge it may be conventional teacher centered or modern ICT based which is a student centered approach⁶. For this, we asked "Which teaching method do you use; the teacher-centered or the student-centered?" The response to this we received that 31.59% persons were found having conventional teaching method, 36.84% used modern ICT based teaching method, 31.57% who were using both methods. The graphical representation of these figures is given in Figure 2.

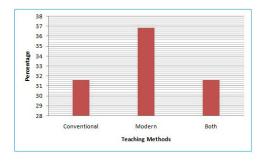


Figure 2. Teaching methods of respondents.

The Information and Communication Technology is a set of tools including television, radio, computers and the Internet etc. that helps the teachers to make their teaching methodology more effective and efficient. In this age of science and technology, it is necessary for modern teaching to have a good knowledge about ICT. Relatively, we asked "Do you have knowledge about ICT?" The response to this we received that 73.69% persons were found having ICT knowledge and 26.31% respondents having no any ICT knowledge. The graphical representation of these figures is given in Figure 3.

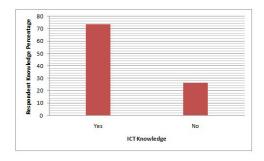


Figure 3. ICT knowledge of respondents.

In order to understand the above question more clearly the degree of ICT knowledge was necessarily to be measured. Therefore, we asked "At what level, do you utilize the ICT knowledge in teaching?" The response to this we received that 29.38% persons were found at lower level, 53.13% averagely and 17.49% at high level respondents utilized their ICT knowledge. The graphical representation of these figures is given in Figure 4.

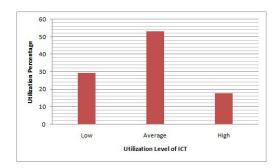


Figure 4. Level ICT knowledge of respondents.

No doubt that the use ICT increases the subject knowledge and understanding level of students. For this, we asked "Could the use of ICTs Aids attract students' attention towards their subject?" The response to this we received that 6.0% persons were found at lower level, 28.57% averagely and 65.43% at high level students are attracted towards ICT based teaching and learning. The graphical representation of these figures is given in Figure 5.

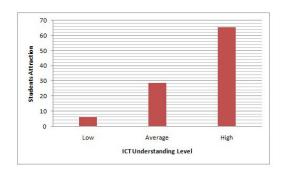


Figure 5. Students' attention towards subject.

There are many purposes of using ICTs in every field of life. For knowing the targeted goal, we asked "What is (are) purposes of using ICTs either at institution or using your PC at home?" The response to this we received that 9.27% persons were using ICT personal purposes, 27.52% for college use, 2.87% for spreadsheet, 11.34% for typing exam papers, 41.55% for finding information on net, 2.12% for developing teaching resources, 3.82% for developing students contents and 1.51% found using ICT for other purposes. The graphical representation of these figures is given in Figure 6.

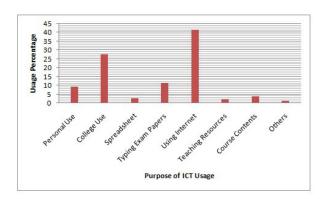


Figure 6. Purpose of using ICT.

There are many teaching methods that depend upon the situation and level of education. In our area traditional teaching method is used since long which is not satisfactory and does not meet all the requirements of teaching and learning process. For this cause we asked "Are you satisfied with current teaching methods?" The response to this we received that 15.26% persons were found highly satisfied, 72.62% averagely, 12.12% who were not satisfied with current teaching methods. The graphical representation of these figures is given in Figure 7.

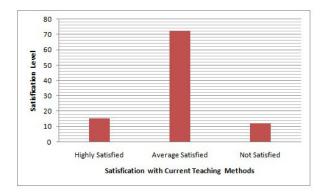


Figure 7. Satisfaction with current teaching methods.

The use of ICT should be in practice at college level because it is need of time for becoming well equipped professionals in their respective fields after leaving college. For this cause we asked "Should the use of ICTs in effective teaching be a general practice at college level?" The response to this we received that 5.27% persons were found that ICT should not be used at college level but on the other hand 94.73% respondents agreed to the use of ICT at college level for the better results in the teaching and learning process. The graphical representation of these figures is given in Figure 8.

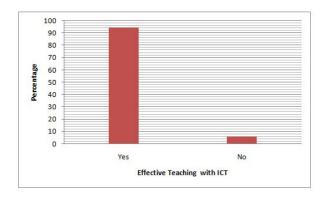


Figure 8. Effectiveness of ICT at college level.

The teachers' training is a process of updating and equipping them with new knowledge, skills and methods in a particular field. ICT based training programs for inservice college teachers should be organized for their professional development. Concerning this idea, we asked "Do you believe in-service teachers should receive extensive training for the use of ICTs as part of their teaching at College?" The response to this we received that 100% people agreed that they should be imparted with such ICT based training programs. The graphical representation of these figures is given in Figure 9.

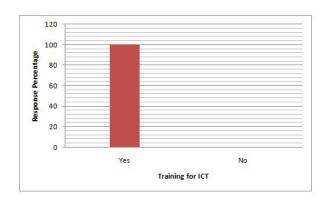


Figure 9. ICT training programs for in-service college teachers.

The use of ICT should be introduced from primary education level to higher education to make our new generations technologically sound. Hence, we asked "Do you believe ICTs should be used in our primary, secondary and higher secondary schools and colleges?" The response to this we received that 100% people agreed that this kind of subject should be made compulsory at every level of education. The graphical representation of these figures is given in Figure 10.

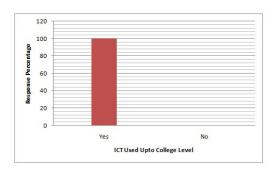


Figure 10. ICT at all levels of education.

ICT based teaching is quite different from the conventional one because of its novelty. For this cause we asked "Do you feel the difference between traditional teaching methodology and ICT based modern teaching methodology?" The response to this we received that 9.86% persons don't feel any difference between the traditional and modern teaching methodology at college level but on the other hand 90.14% respondents agreed to the use of ICT affects the teaching methodology. The graphical representation of these figures is given in Figure 11.

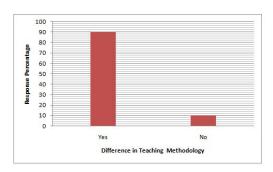


Figure 11. Difference between traditional & ICT based teaching.

4. Discussion

It has been generally accepted that ICT has become part and parcel of almost all the fields including academia. Teaching methodology is one of the most important and critical part of academia. Therefore, we have taken it into consideration whether teachers are inclined to accept ICT as a part of their job, to sophisticate their methodology and to believe that ICT brings effectiveness into imparting education. Relatively, our first three questions inquire about the experience of the college teachers, their respective teaching methodologies, teachers' satisfaction with the current methodologies and their knowledge level about ICT. The results of these questions show

that we have more teachers who have enough teaching experience. The methods used by most of the teachers are categorized under three tags; conventional, modern and both. We found approximately equal ration of each method. However, use of both methods is also at 31% approximately that is somehow encouraging on the part of experienced teachers.

The knowledge level of teachers is also inquired and response to this question is discouraging. Most of the teachers have average level knowledge of ICT. On the other hand, the attraction of the students to the subject with the help of ICT is at high level. Both situations depict that level of knowledge is average whereas it should be higher as per the need of students. Moreover, the teachers are willing to receive the ICT training programs but there are no such plans for them from the education authorities. The desire witnesses that teachers have agreed that ICT should be included in the teaching methodology and they realize that the inclusion of ICT has changed the teaching methods at all levels entirely.

The whole scenario endorses the lapses and the need of use of ICT in teaching. Though, we have found that most of the teachers in spite of having average knowledge level have concern for this field, they do not have appropriate trainings, resources and chances for using ICT. The teachers who are using ICT in their teaching methods are striving on their own. On the part of students, it has also been found that they pay more attention to the respective subjects when teachers include ICT aids and other computer gadgets in the process of teaching and learning. Conclusively, we may state that the current scenario of teaching methods at college level in the sample population is not that much discouraging regarding the use of ICT. However, the improvements are required to make the teaching processes better.

5. Conclusion

Recently ICT is used in every field of life including academia. This paper presented the observations and feedbacks of ICT utilization in teaching methodology at 13 colleges of District Khairpur. The data is collected through questionnaire and then results are produced on the basis of the received responses of teachers. The results showed that teaching methods in the selected colleges, though having some setbacks, are somehow satisfactory but improvements on many grounds also are needed.

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