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Topic of Research: A Study of Integration of ICT and its Influence on Higher Order Thinking Skills of Secondary School Students

OBJECTIVES

1. To study the usage of ICT by students and teachers in school.
2. To examine the ways ICT is being integrated in teaching and learning process of different school subjects at secondary level.
3. To assess the higher order thinking skills of secondary school students.
4. To observe relation (if any) between higher order thinking skills and I.Q. of secondary school students.
5. To observe (if any) integration of ICT in teaching and learning is influencing higher order thinking skills of secondary school students.

RESEARCH METHODOLOGY

The study is Descriptive in nature trying to explore the status of integration of ICT and higher order thinking skills of secondary students in secondary schools of Delhi. To investigate these two aspects, survey of 10 secondary schools of Delhi employing ICT was conducted. The sample comprised of secondary school students and secondary school teachers teaching different subjects. Out of these 10 schools, five were private and five were Kendriya Vidyalayas from Delhi region.

The data obtained was analyzed using both quantitative and qualitative methods. Percentage of responses were calculated for responses of teachers and students from questionnaire. Descriptive and inferential statistics were also used. To support the data, classes were observed and discussion with students and teachers were held.

FINDINGS

The study reveals that at present integration of ICT is limited to use of smart boards for delivering content and using computers and software packages for administrative tasks. The opportunity of using internet for teaching and learning process presents is recognized by teachers but has not been taken advantage of due to several administrative issues especially due to lack of training and unavailability of basic resources in schools.

In private schools the availability of software platform for use eased teachers' work despite having not enough content for subjects like Hindi or practice questions for Mathematics. Government school teachers who used Smart boards had to rely on presentations made by students or themselves or they would download clippings/ video from internet.

To keep their teachers updated Private schools organized regular trainings and this helped them to adapt to the new technology easily, especially for the senior staff members. These teachers also had an option of creating/modifying the material available in the modules of the software school was using on the Smart boards.

Teachers while discussing their views on role of ICT in education, mentioned that using internet helps make more content available. They also remarked that creativity is on the downside with students using less of their own thinking and rely on material available online; at times, it means simply copying material from websites and submitting for their assignments.

During class observation, it was found that teachers mostly used videos available on modules for reinforcement of the concept taught or to revise and increase chances of retention. Even in Government schools, where modules were not available for teacher's usage, teachers downloaded videos from internet and used these for reinforcement and retention.

In discussion with students, they mentioned that despite the content availability in modules or on internet, the teacher helped in explanation of the concept. Students during discussion also mentioned that they felt that they were more confident than their teachers in terms of ICT usage and sometimes even teachers asked for their help in case of a problem during class. Further, the teachers instructing students to use ICT tools for completing their activities or assignments.

Thus, the parameters for "integration of technology" in the schools surveyed were found to be use of Smart boards and using internet to prepare assignments and often, submitting these online.

Teachers attributed HOTS to "application of content" and remarked that such skills are found only in "bright"/ "intelligent"/ "high performing students". Very few teachers had the knowledge of concept of higher order thinking skills. From the type of questions teachers asked in the class it seemed that the teachers did not inculcate the skills in an integrated manner and mentioned in the interview that they give students practice questions for HOTS as it is a part of CBSE exam pattern. The students from private schools performed better than government school students in the test for HOTS designed for the study.

The observations done in this study show that the school environment, teacher's competence and pedagogy used in the classroom influence higher order thinking skills in students. The study does not give a direct relation between use of technology and development of higher order thinking skills, but from exploration done in the 10 schools, it concludes that higher order thinking skills can be taught by teachers who are aware and competent to teach them. The role of technology in developing these skills is important and it should form part of pedagogy for teaching students as it presents the prospect of evaluating the explored information. And gives them a chance to relate the new information with the previous knowledge, synthesize and evaluate the resources, critically.