



Effect of Information and Communication Technology (ICT) on Creativity and Academic Achievement of Adolescents

Arun Kumar Satsangi, B.P.Singh and Neha Gupta

Central Library, Dayalbagh Education Institute (Deemed University), Agra, India.

ARTICLE INFO

Article history:

Received: 15 January 2015;

Received in revised form:

17 April 2015;

Accepted: 22 April 2015;

Keywords

Information and Communication Technology,
Higher Education,
Adolescents academic achievements,
ICT effect on adolescents academic achievements,
Academic creativity.

ABSTRACT

Information revolution implies the use of technology especially electronic devices in communication, information, knowledge and skills. Today, in electronic era information technology is sharing and interchanging information such as knowledge, mental skills, motor skills and attitude through the use of mass media, especially electronics. In the broadest sense information technology refers to both the hardware and software that are used to store, dissemination and manipulate of information. Information technology comprises computers, networks, satellite communications, robotics videotext, cable television, electronic mail, electronic games and automated office equipments. Information technology mainly includes computer, internet and multimedia. The main objective of the study is to find out the level of academic creativity and achievement of adolescents not using information technology. Also, another objective is to study the effect of use of information technology on creativity and information technology of adolescents. Descriptive survey method has used in the research. Baquer Mehdi's verbal test of creative thinking (TCW) has used to measure the creativity of adolescents. It provides three factor scores-fluency, flexibility and originality. Final results of the students are collected for measuring Academic Achievement. A sample consist 200 adolescents of two streams (science and arts) of graduation class which has selected by Purposive Sampling Method from Mathura. To interpret & analysis the data statistical techniques Mean, Standard Deviation, t/ CR test, ANOVA were used. The study of interactional effect of all three independent variables - AXBXC i.e. stream * sex x use of information technology results in the rejection of null hypothesis and it was found that all the three variables combinedly effect the creativity and academic achievement of adolescents. On the basis of the findings given above it may be concluded that the use of information technology effect the creativity and academic achievement of Adolescents.

© 2015 Elixir All rights reserved.

Introduction

Over the countries, we as human beings have always felt the need to communicate and share our ideas and thoughts. Man is a communicator of information. India has entered 21st century as one of the most dynamic, developing and forward-looking nations of the world. Today, we see that technology is being applied to every field of civilized living. It comes in many forms and their applications are limitless. Technology is revolutionizing training. However, in India its impact has yet to be felt adequately.

Information revolution implies the use of technology especially electronic devices in communication, information, knowledge and skills. Information technology is sharing and interchanging information such as knowledge, mental skills, motor skills and attitude through the use of mass media, especially electronics. In the broadest sense information technology refers to both the hardware and software that are used to store, receive and manipulate information. Information technology comprises computers, networks, satellite communications, robotics videotext, cable television, electronic mail, electronic games and automated office equipments.

The National Policy on Education (1986) and as modified in 1992 envisaged the role of media and technology as: modern communication technology have the potential to bypass several stages and sequences in the process of development encountered in early decades. Both the constraints of time and distance at

once become manageable. Information technology mainly includes computer, internet and multimedia.

Statement of the Topic

To study the Effect of Information and communication Technology on Creativity and Academic Achievement of Adolescents.

Definitions of The Terms

The definitions of the technical terms which has been used in the study are as follows:

Information Technology

Information Technology, as defined by the **Information Technology Association (ITAA)**, is "the study, design, development, implementation, support and management of computer – based information system, particularly software application and computer." Information Technology deals with using electronic computer and software to convert, store, protect, process, retrieve with security or transmit any information.

Creativity

Psychologist Mednick (1962) stated

"Creativity thinking consists in forming new combination of associative elements which either meet specified requirements or in some way are useful. The more mutually remote the elements of new combination the more creative are the process".

According to **Guilford** (1960), "creativity is divergent thinking which plays a major role. The new ideas come when we think in different directions".

Table 1.0. Showing design of the study

I.V.	Users of Information Technology		Non-users of Information Technology	
D.V.	Science	Arts	Science	Arts
Creativity	25	25	25	25
Academic Achievement	25	25	25	25

In the present study the definition given by Guilford has been accepted and creativity was considered as sum of the fluency, flexibility and originality.

Fluency: Fluency of thinking means fertility of ideas.

Flexibility: Flexibility of thinking consists of factors namely spontaneous flexibility and adaptive flexibility. Spontaneous flexibility is defined as the ability to produce a great variety of ideas with freedom from inertia as from preservation. Adaptive flexibility which facilitates the production of a most unusual type of solution.

Originality: it is identical by unusualness of responses or remote associations and relationship, one must get away from the obvious, the ordinary conventional in order to make a good score or response.

Academic Achievement

According to **Good** (1959) "it is the knowledge attained, or skills developed in the school subjects usually designed by test scores or by marks assigned by teachers or both."

According to **Michelle Bell** (1946) "Academic Achievement can be defined as excellence in all educational disciplines in class as well as extra curricular activities"

In present study scores or marks attained in the examination will signify the educational achievement of the students.

Adolescents

To understand the word adolescents, it is necessary to know the meaning of the term adolescents.

The Adolescent is derived from the Latin word *Adolescere*, which means 'to grow into maturity'. It is a 'Biosocial transition' between childhood and adulthood. Puberty refers to the physical and sexual maturation of boys and girls. Adolescence refers to the behavior characteristics of this period that are influenced by cultural and physical changes.

Objectives Of The Study

The objectives of the study are listed below:

1. To study the academic achievement and creativity of adolescents using information technology.
2. To a comparative study the level of academic achievement and creativity of adolescents not using information technology.
3. To a comparative study of the creativity of science and arts group adolescents who are using IT and not using IT.
4. To study the joint interactional effect of streams and use of information technology on creativity and academic achievement of adolescents.

Hypotheses of The Study

In the present study following hypotheses has been formulated to achieve the objective of the study:

1. There is no significant effect of use of information technology on creativity.
2. There is no significant effect of use of information technology on academic achievement.
3. There is no interactional effect of use of information technology on creativity and academic achievement.

Delimitations of The Study

In the view of limited time at the disposal of the investigation, the present study has been limited to:

- 200 students of graduation of Mathura City which are affiliated with the U.P. Board.
- Students of only two streams of education-Science and Arts.

Design of the Study

Independent variable has been treated at two levels – users and non-users of Information Technology, both of the streams Science and Arts. So the research design will be 2 2 2 factors research design.

Variables Of The Study

Independent Variables

1. Use of Information Technology
2. Streams (science and arts)
3. Sex (male and female)

Dependent Variables:

1. Creativity
2. Academic Achievement

Statistical Techniques

To interpret & analysis the data following techniques has been used :

- (1) Mean
- (2) standard Deviation
- (3) t/ CR Test
- (4) ANOVA

Findings of The Study

Finding under various objectives are given below:

Findings Related To Creativity

Nature of the distribution of creativity scores sex and stream wise.

- i. The creativity scores are almost normally distributed as skewness and kurtosis was found.446 and .279 respectively. This mean value of creativity of adolescents was found 64.60 showing above average level of creativity.
- ii. The analysis of data has shown significant difference among creativity scores of male and female. Female students have high creativity than male students. Though they differ in two components of creativity that are fluency and originality but in flexibility, they are almost same.
- iii. In relation to stream, the science students are superior than arts students in all three components of creativity.

To study the creativity scores of information technology users in relation to sex and stream:

- i. Significant difference is found between the creativity scores of male and females, who are using information technology. But females are high in creativity than males in only one component of creativity that is originality.
- ii. The null hypothesis that "there is no difference between the creativity of science and arts students who are using information technology" - has been rejected, because the view that science students are much more creative than arts group was confirmed at 0.05 level of confidence.

Study of creativity scores of not users of information technology

- i. The mean value of creativity scores of information technology not users is found average i.e. 58.62. But the mean value of creativity scores of female students i.e. 61.02 was found greater than the mean value of male students i.e. 54.37, and female students who are not using information technology are capable to think more fluently than the male of the same group.

- ii. There is found significant mean difference between the creativity scores of science and arts students who are not using information technology. The information technology users of science stream have more originality than of arts stream but they are same in fluency and flexibility.

Comparison of creativity scores of users and not users of information technology

- i. Statistical analysis of the mean of creativity scores of information technology users, indicates that they differ in creativity significantly. information technology users are superior in all three dimensions of creativity than information technology not users.
- ii. When the researcher compared the creativity scores of information technology users and not users, sex wise, she found that information technology using males and females are highly creative than information technology not using male and females, as t value of all three dimension was found significant.
- iii. In relation to stream information technology users of science as well as of arts are more creative than information technology not users of both the stream

Interactional effect of use of information technology on creativity of adolescents

- i. Summary of ANOVA indicates that creativity scores of adolescents differ on the basis of sex and stream.
- ii. In relation to factorial analysis, the interactional effect of AXB factor (stream X sex) is significant at 0.01 level of confidence i.e. sex and stream combined also effect the creativity scores of adolescents.
- iii. Either sex or stream when combined with the use of information technology affects the creativity scores of adolescents.
- iv. The study of interactional effect of all three independent variables - AXBXC i.e. stream * sex x use of information technology results in the rejection of null hypothesis and it was found that all the three variables combinedly effect the creativity of adolescents.

Findings Related To Academic Achievement

Nature of the distribution of academic achievement scores sex and stream wise.

- i. The academic achievement scores are almost normally distributed as skewness and kurtosis was found -0.456 and .279 respectively. This mean value of academic achievement of adolescents was found 66.60 showing above average level of academic achievement.
- ii. The analysis of data has shown significant difference among academic achievement scores of male and female. Female students have high academic achievement than male students. Though they differ in two levels of academic achievement that are first and third but in second level, they are almost same.
- iii. In relation to stream, the science students are superior than arts students in all three levels of academic achievement.

To study the academic achievement scores of information technology users in relation to sex and stream

- i. Significant difference is found between the academic achievement scores of male and females, who are using information technology. But females are high in academic achievement than males in only one level of academic achievement that is third.
- ii. The null hypothesis that "there is no difference between the academic achievement of science and arts students who are using information technology" - has been rejected, because the view that science students are much more academic achievement than arts group was confirmed at 0.05 level of confidence.

Study of academic achievement scores of not users of information technology

- i. The mean value of academic achievement scores of information technology not users is found average i.e. 59.52. But the mean value of academic achievement scores of female students i.e. 62.02 was found greater than the mean value of male students i.e. 56.27, and female students who are not using information technology are capable to think more fluently than the male of the same group.
- ii. There is found significant mean difference between the academic achievement scores of science and arts students who are not using information technology. The information technology users of science stream have more scores at third level than of arts stream but they are same in first and second level.

Comparison of academic achievement scores of users and not users of information technology

- i. Statistical analysis of the mean of academic achievement scores of information technology users, indicates that they differ in academic achievement significantly. information technology users are superior in all three levels of academic achievement than information technology not users.
- ii. When the researcher compared the academic achievement scores of information technology users and not users, sex wise, she found that information technology using males and females are highly academic achiever than information technology not using male and females, as t value of all three levels was found significant.
- iii. In relation to stream information technology users of science as well as of arts have more academic achievement than information technology not users of both the stream

Interactional effect of use of information technology on academic achievement of adolescents

- i. Summary of ANOVA indicates that academic achievement scores of adolescents differ on the basis of sex and stream.
- ii. In relation to factorial analysis, the interactional effect of AXB factor (stream X sex) is significant at 0.01 level of confidence i.e. sex and stream combined also effect the academic achievement scores of adolescents.
- iii. Either sex or stream when combined with the use of information technology affects the academic achievement scores of adolescents.
- iv. The study of interactional effect of all three independent variables - AXBXC i.e. stream * sex x use of information technology results in the rejection of null hypothesis and it was found that all the three variables combinedly effect the academic achievement of adolescents.

Conclusion

On the basis of the findings given above it may be concluded that the use of information technology effect the creativity and academic achievement of Adolescents. Thus the use of information technology can develop higher level of creativity and academic achievement among young generation, so if we want to increase the creativity and academic achievement of young generation, we have to provide the environment for using information technology frequently.

References

1. Anderson, J. E. The nature of abilities. In E. P. Torrance (Ed.), Talent and education. 1960:3 1. Minneapolis: University of Minnesota Press.
2. Asha, C. Creativity and academic achievement among secondary school children. Asian Journal of Psychology and Education.1980; 6: 1-4.

3. **Bentley**, J. C. Creativity and academic achievement. Journal of Educational Research. 1966; 59: 269-72.
4. Cicirelli, V. G. Form of relationship between creativity, **I.Q.**, and academic achievement. Journal of Educational Psychol- OD. 1965; 56:303-8.
5. Mayhon, W. G. The relationship of creativity to achievement and other student variables. Dissertation Abstracts. 1966; 27(6A):1713.
6. M H olson, An Empirical Study of the Impact of User Involvement on System Usage and Information Satisfaction, University of Delhi. 1986.
7. Murphy, R. T. Relationship among a set of creativity, intelligence, and achievement measures in a high school sample of boys. Proceedings of the 81st Annual Convention, American Psychological Association, 2009: **USA;81**, 631-2.
8. Shaw, J. M., & Cliatt, M. **1**. A model for training teachers to encourage divergent thinking in young children. Journal of Creative Behavior. 2005:20;81-8.
9. Tanpraphat, A. A **study** of the relationship between creativity, academic achievement, scholastic aptitude, **sex**, and vocational interests of tenth grade Thai students. Unpublished doctoral dissertation, University of North Colorado, Greeley. 2003.