



Relationship between Internet Competency and Academic Achievement of Science Students in Bachelor Level

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Abstract

This paper was aimed to answer whether there is relationship between internet competency (IC) and academic achievement (AA) among science students in bachelor level with various combination of subjects (PCM, PMCs and CBZ). This was a correlation study with prediction and analytical research. A total of 254 science students in bachelor level of final year were drawn randomly from the four chosen colleges giving representation to three different combinations- PCM, CBZ and PMCs. One college under each type: Private Aided College, Private Unaided College, Government College and Mysore University Constituent College. One of chosen using convenience sampling technique. The IC questionnaire prepared by the researcher employed to assess IC in total and component wise. The data analyzed using Pearson's Correlation Coefficient and Multiple Regression. The findings indicated that component of information search significantly and negatively correlated with AA of science students in bachelor level with different combination of subjects (PMCs, PCM, and CBZ). Further results showed that in total there was no significant positive relationship between IC and AA of Science Students in Bachelor Level.

Keywords: Internet competency, information management, search, computer general knowledge, ability, communication and collaboration, general webpage and academic achievement.

Introduction

The essential usage of information technology is an important index of national and economic growth. New finding of technology especially computer technology cause different change and make things easier for use in routine life. Technologies role is so important and one of the important issues in education policy in the world¹. In the educational area, many specialists have same ideas in using information and communication technology. Usha² explains the use of internet especially (WWW) causes a new horizon of the information production and delivery that global caused digitization programmes. Ojedokun and Owolabi³ believe that teacher should change their teaching method and learn Internet skills. Teachers have to learn new method and teach to their students to use Internet to acquire new information. In some developed countries, the educational institution in particular are essential users of ICT, they understand the fact that ICT provides more useful teaching and learning processes. The web is essential source of acquisition of information in academic level. Scholars can find different articles in Web. Any information in research field can be found on the online website⁴.

The barriers of communication are broken through Internet. The connection through net is easy without any limitation and barrier. And many facilities are available for the users without any obstacle. The Internet provides opportunity to use up-to-date research findings in different topics, Such as technology and science, art and music, finance and business. Thus it is important tool of learning in electronic eras. Student should

have new skills for better use of Internet facilities, for evaluating the quality of found sources, in web designing information in using chartrooms or etc⁵. Internet Competency (IC) is the ability of a person to use the Internet correctly. It is a mixture of skills and knowledge of using the Internet to improve their action⁵. Learning is one of the essential factors in the advancement. Human beings gain his/her success in the light of leaning. There are many factors that affect the learning which one of them is individual IC.

The Internet have the influence on the social life of individuals, leisure, consumer, community well-being and economic^{6,7,8}. The Internet facility is easy for use and prepares many benefits for person in daily life. (e.g. social life, work life, leisure life and education life). Some authors proposed that the Internet has direct influence on Academic Achievement (AA) with using of educational software, and the provision of essential information^{9,10}. Others suggest that the Internet prepare practices for socialization as it provides the closeness of human's relationships without time consuming and location^{11,12}.

The significance of present study is the fact that nowadays the Internet is essential factor in individuals life, institutions in India. The recent decades have witnessed a dramatic increase in the usage of the Internet and an unprecedented increasing computer-based technology. Computer technologies and the Internet cause social changes in modern society. Since computers are a common tool of daily living for a more population, the Internet has a great influence on quality of life⁵. Statistical research show us that global Internet users numbered

16 million in 1996, and increased to 500 million by 2001¹³. For example, 90% of American teens use the Internet, up from seven in 2000¹⁴. However, as affirmed in above, India is grows very fast in Internet use. Adolescents and youth use a lot from Internet activities than adults¹⁵.

The findings of this study can identify the relationship between IC and AA of students, Administrators and teachers can inform students about the role of Internet in improving their AA. Furthermore, they can encourage students to use the Internet to increase their knowledge, and give more Internet facilities available for Bachelor Degree Science Students.

Adegoke¹⁶ showed that most of the students use the Internet easily. Most of the students that have facility to use the Internet browse more for other purpose (socio-networking sites). The relationship between Internet browsing and students' achievement in Agricultural Science through positive is not significant.

YangKim¹⁷ showed there is no statistically significant correlation between Internet use and AA. Total Internet access was highly correlated to nonacademic related Internet browsing. Although not statistically significant, the consistent negative correlations between nonacademic Internet use with both self-regulation and achievement shows that the Internet is fascinating distraction to achievement which may related to lack of self-regulation.

Puzziferro¹⁸ showed that online technologies self-efficacy scores have not correlation with student performance.

Jackson, Von Eye, Biocca, Barbatsis, Zhao and Fitzgerald⁹ shown that children who used the Internet are given more point on standardized tests of reading achievement and higher mark averages 6 months, 1 year, and 16 months later than did children who used it less. Grown children accesses the Internet more than younger children, but age limitation had no influence on the nature or the academic performance usage of Internet.

Lim¹⁹ indicated that Internet information literacy correlated with Internet literacy (mechanical aspect) at a relatively high coefficient (0.71) and with computer literacy at coefficient of 0.67. Further, there was correlation between the frequency of use of the Internet for schoolwork and the literacy level of the participants in computer, Internet and information literacy, and also their innate ability.

The present survey is a try to study the relationship between IC and AA of Bachelor Degree Science Students. It is hypothesized that there is significant relationship between IC and AA of Science Students in Bachelor Level with differ combination of subjects Physic, Mathematics and Computer Science (PMCs), Physic, Chemistry and Mathematic (PCM), Chemistry, Botany and Zoology (CBZ).

Methods

The population of this survey are used from final year of students of Maharani Science College for Women, Government First Grade College for Women in Vijayanagara, Yuvaraja College, Saradavilas College, Government First Grade College in Kuvempunagar, Teresian College, Mahajana First Grade College, NIE Science College, MMK and SDM College for Women, College ST. Josephs First Grade colleges and Mallamma Marimallappa Science and BBM college, that have science matter in various combinations as (PCM, CBZ and PMCs) in Mysore city (Karnataka - India). Just 2 colleges (ST. Josephs First Grade colleges and Mallamma Marimallappa Science and BBM College) were excluded from the population, because they were not final year students. The population volume was 745 students as detailed here: PMCs (234 students), PCM (323 students) and CBZ (188 students)²⁰.

Convenience sampling methods used to choose the colleges in Mysore city and random sampling technique used to show last year students from the various colleges giving representation to different combinations—CBZ, PCM and PMCs. Totally 254 students were selected according to the table of Krejcie and Morgan²¹. All the colleges constituting the sample of the study are affiliated to University of Mysore. One College was selected under each kind of college: Private aided College, Private unaided College, Government College and University of Mysore Constituent College. The given details of sample elected for the study in table 1.

The IC Scale used in this research paper to determine IC created by the scholar. This scale combines of 6 components-information search, communication and collaboration, computer general knowledge, general webpage using, computer general ability and information management. Each component consisted of multiple items. In whole, this Scale contained 72 Items.

The IC Scale used to assess IC in total and each component. This scale included of 6 major components. Each component including of several items in each component, each item has 5 levels of responses like Very Good, Good, Average, Poor and Nil. Which were given rating of 4 to the very good, 3 to the good, 2 to the average, 1 to the poor, and 0 to the nil. Each item scored by assigning the number allotted to the corresponding rating and the total score on each component was get by calculating the mean of the scores assigned to every one of the items in that component.

For reliability the scale given to faculty members and Ph.D students of Department of Education in Mysore University and Regional Institute of Education Mysore, Department of Studies in Psychology and Department of Computer Science. Based on the discussion with them and their offer, selected items were modified; certain items added or reduced and finalized the instrument. Cronbach alpha coefficient used to represent its reliability and it was found to be 0.97 for the whole scale.

Table-1
Details of the sample for the study

No.	Kind of College	Population and Sample	Combination of fields									Total
			CBZ			PCM			PMCs			
			F	M	T	F	M	T	F	M	T	
1	Pvt. Aided	Population	9	20	29	10	44	54	0	13	13	96
		Sample	4	8	12	4	18	22	0	5	5	39
2	Pvt. Unaided	Population	-	-	-	11	-	11	35	-	35	46
		Sample	-	-	-	5	-	5	14	-	14	19
3	UOM Constituent College	Population	12	50	62	25	109	134	28	50	78	274
		Sample	5	20	25	10	44	54	11	20	31	110
4	Government	Population	82	-	82	97	-	97	34	-	34	213
		Sample	33	-	33	39	-	39	14	-	14	86
Total	Total	Population	103	70	173	143	153	296	97	63	160	629
		Sample	42	28	70	58	62	120	39	25	64	254

This is a correlation study with descriptive and analytical research. Further involves prediction of most contributing variables to the AA of Science Students in Bachelor Level through Regression analysis. The data was collected using IC questionnaire. During administration of the scale, clarifications were given for certain items on demand. The analyzed data used Pearson correlation coefficient and Multiple Regression with SPSS.

Results and Discussion

From the table 2 it is clear that only one IC component (information search) significantly and negatively correlated with AA. Information search was found to be significantly and negatively with AA ($r = -.134$; $p < .05$).

Table-2

Results of Pearson's Correlation Coefficient for IC and Academic Achievement of Science Students in Bachelor Level with different subjects-CBZ, PMCS, PCM- (in total and component wise)

Internet Competency Components	Academic Achievement	
	R-value	P- value
Computer General Ability	-.03	.632 NS
Computer General Knowledge	-.02	.734 NS
Communication and Collaboration	-.02	.774 NS
General Webpage Using	.00	.981 NS
Information Search	-.13	.033*
Information Management	-.03	.646 NS
Total IC Components	-.04	.542 NS

*Significant at the 0.05 level NS: Not Significant.

Rest of the correlation coefficients between IC components in total ($r = -.04$; $p > .05$) and IC components -Computer General Ability ($r = -.03$; $p > .05$), Computer General Knowledge ($r = -.02$; $p > .05$), Communication and Collaboration ($r = -.02$; $p > .05$), General Webpage Using ($r = .00$; $p > .05$) and Information Management ($r = -.03$; $p > .05$) with AA were found to be independent of each other including total scores both for IC and AA.

Table-3
Regression of Academic Achievement on IC model summary and ANOVA

Model	r	r Square	Adjusted r Square	df	F	P
1	.24	.06	.05	2, 251	7.53	.001**

** $P < 0.01$

The Multiple Regression was used to assess the multiple coefficient of correlation between IC components and AA in students. So the variables such as communication and collaboration, information search, computer general knowledge, general webpage using, computer general ability and information management as predictors and AA (G.P.A.) as a criterion variable were entered into the regression equation with the Stepwise method. The multiple coefficients of correlation among the variables were 0.24 which explains 6% of variance of average marks ($R^2 = 0.06$). Further table 3 shows that the model is significant ($F = 7.53$, $P < 0.01$).

Table-4
Regression Coefficient of IC among the students

Predictors	Standardized Coefficients	t	P Value
	Beta		
(Constant)		21.02	.000
Information Search	-.42	3.89	.000**
General Webpage Using	.35	3.21	.002**

Table 4 shows that among the components of IC, information search (Beta= -0.42, $t = 3.89$, $p < 0.01$) and general webpage using (Beta= 0.35, $t = 3.21$, $p < 0.01$) were the best predictor of AA (G.P.A.) of students.

Table-5
Regression Coefficient of IC components among the students (Excluded Variables)

Variables	Beta In	t	P Value
Computer General Ability	.08	.9	.371 NS
Computer General Knowledge	.12	1.23	.219 NS
Communication and Collaboration	.06	.57	.570 NS
Information Management	.02	.16	.870 NS

Table 5 shows that among the components of IC, computer general ability (Beta= 0.08, t=0.9, p>0.05), computer general knowledge (Beta= .12, t=1.23, p>0.05), communication and collaboration (Beta= 0.06, t=0.57, p>0.05) and information management (Beta= 0.02, t=0.16, p>0.05) were not the predictor of AA (G.P.A.) of students. Therefore the above variables have been removed in the model.

Discussion: Result of this study indicated that component of information search significantly and negatively correlated with AA of Science Students in Bachelor level with different combination of subjects (PMCs, PCM, and CBZ). This means that more usage of the information search on the sites and databases by students to decrease the student AA. In the contrary any amount of Information Search on the sites and databases by students, increase their AA. This result is similar with the results of studies by Lim¹⁹, showed that there is correlation between the frequency of use of the internet for schoolwork and the literacy level of the participants in internet, computer, information literacy and their innate ability.

Other result in this paper showed that there is no significant correlation between total IC and AA, computer general knowledge and AA, computer general ability and AA, communication and collaboration and AA, general webpage using and AA, information management and AA of science students in bachelor level with different combination of subjects (PMCs, PCM, and CBZ). This means that in this study the components of IC mentioned in above has no impact on the AA of science students in bachelor level with different combination of subjects (PCM, PMCs and CBZ). This finding is on par with the results of studies by Yang Kim¹⁷, Adegoke¹⁶, Puziffero¹⁸, Jackson, Von Eye, Biocca, Barbatsis, Zhao and Fitzgerald⁹.

YangKim¹⁷ showed there is no evident correlation between Internet use and AA. Total internet access was highly correlated to nonacademic related internet browsing. Adegoke¹⁶ indicated most of the students that have access to the Internet browse more for non-educative information. The relationship between Internet browsing and students achievement in Agricultural Science through positive is not significant. Puziffero¹⁸ states that online technologies self-efficacy marks are not same with students' ability. Jackson, Von Eye, Biocca, Barbatsis, Zhao and Fitzgerald⁹ revealed that children who used the Internet more

had higher ability on standardized tests of reading achievement shows better mark during 6 month, 1 year, and 16 months later than did children who used it less. Older children used the Internet more than did younger children, but age have no effect on the nature or the academic performance benefits of Internet use.

Further result shows that information search component and general webpage using component were the best predictor of AA for students of science students in bachelor level with different combination of subjects (PMCs, PCM, and CBZ). However the other components of IC - information management, computer general knowledge, communication and collaboration and computer general ability were not the predictor of AA for students of science students in bachelor level with different combination of subjects (PMCs, PCM, and CBZ).

The Internet is used for instruction and learning in colleges and classrooms. Although, there are problems with Internet use such as Internet addiction or unregulated Internet use²². When students use the Internet academically or non-academically, both can influence their learning positively or negatively.

The Colleges affiliated to university of Mysore should have to use more finding and the other accessible support for Internet and information literacy. Also colleges must take initiative to provide facilities for students and ask them to develop IC for the improvement of Achievement of students.

Students of colleges affiliated to university of Mysore should have use the Internet as much as better in academic and research requirements, and for better result. They should not spend their valuable times in Internet for seek for vain activities such as playing the game, friends chat, entertainment, etc.

Conclusion

According to the above findings it can be concluded that more usage of the information search on the sites and databases by students to decrease the student AA and vice versa. Total IC and the other components of IC (information management, general webpage using, communication and collaboration, computer general knowledge, computer general ability) have no impact on the AA of science students in bachelor level. Further can be concluded that between the components of IC, information search and general webpage using were the best predictor of AA for students of science students in bachelor level with different combination of subjects (PMCs, PCM, and CBZ). The results of present study can be used for managers, planners, lecturers and educators in universities and educational institutions, particularly online classes, distance education, open universities and virtual education in curriculum and instructional planning.

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