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Internet Use in Relation to Gender and Academic Achievement with Different Levels of Internet Self Efficacy



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Abstract

The study was conducted to find out internet use in relation to gender and academic achievement with different levels of internet self efficacy. Sample comprised of 400 adolescents of IXth class (i.e. 200 males and 200 females) of Government Senior Secondary Schools of Chandigarh. Descriptive method was used. Results revealed that male adolescents exhibited better internet use as compared to female adolescents. Significant difference was found among adolescents with low, moderate and high internet self efficacy with respect to internet use. It was also found that no significant difference was found among adolescents with low, moderate and high academic achievement with respect to internet use. Results also revealed that no significant interaction was found among gender, internet self efficacy and academic achievement of adolescents with respect to internet use.

Keywords: Academic Achievement, Internet Efficacy.

Introduction

The Internet is seen as the most dynamic mass media in present century. Its interactive nature has attracted adolescents from all walks of life. Unlike its predecessors like the TV and radio, the Internet is also a storehouse of knowledge providing access to huge pile of information. The number of adolescents independently using the Internet for self-directed activities is continually increasing. It became evident that through the adolescent's engagement with the Internet they have developed an in-depth understanding of the different uses of the tool for different purposes. The Internet is also an inseparable part of today's education system. Now days the adolescent student increasingly depends on the Internet for their academic purposes (Salman, 2010). Internet allows adolescent student to broaden their academic experience, access important information and communication with others. This is a universal fact that the use of Internet has a great impact on the student's academic achievement. The opportunities, which the Internet can offer in the sphere of education, are really unique. Internet is a relatively new channel for students and contains vast quantities of information that vary a great deal regarding its contents, aim, target group, reliability etc. In present days progress in the field of the Internet is bringing about progress in the field of education (Chapman, 2002).

Review of Literature

Studies on Internet use

Chauhan and Gupta (2015) conducted a study in India to find the impact of frequency of Internet use on cognitive processing among adolescents. The sample comprised of 240 adolescents (120 males and 120 females) within the age range of 13 to 17 years. The subjects completed the Internet use scale (Donchi & Moore, 2004) and four scales measuring cognitive processing each measuring one dimension of Cognitive processing (i.e., planning, attention, simultaneous and successive processing). The data was subjected to 2x2 analysis of variance. Results revealed that significant differences between frequent and infrequent Internet users particularly in terms of planning, attention and successive processing while no significant differences were found in terms of simultaneous processing. The frequent Internet users thus, displayed higher cognitive processing benefits than their counterparts. In order to see the significance of differences among means involved in interactions Duncan's multiple range test was applied, the results revealed that infrequent female Internet users lack significantly in attention span task as compared to counterparts. Internet thus may act as a tool that encourages

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certain kind of cognitive structures among adolescents.

Ganapathi (2015) determined the prevalence of Internet Addiction pattern and to analyze the associated factors among the college students from various education fields from South India. Cross-sectional study was conducted on 596 college students studying in Arts, Engineering and Medicine were assessed using a self-administered questionnaire. Information regarding demographic factors was collected and Internet Addiction pattern determined by Young's Internet Addiction test scale. Results revealed that out of 596 students, 246(41.3%) were mild addicts, 91(15.2%) were moderate addicts and 259(43.5%) were not addicted to Internet use. There was no pattern of severe Internet addiction among the study group. Males, students of Arts and Engineering stream, those staying at home, no extracurricular activity involvement, time spent on internet per day, mode of accessing internet are some of the factors significantly associated with internet addiction pattern. It was also found that the prevalence of Internet Addiction is high among more than half of the study group.

Montalvo, Velez and Irazabal (2015) analyzed the characteristics and habits of Internet use in a sample of pre-adolescents between 10 and 13 years of age, enrolled in the 6th grade of primary school in Navarra (Spain). Likewise, the existence of differential patterns in Internet use by sex was analyzed, and risk behaviors were detected. The sample was composed of 364 students (206 boys and 158 girls) who were evaluated at their schools. Information about socio-demographic characteristics, Internet use habits, and online behaviors was collected using a data-gathering tool specifically designed for the study. The results demonstrated high Internet use by the adolescents studied. Girls used the Internet more for social relationships, whereas boys tended to use it differently, including accessing online games. Moreover, some risky behaviors were found, including interactions with strangers, giving out personal information, and sending photos and videos. Likewise, behaviors associated with cyber-bullying were detected. These results indicated the necessity of establishing prevention programs for safe and responsible Internet use.

Gender

The term 'gender' will be used according to the description of McGregor & Bazi (2001): "Whereas the sex of an individual is biologically determined, gender refers to the socially constructed definition of females and males and the relationship between them. Gaicquinta (1990) said it can be seen that women look at computers as instruments to complete a task. To the contrary, boys usually view computers as recreational. They see them as toys to be played with and explored. Thus boys explore, challenge the limits, and often shape computers and computer use. Computers are viewed differently by males and females.

Numerous studies had documented that boys spend more time than girls playing computer and video games (Subrahmanyam, Greenfield and Kraut

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2001). Based on early home computer and video game use patterns, it was expected that boys also would spend more time online than girls. Even if girls and boys spent equivalent amounts of time online, previous research (both academic and market based) suggested that they might display gender stereotypical preferences in their choices of Internet activity, i.e., boys might be more likely to spend their time online alone, playing violent online games, while girls might be more likely to spend their time online in social interaction (Subrahmanyam, Greenfield and Kraut, 2001).

Studies on Gender

Tomar and Gulati (2011) conducted a study to assess the internet use among the adolescents. Sample comprised of 120 adolescents in 14 to 16 years of age range from four private Senior Secondary Schools of Ludhiana city. A self-structured questionnaire was used. Percentages, means, t test, Z test, Chi square, and correlations were used to analyze the data. Results revealed that, frequency and degree of internet use was significantly higher among male as compared to females.

Soh, Teh, Hong, Ong and Charlton (2013) explored gender differences in urban adolescent Internet access, usage and motives. Sample comprised of 914 urban school students in Malaysia. Factor analysis revealed that entertainment, social interaction, shopping and information/surveillance are the key drivers for adolescence Internet usage. Results revealed that boys and girls differed in their intensity of usage, place of access and their motivations to use the Internet. Girls use internet mainly for shopping, social interaction and for surveillance/ information, while boys who used internet were more motivated by eroticism and higher tendency to be addicted to the internet. However, boys and girls did not exhibit any significant differences in online entertainment motivation.

Smritikana (2015) examined Internet addiction in adolescence in terms of gender. Sample consisted of 200 school students (100 boys and 100 girls) studying in class Xth of Ranchi town. Simple random sampling technique was used. The study revealed there were significant differences between the boys and girls group in their internet addiction. Result showed boys were more addicted to the internet than girls.

Academic achievement

Academic achievement is defined as the level of individual's education and/or educational outcomes accomplished successfully, as a result of learning at school. It is usually determined by comparing his or her score on a school test and/or a standardized test with the average score of other people of the same age (Kim 2011).

Numerous studies have shown that owning a home computer and the use of information technology is positively related to academic achievement (Rocheleau 1995; Subrahmanyam, Greenfield and Kraut 2001). In fact, research shows that having a home computer is associated with higher test scores in reading, even after controlling for family income and other factors related to reading test scores (Jackson

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2008). Jackson's (2008) study on race, gender, and information technology use found that "for both white and black twelve-year-old boys and girls," frequency of computer use was positively associated with grades received and overall GPA. Conversely, these findings also suggested that frequency of playing video games was negatively related to overall achievement". Empirical studies have also provided evidence of positive associations among internet use, social support and academic achievement (Bargh and Katelyn, 2004). Increased levels of social support have been shown to translate into higher achievement scores.

But, an other study conducted by Metzger (2003) shows some weaknesses of the internet in academic work:

1. few centralized information filters relative to the amount of information available
2. no explicit editorial review policies to analyze content and verify factual information
3. less social and professional pressure to ensure accuracy
4. no regulatory policy concerning web-based information
5. ease of electronic sabotage and content alteration
6. many web sites do not have established reputations that can aid users in assessing the sites' veracity.
7. merging of advertising and information
8. professional quality web sites are easy to create and can appear credible, even when they are not.

Studies on Academic achievement

Shohrwardhy and Hassan (2014) attempted to determine the students' perception of social networking on their academic purpose. Sample comprised of total 480 students of Bangladesh. Self administrative questionnaires given to a sample of students from the business faculties of different public and private universities in Chittagong. The purpose was to aggregate respondent's opinions on the uses of their favorite social networking site(s) and their impact on the students' academic performance. Results revealed that most of the respondents report a positive impact of social networking on their academic purposes and there is a favorable perception of social networking taking different nuances.

Goel and Garg (2015) conducted a study to know the influence of access and use of internet on academic performance among adolescents and to examine the gender differences among adolescents on excess usage of internet. Sample comprised of 300 adolescents of Muzaffarnagar, UP. Descriptive statistics was used for analyzing the adolescents' responses to the "Internet Usage Scale" and GPA for the previous year. The results suggested that excess use of Internet was significantly negatively correlated with academic performance of adolescents. Results also suggested that male adolescents had higher user of Internet than female ones.

Munkaila and Iddrisu (2015) examined the influence of social media usage on academic performance of students in tertiary institutions.

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Sample comprised of total 600 students from Tamale polytechnic college. The findings revealed that most of the students make use smartphones, followed by cell phones and laptops. For the use of social network sites, it was obvious that, most of the students use Facebook, followed by Google and Whatsapp. Findings indicated that 64.6% of students reported that social media enhances academic performance of students. The study also revealed that even though students generally use social media for academic purposes; they also use it for non-academic matters.

Internet Self Efficacy

Internet self-efficacy refers to "the belief in one's capability to organize and execute Internet actions required to produce given attainments" (Eastin and LaRose, 2000). Joo, Bong and Choi (2000) and Thompson, Meriac, and Cope (2002) pointed out that internet self-efficacy positively predicted students' performance. Students with high internet self-efficacy have better information searching skills and learn better than those with low internet self-efficacy (Tsai and Tsai, 2003). On the other hand, some have found internet self-efficacy as a poor predictor for student success in an online course (DeTure, 2004). Direct research examining the relationship between internet self-efficacy and students satisfaction suggests there is no relationship, but the number of studies is small. Examinations of the relationship between internet self-efficacy and student performance are mixed.

Studies on Internet self efficacy

Shi, Chen, and Tian (2011) conducted a study of the relationships between internet self-efficacy, sensation seeking, the need for cognition, and problematic use of the internet. The study was based on a randomly selected sample of 979 adult internet users of China. Hierarchical multiple regression analysis of these subjects' responses on a questionnaire consisting of relevant items indicated that internet self-efficacy and sensation seeking positively predicted problematic internet use. Contrastingly, the need for cognition was significantly negatively associated with problematic internet use.

Buchanan, Joban and Porter (2014) conducted two studies in UK to test the hypothesis that use of learning technologies among undergraduate psychology students was associated with higher Internet self-efficacy (ISE). In Study 1, the ISE scores of 86 students were found not to be associated with either attitudes towards, or measured use of, blogs and wikis as part of an IT skills course. ISE was associated with time spent online, and positive attitudes to wikis were associated with higher use. Study 2 measured 163 students' ISE scores at the beginning and end of the same course. ISE was again not correlated with attitudes towards, or actual measured use of, learning technologies used in the course. However, ISE was shown to increase during the course. Positive attitudes towards wikis and discussion boards were associated with higher use of each. Overall, ISE scores did not influence measured use of a Virtual Learning Environment (VLE, including blogs, wikis and a discussion board), or attitudes towards those technologies. This implies that while ISE is linked to aspects of online behaviour (time

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spent online) and can be modified by online activity or training, it does not predict student use of educational Internet technologies.

Ozkan (2016) examined the self-efficacy perceptions of social studies teacher candidates with respect to educational internet use. This research was conducted on a sample of 174 social studies teacher candidates enrolled in Gaziantep University Nizip Faculty of Education. The "Educational Internet Self-Efficacy Scale," developed by Sahin, was used as a data collection tool. The relational scanning method, which was a type of quantitative research techniques, was used in this research. The data obtained from teacher candidates were subjected to independent t-tests and one-way variance analyses (ANOVA) using the SPSS 18.00 program. The self-efficacy perceptions of the teachers were examined with respect to variables such as gender differences, the place of internet connection, class where education is given, and the Internet usage period. A positive influence was obtained in favor of male teachers with respect to the gender variable among the social studies teachers; however, no significant difference was found with respect to internet connection medium. Significant differences were observed with respect to the classroom, where they get education.

Statement of the problem

Internet use in relation to gender and academic achievement with different levels of internet self efficacy.

Objectives of the Study

The objectives of this study were:

- 1) To compare the Internet use by male and female adolescents.
- 2) To study the Internet use by adolescents at different levels of academic achievement.
- 3). To study the interaction effect of:

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- internet self efficacy and academic achievement
- gender and academic achievement

of adolescents with respect to internet use.

4) To study the interaction effect among gender, Internet self-efficacy and academic achievement among adolescents with respect to internet use.

Hypotheses

Ho1 There is no significant difference between male and female adolescents with respect to Internet use.

Ho2 There is no significant among adolescents with low, moderate and high Internet self-efficacy with respect to Internet use.

Ho3 There is no significant difference among adolescents with low, moderate and high academic achievement with respect to Internet use.

Ho4 There is no significant interaction between Internet self-efficacy and academic achievement of adolescents with respect to internet use.

Ho5 There is no significant interaction between gender and internet self efficacy of adolescents with respect to internet use.

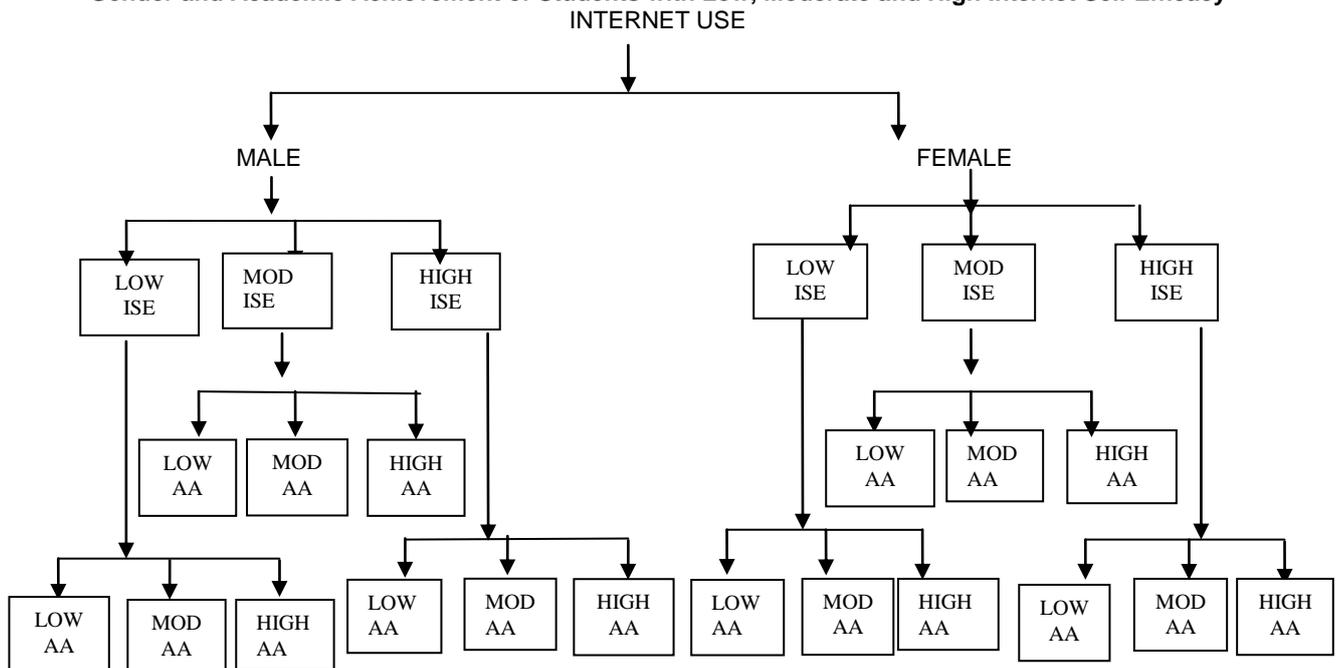
Ho6 There is no significant interaction between gender and academic achievement of adolescents with respect to Internet use.

Ho7. There is no significant interaction among gender, Internet self-efficacy and academic achievement of adolescents with respect to Internet use.

Design of the study

1. Descriptive method was used.
2. 2x3x3 ANOVA design was employed to study the relationship between internet use, gender and academic achievement of students with low, moderate and high internet self efficacy

Figure 1: Schematic Layout of 2x3x3 Factorial Design to Study The Relationship between Internet Use, Gender and Academic Achievement of Students with Low, Moderate and High Internet Self Efficacy



1. MOD-Moderate
2. AA- Academic Achievement
3. ISE-Internet self efficacy

Sample

Stratified Random Sampling Technique was used for the selection of the sample in the present study. 400 students (i.e 200 males and females) of Government Senior Secondary schools of Chandigarh were the sample

Tools

1. Internet use scale developed and validated by the researcher except for dimensions online cognition scale and Internet addiction scale which were developed by Davis, Flett and Besser (2000) and Young (2009) respectively. However these two

scales were validated by the researcher in Indian setting.

2. For Academic Achievement, investigator collected previous year scores of students from their respective class in charges.
3. Internet Self Efficacy scale developed by Hsu and Huang (2006) and validated by researcher in Indian setting.

Delimitations of the study

The study was delimited to class IX th students of Senior secondary schools of Chandigarh.

Statistical Techniques Used

2x3x3 ANOVA was employed to study the relationship between internet use, gender and academic achievement of students with low, moderate and high internet self efficacy.

Analysis and Discussion

Table 1: Summary of 2x3x3 ANOVA for Adolescents Internet Use in Relation to Gender and Academic Achievement at Different Levels of Internet Self Efficacy

Source	Type III Sum of Squares	df	Mean Square	F	Result
Corrected Model	716032.808 ^a	17	42119.577	17.921	S
Intercept	27563257.302	1	27563257.302	11727.866	S
Gender	532784.559	1	532784.559	226.694	S
ISE	50785.607	2	25392.803	10.804	S
AA	931.698	2	465.849	.198	NS
Gender * ISE	71387.135	2	35693.568	15.187	S
Gender * AA	1279.603	2	639.802	.272	NS
ISE * AA	6236.411	4	1559.103	.663	NS
Gender * ISE * AA	4158.582	4	1039.645	.442	NS
Error	897790.302	382	2350.236		
Total	33913722.000	400			
Corrected Total	1613823.110	399			

* Significant at the 0.05 level
 **Significant at the 0.01 level.
 NS- Not Significant

Main Effects

Gender

F- ratio for the difference in the Internet use between males and females adolescents was found to be significant at 0.01 level of confidence. Male adolescents Internet usage was found higher than the internet usage of female adolescents. Hence H1 was rejected as significant difference was found between male and female adolescents with respect to internet use.

Internet self efficacy

F ratio for the difference among adolescents Internet self-efficacy with respect to the Internet use was found to be significant at 0.01 level of confidence. Further t-test was employed to identify different levels at which Internet self efficacy comes significant
 LISE =Low Internet Self efficacy
 MISE= Moderate Internet Self efficacy
 HISE= High internet Self efficacy

Table 2: t-test among adolescents with low, moderate and high internet self efficacy with respect to internet use.

	L ISE (M=264.82)	M ISE (M=290.67)	H ISE (M=292.42)
L ISE (M=264.82)		3.240**	2.924**
M ISE (M=290.67)			.269
H ISE (M=292.42)			

* Significant at the 0.05 level
 **Significant at the 0.01 level.

From the above mentioned table 2, it was clear that significant difference was found between low, moderate and high internet self efficacy of adolescents with respect to internet use. Table 2 also indicated that:

1. Adolescents with moderate internet self efficacy exhibited better internet use as compared to adolescents with low internet self efficacy (t=3.240).
2. Adolescents with high internet self efficacy exhibited better internet use as compared to

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adolescents with low internet self efficacy (t=2.924).

- Adolescents with high internet self efficacy and moderate internet self efficacy exhibited comparable internet use (t=.269).

So this study provides sufficient evidence to reject null hypothesis H2. Hence H2 was rejected as significant difference was found among adolescents with low, moderate and high internet self efficacy with respect to internet use.

Academic Achievement

F ratio for the difference among adolescents academic achievement with respect to Internet use was not found to be significant even at 0.05 level of confidence. This suggests that adolescents with different levels of academic achievement exhibited comparable internet use. So this study could not provide sufficient evidence to reject the null hypothesis H3. Hence H3 was retained as no significant difference among adolescents with low, moderate and high academic achievement with respect to internet use.

Interaction Effect

Internet self efficacy and Academic achievement (ISE X AA)

Table 3: t-test among Male And Female Adolescents At Low, Moderate And High Internet Self Efficacy

	F LISE (M=204.43)	F MISE (M=260.46)	F HISE (M=264.39)	M LISE (M=325.22)	M MISE (M=320.89)	M HISE (M=320.44)
F LISE (M=204.43)		5.120**	4.682**	11.201**	13.563**	10.729**
F MISE (M=260.46)			.402	7.858**	9.200**	7.259**
F HISE (M=264.39)				7.011**	8.008**	6.433**
M LISE (M=325.22)					.925	.900
M MISE (M=320.89)						.095
M HISE (M=320.44)						

* Significant at the 0.05 level

**Significant at the 0.01 level.

Hence from table 3, it was clear that interaction effect was found to be significant between gender and internet self efficacy. Table 3 also indicated that

- Male adolescents with low internet self efficacy exhibited better internet use as compared to female adolescents with low internet self efficacy (t= 11.201).
- Male adolescents with moderate internet self efficacy exhibited better internet use as compared to female adolescents with moderate internet self efficacy (t=9.200).
- Male adolescents with high internet self efficacy exhibited better internet use as compared to female adolescents with high internet self efficacy (t=6.433).
- Male adolescents with moderate internet self efficacy and male adolescents with low internet

F- ratio for the interaction between Internet self-efficacy and academic achievement was not found to be significant even at 0.05 level of confidence. This suggests that Internet self-efficacy and academic achievement did not interact to yield significant difference on the adolescents Internet use scores. This study could not provide sufficient evidence to reject the null hypothesis H4. Hence H4 was retained as no significant interaction was found between internet self efficacy and academic achievement of adolescents with respect to internet use.

Gender X Internet self efficacy (G X ISE)

F- ratio for the interaction between gender and Internet self-efficacy was found to be significant at 0.01 level of confidence. Further t-test was employed between male and female adolescents at low, moderate and high Internet self-efficacy.

- F LISE = female low internet self efficacy
- F MISE = female moderate internet self efficacy
- F HISE =female high internet self efficacy
- M LISE = male low internet self efficacy
- M MISE =male moderate internet self efficacy
- M HISE =male high internet self efficacy
- M= Mean

self efficacy exhibited comparable internet use (t=.925).

This suggests that gender and Internet self-efficacy interact to yield significant difference on adolescents Internet use. So H5 was rejected as significant interaction was found between gender and internet self efficacy of adolescents with respect to internet use.

Gender X Academic achievement (G X AA)

F- ratio for the interaction between gender and academic achievement was not found to be significant even at 0.05 level of confidence. This suggests that gender and academic achievement did not interact to yield significant difference on the adolescents Internet use scores. This study could not provide sufficient evidence to reject the null hypothesis H6. Hence H6 was retained as no significant interaction was found between gender and

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academic achievement of adolescents with respect to internet use.

Gender X Internet self efficacy X Academic achievement (G X ISE X AA)

F- ratio for the interaction between gender, Internet self-efficacy and academic achievement was not found to be significant even at 0.05 level of confidence. This suggests that gender, Internet self-efficacy and academic achievement did not interact to yield significant difference on adolescents internet use score. Hence H7 was retained as no significant interaction was found among gender, internet self efficacy and academic achievement of adolescents with respect to internet use.

Results

1. Significant difference was found between male and female adolescents with respect to internet use. Male adolescents exhibited better internet use as compared to female adolescents.
2. There found Significant difference among adolescents with low, moderate and high internet self efficacy with respect to internet use.
3. Adolescents with moderate internet self efficacy exhibited better internet use as compared to adolescents with low internet self efficacy.
4. Adolescents with high internet self efficacy exhibited better internet use as compared to adolescents with low internet self efficacy.
5. Adolescents with high internet self efficacy and moderate internet self efficacy exhibited comparable internet use.
6. No significant difference was found among adolescents with low, moderate and high academic achievement with respect to internet use.
7. No significant interaction was found between internet self efficacy and academic achievement of adolescents with respect to internet use.
8. No significant interaction was found between gender and internet self efficacy of adolescents with respect to internet use.
9. Male adolescents with low internet self efficacy exhibited better internet use as compared to female adolescents with low internet self efficacy.
10. Male adolescents with moderate internet self efficacy exhibited better internet use as compared to female adolescents with moderate internet self efficacy.
11. Male adolescents with high internet self efficacy exhibited better internet use as compared to female adolescents with high internet self efficacy.
12. Male adolescents with moderate internet self efficacy and male adolescents with low internet self efficacy exhibited comparable internet use.
13. No significant interaction was found between gender and academic achievement of adolescents with respect to internet use.
14. No significant interaction was found among gender, internet self efficacy and academic achievement of adolescents with respect to internet use.

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