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Impact of Peer Learning and Learning through Networking Sites on the Achievement of Undergraduate Students

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***Abstract*- The present paper reports the study conducted to gauge the impact of peer learning and learning through networking sites on the achievement of undergraduate students. The objectives of the study are a) to study the level of achievement of undergraduate students; b) to study the level of achievement of students from peer learning group and social networking group; c) to study the effect of treatment, gender and their interaction on the achievement by taking intelligence as covariate; and d) to study the effect of treatment, type of institution and their interaction on the achievement by taking intelligence as covariate. The present study is an experimental study where Posttest-Only Random Group Design is utilised. The sample consisted of 183 undergraduates from government and private institutions of Bhopal which were randomly assigned to peer learning group and social networking group. The peer learning group had face to face interaction while the social networking group collaborated on social media platforms on selected topics. The results revealed that students belonging to the social networking group were found to have significantly better achievement than those of peer learning group when Intelligence was taken as covariate. Female undergraduate students were found to have significantly higher achievement than the male undergraduate students when intelligence was taken as covariate. Private undergraduate students were found to have significantly better achievement than government undergraduate students when intelligence was taken as covariate.**

***Keywords*- peer learning, learning through networking sites, social media, achievement.**

I. INTRODUCTION

Peer learning is an educational approach to teaching and learning that involves groups of students working together to solve a problem, complete a task, or create a product. Successful peer learning has the potential to bring out the unique strengths of each individual student while strengthening the work of the group through teamwork, cooperation and combined effort and resources.

According to Farivar and Webb (1994) peer learning essentially refers to students learning with and from each other as fellow learners without any implied authority to any individual. Thus peer learning is learning that takes place amongst two or more persons in which each person contributes what he knows about the discourse with the aim of teaching it to others and also learning from the others what the teach. Social media are perhaps the most promising and embracing technology. They enable messaging, blogging streaming media and tagging .Some most commonly used social media are Facebook, Twitter, WhatsApp etc.

These media have enabled quick communication. Students can now easily clear their doubts and interact with teachers at any time with their teachers with the help of social media.

Social media has been broadly defined to refer to 'the many relatively inexpensive and widely accessible electronic tools that enable anyone to publish and access information, collaborate on a common effort, or build relationships'.For content contributors, the benefits of participating in social media have gone beyond simply social sharing to building reputation and bringing in career opportunities and monetary income.

Social media is becoming an integral part of life online as social networking websites and applications proliferate. According to Kuss and Griffiths (2011) social networking sites (SNSs) are virtual communities where users can create individual public profiles, interact with real-life friends, and meet other people based on shared interests.

The present age is called digital natives No one can keep the both separated. They were born and brought up with digital technology and their lives are incomplete without it. One of the most influencing inventions in digital technology is social media and social networking sites. Those researching in teaching and learning in higher education have found that social media is both a boon and a bane. If used productively it leads to academic success

and if used unproductively without any target it leads to academic failure. Today it is not possible to keep students away from social media as they perceive technologies, specifically social media, to be a meaningful part of their undergraduate learning. The irony is that when it comes to academics, students prefer to keep academics and social media separate. The attitude towards social media too is mixed. Undergraduates across disciplines often described social media as "a real double-edged sword" that can either help or hinder learning depending on the context, purpose, or intention of the interaction. In the present research work an attempt is made to make social media more productive in learning by using social media platform to enhance collaboration in academic terms and develop an understanding among students as to how use social media for academic purposes and ultimately enhance their achievement.

1. Need and importance of the study:

Computer science as a subject is less of theory and more of practical especially when it comes to its practical implication (Kear, Rosewell and Williams, 2012). Students need to brainstorm and discuss a lot with each other to solve a problem or create something novel. As a subject computer science learning depends a lot on collaborative or peer learning (Bosch, 2009).Further learning is measured and it is the academic achievements which point towards the success of any media. On a universal level, the studies conducted by Laru, Näykki and Järvelä (2012); Novak, Razzouk and Johnson (2012); Ha and Shin (2014); and Al-Bahrani, Patel and Sheridan (2015) look at some of the educational benefits of using social media.

A study conducted by Hunter and Caraway (2014) on students attending an urban high school using Twitter found students were engaged with the content of the class even afterschool hours and beyond school walls. Although a number of studies have been conducted but they directly do not prove they led to enhancement in the academic achievement of the student. There is need to proved that learning through networking sites enhances the academic achievement of the students in the subject or not.

A number of studies have proved that there is direct and positive relationship between intelligence and learning (Mcguire, 1994 and Kaplan, 1993). Also success or failure of the achievement of educational goals much depends on how the learning process experienced by students as learners (Woolfolk, 2001; Ahmadi and Supriyono, 2013). Hence it is necessary to take into consideration the intelligence of participants when a method is used to influence leaning and its effect on achievement is measured.

Similarly gender (Lin & Lu, 2011; Park & Lee, 2014; Idemudia, Raisinghani, Adeola, &Achebo, 2017; Osorio-Arjona& García-Palomares, 2019; Lin & Wang, 2020; Twenge & Martin, 2020).and type of institute (Apeanti, and Danso, 2014; Rodríguez, Palanca, del Val &Rebollo, 2020) are important attributes while gauging the effect of any novel method on attitude and achievement. No studies in this regards has been done in Indian context. Learning through social networking and social media are in fact new to the context of education and there is need to explore it further especially when it comes to enhancing the knowledge of computer science students and the present study attempts to find the same empirically.

2. Objectives of the Study:

The present investigation was conducted with the objectives mentioned in the lines given below.

- To study the level of achievement of undergraduate students.
- To study the level of achievement of students from peer learning group and social networking group.
- To study the effect of treatment, gender and their interaction on the achievement by taking intelligence as covariate.
- To study the effect of treatment, type of institution and their interaction on the achievement by taking intelligence as covariate.

3. Research Questions:

The research questions associated with the study are as follows –

- What is the level of achievement of undergraduate students?
- What is the level of achievement of students from peer learning group and social networking group?

4. Hypothesis:

The hypothesis prepared for the above objectives

- There is no significant effect of treatment, gender and their interaction on the achievement by taking intelligence as covariate.
- There is no significant effect of treatment, type of institution and their interaction on the achievement by taking intelligence as covariate.

II. METHODOLOGY

The present study is an experimental study where Posttest-Only Random Group Design is utilised. Further the investigator aimed to take two separate groups provide the intervention to one group through peer learning and use learning through networking sites for the other group and then conduct a assess the difference in the attitude towards social media. For the present study one government and one private college each were selected from Bhopal district. From each college, students of computer science department were selected as the sample. In both the colleges one section each was selected and all the students of the selected section were included in the study. The sample consisted of 183 undergraduates. Out of the

selected students 86 were from government colleges and 97 were from private colleges. From the students selected from the government colleges 37 were girls and 49 were boys, similarly from the students selected from the private college 39 were girls and 58 were boys.

Further of the selected sample 94 students were assigned to the peer learning group and 89 were assigned to the social networking group. The tools used for data collected included Raven's Progressive Matrices prepared by J. C. Raven's, J. H. Court and J. Raven (for testing intelligence); and Achievement test on a selected topic prepared by the investigator.

In order to collect the data students were assigned into the two experimental groups i.e. the peer learning group and the social networking group. As part of the treatment in the Peer Learning students interacted with each other in face to face mode andwhile the students of the social networking group collaborated and interacted with each other through specially prepared links on social networking platforms. At last the tools were administered to find the impact of the treatment on the achievement of each of the groups.

III. ANALYSIS AND INTERPRETATION

In the lines that follow the analysis and interpretation is done objective wise.

1. Level of Achievement of Undergraduate Students:
The first objective of the study was 'to study the level of achievement of undergraduate students' for which the research question prepared was 'What is the level of achievement of undergraduate students?' The achievement of the undergraduate students was found out using the Achievement Test developed by the investigator. Based on the scores obtained by the student in the achievement the students were categorised as having basic, proficient and advanced level of achievement. The level of achievement of all the undergraduates included in the present study is presented in figure 1.

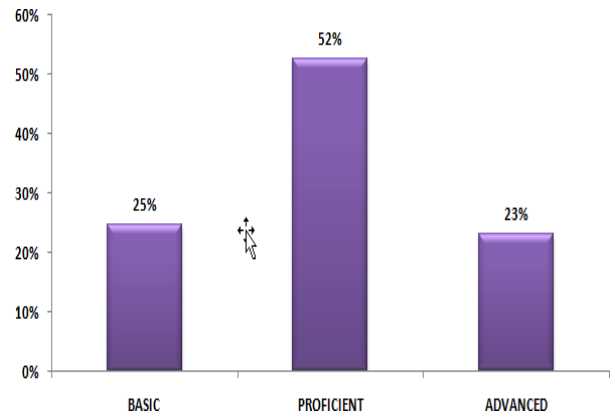

Fig 1. Level of Achievement of Undergraduate Students.

From figure 1 it can be seen that 25% of the undergraduate students have basic level of achievement, 52% have proficient level of achievement and 23% have advanced level of achievement. From above it can be inferred that less than one fourth of the undergraduate students have advanced level of achievement.

2. Level of Achievement of Students from Peer Learning Group and Social Networking Group:
The second objective of the study was 'to study the level of achievement of students from peer learning group and social networking group' for which the research question prepared was 'What is level of achievement of students from peer learning group and social networking group?' The achievement of the undergraduate students was found out using the Achievement Test developed by the investigator. These scores were collected by bifurcating the data pertaining to the undergraduatestudents from peer learning group and social networking group and analysing them separately. Based on the scores obtained by the undergraduatestudents from peer learning group and social networking group in the Achievement Test they were categorised as having basic, proficient and advanced level of achievement. The level of achievement of undergraduatestudents from peer learning group and social networking group is presented in figure 2.

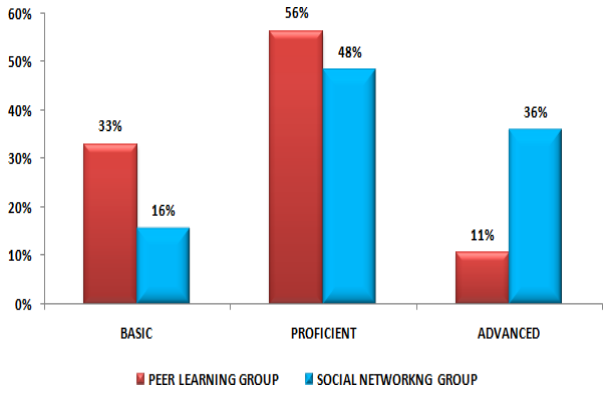

Fig 2. Level of Achievement of Students from Peer Learning Group and Social Networking Group.

From figure 2 it can be seen that among the undergraduate students from peer learning group 33% have basic level of achievement, 56% have proficient level of achievement and just 11% have advanced level of achievement. While among the undergraduate students from social networking group16% have basic level of achievement, 48% have proficient level of achievement and 36% have advanced level of achievement.

From above it can be inferred that just one-tenth of the undergraduate students belonging to the peer learning group have advanced level of achievement while more than two-thirds of the undergraduate students belonging to the social networking group have advanced level of achievement.

3. Effect of Treatment, Gender and their Interaction on the Achievement by taking Intelligence as Covariate:

In the present study, there were two levels of Treatment, namely, peer learning and learning through social networking. Males and Females were the two levels of Gender. Intelligence is the covariate. Achievement Test prepared by the investigator was administered to the students after the treatment in order to measure their achievement and to know the effect of treatment.The data were analysed with the help of Two-Way ANCOVA. The results are presented in Table 1 below.

Table 1. Summary of Two Way ANCOVA for Treatment, Gender and their Interaction on the Achievement by taking Intelligence as Covariate.

Sources of Variance	df	$SS_{y.x}$	$MSS_{y.x}$	$F_{y.x}$	Remark
Treatment (A)	1	1048.307	1048.307	15.396	p<0.01
Gender (B)	1	944.228	944.228	13.868	p<0.01
A X B	1	138.135	138.135	2.029	p<0.05
Error	178	12119.885	68.089		
Total	183				

From Table 1, it can be seen that the adjusted F-Value for treatment is 15.396, which is significant at 0.01 level of significance with df=1/183. It reflects that the adjusted mean scores of achievement of students taught through peer learning approach and learning through social networking differ significantly when Intelligence was taken as covariate. Thus the null hypothesis that there is no significant effect of treatment on achievement by taking intelligence of students as covariate is rejected.

Further the adjusted mean score of achievement of peer learning group is 21.49 which is significantly lower than those of social networking group whose adjusted mean score of achievement is 26.34. It may, therefore be said that students belonging to the social networking group were found to have significantly better achievement than those of peer learning group when Intelligence was taken as covariate.

On further analysing, it can be seen that the adjusted F-Value for interaction between Treatment and Gender is 2.029 which is not significant at 0.05 level of significance with df=1/183. So there was no significant effect of interaction between treatment and gender on achievement when intelligence was taken as covariate. Thus the null hypothesis that there is no significant effect of interaction between treatment and gender on achievement by taking intelligence as covariates is not rejected. Hence it can be inferred that there is no combined effect of treatment and gender on the mean scores of achievement.

4. Effect of Treatment, Type of Institution and their Interaction on the Achievement by taking Intelligence as Covariate:

There were two levels of treatment, namely, peer learning and learning through social networking. Undergraduate students from government and private schools were the two levels for type of institution. The data were analysed with the help of Two-Way ANCOVA. The results are presented in Table 2, below.

Table 2. Summary of Two Way ANCOVA for Treatment, Type of Institution and their Interaction on the Achievement by taking Intelligence as Covariate.

Sources of Variance	df	$SS_{y.x}$	$MSS_{y.x}$	$F_{y.x}$	Remark
Treatment (A)	1	960.738	960.738	13.748	p<0.01
Gender (B)	1	698.888	698.888	10.001	p<0.01
A X B	1	38.006	38.006	.544	p>0.05
Error	178	12439.209	69.883		
Total	183				

From Table 2, it can be seen that the adjusted F-Value for treatment is 13.748, which is significant at 0.01 level of significance with df=1/183. It reflects that the adjusted mean scores of achievement of students taught through peer learning approach and learning through social networking differ significantly when Intelligence were taken as covariate. Thus the null hypothesis that there is no

significant effect of treatment on achievement by taking intelligence of students as covariate is rejected. Further the adjusted mean score of achievement of peer learning group is 21.49 which is significantly lower than those of social networking group whose adjusted mean score of achievement is 26.34. It may, therefore be said that students belonging to the social networking group were found to have significantly better achievement than those of peer learning group when Intelligence was taken as covariate.

Further, it can be seen that the adjusted F-Value for type of institution is 10.001 which is significant at 0.01 level of significance with df=1/183. It reflects that the adjusted mean scores of achievement of government and private undergraduate students differ significantly when intelligence was taken as covariate. Thus the null hypothesis that there is no significant effect of type of institution on achievement by taking intelligence of students as covariate is rejected.

The adjusted mean scores of achievement of government undergraduate students is22.17 which is significantly lower than those of private undergraduate students whose adjusted mean score of achievement is 25.33. It may, therefore be said that private undergraduate students were found to have significantly better achievement than government undergraduate students when intelligence was taken as covariate.

On further analysing, it can be seen that the adjusted F-Value for interaction between treatment and type of institution is 0.544 which is not significant at 0.05 level of significance with df=1/183. So there was no significant effect of interaction between treatment and type of institution on achievement when intelligence was taken as covariate.

Thus the null hypothesis that there is no significant effect of interaction between treatment and type of institution on achievement by taking intelligence as covariates is not rejected.

Hence it can be inferred that there is no combined effect of treatment and type of institution on the mean scores of achievement when intelligence is taken as covariate.

IV. CONCLUSION

From the above the following conclusions can be drawn – Less than one fourth of the undergraduate students have advanced level of achievement. Just one-tenth of the undergraduate students belonging to the peer learning group have advanced level of achievement while more than two-thirds of the undergraduate students belonging to the social networking group have advanced level of achievement.

Students belonging to the social networking group were found to have significantly better achievement than those of peer learning group when Intelligence was taken as covariate. Female undergraduate students were found to have significantly higher achievement than the male undergraduate students when intelligence was taken as covariate. Private undergraduate students were found to have significantly better achievement than government undergraduate students when intelligence was taken as covariate.

Implications:
Based on the above findings since most of the students possess moderate and favourable attitude towards social media there is urgent need to develop mechanism so that social networking sites usage by the undergraduate students can be enhanced and they could be oriented for proper use of social media and social networking sites.

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