

# **Twitter vs Audio Podcasts as Micro Learning Tools in Coeducation**

Nauman Ahmad

Department of Mathematics and IT

Centre for Preparatory Studies

Sultan Qaboos University

nauman@squ.edu.om

## **Abstract**

Twitter is a social networking tool that connects internet users around the world to share and exchange the information through tweets. Each tweet has a maximum length of 280 alphabets that restricts the tweet to be short and pertinent. Audio podcast is a tool of communication that is used for the delivery of digital information through recorded audio. Audio podcasting is a great method for the creation of in depth knowledge. Overall, female learners are shy in traditional classrooms. Micro learning is a technique that divides learning contents in small parts and use these contents in small steps. This is a comparative study based on experiments, done on students, studying a course module of information technology. The students were divided in four groups; two male and two female groups. Contents of the course module were divided in small parts, following the micro learning technique and given to the students as an additional support for revising the course contents. Exams were conducted to compare the impacts of these tools on the groups. Group means of exam results were taken for the purposes of statistical comparisons. Outcomes had revealed that twitter and audio podcasts worked nearly parallel to the male groups; however, female groups with audio podcasts and twitter had produced better results as compared to the male groups. Moreover, female group with audio podcasts had gained elevated results as compared to the female group that had used twitter.

**Keywords:** Audio Podcast, Coeducation, Female students, Gender Diversity, Twitter, Micro Learning, Male students

---

## **1. Introduction**

Education is a process of teaching and learning where a teacher transfers the knowledge and skills to learners. Instructional practices play an important role towards learning and skills development, and worthy ways of teaching produce better learning outcomes.

The teacher conveys the knowledge and students create conceptions based on delivered information. Face to face mode of education is a formal way of teaching and learning that provides the teacher and learners with one, two or more hours to meet within a classroom, to perform pedagogical activities. Most of the times teachers and learners have to spend 8 hours

a day for face to face classroom based activities; as a result, instructors and learners get tired and bored, passing through these lengthy lecture timings and learners cannot get in-depth knowledge and ideas of the learned topics.

Here, micro learning gets in as a solution of these lengthy lectures; because, literature reveals that micro learning is a technique of education where learning content is divided in small and digestible parts and used in small steps.

Existing literature reveals that audio podcast is an electronic communication tool that records the information in the form of audios and is useful if used as a micro learning tool during the process of teaching and learning. Moreover, twitter as a tool of micro learning has positive effects on the instructional learning outcomes.

Next sections of this paper are related with literature review, purpose of study, methodology, results, conclusions and future work and references. This is a comparative study based on the outcomes of the use of twitter and audio podcasts on male and female group of learners, as tools of micro learning in the field of education, within a hybrid learning environment. Author has published the outcomes of these experiments in a prestigious journal (Ahmad, 2017) and conference (Ahmad, 2020). If the comparisons are proved to be groundbreaking and inspiring on the gender diversity; the implications would be significant for teachers, educational specialists and educational industry towards the use of information and communication technologies based on pedagogical environments for teaching and learning male and female students.

## **2. Literature Review**

### **2.1. Male and Female Learners**

Overall male learners have better understanding, knowledge and advance approach towards the use of information and communication technologies (ICT) as compared to female learners; nevertheless, when female learners attain skills and understanding of ICT then female learners can perform better than male learners (Alrasheedi, 2009). Female learners have progressive approach towards the use of information and communication technologies (Mahmood, 2009). Overall, female learners are being witnessed to be shy as compared to male learners (Singh & Singh, 2017).

### **2.2. What is Micro Learning?**

Micro learning is a technique that divides the learning contents in small pieces and these tiny pieces of information could be used in small steps for the purpose of learning (Hug, 2005). The tiny pieces of information in the form of micro contents are easy to digest for a learner

(Fernandez, 2014). When a learner deals with micro content, the result is micro learning (Mosel, 2005). The process of learning using the tiny pieces of information is advantageous that helps in the understanding of knowledge and development of skills (Minimol & Habil, 2012).

### **2.3. What is an Audio Podcast?**

Audio podcast is an outstanding tool to send auditory information (Rech, 2007). Audio podcasting is an excellent technique that creates in-depth ideas towards the acquisition of knowledge for the topic under discussion that can be heard through portable electronic devices at any place or time, depending on the choice of listener (Lee, McLoughlin & Chan 2008).

### **2.4. What is Twitter?**

Twitter is known as micro-blogging site that connects people to share their ideas (Haewoon et al., 2010). A post on twitter is called a tweet that is centred on micro bits of information in the shape of videos, text or pictures (Caroline, 2019). A tweet is limited to 280 characters that promotes brief and to the point use of information (Gil, 2019).

### **2.5. Electronic Communication Technologies and Education**

At present, educational industry is using electronic communication technologies along with formal face to face mode of instruction and increasing the learning outcomes (Auster, 2016). The use of twitter as a micro learning tool for electronic communications towards the process of teaching and learning produces improved learning outcomes (Ahmad, 2020). Micro learning through audio podcasting as a tool of electronic communications is an effective technique that increases the learning outcomes (Ahmad, 2017; Ahmad, 2017).

### **2.6. Blended Learning**

Blended or hybrid learning is a practice in the field of education where any learning method centered on digital technology gets integrated with formal face to face mode of instruction that could support students towards the enhancement of their skills (Ahmad 2022).

## **3. Purpose of Study**

The purpose of this study is to compare the outcomes of the usage of audio podcasting and twitter as tools of micro learning on four groups (2 for males and 2 for females) within hybrid learning environments. These four groups had studied a course module (a chapter) of the subject information technology and used the above mentioned electronic communication

tools as hybrid modes of learning for the revisions of studied contents. Examinations were conducted to compare the learning outcomes.

#### **4. Methodology**

This is a comparative study based on two experiments, done on the students, studying the course module (a chapter) of the subject information technology. Students were divided in four groups; two male and two female groups. As tools of electronic communications, Twitter and audio podcasts were used for the experiments.

The contents of course “Basic Computing Skills” for Chapter#1 “Computer Fundamentals” were divided with a maximum of 280 characters (maximum size of a tweet on twitter) to make the learning contents as micro. Total number of participants was 21, divided into two groups of 7 male and 14 female participants; for this paper these two groups are linked with groups ‘A’ and ‘B’, respectively, for the purposes of comparisons. Participants of these groups had used their portable electronic gadgets, including smart phones and tablets to read the tweets. The effects of tweets on the learning outcomes were compared through the examination of studied Chapter#1.

Similarly, the contents of the course “Basic Computing Skills” for Chapter#1 “Computer Fundamentals” were used for audio podcasting. Total number of participants for the experiment of audio podcasting was 52, divided in two groups of 26 male and 26 female students for groups ‘C’ and ‘D’, respectively. Audacity (an open source digital audio recording software) was used to record audio podcasts; each audio podcast was less than 4 minutes, keeping in view the bite-sized micro learning content. These micro contents were given to the participants through a course website, prepared for the experiment. Learners had used their portable electronic gadgets, laptops and computers for downloading the micro audio podcasts as a supplemented support after attending classroom lectures, for the purpose of revising the module, within the hybrid learning environment. The effects of audio podcasts were compared on the learners through the examination of studied Chapter#1.

#### **5. Results**

##### **5.1. Comparisons of Exam Results – Twitter (‘Male’ vs ‘Female’ Groups)**

Table 1 and figure 1 show the outcomes of examination taken after the use of twitter on male and female learners groups within the hybrid learning environment. Examinations of the studied chapter were taken to compare the effects of twitter on these groups. Group means of exam results were taken for the purposes of statistical comparisons (Ahmad, 2020). Outcomes of the examinations reveal that the use of twitter as the micro learning tool worked better on

the female group (9.98 marks out of 15 marks) as compared to male group (9.21 out of 15 marks). The difference is equal to: “mean value of exam marks for female group” – “mean value of exam marks for male group” =>  $9.98 - 9.21 = 0.77$  marks; a conversion of 0.77 marks in percentage results in a difference of 5.13%.

Comparisons of exam results 'Twitter as the Micro Learning Tool' Group means of groups 'A' and 'B' within the hybrid learning atmosphere Twitter 'Male' group vs Twitter 'Female' group	
Total exam marks of Chapter#1: 15 marks	
Twitter <i>Male</i> students (Group 'A') Group mean of examination outcomes	Twitter <i>Female</i> students (Group 'B') Group mean of examination outcomes
<b>9.21</b>	<b>9.98</b>
<b>Percentage of group mean: 61.4%</b>	<b>Percentage of group mean: 66.5%</b>

Table 1 – Comparisons of exam results 'Twitter' vs 'Twitter'; 'Male' vs 'Female' groups

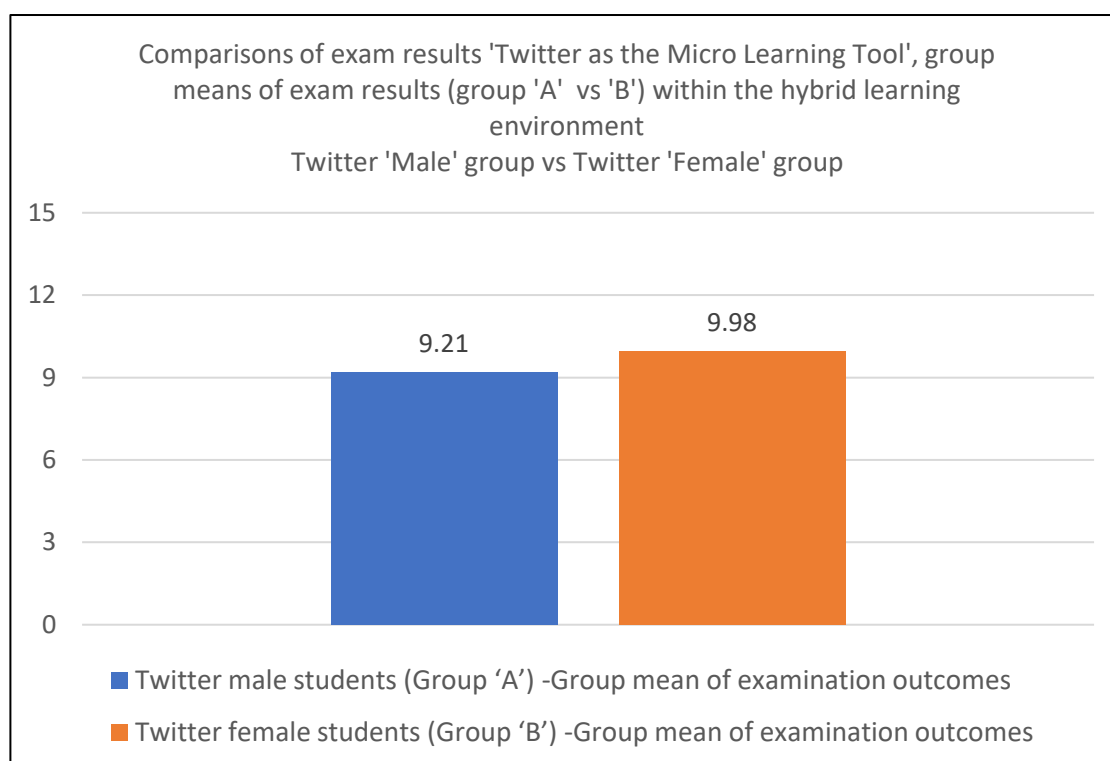


Figure 1 – Comparisons of exam results 'Twitter' vs 'Twitter'; 'Male' vs 'Female' groups

## 5.2. Comparisons of Exam Results – Audio Podcast ('Male' vs 'Female' Groups)

Table 2 and figure 2 illustrate the results of examination conducted after the use of audio podcasts on male and female learners groups within the hybrid learning environment. Examinations of the taught content were taken to compare the effects of audio podcasts on

these groups. Statistical comparisons were done on the group means of exam results (Ahmad, 2017; Ahmad, 2017). Exam results clearly indicate that the use of audio podcasts as the micro learning tool performed better on the female group (10.57 marks out of 15 marks) as compared to male group (9.25 out of 15 marks). The difference is equal to: “mean value of exam marks for female group” – “mean value of exam marks for male group” =>  $10.57 - 9.25 = 1.32$  marks; a conversion of 1.32 marks into percentage results in a difference of 8.8%. This comparative study visibly specifies that female group had attained better results after using audio podcasts as the micro learning tool within the hybrid learning environment as compared to the male group that had also used audio podcasts.

<b>Comparisons of exam results ‘Audio Podcast as the Micro Learning Tool’                      Group means of groups ‘C’ and ‘D’ within the hybrid learning atmosphere                      Audio Podcast ‘Male’ group vs Audio Podcast ‘Female’ group</b>	
Total exam marks of Chapter#1: 15 marks	
Audio Podcast <i>Male</i> students (Group ‘C’) Group mean of examination outcomes	Audio Podcast <i>Female</i> students (Group ‘D’) Group mean of examination outcomes
<b>9.25</b>	<b>10.57</b>
<b>Percentage of group mean: 61.6%</b>	<b>Percentage of group mean: 70.4%</b>

Table 2 – Comparisons of exam results ‘Audio Podcast’ vs ‘Audio Podcast’; ‘Male’ vs ‘Female’ groups

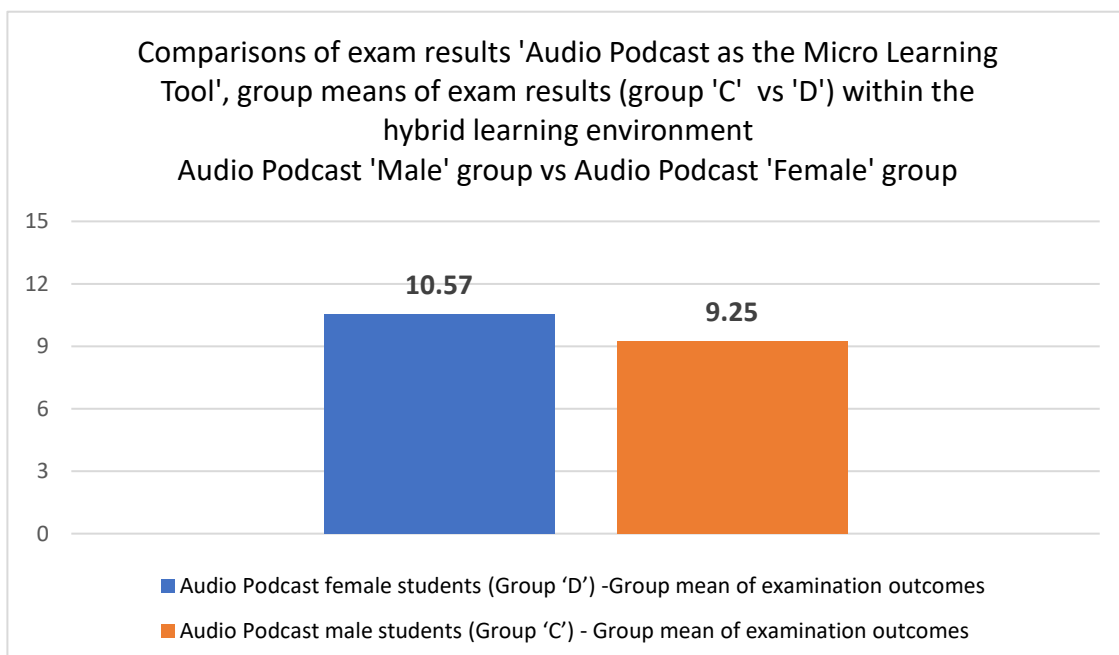


Figure 2 – Comparisons of exam results ‘Audio Podcast’ vs ‘Audio Podcast’; ‘Male’ vs ‘Female’ groups

### 5.3. Comparisons of Exam Results – Twitter Vs Audio Podcast (‘Male’ vs ‘Male’ Groups)

Table 3 and figure 3 show the comparisons of examination taken after the use of twitter and audio podcast on male vs male learners groups within the hybrid learning environment. Exams were conducted to compare the impacts of these tools on the groups. Group means of exam results were taken for the purposes of statistical comparisons (Ahmad, 2020; Ahmad, 2017). Outcomes reveal that the use of twitter and audio podcast as micro learning tools worked nearly similar on both the male groups (group ‘A’: 9.21 marks out of 15 marks; and group ‘C’: 9.25 marks out of 15 marks). The difference is equal to: “mean value of exam marks for male group of audio podcast” – “mean value of exam marks for male group of twitter”  $\Rightarrow 9.25 - 9.21 = 0.04$  marks; in percentage the difference on 0.04 marks is 0.26%.

Comparisons of exam results ‘Twitter vs Audio Podcast as Micro Learning Tools’ – group means of groups ‘A’, and ‘C’ within the hybrid learning atmosphere Twitter ‘Male’ vs Audio Podcast ‘Male’	
Total exam marks of Chapter#1: 15 marks	
Twitter <i>Male</i> students (Group ‘A’) Group mean of examination outcomes	Audio Podcast <i>Male</i> students (Group ‘C’) Group mean of examination outcomes
<b>9.21</b>	<b>9.25</b>
<b>Percentage of group mean: 61.4%</b>	<b>Percentage of group mean: 61.6%</b>

Table 3 – Comparisons of exam results ‘Twitter’ vs ‘Audio Podcast’; ‘Male’ vs ‘Male’ groups

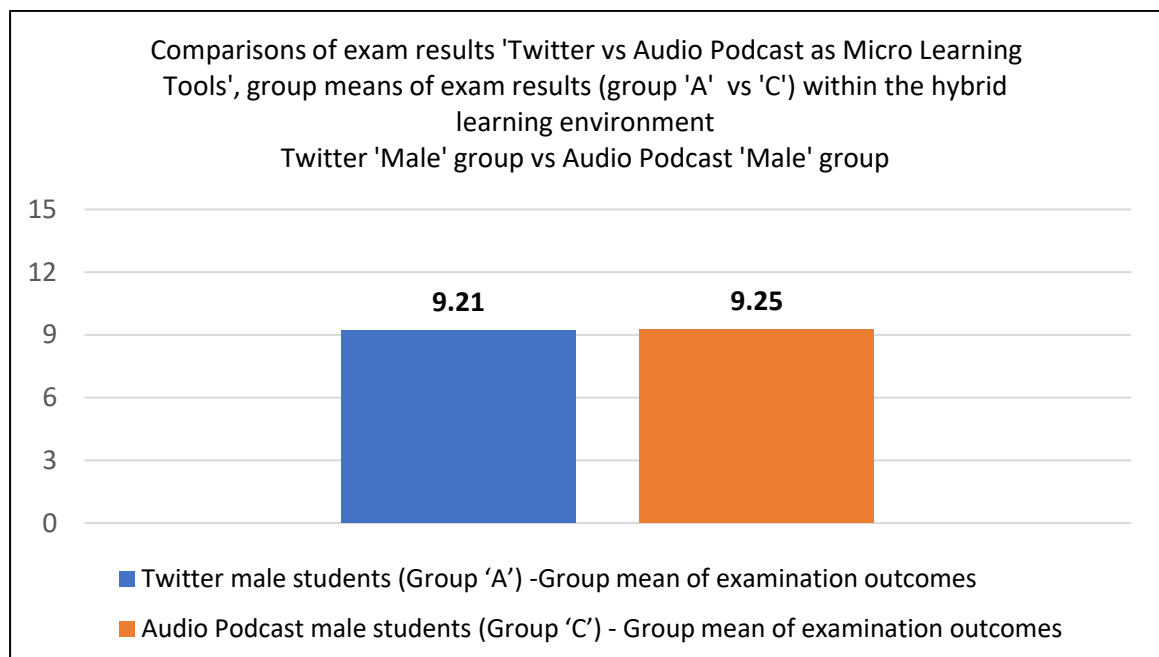


Figure 3 – Comparisons of exam results ‘Twitter’ vs ‘Audio Podcast’; ‘Male’ vs ‘Male’ groups

#### 5.4. Comparisons of Exam Results – Twitter Vs Audio Podcast (‘Female’ vs ‘Female’ Groups)

Table 4 and figure 4 show the comparisons of examination taken after the use of twitter and audio podcast on female vs female learners groups within the hybrid learning environment. Exams were taken to compare the effects of these tools on the groups. Statistical comparisons were done on the basis of group means of exam results (Ahmad, 2020; Ahmad, 2017). Audio podcasting impacted female group ‘D’ in a better way (10.57 marks out of 15 marks) as compared to female group ‘B’ that had used twitter (9.98 marks out of 15 marks). The difference is equal to: “mean value of exam marks for female group of audio podcast” – “mean value of exam marks for female group of twitter” =>  $10.57 - 9.98 = 0.59$  marks; a conversion of 0.59 marks in percentage comes up with a difference of 3.93%.

Comparisons of exam results ‘Twitter vs Audio Podcast’ – group means of groups ‘B’, and ‘D’ within the hybrid learning atmosphere Twitter ‘Female’ vs Audio Podcast ‘Female’	
Total exam marks of Chapter#1: 15 marks	
Twitter Female students (Group ‘B’) Group mean of examination outcomes	Audio Podcast Female students (Group ‘D’) Group mean of examination outcomes
<b>9.98</b>	<b>10.57</b>
<b>Percentage of group mean: 66.5%</b>	<b>Percentage of group mean: 70.4%</b>

Table 4 - Comparisons of exam results ‘Twitter’ vs ‘Audio Podcast’; ‘Female’ vs ‘Female’ groups

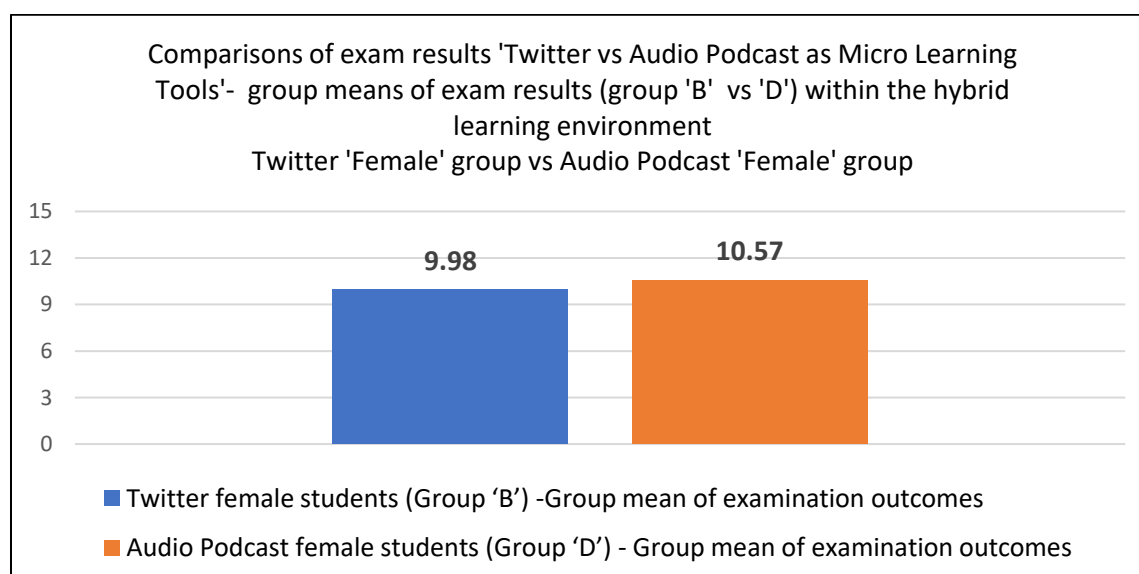


Figure 4 – Comparisons of exam results ‘Twitter’ vs ‘Audio Podcast’; ‘Female’ vs ‘Female’ groups



The results section of this comparative study indicate that the effects of audio podcasts and twitter as tools of electronic communications are evidently positive on the process of teaching and learning. Moreover, female learners got the advantage of electronic communication tools in a better way as compared to male learners, and the method of audio podcasting as the micro learning tool worked better on female group as compared to the female group that had used twitter as a tool of micro learning. However, male groups had received almost similar effects on their exam results with an overall average.

## **6. Conclusions and Future Work**

Twitter and audio podcasts are the tools of information and communication technologies. Micro learning is a technique in education that divides the learning content in small parts and these tiny parts are handed over to the learners through bite-sized and digestible steps. Blended/hybrid learning environments are based on the blending of digital content with traditional face to face mode of instruction; and hybrid learning leaves positive effects on the process of teaching and learning. When twitter and audio podcasting are used through micro learning method via division of learning contents in small parts and used in small steps within hybrid learning environments, they produce better learning outcomes.

This comparative study affirms that the use of twitter as the tool of micro learning within the blended learning environment effects the female students better than male students as shown in table 1, figure 1 and table 2 and figure 2; these outcomes are in agreement with Alrasheedi (2009) that when female students get skills and knowledge about the use of information and communication technologies then female students can perform better as compared to male students. Overall, the outcomes of this comparative study are in agreement with (Ahmad, 2017) that the use of information and communication technology tools as micro learning methods under blended learning environments effects the outcomes based on gender diversity and supports female learners in a better way as compared to male learners.

The impacts of these micro tools on male vs male comparison tells that audio podcasts and twitter impacted both the male groups almost parallel, as shown in table 3 and figure 3. However, the impacts of audio podcasting was better on the group of female learners as compared to the group of female learners those had used twitter, as shown in table 4 and figure 4; this outcome is in pact with (Singh & Singh, 2017) that female learners are shy than male learners, and when they got an individual chance to listen the recorded audio podcasts, privately, their outcomes were better than male learners, as compared to the use of twitter that is a social networking tool to socially interact on twitter.

Therefore, these two methods are constructive additions to the industry of education. Dear educational experts, teachers and educational establishments; use twitter and audio podcasts as micro learning tools within hybrid learning environments to enhance the overall learning outcomes of your courses, and especially, to support the female learners. The use of audio podcasts and twitter is easy on pocket because it does not need to buy and install any special software, no specialized trainings are required, and it is easy to implement and utilize. Blogs and synchronous online chat session as micro learning tools within hybrid learning environments are recommended as future work.

## 7. References

Ahmad, N. (2017). The Impact of Audio Podcasting as A Micro-Learning Tool on Co-Education, *Proceedings of E-leader Conference, Chinese American Scholars Association, Macao, China*, January, 2017.

Ahmad, N. (2017). The Impact of Audio Podcasting as A Micro-Learning Tool on Co-Education, *E-Leader International Journal*, Volume 12, Number 1, <http://www.g-casa.com>, ISSN 1935-4819, Chinese American Scholars Association, New York, New York, USA, February, 2017.

Ahmad, N. (2020). Aftermath of Twitter as a Tool of learning on Coeducation, *Proceedings of 11th International Conference on e-Learning*, Belgrade Metropolitan University, Belgrade, Serbia, 2020, 77-81.

Ahmad, N. (2022). Micro Text Messaging as a Flipped Learning Approach within a Hybrid Learning Atmosphere, *International Journal of Digital Information and Wireless Communications (IJDIWC)*, 11(3), 53-63, The Society of Digital Information and Wireless Communications, 2021 ISSN: 2225-658X

Alrasheedi, H. (2009). Information and communication technology (ICT): Effects of gender and training among kuwait teachers. Ohio University). *ProQuest Dissertations and Theses*, 207. URL: <http://search.proquest.com/docview/304967628?accountid=27575>. (304967628).

Auster, C. J. (2016). Blended Learning as a Potentially Winning Combination of Face-to-Face and Online Learning: An Exploratory Study. *Teaching Sociology*, 44, 39-48.

Caroline Forsey. (2019). *What Is Twitter and How Does It Work?*, URL: <https://blog.hubspot.com/marketing/what-is-twitte>

Fernandez, J. (2014). *The Micro learning Trend: Accommodating Cultural and Cognitive Shifts*, URL: <http://www.learningsolutionsmag.com/articles/1578/the-microlearningtrend-accommodating-cultural-and-cognitive-shifts>

Gil P. (2019). *What Is Twitter & How Does It Work?*, URL: <https://www.lifewire.com/what-exactly-is-twitter2483331>

Haewoon K., Changhyun L., Hosung P. & Sue M. (2010), What is Twitter, a Social Network or a News Media? *WWW 2010, April 26–30, 2010, Raleigh, North Carolina, USA*. ACM 978-1-60558-799- 8/10/04.

Lee, M. J. W., McLoughlin, C. & Chan, A. (2008). Talk the talk: Learner-generated podcasts as catalysts for knowledge creation. *British Journal of Educational Technology*, 39, 501–521, doi: 10.1111/j.1467-8535.2007.00746.x

Mahmood, K. (2009). Gender, subject and degree differences in university students' access, use and attitudes toward information and communication technology (ICT). *International Journal of Education and Development using Information and Communication Technology*, 5(3), G1-G11.

Minimol A. J. & Habil S. O. (2016). Micro Learning As Innovative Process of Knowledge Strategy. *International Journal of Scientific & Technology Research*, 1, 92- 96, ISSN 2277-8616.

Mosel, S. (2005). Self Directed Learning With Personal Publishing and Microcontent. Constructivist Approach and Insights for Institutional Implementations. *Paper presented at the Microlearning 2005 conference, 2005, Innsbruck, Austria*.

Nazarenko, A. L. (2015). Blended Learning vs Traditional Learning: What Works? (A Case Study Research), *Procedia - Social And Behavioral Sciences*. 200(*The XXVI Annual International Academic Conference, Language and Culture*, 27, 77- 82, doi:10.1016/j.sbspro.2015.08.018

Rech, J. (2007). Podcasts about Software Engineering. *ACM SIGSOFT Software Engineering Notes*, 32, 1-2.

Singh, A. & Singh, R. (2017). Effect of type of schooling and gender on sociability and shyness among students. *Industrial psychiatry journal*, 26(1), 77–81. [https://doi.org/10.4103/ipj.ipj\\_25\\_14](https://doi.org/10.4103/ipj.ipj_25_14)