



E-Learning Vs M-Learning through Gamification as a Micro Learning Tool within a Blended Learning Environment

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Introduction

During the practice of face-to-face instruction, the timings of lectures ranges from 1 to 2 hours or more, and teachers and learners, both could be engaged in the pedagogical process of teaching and learning for 6 to 8 hours a day, and sometimes, during this lengthy process, its difficult to create the detailed ideas of the topics, and to cover big amount of studying material. Consequently, teachers try to review the concepts at later stages, that results in a course, growing out of control, without in-depth creation of ideas, and leads to compromised learning outcomes.

Hence, it is essential for the teachers to discover some other methods of teaching, through the addition of newly available technologies including E-Learning and M-Learning modes, along with face to face instruction for getting the improved learning outcomes.

E-learning vs M-Learning

E-learning is the use of computers or laptops, for the purpose of learning that can be accessible by the learner from his or her desk, where as, M-Learning is the use of smart phones or portable devices that is portable and freely accessible from any place (Gutierrez, K. 2015).

MICRO LEARNING AND GAMIFICATION?

A Micro Learning is a process of learning where the learning contents are divided in small parts, and learning activities are based on short period of time (Hug, 2005). A learning process based on tiny learning units those are suitable, and easily consumable (Fernandez, 2014).

In education, gamification is a learning technique that stimulates the interest of the learners, and upturns their engagement towards the learning of course contents, through combining the game based principles along with the contents of the course (Dichev, & Dicheva, 2017).

PURPOSE OF STUDY

The purpose of this research was to compare the **E-Learning and M-Learning modes** (through a newly introduced methodology) by integrating an online Game/Gamification (Purpose Games) for the learners, along with their course material, used as a Micro Learning Tool, as an extra support, within a blended learning environment, and through the comparison of its outcomes

to measure the effects of Gamification as a Micro Learning Tool on:

- the **results** of examination.
- **Attitudes of learners** towards the use of Gamification.
- help of Gamification Tool in **Understanding** and **Learning the course material**.
- **Help of the Gamification Tool** in the preparation of Examinations
- **Likings of learners** regarding the mode of instruction

METHODOLOGY

This research study has tested the gamification effects as a Micro Learning tool on instruction, within a Blended learning mode, where the course material of an IT course (Basic Computing Skills) for the course Module “Microsoft Word”, based on practical work in computer labs, was combined using the Micro Learning technique, and integrated with an online game (gamification technique). **Total number of participants was 14, and divided in two groups. Group ‘A’ and Group ‘B’ and both groups were supported with an Online Game for Microsoft Word (PurposeGames, 2017), along with face-to-face lectures. Group ‘A’ (E-learning) with seven (7) participants, was requested to play the online game using fixed locations through computers or laptops, only, whereas Group ‘B’ (M-Learning) with seven (7) participants, was requested to play the online game through their mobile devices only.**

This online game had 51 questions related with the subject area, and the attempt of using this game was divided in small parts as a Micro Learning technique, by requesting the participants **to play this online game for a duration of 5 minutes only, and were asked to reattempt the online game after a gap of at least two hours.**

This game had **questions connected with the course contents, percentage of completion, a timer, counting of correct and wrong answers, right and wrong replies with different colors, and the numbers of remaining questions.** This online game was asking questions and the learner had to choose the answer through the mouse, from the given options, from the MS word Ribbons.

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Microsoft Word Ribbons

Remaining	Correct	Wrong
42	9	1

Change Paragraph Spacing

17%

02:54.9

Quit



Methodology.....continued

Questions were reshuffling in a random order, at the beginning of every attempt. Maximum recorded time to answer all the questions, easily, was 5 minutes. Participants of Group 'A' had used their computers or laptops from fixed locations as e-learning mode, and the participants of Group 'B' had used their smartphones or portable devices, from any where any time.

This research study has evaluated the effects of gamification, through these two groups (E-learning vs M-Learning), by comparing their-

- results of examination for the studied module.

Additionally, the participants of Group 'A' and Group 'B' had been studied through a survey questionnaire, for **Before** and **After** stages, based on 5-points Likert Scale, ranged from 1 to 5, where 1). Strongly Disagree. 2). Disagree, 3). Uncertain, 4). Agree, 5). Strongly Agree.

Their feedback was taken, regarding:

- Learners' attitudes towards Gamification as a Micro Learning Tool as; - **friendly, - comfortable, - essential,**
- help of Gamification as a Micro Learning Tool in **understanding & learning** the course material
- help of Gamification as a Micro Learning tool towards the **preparation of exams.**

Statistical Analysis

Plain statistical comparison has been done, for the exam results of both the groups, and through comparing their groups means through survey questionnaire, for both the stages

- **Before** and
- **After**

1. ASSESSMENT OF EXAM RESULTS (GROUP 'A' VS GROUP 'B')

Table 1, and Fig.1 show the effects of gamification as a Micro Learning tool on the results of examination for E and M-Learning Modes.

<i>Table 1: Comparison of Exam Results – Group Means (Group 'A' Vs Group 'B')</i>	
<i>Exam Results (Total Marks of the Exam Module: 25)</i>	
<i>Group A (Gamification through E-Learning):</i>	<i>Group B (Gamification through M-Learning):</i>
Group Mean – Group 'A'	Group Mean - (Group 'B')
17.54	18.43
Mean difference = results of Group 'B' – results of Group 'A' = 18.43 - 17.54 = 0.89 Conversion of Mean difference in Percentage=> 0.89 (out of 25) = 3.56%	

Fig. 1. Group Means of Exam Results – Group 'A' Vs Group 'B'

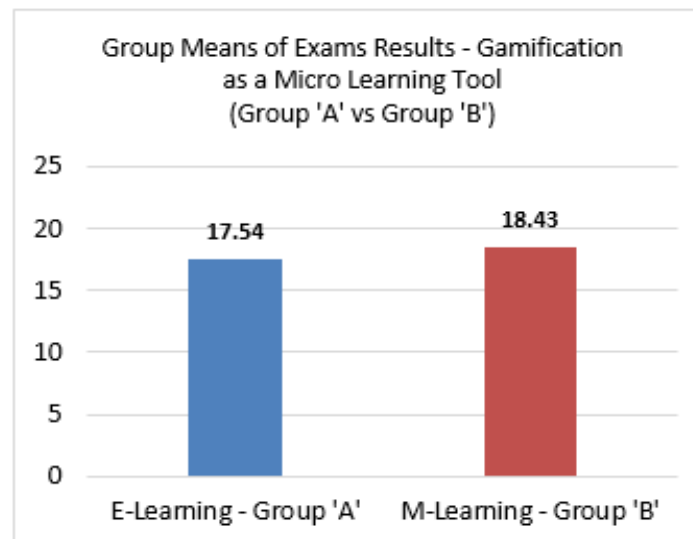


Fig. 1. Group Means of Exam Results – Group 'A' Vs Group 'B'

2. ATTITUDE TOWARDS THE USE OF GAMIFICATION AS A MICRO LEARNING TOOL (GROUP 'A' VS GROUP 'B')

Table 2, and Fig.2 & 3 show the attitude of learners' at before and after stages, using the gamification as a Micro Learning Tool towards three areas, Friendly, Comfortable, and Essential..

Table2: Attitude towards Gamification as a Micro Learning Tool				
Dependent Variables	Mode	Groups Means		Size of Change
		Before	After	After-Before
Friendly	<i>E-LEARNING</i>	2.57	4.43	1.86
	<i>M-LEARNING</i>	2.57	4.86	2.29
Comfortable	<i>E-LEARNING</i>	2.29	4.29	2.00
	<i>M-LEARNING</i>	2.43	4.57	2.14
Essential	<i>E-LEARNING</i>	2.00	4.43	2.43
	<i>M-LEARNING</i>	2.00	4.86	2.86

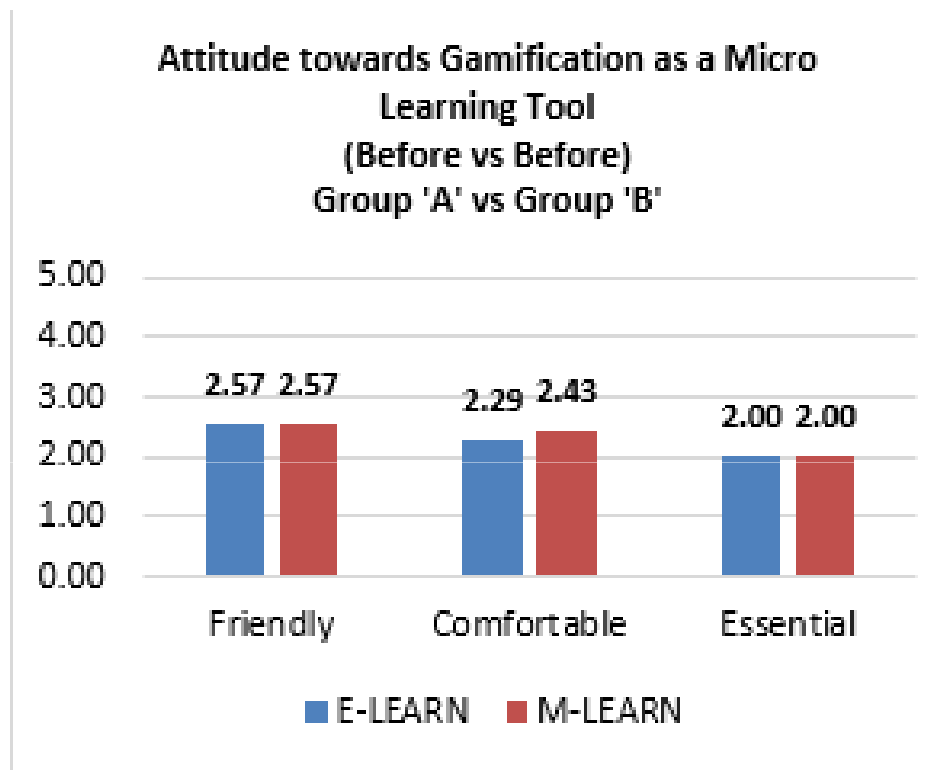


Fig. 2

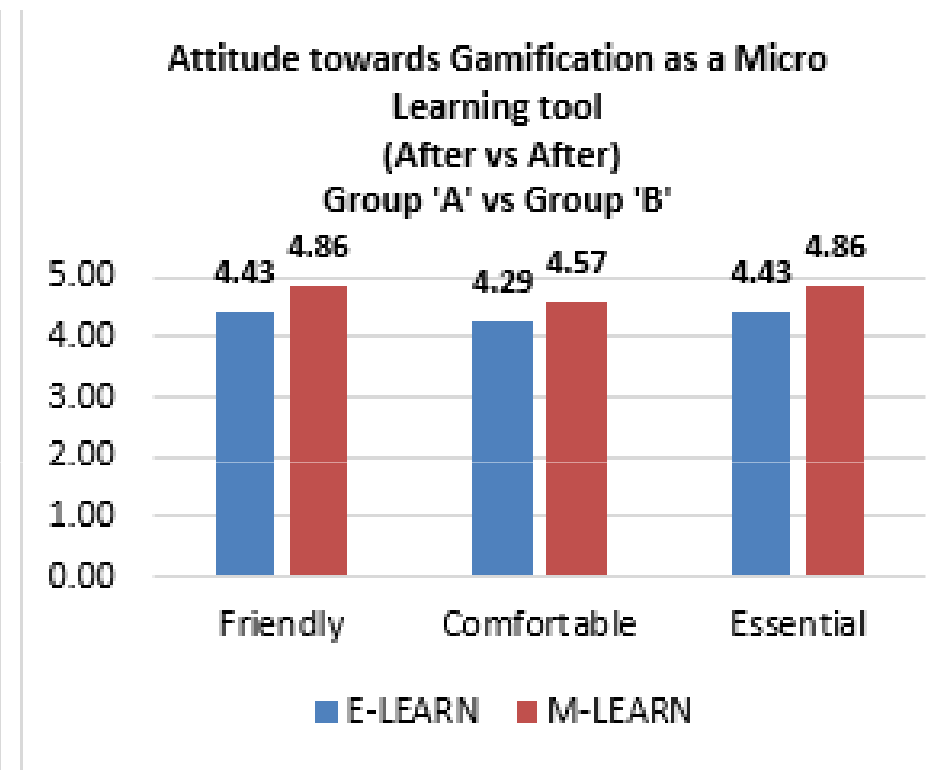


Fig. 3

Fig. 2, 3. Attitudes towards the use of Gamification– (Group 'A' vs Group B)-Before-vs-Before and After-vs-After

3. UNDERSTANDING, LEARNING, HELP IN EXAMINATION, USING GAMIFICATION AS A MICRO LEARNING TOOL (GROUP 'A' VS GROUP 'B')

Table 3, and Fig.4 & 5 show the effects of gamification as a Micro Learning tool on the understanding and learning the course material and its help in the preparation of exams.

Table 3: Help of Gamification as a Micro Learning Tool				
Dependent Variables	Mode	Groups Means		Size of Change
		Before	After	After-Before
Understanding Course Material	<i>E-LEARNING</i>	2.14	4.57	2.43
	<i>M-LEARNING</i>	2.00	4.71	2.71
Learning Course Material	<i>E-LEARNING</i>	2.43	4.43	2.00
	<i>M-LEARNING</i>	2.43	4.71	2.29
Help in Exams Preparation	<i>E-LEARNING</i>	2.43	4.29	1.86
	<i>M-LEARNING</i>	2.29	4.71	2.43

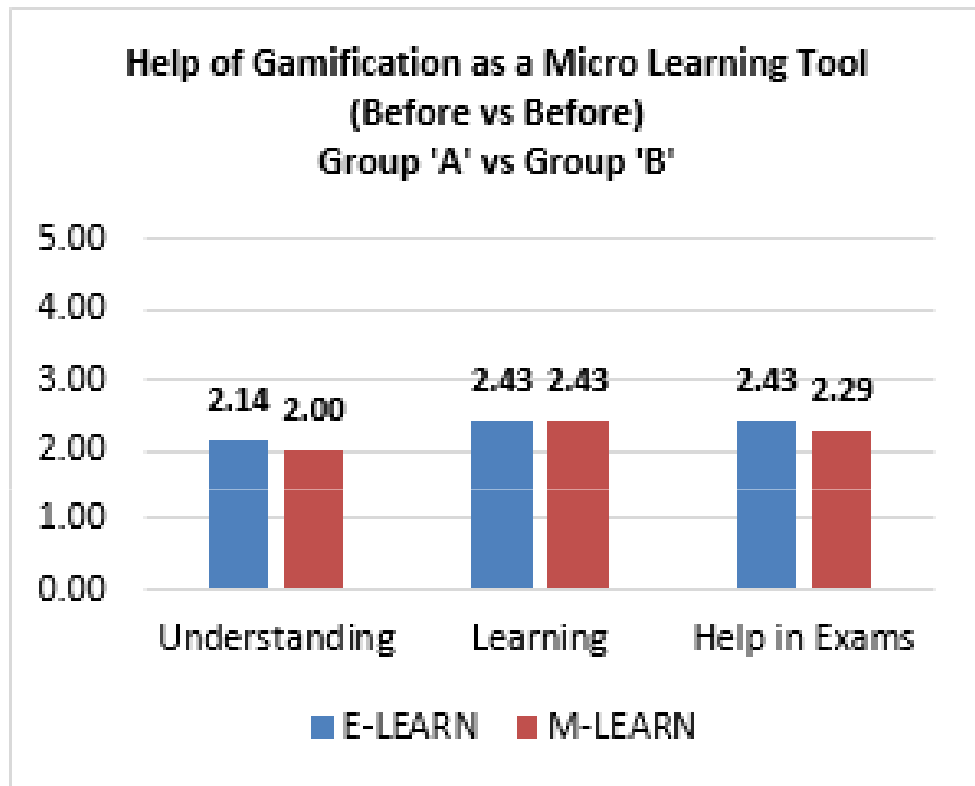


Fig. 4

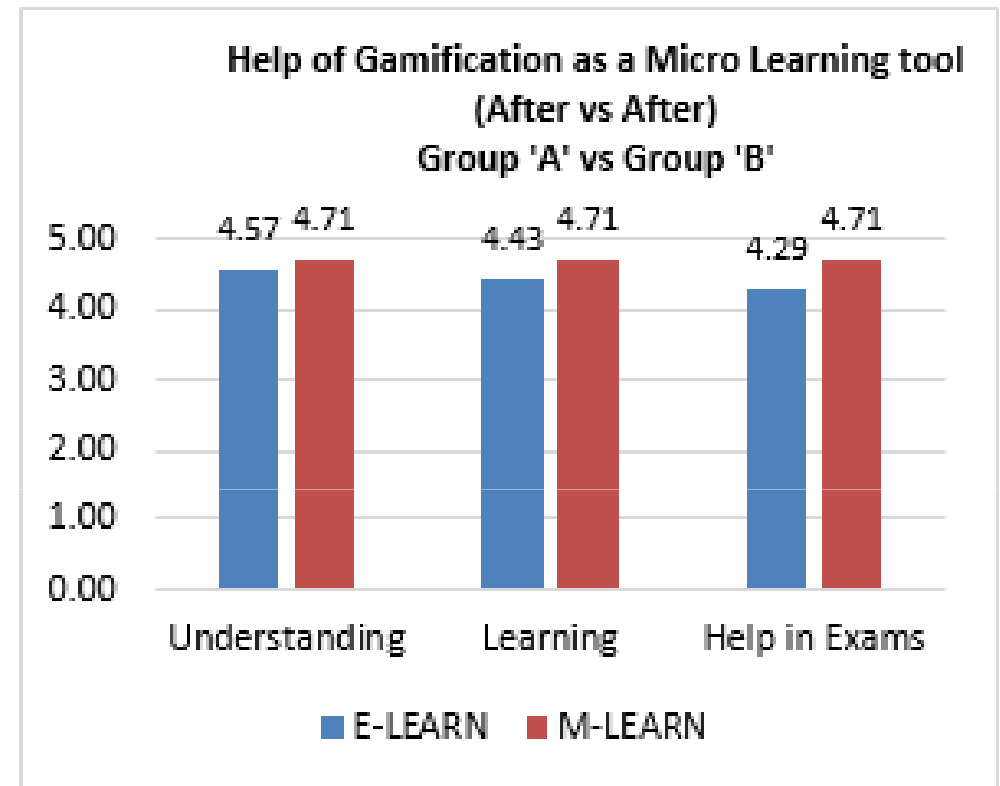


Fig. 5

Fig. 4, 5. Help of Gamification as a Micro Learning Tool– (Group 'A' vs Group 'B')-Before-vs-Before and After-vs-After

4. LIKING OF PARTICIPANTS (MODE OF INSTRUCTION)

Table 4, and Fig.6 & 7 show the difference of learners' likings towards the mode of instruction for E and M-Learning Modes at before and after stages.

Table 4: Liking of Participants (Method of Instruction)				
Dependent Variables	Mode	Groups Means		Size of Change
		Before	After	
Instruction through Instructor & supported with Gamification as a Micro Learning Tool	<i>E-LEARNING</i>	2.14	4.43	2.29
	<i>M-LEARNING</i>	2.29	4.57	2.29

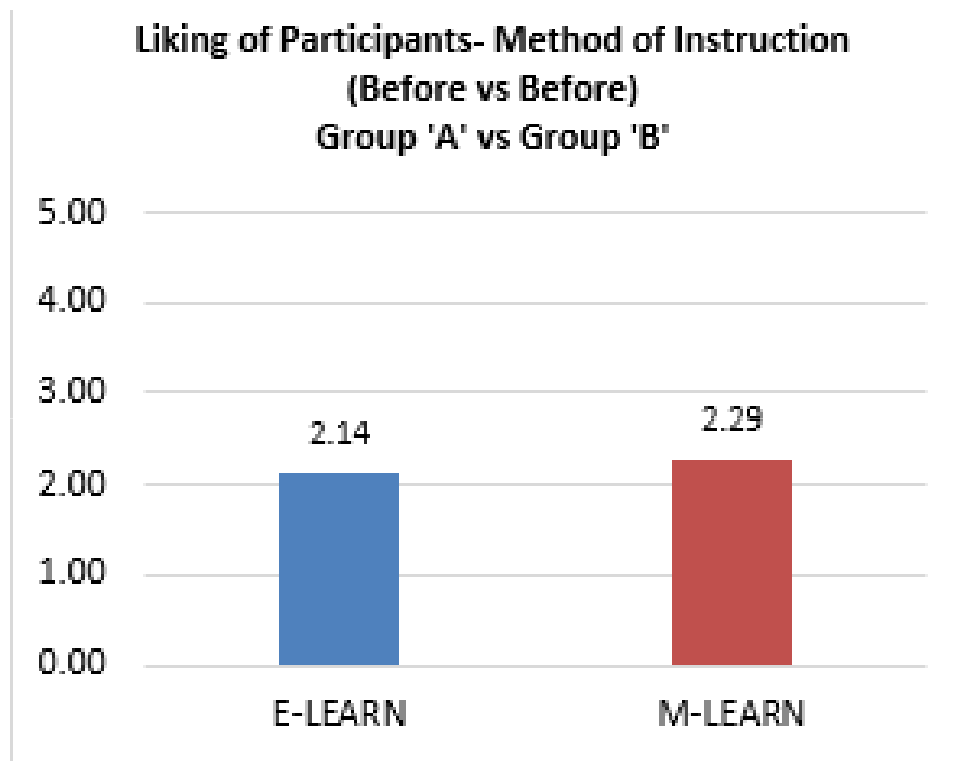


Fig. 6

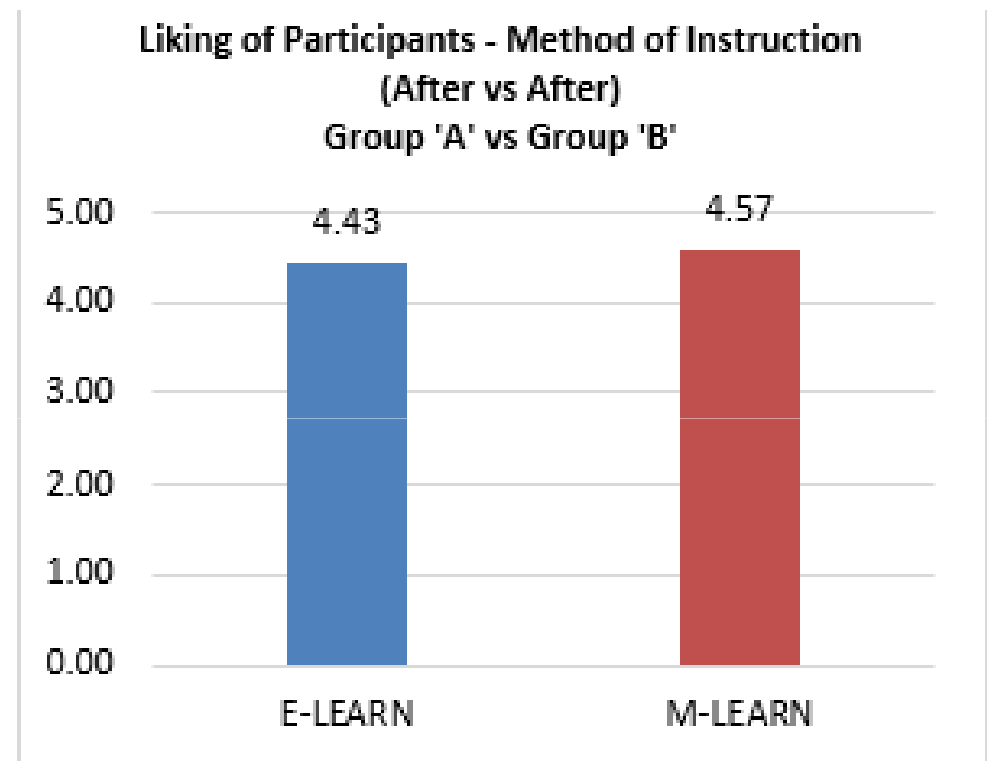


Fig. 7

Fig.6, 7. Liking of Participants – Method of Instruction– (Group 'A' vs Group 'B')-Before-vs-Before and After-vs-After

Conclusion:

Results of this study reveals that both E-Learning mode and M-Learning modes are useful when used through Gamification as Micro Learning and produced positive results, as their overall effects on the outcomes are:

Learners' Friendly

Comfortable to the learners

Has been verified as an essential part of the course Module for

Understanding the contents of the course module and

Learning the contents of the course module,

Verified to be very helpful for the preparation of the exams

Gamification as a Micro Learning Tool within a Blended Learning environment has been favored as an ideal mode of instruction, by the learners' of both modes

And

The Gamification as a Micro Learning Tool had helped the learners of both modes in gaining high scores in the exams, with 17.54, and 18.43 (out of 25 marks) for E-Learning and M-Learning modes, respectively.

(Overall, M-Learning produced a little higher results as compared to E-Learning mode)

Dear teachers, don't wait any more, start using this new methodology through Gamification as a Micro Learning Tool, with E-Learning or M-Learning mode, or both; to generate in depth ideas of the course materials, and to increase the understanding level of learners' for better learning outcomes.