

Micro Learning

Micro learning is learning in small steps.



Effects of Gamification as a Micro Learning tool on instruction

Nauman Ahmad

IT Lecturer,

**Centre for Preparatory Studies, Mathematics and IT Department,
Sultan Qaboos University, Al-Khoudh, Sultanate of Oman**

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Abstract

Gamification is a technique in teaching and learning that helps the learner to get the benefits of electronic technology to understand the course material, thorough playing the game or game based principles integrated with the course material. This way of learning increases the motivational level of learner, which in turn enhances the engagement and understanding with the subject material. Micro learning is a new-fangled technique of learning, to deliver the content of the subject in small chunks. This research study has merged the Micro Learning technique with gamification, as a new learning methodology and has revealed the effects of gamification as a Micro Learning Tool on instruction with in a Blended Learning setup of instruction. Total number of participants for this study was 28, and divided in two Groups; those had studied an IT course. First group ('A') was the experimental group, supported with an Online "Microsoft Word Ribbons" Game, provided as an additional Micro Learning Tool to practice their course module. This group ('A') had used their computers, laptops and mobile/portable devices to use the online game, as a Micro Learning tool. Second group ('B') was a control group that had attended traditional face-to-face instruction. This research study has analyzed the effects of gamification technique, through these two groups, by comparing their exam results of the studied module. Furthermore, the participants of experimental Group 'A', those had used the gamification technique were studied through a survey questionnaire for two stages, **Before** and **After** the use of online game, regarding their attitudes toward the new tested methodology. Plain statistical comparisons have been made on the feedback of Group 'A' for **Before** and **After** stages. Outcomes of this study are of great interest for the researchers, connected with the use of Gamification and Micro Learning technique in instruction.

Introduction

During the traditional face-to-face learning, generally the duration of a single lecture ranges from 1 to 2 hours or more, moreover, instructors and learners, both get engaged in the process of teaching and learning for many hours a day, and sometimes, during lengthy lectures, its really difficult to generate in depth concepts and ideas, and to cover big amount of teaching materials. Therefore, instructors try to repeat the ideas, at later stages, and as a result the course gradually goes out of control, without in-depth creation of learners' ideas, and finally results in compromised learning outcomes.

Therefore, it is important for the instructors to find different ways of teaching, along with face to face instruction, for the maximum utilization of information, and better learning outcomes.

WHAT IS GAMIFICATION AND MICRO LEARNING?

Gamification is a method in education that **motivates** the learner and increases their **engagement** toward the learning content by integrating the game design principles along with course contents, with in a learning environment (Dichev, & Dicheva, 2017).

Micro Learning is a learning process based on small units those are easily acceptable and consumable (Fernandez, 2014). A process of learning through small divisions of the learning contents and related activities based on focused and short duration is called Micro learning (Hug, 2005).

PURPOSE OF STUDY

The purpose of this research was to introduce and **new learning methodology**, through integrating an online Game/Gamification (Purpose Games), with the course material, used as a Micro Learning Tool, as an additional support to the learning process, within a blended learning mode,

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

- the **exams results** of the learners’.
- **learners attitudes.**
- help of Gamification Tool in **Understanding** and **Learning the contents of the course.**
- **Help of Gamification Tool in Exams preparation**
- **Learners likings about the mode of instruction**

METHODOLOGY

This research study has tested the effects of gamification as a Micro Learning tool on instruction, with in a blended learning environment, where the course contents of an IT course (Basic Computing Skills) for the Module “Microsoft Word”, a module based on practical activities were merged using the Micro Learning technique, and integrated with an online game (gamification technique). **Total number of participants was 28, and divided in two groups. Group ‘A’ was experimental group, supported with an Online Game for Microsoft Word (PurposeGames, 2017), provided as an additional learning and practice to their course, and Group ‘B’ was a control group, those had attended face-to-face lectures.**

This online game had 51 questions related with the subject area, and the attempt of using the game was divided in small chunks as a Micro Learning technique; participants were specially informed and emphasized **to play the online game for 5 minutes only, and were asked to reattempt the game after a break of at least two hours.**

This game had **questions related with the course material, a timer, percentage of overall completion, counting of correct and wrong answers in numbers, and the numbers of remaining questions.** The game was asking questions and the participant had to choose the answer through the mouse selection, from the available options, among variety of answers, from the MS word Ribbons.

At every restart, questions were appearing in a random order. Minimum-recorded time to solve those 51 questions was 5 minutes. Participants had used computers, laptops and their mobile/portable devices, and tried their best, at every new attempt, to solve maximum number of questions with correct answers within 5 minutes.

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- Games
- Explore
- Groups
- Create
- Badges
- Tournaments
- Leaderboards

Microsoft Word Ribbons

Remaining Correct Wrong
 42 9 1

Change Paragraph Spacing

17%

02:54.9

Quit



Methodology.....continued

This research study has analyzed the effects of gamification, through these two groups, by comparing their-

- exam results of the studied subject module.

Furthermore, the participants of Group 'A', those had used the gamification technique were studied through a survey questionnaire for two stages, **Before** and **After** the use of online game, through a Questionnaire based on

5-points Likert Scale, from 1 to 5,

where 1. Strongly Disagree. 2. Disagree, 3. Uncertain, 4. Agree, 5. Strongly Agree.

Feedback was taken through the questionnaire concerning the:

- participants attitudes toward the e-tool; **friendly, comfortable, essential,**
- help of e-tool in **understanding** and **learning** the contents of course module
- help of e-tool in the preparation of exams.
- **Liking of participants** toward the mode of instruction

Statistical Analysis

Plain statistical analysis based on the statistical means have been done on the exam results of these two groups, and a comparison of group mean has been calculated on the learners' feedback of **group 'A'**, for two 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.

<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>	
<u>Group A (Experimental Group):</u> Supported with Gamification as a Micro Learning tool	<u>Group B (Control Group):</u> Traditional face-to-face instruction without using Gamification as a Micro Learning tool
Group Mean – Group 'A'	Group Mean - (Group 'B')
17.98	14.28
Mean difference = results of Group 'A' – results of Group 'B' $= 17.98 - 14.28 = 3.7$ Conversion of Mean difference in Percentage=> 3.7 (out of 25) = 14.8%	

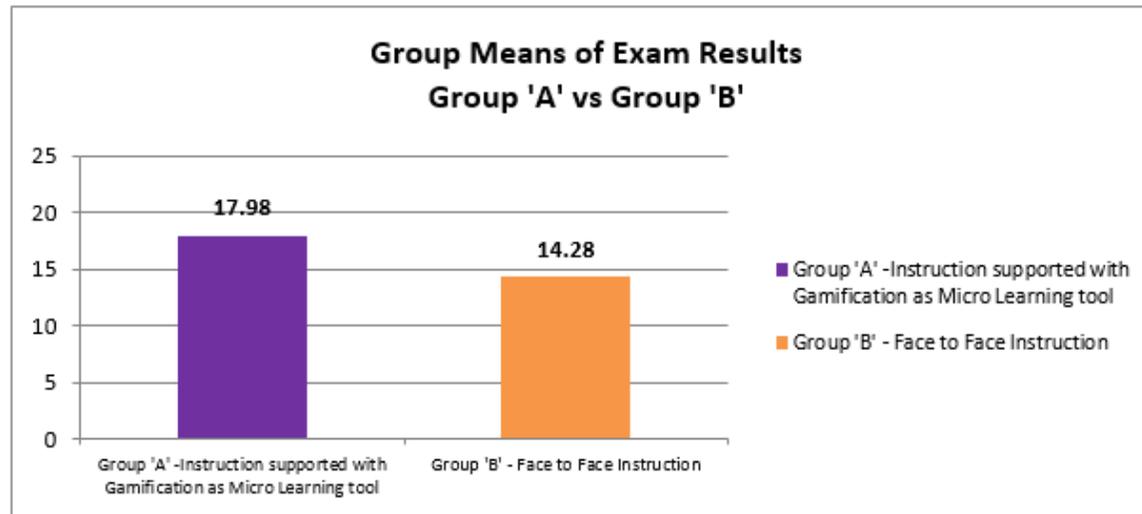


Fig. 1. Group Means of Exam Results – Group 'A' Vs Group 'B'

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

Table 2, and Fig.2 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..

<i>Table 2: Attitude towards the use of Gamification as a Micro Learning tool (Group 'A')</i>			
Dependent Variables	Mean		Size of Change
	Before	After	After-Before
Friendly	2.57	4.64	2.07
Comfortable	2.36	4.43	2.07
Essential	2.00	4.64	2.64

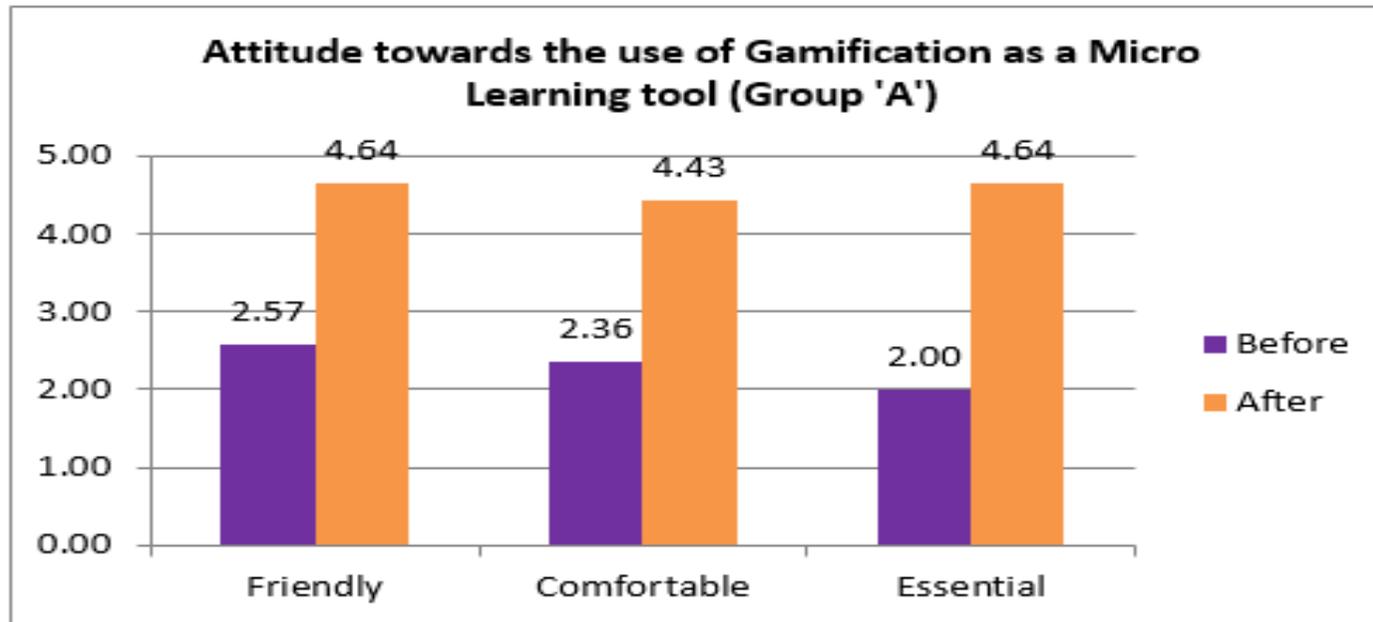


Fig. 2. Attitudes towards the use of Gamification as a Micro Learning tool – (Group 'A')

3. UNDERSTANDING, LEARNING, HELP IN EXAMINATION, TOWARDS THE USE OF GAMIFICATION AS A MICRO LEARNING TOOL (GROUP 'A')

Table 3, and Fig.3 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.

<i>Table 3: Understanding, Learning, Help in Examination toward the use of Gamification as a Micro Learning tool (Group 'A')</i>			
Dependent Variables	Mean		Size of Change
	Before	After	After-Before
Understanding course material	2.07	4.64	2.57
Learning course material	2.43	4.57	2.14
Help in Exams Preparation	2.36	4.50	2.14

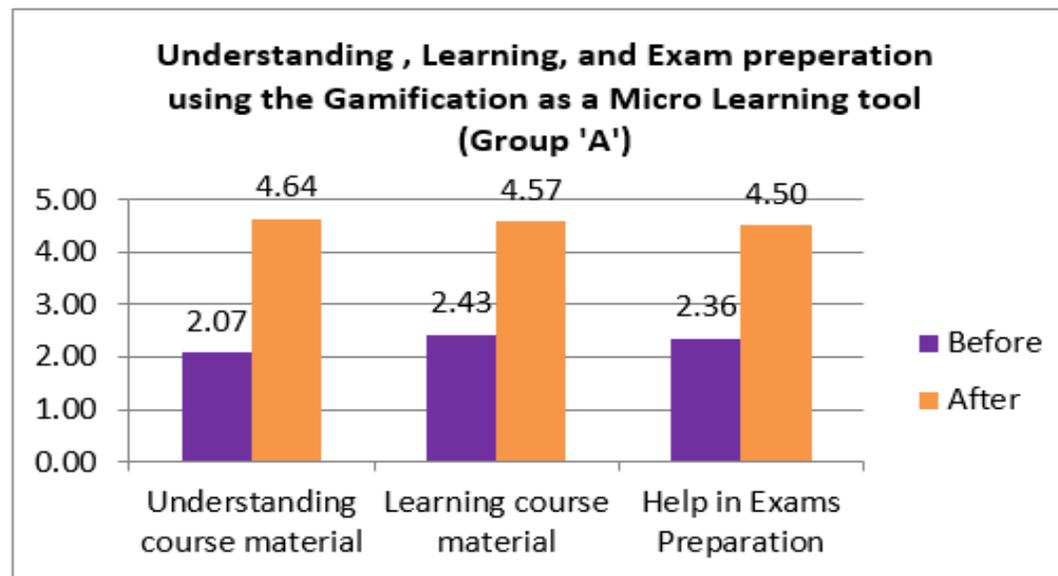


Fig. 3. Understanding and Learning using Gamification as a Micro Learning tool - (Group 'A')

4. PARTICIPANTS LIKING (METHOD OF INSTRUCTION) – GROUP 'A'

Table 4, and Fig.4 show the difference of participants' liking towards the method of instruction at Before and After stages.

<i>Table 4: Participants Liking (Method of Instruction) – (Group 'A')</i>			
Dependent Variable	Mean		Size of Change
	Before	After	After - Before
Instruction through Instructor & supported with Gamification as a Micro Learning Tool	2.21	4.50	2.29

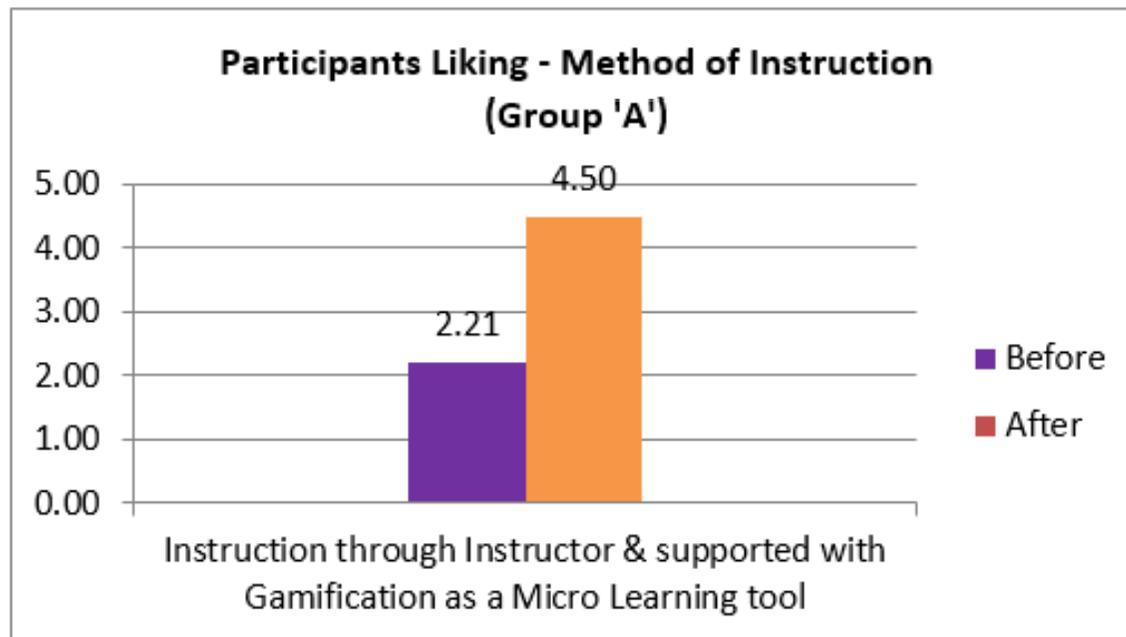


Fig. 4. Participants Liking – Method of Instruction using Gamification as a Micro Learning tool - (Group 'A')

Conclusion:

Results of this study reveals that the use of Gamification as a Micro Learning tool on instruction acted positively, and improved the learning outcomes, and verifies that this tool is:

User Friendly

Comfortable

Proved as an essential part of the course for

Understanding the course material and

Learning the course material,

Confirmed to be extremely helpful for the preparation of exams

Gamification as a Micro Learning Tool with in Blended Mode has been favored as a preferred mode of instruction, by the learners'

And

The Gamification as a Micro Learning Tool had helped the students in gaining high scores in the exams, with a group mean of 14.8%.

Dear educators, what are you waiting for? Adopt this solution; an innovative way of teaching through Gamification as a Micro Learning Tool, to create in depth ideas of the course contents, and to raise the level of learners' understanding, better results, and overall improved learning outcomes.