# The Effectiveness of Edmodo as a Professional Learning Network (PLN) on Students' Achievement and their Motivations toward it

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## Abstract

The purpose of this study was to examine the effectiveness of Edmodo as a Professional Learning Network (PLN) on students' achievement and their motivations toward it in the e-learning course and also to determine the level of their motivations toward Edmodo. The findings of the study affirmed the effectiveness of Edmodo as (PLN) on students' achievement at the cognitive domain, and also it has been indicated a clear effectiveness of Edmodo on motivations for the majority of students toward it, as well as the students' motivations level toward Edmodo was in high level since they considered it as an effective participatory tool for discussions and exchange ideas and knowledge

**Keywords**: Edmodo, Professional learning network (PLN), Academic achievement, Motivations.

# La efectividad de Edmodo como una red de aprendizaje profesional (PLN) en el logro de los estudiantes y sus motivaciones para lograrlo

### Resumen

El propósito de este estudio fue examinar la efectividad de Edmodo como Red de Aprendizaje Profesional (PLN) en el rendimiento de los estudiantes y sus motivaciones hacia el mismo en el curso de aprendizaje electrónico y también determinar el nivel de sus motivaciones hacia Edmodo. Los hallazgos del estudio afirmaron la efectividad de Edmodo as (PLN) en el rendimiento de los estudiantes en el dominio cognitivo, y también se ha indicado una clara efectividad de Edmodo en las motivaciones para la mayoría de los estudiantes hacia él, así como también en los estudiantes. El nivel de motivación hacia Edmodo fue de alto nivel ya que lo consideraron como una herramienta participativa efectiva para las discusiones e intercambiar ideas y conocimientos.

**Palabras clave:** Edmodo, Red de aprendizaje profesional (PLN), Logro académico, Motivaciones.

## 1. INTRODUCTION

The current digital millennium created new challenges and new demands for most community members to live in a digital environment, as well as, the university community, since day by day the teachers and students change their lifestyle to a digital and electronic style based on technology and social networks to meet the new educational challenges and new demands, however, they both live

in modern e-learning atmosphere and they teach and learn differently using different learning tools, they using e-books, e-files, e-libraries, and data basis, moreover, the most of them are linked to social learning networks. Social Network site (SNs) and Social Learning Network (SLN) site emerged as a result of development of digital revolution and internet network, since, the internet evolved from being a way to transfer and dissemination of information (Web 1.0) to a means of communication, networking, sharing and participation (Web 2.0), as transferred the learner from non-active learner, non-reactive to active learner, effective, collaboration in SLN applications and services (Ali, 2015).

Unconsciously, using of Social Learning Network (SLN) are being implemented in classrooms as web-based learning environment by providing internet access to social collaboration tools in addition to traditional instruction tools, however, by links the traditional instruction tools to external web-based system to engage online dialogue at a safe and secure environment (Marín-Díaz, Martinez, & McMullin, 2014). It is also used of Professional Learning Network (PLN) as a systems of connections and resources allow teachers and educators to grow professionally and development their profession by connect them with networks worldwide to collect much more information from different sharing resources to increase the opportunities of enhance, support learning and to create professional knowledge (Ursavaş & Reisoglu, 2017).

Recently, some studies investigated the educational effect of (SLN) like Bryla (2014), and more recently, limited studies examined

(PLN) and Edmodo as an educational tool, but currently, Edmodo is one of the most popular (SLN) and one of the most widely used as (PLN), because it is a closed social networking system used at classroom level by teachers and students alike, provides a platform for learning that actively enhances students in the classroom within the spirit of social networking (Durak, 2017).

A few studies and researches indicated that SNs can be used by university students for learning purposes effectively (Yaman & Yaman, 2014), and this means Edmodo as PLN may be successful learning strategy and may also lead to affect the academic achievement, and improve learning (Manowong, 2016).

The adoption of Social Networks in the education field is not only widespread but also growing at a significantly fast rate, even the obstacles or disadvantage and challenges that have faced the use of them and have been documented, such as, the individuals' privacy (privacy concerns of personal information) since many individuals express and supply very powerful personal details about themselves, despite many of information is elective, and may it is exploited by harmful contacts for unethical issues (Zaidieh, 2012), moreover, several studies confirm that this data or information it is not always true, so the individual has many friends but the honesty and quality of friendships is not always true, so it is likely to be more dangerous than good (Thongmak, 2013). All of that will affect the use of Social Networks in education, therefore, it is suggested to use a special SNs with academic naturally providing more secure educational platform, includes safe learning tools for learners and educators, convenience of

using to complete activities and assignments assigned by teachers, allowed students to know their classmates better, and can benefit the teacher community as well (Curran-Sejkora, 2013).

At the same time, the professional development (PD) could be in the center of improving the teaching and learning process, and it is needed by educators to meet their professional needs, although the traditional PD programs are needed and often include such as seminars and short workshop, but the continuously PD supported by PLN is more needed because it is enhance educators to grow professionally throw share learning experiences, improve skills, find new important knowledge even create professional knowledge, in other words, PLN support continuous PD and professional learning experiences that may meet all the professional needs of networks environment include online communities using collaborative learning tools(Trust, krutka, & Carpenter, 2016).

In addition, findings of a number of researchers indicates to the highly positive perceptions of both male and female students toward use of Edmodo as a tool for learning (Al-Kathiri, 2015), and other researchers revealed to the effectiveness of Edmodo on achievement in middle school and in higher secondary level (Hankins, 2015, Tripathi, 2016), as well as, in advanced-level students (Shams-Abadi, Ahmadi, & Mehrdad, 2015; Khodary, 2017), furthermore, the general findings of study by Al-Ruheili & Al-Saidi (2015) revealed that Edmodo raised students' motivation level, similar to a research by Hastomo (2016) indicated to the effectiveness of Edmodo in development of students' motivations.

In developing countries, there are some attempts to use SNs to create a new educational environment and to enrich social communication skills, although, of this interest in this networks of learning, but unfortunately, there are limited studies of SLN, and PLN has not received suitable attention by researchers in Saudi Arabia, response to the above, this study attempted to highlight the role of Edmodo as PLN. Toward this end, there is a dearth of studies concerning effectiveness of Edmodo as PLN, and no other study has examined the effect of Edmodo as PLN on students' achievement and motivations, thus it is expected from this study to explore the following questions:

What is the effectiveness of Edmodo as a Professional Learning Network (PLN) on University students' achievement in KSA?

What is the effectiveness of Edmodo as a Professional Learning Network (PLN) on University students' motivations in KSA?

What is the level of University students' motivations toward Edmodo as a Professional Learning Network (PLN) in KSA?

The current study aimed to examine the effectiveness of Edmodo as a Professional Learning Network (PLN) on Taibah University students' achievement in the e-learning course, and to examine the effectiveness of Edmodo on students' motivations toward Edmodo, and to determine the level of students' motivations toward Edmodo.

To achieve these aims, the study attempts to test the following the two null hypotheses, First: There is no statistically significant differences ($\alpha \leq 0.05$) between gain mean scores of experimental

group students (taught with Edmodo) and gain mean scores of control group students (taught with traditional lecture) in the achievement post-test. Second: There is no statistically significant differences ($\alpha \leq 0.05$) between gain mean scores of experimental group students (taught with Edmodo) and gain mean scores of control group students (taught with traditional lecture) in the motivation post-scale.

Social Network site (SNs): also known as a social networking site, or as a social networking website, or a social website, and it is defined as a "web-based services that allow individuals to 1) construct a public or semi-public profile within a bounded system, 2) articulate a list of other users with whom they share a connection, and 3) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site" (Boyd & Ellison, 2008, p. 211).

Social Learning Network (SLN): it is referred to learning within social network site (SNs), and it is defined as a "is a type of social network among students, instructors, and modules of learning" (Brinton & Chiang, 2014).

Professional Learning Network (PLN): it is not an ambiguous term, it focuses on professionality, and it is defined as "a collection of social media and Web 2.0 tools that facilitate the discovery of new information about a topic of interest" (Trust, 2013, p.2). For the study' purpose the operational definition of PLN: is an interactive system combine between social network connections and information gathering that allows the teachers to meet their professional development, and betterment their professional practices by collecting

new knowledge, skills about a content of interest to support learning, and allows the learners to interact with their colleagues for sharing the work-related course.

This study is limited to the male students of Taibah University, and two chapters from the e-learning course (e-learning tools and learning management systems), during the first semester of the academic year 2014-2015 AD.

The history of Social Network sites (SNs) started from the revolution of websites technologies based on the development of Web 2.0 tools (Wikis, Blogs, RSS Reader, micro blogging, podcast, videocast, tagging …etc.) which changed people to communicate with each other, allowed them to participate actively, and rapid create their own content, however, SN generated network-based society, that enhance communication skills, support collaboration and contributions from its users, build new information resources to sharing them with others worldwide (McClain, 2013). And from the advantages or the advanced feature of SNs, create a public or semi-public e-profile to be a membership on social circles to easy participate, express opinions, and self-presentation (Bicen & Uzunboylu, 2013).

In fact, SNs used for multiple purposes within different contexts, by different actors, and the term Social Learning Network (SLN) cover the educational usage of SNs, and how it can be used in teaching-learning process, hence, through using learning networks tools to support new educational experiences for both teachers and students within a social space, however, teachers conducting virtual projects' groups or courses' groups, then, invite the students to

involving them in teamwork to solve assignments, to send helpful supportive material, this foster process of encourage them doing tasks, even to motivate students sharing new information between their colleagues, so the teachers received immediate feedback and feed-forwards among works' groups, and all of this may increase students' motivation, or may lead to deep learning and successes, at the same time students can create their own virtual community to interact each other, for extra resources for their homework (Durak, 2017).

Basically, SLN based on the pedagogical principles of constructivism theory and social constructivism theory associated with contemporary connectivism theory, in constructivism the learner alone is constructor of new knowledge linked to previous knowledge and information, learning is constructive process (Munoz, Pellegrini-Lafont, & Cramer, 2014). Social constructivism approach believe that reality and knowledge is constructed socially through the activity of society members together, learning is a social process, so the learner is taken place only within a social group, and engaged to interact with each other in social activities to construct the new knowledge in a social reality based on previous learning through connectivity and collaboration and interactions with other learners (Mattar, 2018), simply, learner builds knowledge not discover it or received it, in this context, learning is a social constructive and interactive process, occurs in social communities lied to social learning network (SLN), and it is a part of SNs (Kim, 2001).

Connectivism established as a network theory of learning, however, based on a highly networked technology that offered

connections and interactions among learners, they can exchange their knowledge, increasing effectiveness wherever and whenever (Tinmaz, 2012), briefly, learning constructed knowledge in networks of learners they established, so learning is connecting process, growing, and navigating networks in anywhere and at any time (Siemens & Tittenberger, 2009). Connectivism emphasizes that teachers and students who share an online network are a part of a community, and they are not only utilizing the community but also they should contribute and interact more directly and more frequently since knowledge distributed on networks and among them (Boitshwarelo, 2011).

Relating to, PLN is relatively new domain in SLN and in the educational field, specifically, PLN is suggested for teachers as an alternative or moderately platform for SLN, and for those seeking for professional development and to understand teacher professional learning in the 21$^{st}$ century, just recently have they suggested professional development that meets the needs of the holistic teacher, however, teachers are not only expected to be content experts, but also they are expected to be educators, researchers, professionals, and even artists, and they must continually seek new knowledge, resources and learn new skills and expertise available on the internet in order to improve student achievement (Trust et al., 2016).

In common, PLN using global social networks to focus on teachers' learning related their professional growth, basically, they correlate teachers within networked communities with other colleagues, educators, an expert in their courses they are teaching,

aiming from that to grow professionally, or to learning as professionals. PLN allowance for teachers to expand and increase of connections beyond their local networks, allowed them to connect with experts from around the world, and rapidly seeking help, they could use to seek new knowledge and skills from a global network of educators, that might not otherwise be available. The dynamics of SLN could be important for teachers who feel isolated in their work or fear asking help from their colleague or wait for professional development workshops. Based on the contexts in which they work, but PLN offers opportunities for engagement and contribution beyond their local networks, and allows teachers to adapt their learning experiences, provide and offer them support as they seek to grow as professionals in their teaching and students' learning (Trust, 2015).

It is clearly that, PLN offered possibilities for supporting the professional growth, sharing and collaborating to grow professionally, focus on the learning experiences of the teachers not in a single community, network of practice, or site, also allows the sharing of lesson plans, teaching strategies, and student work, as well as collaboration across grade levels.

A PLN is a system combine social media and Web 2.0 applications, in other words, it is a multifaceted structure of multiple and interactive network connections enable to collect new knowledge, information, resources, skills, experts, about a content of interest to support learning. Mainly, PLN consists of two main types of tools": contains two types of tools, There are two types of tools for PLN, There are two types of PLN, for each one using different tools and

different platforms: Predominantly, a PLN using two different tools and platforms: information aggregation (intelligence gathering) and social media connections (collaborative platforms), the first tools of PLN is information aggregation, that give teacher possibility to stay updated on new information by using gathering tools (i.e., Blogs, Wikis, Podcast, RSS Readers, Social Bookmarking, Google Reader) to collecting information from different websites and sources instead of visiting or sources (Trust, 2012).

An example of a RSS (Really Simple Syndication) feed readers technology probably the most important digital tool for teachers and students, through helps rapidly and easily browse the amazing amount of blogs written by trusted educators that address thousands of articles to gaining of information, to collect new posts in order to stay updated on the latest material for teaching techniques, best practices, instructional models and pedagogies in the field of education. RSS readers known as free aggregators, save teachers time because they do not have to visit each individual website and check for updates of content that is being continually added to the Internet (Ferriter, 2009).

The second tools of PLN is social media connections, include social networking platforms which based on affinity groups for sharing interested learning aims (i.e., Edmodo, Classroom 2.0, The Educator's PLN, Ning), Although, allows teacher to create a global network of individuals to connect with various individuals worldwide who to share resources, to discuss lesson plans, to find support from large groups of individuals that pool their answers to find the best solution to solve a problem, to receive feedback on new ideas (Flanigan, 2011).

Edmodo is a popular professional learning network platform and it is now widely used as PLN,  since, there are over 77,7 million members, and it has 12 subject communities include Computer Technology, Social Studies, Science, Math, Language Arts, Creative Arts, College Readiness, Special Education, World Languages, Health and PE, Career and Tech Ed, and Professional Development. Where all the members can share resources or ask for feedback from other members within the same subject communities, particularly, it is an engaging for teachers, and many teachers are motivated to involve in Edmodo for professional growth, however, they can use it to connect with other colleagues to join their class groups, and build relationships with educates whom interested in collaboration and share ideas, advice, resources, and new knowledge, and also asking questions, as well as for getting feedback (Hourdequin, 2014).

For each teacher and student have a personal profile page contains an RSS feed to all of the learning communities, so when they visit a community, all of the posts from that community are sent via RSS feed directly to their profile page, so they can keep up dated on all of the community without exit his profile page. So they do not have to join each learning community to read the newest posts and discussions. Also, they can answer to the posts in their RSS feed directly from the profile page. Additionally, Edmodo is built-in a notification tool that lets continuously teachers and students joined dialogues or discussions, receive every time the posts emails from a new teacher or student adds to the dialogue or discussion (Trust, 2013).

Additionally, after reviewed of several related studies regarding use Edmodo for teaching-learning process, a few numbers of studies indicated to the effectiveness of Edmodo on academic achievement, however, in the USA, the study of Hankins (2015) aimed to determine the effects of Edmodo on student achievement in middle school level, the study sample included from a total of 207 seventh-grade level, the findings of the study failed to find a significant first or second order effect of Edmodo on students' reading achievement, and only the English language students were found to have a significant effect on their achievement. Another study by Al-Ruheili & Al-Saidi, (2015) aimed at exploring the students perceptions on the usefulness and the challenges of integrating Edmodo into English classes, the study was conducted with 50 foundation year students at Sohar College of Applied Sciences in Sultanate of Oman, the findings of the study showed that from the students' perceptions of Edmodo it raised students' motivation level to participate inside and outside the classrooms.

And a study of Shams-Abadi et al. (2015) investigated the effect of Edmodo on EFL learners' writing performance in Iran, they used a quasi-experimental design in their study, and the participants were 40 female advanced-level students, the results of the study revealed that the use of Edmodo in writing was more effective on EFL learners' writing performance of students. Tripathi (2016) conducted an experimental study in India to compare the effectiveness of using Edmodo with that of the conventional method of teaching Economics to students of higher secondary classes, his sample consisted of 80

Economics students from 4 different schools (40 students for each experimental group and control group), the researcher detected that teaching using Edmodo is more effective on academic achievement of students of experimental group compared the students of control group.

Hastomo (2016) studied the effectiveness of Edmodo to teach writing at one of senior high school students in Indonesia, the sample of the study were 60 students from two classes, the findings indicated to the effectiveness of Edmodo to teach writing than Picture Series to teach writing, and it is increasing students' motivations to have better writing skill. Finally in KSA, and the research of Khodary (2017) tried to explore the effect of Edmodo use on developing Saudi English as a Foreign Language (EFL) students' Self-Directed Learning (SDL) in Northern Border University. She employed a quasi-experimental design that included a one group design, her sample contained 45 fifth level female students from Department of Languages and Translation at Faculty of Education and Arts. Found there is a statistically significant difference in the participants' SDL between the pre and post Personal Responsibility Orientation to Self-Direction in Learning Scale in favor of the post one.

The researcher applied Edmodo as PLN platform, since it is a secure and a safe environment, and it is free of advertisements and games that might effect on students. Many students like the design of Edmodo's interface as its similarity to Facebook, and it is a simple and easy to use. Edmodo was recognized by the American Association of School Librarians as one of the top platforms that foster learners'

abilities of innovation, creativity, and encourage participation and collaboration, see Capture 1 (Trust, 2013).

The teachers and students could be used Edmodo as unlimited tool for organizing class groups, such as, the creation of polls for ideas and opinions, writing assignment, send a note like an alert in a bold font type to the whole class, or send a private note to a single, upload files to personal Library and share them even includes documents and multimedia like video, presentation, and document, post question, and answer, sending students' grades into grade book, and students can access the grades they have received on Edmodo assignments, see Capture 2. Also, the student has space to store files and class assignments. In addition, the parent communication, by a code that is unique to their child, a parent can track their children' assignment, grades, due dates, and read any dialogue between students and teacher (Purnawarman, Susilawati, & Sundayana, 2016).
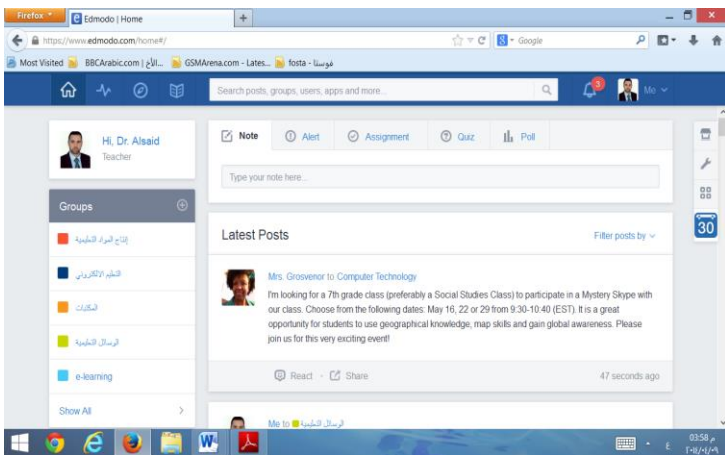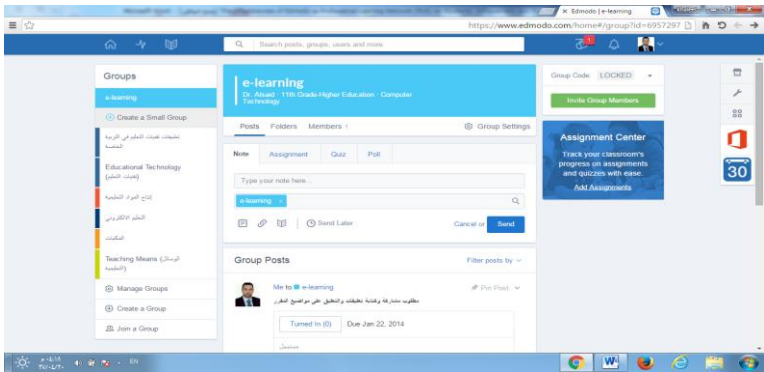


Figure1: Edmodo Interface

Figure 2: Edmodo Tools

## 2. METHODOLOGY

This study followed the quantitative paradigm and adopted the experimental method to reach study's aims. The study population contented all the undergraduate students who study the e-learning course in department of educational technology at Taibah University, and the main study sample was 59 students (a random sample), 52 students divided into two groups (26) students for the control group, and 26 students for experimental group), and the other seven students from the main sample were applied to them as the study tools for reliability.

Achievement test and motivation scale toward Edmodo as well as Edmodo were used, the achievement test prepared based on e-learning course, consisted of 40 multiple choice questions at cognitive domain (based on Bloom's taxonomy), each question included four

choices, the full mark of the test were 40 marks, one mark for each question. Regarding the students' motivation scale toward Edmodo, it was developed after reviewed the related literature and other researches tools, it contained 24 multiple choice items, each item has five choices according to Likert-type scale. 18 items were positive and just a six items were negative (No. 5, 11, 15, 20, 23, 24) as shown in Table 4.

The validity of achievement test and motivation scale, confirmed by referring to a six experts (three e-learning course instructors from educational technology department and three from psychology department), and they indicated some notes, remarks, and useful annotations to change some items, then they indicated to the suitability of tools for the aims of study.

The reliability of study tools measured by applying test and re-test method on seven students from the main study sample, then extracted by using Pearson correlation equation, and it reached (0.67) for achievement test, and (0.72) for motivation scale. And depending on five-Likert scale, selected one key to correct the motivation scale as follows: for the positive items, (5) grads for a very high response, (4) grads for a high response, (3) grads for an average response, (2) grads for a low response, and just one degree for a very low response. To determine the level of each item of the scale, selected a three-tiered gradient mode according to the means of the items as follows: low level and its arrange (1 - 2.32), average or normal level and its arrange (2.33 - 3.66), and high level and its arrange (3.67 – 5).

Before starting the implementation of the experiment the researcher applied the achievement pre-test and the students' pre-scale of motivation on 52 students (two groups: experimental and control) to ensure equivalent of them toward Edmodo. Then the researcher started teaching the control group two chapters of e-learning course (E-learning Tools and Learning Management Systems) using face-to-face with the regular whiteboard, and the experimental group using the Edmodo platform. The experiment lasted for almost (6) weeks from twenty-five of February 2014 to twenty of March 2014.

The results of the analysis described as mean, standard deviation, and t value of the students' scores on achievement pre-test and the students' pre-scale of motivations for the two groups were reported in Table 1. So these results indicate that the two groups were almost equivalent, even there are statistically significant differences in the achievement pre-test between experimental and control groups at the level of significance ($\alpha = 0.283$), but it is no statistically significant, since the value of t (1.718) for achievement, and also reported that there is a difference between the mean of the sum of total motivation pre-scale for experimental and control groups, but it is no statistically significant, since the value of t (0.448) for motivations, which is not statistically significant at the level of significance (a = 0.631), and the students were almost same and equivalent.

Table 1: Mean, Standard Deviation, and T-Test of the students' scores

on achievement pre-test and the students' pre-scale of motivation

| Tools | Group | N | Mean | Std. Deviation | F | t | Sig. |
|-------|-------|---|------|----------------|---|---|------|
| Achievement Test | **Experimental** | **26** | **15.62** | **2.118** | 1.180 | 1.718 | 0.283 (non-sig.) |
| | Control | 26 | 14.69 | 1.738 | | | |
| Motivation Scale | **Experimental** | **26** | **58.65** | **8.139** | 0.234 | 0.448 | 0.631 (non-sig.) |
| | Control | 26 | 59.77 | 9.738 | | | |

Initially, after made a personal profile on Edmodo to go deeper in discuss topics and share resources or content, then begins by discover the Professionals like-minded individuals, educators, or researchers, and lecturers who have received interest, then follow them on social media, catch their blogs, and set up an RSS feed to inform you when they post any new content, see Capture 3. Later, join personal interested groups (Niche Groups), familiarities in knowledge and skills, or people shared personal interest, by doing a simple search for terms or concepts that interest and follow them, become the foundation of any vibrant PLN. Finally, find PLN buddies and mentors, the closest group in your PLN, the people who you feel connected to beyond one shared interest; maybe you're lurking on a Twitter chat (Crowley, 2014).

Figure 3: Edmodo Posting

The data was codified and analyzed using SPSS (V. 16.0), used means and standard deviation, and t-test were used to ensure equivalent between the students, and also to examine the differences in students' achievement and their responses on motivations scale, finally, used means to determine the level of students' motivations toward Edmodo.

## 3. RESULTS and DISCUSSION

To answer the first question of the study, the researcher examined the first hypothesis after applied the achievement post-test on the two groups, and the students' scores were stat analyzed, and the results of the mean, standard deviation, and t value of the students' scores on achievement post-test for the two groups were presented in Table 2.

Table 2: Mean, Standard Deviation, and T-Test of the students' scores on achievement post-test

| Group | N | Mean | Std. Deviation | F | t | Sig. |
|---|---|---|---|---|---|---|
| **Experimental** | **26** | **35.50** | **2.717** | 9.608 | 6.595 | 0.003 |
| Control | 26 | 28.38 | 4.784 | | | (sig.) |

It is clear from Table 2 there were statistically significant differences in the level significance ($\alpha = 0.05$) between the study sample in the achievement post-test according to the group variable (experimental and control) in favor the experimental group, since their mean score higher than the control group mean, however, the mean score on achievement post-test for students of the experimental group were (**35.50**) and the mean score for students of the control group were (28.38), value of t (6.595) at the level ($\alpha = 0.003$), so it could reject the first null hypothesis of the study and accept the alternative hypothesis: there are statistically significant differences ($\alpha \leq 0.05$) between gain mean scores of experimental group students (taught with Edmodo) and gain mean scores of control group students (taught with traditional lecture) in the achievement post-test in favor of the experimental group. And the answer to the first study question will be: clearly there is effectiveness of Edmodo as a Professional Learning Network (PLN) on University students' achievement.

This result can be explained by the fact that Edmodo is a new learning environment and may attract the attention of students (study sample) and influenced them more than the traditional classroom

lecture. It seems that Edmodo evoke their minds and their senses sufficiently, and helped them to increase their achievement in this level as it was not expected in the first hypothesis, maybe the increased communication and social interaction between students and teachers show positive results in student achievement at cognitive domain, or maybe they found enough supports to collaborate with others to catch professional knowledge from their teacher who grow professionally by using Edmod.

Also, this result agrees with studies such as Hankins (2015), Shams-Abadi et al. (2015), Tripathi (2016), and Khodary (2017) which they confirmed that Edmodo more effective on performance of students especially on their academic achievement, as well as provide feedback and exchange of students ideas and opinions through conversation among the Edmodo. Furthermore, the motivation scale indicated in Table 4 that the level of the item "Edmodo increases the effectiveness of learning" was in high level with value (3.88), and also the level of the item "Edmodo does not generate an effective learning environment" was from the lowest one, just with value (1.88).

To answer the second question of the study, the researcher tested the second hypothesis belong motivations afterward the experiment, by applying the students' post-scale of motivation on the two groups, the statistical analysis of student's responses shown in Table 3.

Table 3: Mean, Standard deviation, and T-Test of the students' post-scale of motivation

| Group | N | Mean | Std. Deviation | F | t | Sig. |
|---|---|---|---|---|---|---|
| **Experimental** | **2 6** | **107.50** | **5.479** | 4.52 0 | 19.12 6 | 0.03 8 (sig.) |
| Control | 2 6 | 59.9 6 | 11.428 | | | |

Table 3 shows the results of students' post-scale of motivation for the two groups, which clearly showed that there were statistically significant differences in favor of the experimental group at the level of significance (a = 0.05), however, the mean score of experimental group was (107.50) is higher than the mean score of control group was (59.96), the t value (19.126) at the level (a = 0.038), so it could reject the second null hypothesis of the study and accept the alternative one: there is statistically significant differences (α ≤ 0.05) between gain mean scores of experimental group students (taught with Edmodo) and gain mean scores of control group students (taught with traditional lecture) in the motivation post-scale in favor of the experimental group. And the answer of the second study question will be: there is effectiveness of Edmodo as a Professional Learning Network (PLN) on University students' motivations toward it.

In general, the results clearly means that there are preferential orientation and  motivation among students toward using Edmodo, since the mean of motivations of the experimental group is high (107.50 from 120), according to Likert scale), this high level of motivations can be attributed to many interpretations, such as, by using Edmodo, the majority of students feel free in discussions course topics and facilitates exchange or sharing information regarding course materials and new knowledge by sending comments, notes, links, files. The results of motivation scale confirmed that (Table 4), the highest mean was (4.35) for item "Edmodo allows me participate in discussions and exchange ideas and information", and reflected the height level of two items "Edmodo facilitates me finding and sharing new knowledge and resources" and "Edmodo fosters the collaborative learning among students"  were (4.15).

And also may be Edmodo increased contribute of social interaction between them and the teacher, and it reflects the high mean of item "Edmodo helps to receive immediate feedback from teacher." was (4.31). All the above results are confirmed by Hastomo (2016), and Al-Ruheili & Al-Saidi, (2015) and showed that Edmodo raised students' motivation level.

Table 4: Mean and Standard Deviation of the responses on motivation scale

| No. | Items of motivation Scale | Sum | Mean | Std. Deviation |
|:---:|:---:|:---:|:---:|:---:|
| 1 | Edmodo increases the | 101 | 3.88 | 1.033 |

| | | | |
|---|---|---|---|
| | effectiveness of learning. | | | |
| 2 | Edmodo develops my motivation towards learning. | 106 | 4.08 | 0.796 |
| 3 | Edmodo provides easy communicate and continuous interact with my colleagues and with my teacher. | 101 | 3.88 | 0.816 |
| 4 | Edmodo allows me participating in discussions and exchange ideas and information. | 113 | 4.35 | 0.797 |
| 5 | Edmodo does not generate an effective learning environment.* | 49 | 1.88 | 0.711 |
| 6 | Edmodo allows me to easily access course' materials. | 93 | 3.58 | 0.703 |
| 7 | Edmodo helps me to understand the course content. | 93 | 3.58 | 0.987 |
| 8 | Edmodo facilitates finding and sharing new knowledge and resources. | 108 | 4.15 | 0.784 |
| 9 | Edmodo encourages me and develops critical thinking. | 99 | 3.81 | 0.694 |
| 10 | Edmodo helps to receive immediate feedback from teacher. | 112 | 4.31 | 0.736 |
| 11 | Edmodo does not help me to do my assignments and tasks very | 72 | 2.77 | 0.815 |

| | well.* | | | |
|---|---|---|---|---|
| 12 | Edmodo reduces my reliance on my teacher and increases self-learning skills. | 95 | 3.65 | 0.845 |
| 13 | Edmodo removes the limitation of the place and the time to access course materials. | 93 | 3.58 | 1.137 |
| 14 | Edmodo enhances the traditional learning. | 97 | 3.73 | 0.919 |
| 15 | Edmodo saves my time and my effort to get new course' information. | 104 | 4.00 | 0.748 |
| 16 | Edmodo is a waste of time and effort.* | 54 | 2.08 | 0.744 |
| 17 | Edmodo developing my research skills. | 98 | 3.77 | 0.652 |
| 18 | Edmodo fosters the collaborative learning among students. | 108 | 4.15 | 0.675 |
| 19 | Edmodo assessed me to submit assignments and tasks. | 104 | 4.00 | 0.800 |
| 20 | Edmodo requires more effort.* | 60 | 2.31 | 1.123 |
| 21 | Edmodo lets me asking help and support from class group. | 105 | 4.04 | 0.662 |
| 22 | Edmodo gives learning more flexibility by access course | 97 | 3.73 | 0.778 |

| | information at any time and at any place. | | | |
|----|----|----|----|----|
| 23 | Edmodo does not develop self-learning skills.* | 51 | 1.96 | 0.958 |
| 24 | Edmodo has cons more than positives.* | 42 | 1.62 | 0.637 |
| .* | Negative item. | | | |

To answer the third question, the researcher calculated the mean of the positive items, the value were (3.90), this value is arranged between (3.67 – 5), that indicates a high level of University students' motivations toward Edmodo as PLN. The value of mean of the negative items was (2.10), and this value is belonged low level which is arranged between1 and 2.32.

Based on motivation scale the majority of the study sample considered that Edmodo developing their motivation towards learning, so their motivations toward Edmodo increased, and also the level of the item "Edmodo develops my motivation towards learning" was (4.08) and confirmed that, as well as, the study of Hastomo (2016) showed the effectiveness of Edmodo in developing students' motivations.

# 4. CONCLUSION

Based on the study findings, it can be concluded that using Edmodo as PLN platform increases the cognitive achievement, and it

has many benefits to support the learning process and monitoring the performance students when they exchange their views and ideas about university courses and it is effective in developing the motivation more than the traditional learning environment. Finally, the researcher recommends encouraging universities to prepare a learning guide for using Edmodo, and to hold a workshop or seminar for both students and professors to simplify the educational services of Edmodo.

**Acknowledgment**

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