GoAcademica CRP

Perum Manglayang Regency Blok C9 No. 09. Cimekar
Kab. Bandung. Provinsi Jawa Barat
email: goacademica@gmail.com Telp. +62 821-1866-3620

Dear Author,

Paper ID : CFP_WOS_0146
Author Name : Andrea Felicia Kurniawan[1], Leony Sanga Lamsari Purba[2], Familia Novita Simanjuntak[3]
Paper Title : **Utilization of Moodle in Increasing Motivation of Learning Chemistry Students**

Congratulations! On behalf of Editorial Team of the "**Call for Paper Interdisciplinary Social Science Web of Science Proceeding"**, we are pleased to inform you that your Paper has been accepted publication in **Proceeding Atlantis Press** as per the recommendations given by the peer review group of experts.

We would like to further extend our congratulations to you that your paper is accepted for publication in upcoming volume proceeding at Atlantis Press. Kindly email us your final paper. The blind peer review process results are given below

---------- **REVIEW 1** ----------

---------- Overall evaluation ----------
Review Decision 1: Accepted
----- TEXT:
1. Originality: 85%
2. SCOPE: 71%
3. Results: Satisfactory
4. References are Cited Properly

---------- **REVIEW 2** ----------

Review Decision 2: Accepted
1. Originality: 76%
2. SCOPE: 76%
3. Results: Satisfactory
4. References are Cited Properly

Final Decision: Accepted

For any further query feel free to contact us.

Best Regards
Editor

Robbi Rahim

Utilization Of Moodle In Increasing Motivation Of Learning Chemistry Students Of Grade XI BPK PENABUR Pharmacy Vocational School Jakarta

Andrea Felicia Kurniawan, Leony Sanga Lamsari Purba, Familia Novita Simanjuntak*
Chemistry Education Study Program, Christian University of Indonesia, Cawang, Jakarta, Indonesia
**familia.simanjuntak@uki.ac.id*

Keywords: Chemistry education, e-learning, learning motivation, LMS, Moodle.

Abstract: The ability and motivation of learning are different for each student, making the teacher to keep on changing, developing, and seeking the solutions in teaching. The core problem is motivation. Low motivation will impact the learning outcome. In the 21st century, model and learning methods have changed for many times. One of them is the use of e-learning method. Learning Management System (LMS) is a part of e-learning. The example of LMS is Moodle. The aim of this research is to find out whether there is an increase in motivation of learning chemistry after using Moodle. This research is using a quantitative experiment design with one group pre-test and post-test design. The population of the research was all the students of BPK PENABUR Pharmacy Vocational School Jakarta academic year 2018/2019. Purposive sampling technique defines students of grade XI. Learning in the classroom had been done by using a direct learning method, in which Moodle was used as a supplement/complement learning at home. The research instrument was a motivation questionnaire with 20 numbers of statements. The sample of the research was fewer than 30 students, hence the test used was a non-parametric test. Based on the data analysis and hypothesis testing, we know that asymp. Sig. (2-tailed) is 0.002, where $0.002 < 0.05$. In conclusion, the use of Moodle can increase the students' motivation in learning chemistry of grade XI BPK PENABUR Pharmacy Vocational School Jakarta.

1 INTRODUCTION

Indonesia as a big country should take part in educating its citizens. As written in the opening of the UUD 1945 amendments, the Indonesian government required to educate every citizen. Hence, the school has an important role to establish the country. Based on Andriani's (2009) research, concluded that teachers' quality in Indonesia is still low. Teachers still not able to fulfill the requirement in academic standards. This impacted the low education measured by the learning outcome. To make Indonesia's education better in the future, therefore teachers must master the requirements needed in the future. One of them is the ability in the technology field.

Pharmacy Vocational School of BPK PENABUR Jakarta is the only vocational school that belongs to BPK PENABUR foundation. Students who attend school here, come from various types of backgrounds, e.g. race, ethnic, religion, economy, and students' ability. The motivation of students to attend school here are also different, some of them because of the school's fee, or because of this school is a Christian school, or because of parent's command, or because of themselves, etc.

Regardless of all students' motivation and background, all students who have enrolled to study here should do their responsibilities as a student which is study. A vocational school have more lessons compared to other senior high schools in general. Total of subject that need to be learnt by students every week more or less 20 subjects, most of them are about memorization subjects. The subjects must be delivered fast, packed, and clear, so all the lessons could be delivered on time. Every teacher has different ways to deliver the lesson, also the abilities of students to understand the lesson, some are fast and some are slow. Students who slow in studies will find it difficult, as a result, they will tend to blame the situation and lack of motivation to attend the classes, especially in calculation subjects such as mathematics and chemistry (Ormrod, 2009).

Technology had impacted in several areas, including the way of life, working, teaching and learning, interacting and playing. This cannot be avoided or stopped. All areas of human life today, tend to rely on technology. Indirectly, humans must follow the developments of technology, including education. In this 21st century, every element of an educational institution, starting with educators and students, must be more persistent and resilient in learning/teaching because the challenges faced will be more and more severe. Each of us is required to be critical in choosing and sorting out the information. At this time, information is easily obtained as well as the rapid development of technology. Characteristics of this century are the ease of obtaining information, calculation techniques become faster, the use of machinery replaces humans, fast and easy communication. (Litbang Kemdikbud, 2013). But even students can get easy access to technology is not proportional to the increase in student learning outcomes. Growth in the technology field could harm the students, like having difficulty interacting, concentrating and playing with their peers because they are not used to doing it. (Hidayat, 2014).

In this 21st century, teachers must be able and understand how to utilize technology. Principally, technology exists to facilitate human needs. Problems will arise when teachers do not master technology. E-learning program exists as a result of growth in educational technology, to improve the quality of education. Integrating e-learning in the education system is a challenge that must be faced. The secondary education system in developing countries is running very fast, especially in the increase in the number of schools and student enrollment related to the new methods used in schools. The consequence of applying this new method is the lack of competent subject teachers (Olson, 2011).

E-learning is a learning process that is supported and facilitated by the use of technology, for example is moodle. Moodle stands for Modular Object-Oriented Dynamic Learning Environment is an application program that transforms lessons into web forms. This system can create a digital classroom, where students can use it anywhere and anytime (Suartama, 2014).

Based on research conducted by Hamdi, *et. al.* (2013), stated that interactive multimedia (moodle) can significantly improve student physics learning outcomes with an average value of 90.56. Furthermore, Moodle has a good design, complete with features such as material, exercises, quizzes, animations, images, sounds, graphics, and audio.

The results of research conducted by Lamb and Len (2013), state that the analysis of student journals shows that attitudinal factors can influence the final results that focus on using orders online. Based on this, the use of online simulations can improve students' understanding of chemistry through open and interactive questions. On assignments given, often students do not get feedback after working on a task, arguing there is no time to discuss it or others. In addition to saving lesson time at school, this method makes students more motivated in working on existing problems.

The world of education is growing, including the use of technology, especially internet usage. The benefits of using the internet are not only to facilitate the running system but also can be useful in distance learning (e-learning). In the world of education, the use of e-learning makes conventional learning more attractive and can be used by anyone, anytime and anywhere without the limitations of classrooms. Based on the results of research conducted by Yazdi (2012), e-learning is beneficial for teachers and students.

Based on the research of Sjukur (2012), stated that the learning motivation of students who study with the Blended Learning method has higher motivation and learning outcomes than students who are taught in conventional ways, with a sig value. 0,000 average increase of 13.55 and 38.23. Blended learning or hybrid learning is a learning method that combines face-to-face processes (conventional) and online learning.

In essence, technology exists to simplify and make variations in teaching and learning activities. The teacher is required to master and understand technology because now students tend to use more technology. The impact of the high demands of the curriculum causes students to learn extra because of the many tasks given. The teacher cannot guide students for 24 hours. The difficulties faced by students outside of school hours, may not be assisted by the teacher completely. Some students who have difficulty will have less motivation to learn. E-learning might be the right solution for this problem.

Based on observation, the researcher found out that many students were not enthusiastic in chemistry lessons. This situation conforms to the assumption that chemistry is a difficult lesson for students. The topic used in this research is solubility and solubility product. This topic is suitable for using Moodle as complement media because this topic is about calculations and concepts. Solubility

and solubility product is a further discussion that emphasizes concepts, principles and mathematical calculations. Yes, indeed need a lot of practice. Teachers and students can't communicate for 24 hours/day. Through Moodle, students could learn independently, both through topic repetition, drilling and practice.

BPK PENABUR Jakarta has applied Moodle in its learning. The use of Moodle is to accustom students to UNBK (Computer-Based National Examination). However, not all PENABUR schools have utilized it to the fullest. The use of Moodle at BPK PENABUR Jakarta Pharmacy Vocational School is not maximal yet. Various backgrounds of students in this school, differents in learning motivation and the score of chemistry lessons tend to be low, make the researcher chose this school as a research place.

Based on the description above, it is important to make research entitled "Utilization of Moodle in Increasing Motivation of Learning Chemistry Students of Grade XI BPK PENABUR Pharmacy Vocational School Jakarta". This research aims to find out whether there is an increase in motivation of learning chemistry after using Moodle.

Motives are classified into two, intrinsic motives (from within the individual) and extrinsic motives (arising from stimuli from outside the individual). Extrinsic motives can arise because of the use of methods, models, variations in carrying out teaching and learning activities as well as providing assistance, direction and assisting students who experience difficulties, both personal and academic problems (Uno, 2016).

Motivation and learning are interrelated. A person learns if he has the motivation or a purpose to do it and if there is a change in attitude continuously, this a result of the training with a goal. As explained that two main factors influence learning motivation, intrinsic factors, for example, a desire to succeed, there is a need to learn, there are hopes and aspirations for the future. Extrinsic factors (factors that come from outside), for example giving awards, supportive learning environments, and interesting learning activities. The relationship between motivation and learning activities is how to create conducive learning conditions in learning activities, the teacher's role is very important in this regard. Motivating students, to grow motivation so students want to do an activity (Ormrod, 2009).

Dynamic human life, in other words always changing, has an impact on changing needs. When a person's needs change, so does motivation. Needs related to motivation, so that when needs change then motivation also changes according to their needs.

Uno (2016) states that motivation is related to needs. To meet these needs, people will be motivated to take action or activity to meet those needs. Based on the hierarchy of needs (basic needs) referred to by Maslow include physiological needs (basic needs), the need for security (free from danger), the need for love, the need to be respected and respected, and the need for self-actualization.

Uno (2016) also revealed six characteristics or indicators of learning motivation, namely the desire and desire to succeed, the encouragement and needs in learning, the hopes and ideals of the future, the appreciation of learning, the existence of interesting activities in learning and the existence of a conducive learning environment.

Motivation is an individual cog in doing something, as well as learning. For individuals to want to carry out learning activities, there must be a motivation that supports them. The purpose of having strong motivation is to get maximum learning results. According to Sadirman (2016), there are several elements in increasing student motivation, namely giving numbers, rewards, praise, punishment, competition, encouragement to learn, interests, recognized goals, ego-involvement, examinations, and knowing results (feedback).

This theory was first introduced by Deci and Ryan (1985). As time goes by, this theory continues to be updated and refined. This theory explains that there are levels or stages in motivation, starting from the lowest level to successive levels of amotivation, extrinsic motivation, and intrinsic motivation.

Amotivation is a condition where there is no motivation and desire to do an activity, this is the opposite of intrinsic motivation. Between amotivation and intrinsic motivation, there is extrinsic motivation, which is generally divided into two parts, namely autonomous motivation and controlled motivation. Autonomous motivation tends towards intrinsic motivation, while controlled motivation leads to extrinsic motivation. Each of these areas is divided into two more sections.

Controlled motivation is divided into two parts, namely external regulation, and introjected regulation. This is the stage where someone still does not know the purpose. External regulation is a condition where someone wants to do an activity because of a penalty or reward. External factors are still very dominant at this stage. Meanwhile introjected regulation is a condition where a person performs an activity because there has begun to be

acceptance in oneself, avoidance of shame and self-esteem, as well as the involvement of the ego within.

Autonomous motivation is divided into two parts, namely identified regulation and integrated regulation. This is the stage where someone already knows what to and why to do the activity. Identified regulation is a condition when someone is motivated because of personal goals but there are still external factors that influence it. Integrated regulation is a condition where a person is consciously motivated because he knows what and why he is doing an activity.

Intrinsic motivation is a condition where someone is motivated to do an activity because of self-interest and satisfaction. At this stage, the activities carried out on self-awareness without any intervention or interference from outside (Ryan and Deci, 2008).

2 MANUSCRIPT PREPARATION

2.1 Methods

This study is experimental quantitative research methods, with the design of one-group pretest-posttest design. The population in this study were all BPK PENABUR Jakarta Pharmacy Vocational School students, the academic year 2018/2019. Purposive sampling, as the sampling technique and the research sample, was students of grade XI.

The research instrument was a motivation questionnaire with 20 numbers of statements. The questionnaire used a Likert scale with 4 choices, which are strongly agree (SS), agree (S), disagree (TS), and strongly disagree (STS) as described in Table 1.

Table 1: Likert Scale Questionnaire

No.	Indicator	Statement No.
1	Ambition and desire to succeed	1, 6, 8, 9, 12, 16
2	Encouragement and learning needs	2, 3, 4
3	Hopes and ideals of the future	13, 10
4	Appreciation in learning	15
5	Interesting activities in learning	14, 17, 18, 19, 20
6	A conducive learning environment.	5, 7, 11

Construct validation is used to validate the research instrument. Construct validation is a technique to validate an instrument by using expert judgment or expert opinion. The expert judges will decide whether the instrument is valid/invalid and give some suggestions to improve the instrument. The instrument was made by using the Likert Scale, which is part of interval data. Interval data is data that has the same distance but does not have an absolute or absolute zero value (Sugiyono, 2015).

Wilcoxon Signed-Rank Test or Wilcoxon Match Pairs Test is a test that used to find the differences between two dependent samples in pairs with continuous data, and it is an alternative test for Paired T-test if the data is not distributed normally. The Wilcoxon Signed-Rank Test usually used to test a small sampel and big sample (Sugiyono, 2015). The researcher using IBM SPSS 23 to analysis data.
The hypothesis of this research are:
Ho: There is no increase in learning motivation by utilizing moodle.
Ha: There is an increase in learning motivation by utilizing moodle.

The questionnaire results from the pretest and posttest were converted into numbers. The data obtained were analyzed by the Wilcoxon Signed Rank Test and Gain Test. Based on the theory put forward by Hake in Archambault, et al, 2008, the Gain Test is a test to analyze the magnitude of the success rate of the learning process, with the formula:

$$Gain\ Score = \frac{(Posttest - Pretest)}{(\text{Skor Ideal} - Pretest)}$$

Table 2: Gain Score Category

Interval N-gain	Category
0,7 ≤ Gain Score ≤ 1	High
0,3 ≤ Gain Score < 0,7	Middle
Gain Score < 0,3	Low

2.2 Result

This questionnaire has 20 numbers of statements. That has been used for pretest and posttest. This questionnaire was used to measure students' learning motivation in chemistry before and after using moodle. There are 6 indicators of motivation used in the questionnaire, and the essence indicator of this research is the existence of interesting learning activities (moodle). Fourteen respondents filled this questionnaire and the results displayed below.

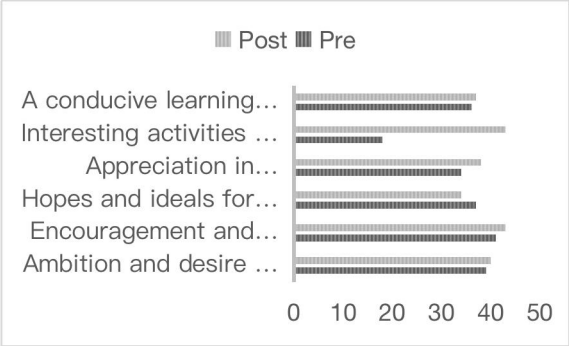

Figure 1: Average Score of *Pretest* dan *Posttest* each Indicator

Based on Figure 1., it can be seen that there are five indicators that have increased and one indicator have decreased. Each indicator has a different increase and decrease, the following explanation:

Indicator 1- Ambition and desire to succeed

Based on Table 2., it can be seen that questionnaire number 1 has the highest increase of 5 points, with the statement "I am trying to study chemicals first before being discussed in class". Questionnaire number 6 has decreased by 2 points, with the statement "I ask the teacher or friend if there is material that I do not understand or practice questions that are difficult to do".

Table 2: Pretest & Posttest Result Indicator 1

Questionnaire No	Pre	Post
1	28	33
6	47	45
8	33	35
9	41	41
12	39	39
16	47	48
Total	**235**	**241**
Average	**39**	**40**

Indicator 2-Encouragement and needs of learning

Based on Table 3., it can be seen that questionnaire number 2 has decreased by 1 point, with the statement "Chemistry is useful in everyday life".

Table 3: Pretest and Posttest Result Indicator 2

Questionnaire No	Pre	Post
2	42	41
3	39	42
4	43	46
Total	**124**	**129**
Average	**41**	**43**

Indicator 3 - Hopes and ideals of the future

Based on Table 4, both statements decreased. Statement number 10, "I want to continue studying in chemistry". Statement number 13, namely "I hope my chemistry will be maximized on PAT (End of Year Assessment) and USBN (National Joint School Examination).

Table 4: Pretest dan Posttest Result Indicator 3

Questionnaire No	Pre	Post
10	22	20
13	52	48
Total	**74**	**68**
Average	**37**	**34**

Indicator 4-Acknowledgement in learning

Based on Table 5., it can be seen that questionnaire number 15 has increased by 4 points, with the statement "I will get appreciation if I get good grades in chemistry". Through the moodle, users can immediately find out the results of the achievement of the problem exercises that are done. So that more enthusiastic in working on practice questions.

Table 5: Pretest & Posttest Result Indicator 4

Questionnaire No	Pre	Post
15	34	38
Total	**34**	**38**
Average	**34**	**38**

Indicator 5-Interesting activities in learning

Based on Table 6., the highest increase was 27 points, number 18 and 20 with the following statement: "Repetition of chemical materials at home is easier by using moodle" and "I am happy to be able to immediately see the results of evaluating my learning using moodle".

Table 6: *Pretest & Posttest* Result Indicator 5

Questionnaire No	Pre	Post
14	19	41
17	18	42
18	17	44
19	18	44
20	18	45
Total	**90**	**216**
Average	**18**	**43**

Indicator 6-A Conducive Learning Environment

Based on Table 7., it is known that questionnaire number 5 dropped by 1 point, with the statement "I am active in discussions or learning takes place". Questionnaire number 7 has an increase of 3 points, with the statement "I dare to answer questions or express my opinion in front of the class even though I'm not sure that's true".

Table 7: Pretest & Posttest Result Indicator 6

Questionnaire No	Pre	Post
5	38	37
7	34	37
11	35	37
Total	**107**	**111**
Average	**36**	**37**

Overall the average pretest and posttest has increased from 33 to 40. In other words, the use of moodle can increase student learning motivation.

Table 8: Pretest dan Posttest Average Score

No.	Indicator	Number	Pre	Post
1	Desire to succeed.	1, 6, 8, 9, 12, 16	235	241
2	Encouragement and need of learning.	2, 3, 4	124	129
3	Future's hopes and ideals.	13, 10	74	68
4	Appreciation in learning.	15	34	38
5	An interesting learning activities.	14, 17, 18, 19, 20	90	216
6	A conducive learning environment.	5, 7, 11	107	111
Total			**664**	**803**

2.3 Discussion

Based on the results of research at BPK PENABUR Jakarta Pharmacy Vocational School, that the use of moodle in home learning can increase student learning motivation. Although there are some obstacles, such as forgetting the moodle password, there is no laptop or internet connection at home, but that is not a reason to learn chemistry using moodle. Students try to access the moodle, by learning together or using a cellular phone. So that the questions given through moodle can be useful to better understand chemistry lessons. With drilling methods and practice at home, students are accustomed to working on chemical practice questions.

Repetition done at home can help students to understand the material being taught. Students look enthusiastic in learning in class, some are seen trying to be actively involved in discussions or discussion of questions in class. But there are still some students who are shy or choose to be quiet in answering questions. Motivation is needed consistently and encouragement from the teacher to make all students actively involved in the class.

Based on Table 2., it is known that statement number 6 is "I ask the teacher or friend if there is material that I have not understood or the problem of practice that is difficult to do", has decreased by 2 points. After the interview with the students stated that the use of moodle is very helpful in doing practice questions. Sequential explanations make the questions easier to understand.

In Table 3. it is known that statement number 2 namely "Chemistry is useful in everyday life", has decreased by 1 point. Based on the results of interviews students stated that they had not felt / understood the benefits of chemistry in daily life in relation to the lessons learned at school. This reinforces that the basic concepts or benefits of studying a material are very important, so students can be more motivated to learn it when they know the benefits directly in their lives. Just as learning mathematics is important because it is used directly in daily activities, whether in buying goods or other things.

In Table 4., indicator number 3 has decreased in both statements. Questionnaire number 10 is "I want to continue studying in chemistry", as many as 2 points. Based on the results of interviews with students, in general students stated that they wanted to work and study immediately but not in chemistry. Chemistry is still considered a difficult lesson for students and they say they do not know what will happen if they have to study chemistry during college.

Statement number 13, namely "I hope my chemistry will be maximal on PAT (Year End Assessment) and USBN (National Joint School Examination), as many as 4 points. Based on the results of interviews with students, it was generally said that they were unsure of the abilities they had and did not want to over-force or target too high because they realized that chemistry was a difficult lesson. On the other hand students also get pressure or targets from parents to study seriously and get good grades, even if it's not perfect. The encouragement from the parents is far greater than personal desires. The desire to please parents with good results is still the main motivation in learning.

In Table 5. it is known that there is no decline and vice versa is an increase of 4 points. This table provides an assessment of the appreciation of learning. In the use of moodle students can immediately see the results of learning. If the answer is wrong then the system will automatically provide the correct answer, along with the explanation. Based on Sadirman (2016), there are several ways that can be used to increase student learning

motivation. One of them is giving numbers and knowing the results. When students can immediately find out the results (right or wrong answers), students will feel more excited in learning because their business is valued and gets a quick response. The problems that existed so far were when students worked on the problem and did not get direct feedback. So that when the desire to learn is high, but they don't get immediate feedback, their learning desires will decrease.

Table 6. shows an increase of 126 points. This table states indicators of interesting activities in learning. Moodle is a tool used to give students other activities in learning. So far students are still learning conventionally for chemistry lessons. With the moodle, students can learn in other interesting ways. Moodle is not limited to time and place, this system can be opened anywhere and anytime, whether using cellular phones, laptops or computers. So there is no reason not to be able to study. This system can also be used to study together with other friends.

In Table 7. it is known that questionnaire number 5 with the statement "I am active in discussions or learning takes place", has decreased by 1 point. Based on the results of interviews with students, stated that shame and lack of confidence are still the biggest factors here. Students become unsure of answering if they do not know for sure the answers to what is discussed. So that some prefer to be silent and not answer. Some also stated that they did not want to look too prominent in the class, always answering the questions or material discussed.

Overall, based on the results of the analysis, it is known that the average posttest has increased from 33 to 40. The indicator that experienced a significant increase was the presence of interesting activities in learning, in this case moodle. This is in accordance with the motivational indicators initiated by Uno (2008), that interesting activities in learning can increase student learning motivation. In addition, this is in line with the theory put forward by Sardiman (2016), giving numbers and knowing the results can increase student motivation. In the use of moodle, students can immediately find out the results of learning, if the answer given is wrong then the system will automatically provide an explanation of the correct answer. So that it can be said that the use of moodle can increase student learning motivation.

Based on the results of hypothesis testing using IBM SPSS 23, Table 4.8 can be seen that the asymp value. Sig. (2-tailed) is 0.002, where 0.002 <0.05. Because the value is smaller than 0.05, it can be concluded that there are differences in motivation before and after the use of moodle. So from that Ho is rejected and Ha is accepted. Based on self-determination theory developed by Ryan and Deci, motivation is divided into several levels or stages. If sorted from lowest to high, there is a-motivation, extrinsic motivation (external regulation, introjected regulation, identified regulation, integrated regulation) and intrinsic motivation. Based on self-determination theory, this is included in external regulation & introjected regulation. Where student's motivation depends on how to make their parents happy. But based on the researcher's observation, during 4x meetings with students (1x meeting for pretest, 2x meetings for the lesson, and 1x meeting for posttest), as the result 5 students using moodle intensively, whereas 2 students were not good enough in chemistry they used Moodle regularly. This phenomenon described the results of the Gain test which shows an increase in student motivation by 0.3 at a moderate level.

Based on the observations and interviews about the results of the posttest with students, it concluded that moodle can increase student motivation. This is proved by the existence of students which although not good enough in chemistry lessons, they still want to try to use Moodle to review the lesson and do the exercise. They know and understand their responsibilities. At the end of the lesson, the researcher gave prizes or rewards to the students who were diligent in using moodle. Based on self-determination theory, this is included in internal motivation. Where students consciously and without coercion learn to use moodle because they want to understand and understand chemistry lessons.

4 CONCLUSIONS

Based on the results of research and discussion, it can be concluded that there is an increase in students' motivation to learn chemistry by utilizing moodle, which is based on the results of hypothesis testing with the Wilcoxon Signed Rank Test where Z is - 3,173 with significant (2 tailed) 0.002, smaller than 0.05. The increase of based on the Gain test is 0.3, included in the medium category.

REFERENCES

Andriani, D. E. (2009). Mutu Guru dan Implikasinya Terhadap Mutu Pendidikan. *Jurnal*

Manajemen Pendidikan, **No. 01/Th V/April/2009**:50-60

Archambault, *et.al.* (2008). *The Effect of Developing Kinematics Concepts Graphically Prior to Intodruction Algebraic Problem Solving Techniques.*

Deci, E. L. dan Ryan, R. M. (2008). *Self-Determination Theory: A Macrotheory of Human Motivation, Development, and Health. Jurnal Canadian Psychology,* **Vol. 49**: 182-185

Hamdi, H., Asrizal, & Kamus, Z. (2013). Pembuatan Multimedia Interaktif Menggunakan Moodle Pada Kompetensi Mengamati Gejala Alam dan Keteraturannya untuk Pembelajaran Siswa SMA Kelas XI Semester I. *Jurnal Pillar of Physics Education,* **Vol. 1 April 2013**: 55-62

Hidayat, W. (2014). Dampak Teknologi atas Kemampuan Belajar. *Kompas Tekno*. Diakses dari http://tekno.kompas.com/read/2014/05/26/0927008/Dampak.Teknologi.atas.Kemampuan.Belajar

Litbang Kemedikbud. (2013). Kurikulum 2013: Pergeseran Paradigma Belajar Abad 21. Diakses dari http://litbang.kemdikbud.go.id/index.php/index-berita-kurikulum/243-kurikulum-2013-pergeseran-paradigma-belajar-abad-21

Olson, J., et al. (2011). *An Analysis of e-Learning Impacts & Best Practices in Developing Countries With Reference to Secondary School Education in Tanzania*. USA: Michigan State University

Ormrod, J. E. (2009). *Psikologi Pendidikan Membantu Siswa Tumbuh dan Berkembang Jilid 2*. Jakarta: Erlangga

Sadirman. (2016). *Interaksi dan Motivasi Belajar Mengajar*. Jakarta: Rajawali Pres.

Sjukur, S. B. (2012). Pengaruh Blended Learning Terhadap Motivasi Belajar dan Hasil Belajar Siswa Tingkat SMK. *Jurnal Pendidikan Vokasi*, **Vol 2 No 3:** 368-378

Suartama, I. K. & Tastra, I. D. K. (2014). *E-Learning Berbasis Moodle*. Yogyakarta: Graha Ilmu.

Sugiyono. (2015). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&D*. Bandung: Alfabeta.

Sugiyono. (2015). *Statistika untuk Penelitian*. Bandung: Alfabeta.

Uno, H. (2016). *Teori Motivasi dan Pengukurannya.* Jakarta: Bumi Aksara

Yazdi, M. (2012). E-learning Sebagai Media Pembelajaran Interaktif Berbasis Teknologi Informasi. *Jurnal Ilmiah Foristek*, **Vol 2**:143-152.