E-Learning Lectures Implementation Analysis for Vertebrata Courses

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Abstract

This research is a descriptive research that aims to analyze the implementation of e-learning lectures for Vertebrata courses. This research was conducted in one of the LPTK in DKI Jakarta with the number of 40 students selected by purposive sampling technique. The instruments in this study are questionnaires and observation guidelines. The results show that during the implementation, the course is considered good by the students. No one aspect of e-learning assessment is considered less and very less, Most students assess e-learning development has been in the good category. Student activities observed during e-learning-based lectures include attendance, discussion, quizzes, and independent assignments. During the intervention, it can be said that all activities are already in a good category, this can be seen in attendance log, quiz score, discussion, and independent task. The presence of students in the implementation of this lecture is 87%. The liveliness of student discussion forums is 81%, while the average self-task and quiz each are 80.94 and 94.62.

Keywords: *Vertebrata, e-learning, descriptive*, *ICT learning*

Preliminary

A strong and superior society in the information age is a society that dominates or controls information and people who control information is a society that controls ICT. However, without being accompanied by a strong learning tradition, ICT mastery will only provide pleasure, not provide the science. With a strong learning tradition, all members of the community have a strong willingness to learn, are always ready to change (open minded), and continue to learn until the end of life (Chaeruman, 2009).

Thus, the control of ICT is an absolute requirement that must be owned by people who want to win the competition in global competition. These conditions require human resources that have comparative and competitive advantages. Global man is a man who believes and cautious to God Almighty, able to compete, master science and technology, and have identity. One of the very strategic rides in improving the quality of superior human resources is through education.

In the world of education, ICT has become part of a radical change in modes of information delivery education. ICTs can play a critical role in constructing knowledge by allowing to create, manage, and share knowledge. Precisely because of its role in producing and disseminating knowledge so significant, educators and decision makers who use it to achieve educational goals must introduce the possible adverse effects it causes. The educational system, both formal and non-formal, is a social institution that has entered into a mission to develop and encourage the behaviors and values desired by the public, especially young people (Rosita and Pribadi, 2005).

One of the points of education development policy in Indonesia, as stated in RENSTRA Ministry of National Education is the use of Information and Communication Technology (ICT), whether it integrates ICT in learning, ICT utilization in the management education management, and the utilization of ICT in various educational activities (Jardiknas, 2007). Furthermore, in the Long-Term Development Plan 2005-2025 the State Ministry of Research and Technology of the Republic of Indonesia seeks to encourage cooperation between educational institutions, research institutions and industry in order to improve the quality of human resources (HR) as well as increase the ability and competitiveness of domestic industries through education, including through the development of Information and Communication Technology (ICT learning) in schools (Pustekom, 2006). For the successful implementation of ICT in education in all lines, in addition to government support, also required the mastery of teachers, lecturers, and educational practitioners in the field of ICT. With ICT literacy, education in Indonesia is expected to be more advanced and fast developing.

Data from the Directorate General of Higher Education (in Pannen, 2005) shows that awareness in the utilization of ICT in the learning process in universities is still very low. Analysis of teaching grant proposal, only 29.69% of which use computer technology based media. Availability of information technology-based media are also limited. Only 15.54% of state universities (PTN) and 16.09% of private universities (PTS) have the availability of information technology-based media, while about 16.65% of students and 14.59% of lecturers have access to information technology. The survey results on the use of IT in 2004 showed that only 17.01% state universities, 15.44% private universities, 9.65% of lecturers, and 16.17% of students who utilize ICT well. Overall, these statistics show that the adoption of ICT in the world of higher education in Indonesia is still low (Wahid, 2005).

Related to the low utilization of ICT, Syarif Hidayatullah Islamic University, Jakarta as one of the state universities, do not want to be left behind in exploiting the development of ICT to support and improve the

quality of the learning process, administration, and various other supporting activities. Infrastructure improvements, application development to support the teaching and learning process as well as for administration, as well as the development of local content are carried out continuously. This is because Syarif Hidayatullah Islamic University, Jakarta in its SWOT analysis stated that one of the weaknesses of the institute is the utilization of information and communication technology (ICT) for the academic field that has not been optimized yet. This is due to the limited competence of ICT use among the academicians so that one of the policy priorities in 2015-2016 is to seek an increase in the use of ICT in learning, by improving lecturer's teaching competency and learning by providing teaching skills for lecturers and learning skills for students (UIN Jakarta, 2015).

One of the Faculty of Islamic University of Syarif Hidayatullah Jakarta which is expected to be a leader in the utilization of ICT is the Faculty of Tarbiyah and Teacher Training (FITK). This faculty is one of the LPTK (Educational Personnel Institution) which is tasked to print prospective teachers so that inevitably have to prepare the students become creative teacher candidates, who can upgrade themselves so as to make innovations in the learning process (Wahid, 2005).

Other than that, the phenomenon of ICT utilization in school learning increasingly resonates. Even in the current 2013 curriculum, ICT plays a very important role in the implementation of learning. In the 2013 curriculum it is explained that learning applies the principle of whoever is a teacher, who are students, and everywhere is a class. Therefore, the utilization of ICT is needed in order to improve the effectiveness and efficiency of learning. That is, do not rule out in the years to come, materials and tasks, transferred through ICT. The development of ICT in the world is very fast, from time to time. The development of ICT is certainly a huge potential to improve the quality of education because information technology stores information about all things unlimited. Thus, this can be utilized for the benefit of education development that is no longer limited by time and space. Of course it will be a big challenge for teachers because it is required to understand, understand, operate, and explore ICT well so that it can be applied in learning. In addition, teachers should think more creatively, innovative, and broad-minded so as to improve the quality of learning.

Nurhadi (1996) argues that the effort to improve the quality of teachers can be done by: (1) the teacher should not only master the field of study, but also master the science and technology insight (IPTEK) in the field of study taught, (2) early on a teacher needs to instill cultural values of industrial society to learners (3) intensifying teacher intervention in order to encourage children to be aware and willing to go to school, (4) assisting children in achieving information resources that enable children to master science and technology, (5) giving teachers opportunities for further study , (6) improving teacher incentives, and (7) adjustment of education level according to the needs and progress of science and technology for teachers and prospective teachers.

Beside the ability to use ICT in learning, Government Regulation no. 19 of 2005 article 20, indicates that teachers are expected to develop learning materials, which is then reinforced through the Regulation of the Minister of National Education (Permendiknas) no. 41 of 2007 on Standard Process, which among others is expected teachers can develop teaching materials as one source of learning. In addition, in the attachment of Permendiknas No. 16 of 2007 on Academic Qualification Standards and Teacher Competencies, also set about the various competencies that must be owned by the teacher, both the core competence and subject competence. For example, for teachers in senior high school level, in the guidance of pedagogic competence as well as professional competence, is closely related to the ability of teachers in developing learning resources and teaching materials. The development of diverse and interesting teaching materials will help the implementation of teaching and learning activities (KBM) so that it will produce meaningful KBM both for teachers and for learners.

The development of the most up-to-date courses is to use e-learning, which is one of the learning models using communication media and information technology, especially internet. E-learning is a popular term in internet-based learning and intranet learning. This e-learning technology is a technology that is bridged by the internet technology, requires a medium to be able to display special materials and questions that require communication facilities to be able to exchange information between participants and teachers (Purbo, 2002).

The understanding of e-learning today largely refers to learning using internet technology. As Rosenberg (2001, in Purbo 2002) notes, which emphasizes that e-learning refers to the use of Internet technology to deliver a range of solutions that can improve knowledge and skills. Purbo (2002) explains that the term "e" or electronic abbreviation in e-learning is used as a term for all technologies used to support teaching efforts through internet technology.

According to Rosenberg (2001, in Purbo 2002), e-learning is one use of internet technology in the delivery of broad-based learning based on three criteria, namely: (1) e-learning is a network with the ability to update, store, distribute, and share material teaches or information; (2) delivery to the last user via the computer using standard internet technology; (3) focusing on the broadest view of learning behind the traditional learning paradigm.

Furthermore, according to Purbo (2002), e-learning has become the trend of learning in the 21st century. This field is an opportunity for the teachers. In terms of development areas, teachers can act as developers of e-learning content or better known as e-learning (both text-based and multimedia-based). From the management side, teachers play a role in managing e-learning both in school institutions and companies. The New Media Consortium (NMC) as part of the e-learning initiator defines e-learning as any collection of material that is structured meaningfully and tied into a learning objective. These materials can be documents, images, simulations, video, audio, and so on.

The definition adapted from the Wisconsin Online Resource Center, Wiley (2000) states that e-learning has several characteristics, including: (1) e-learning is a new way of thinking about the content of learning. Usually the learning content consists of parts that spend several hours, but e-learning is a smaller part of learning, usually in the range of two to fifteen minutes; (2) e-learning is free. Each e-learning can be used freely for different purposes; (3) can be grouped. Each e-learning can be grouped into larger content sections, including traditional learning structures; (4) may be tagged (tagged) with metadata; Each e-learning has descriptive information that makes it easy when searched again.

The potential of information technology is very interesting to try and be utilized in lectures. One of the study program that try to develop e-learning is Biology Education Study Program UIN Syarif Hidayatullah Jakarta. The results of several years of observation in this course of study in some subjects such as: Vertebrate Zoology, Zoology Invertebrate, Animal Physiology, and Physiology Development are a difficult course for students to understand. The difficulties of these students can be seen from the student exam results are generally always lower than other courses (Anonymous, 2015). The same is true in the Department of Biology Education, Faculty of Mathematics and Natural Sciences (FPMIPA) UPI, where the courses of systematic and diverse groups such as Invertebrate Zoology, Vertebrate Zoology, Cryptogamae Botany, and Phanerogamae Botany are difficult subjects for students to master (Anonymous, 2010). In addition, at the University of Syiah Kuala Banda Aceh also happened the same thing, Vertebrate Zoology courses also have less than maximum learning outcomes. This can be seen from the data of the study result of the students of the Biology Education Study Program in academic year 2010/2011 with a minimum passing limit of C, from 35 students who get A 10%, B 35%, C 48% and D 7% (Akmal, 2015). Nur (2013) also reported that Vertebrate Zoology at University of Muhammadiyah Malang is a difficult subject for students, it can be seen from the end result of this subject which tend to less satisfactory. Few students get A and B grades. The average student earns a C grade, even with low qualifications.

Generally, this problem is caused by (1) the use of learning model which is dominated by lectures and inappropriate discussion, thus causing boredom to the students, (2) teaching materials used not yet as needed, and (3) the carrying capacity of creativity development related to the development of science and inadequate technology (Ulfah, 2013 in Widowati and Pratiwi, 2015). In addition, this difficulty is caused also because of the wide scope of the material, which is the history, morphology and anatomy, structure and function as well as the ecology of vertebrate animals. Some of the material can be readily sensed directly by the students, but some other material is abstract and can not be observed directly by the students.

Especially in the Biology Education Study Program of UIN Syarif Hidayatullah Jakarta, the low achievement of students in the lectures is caused by inadequate facilities and lessons, such as the number of locally available lectures is considered less because only 5 classes are used for lectures by two other courses. Laboratories that currently only amount to two spaces cause the use of space is very high, so the lab does not run optimally.

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Therefore, it is necessary to test a lecture system that can minimize the use of lecture space (e-learning), utilize the latest information technology (multimedia), accessible by students anytime and anywhere, and can train students using various learning resources available online on the internet.

Starting from the above thinking, the authors are interested to conduct research with the title of analysis of e-learning lecture implementation of Vertebrata courses.

Method

The research method used in this research is a descriptive research method. Descriptive research is a method of research that is shown to describe the phenomena that exist, which take place at this time or the past. This research is not done manipulation by researchers to the object of research, all activities or events running as it is (Sugiyono, 2013).

The instruments in this study consist of various forms of the questionnaire, sheet oservasi, assessment sheet

and validation sheet. Techniques in collecting data using the instrument research conducted by observation, filling in questionnaires, interviews, and documentation. The collected data is then analyzed to obtain meaningful results. The data in this study consist of two major parts of the data development process and the feasibility of the course data and various responses related to implementation. The data of the development process is analyzed by describing and interpreting the data qualitatively. While the feasibility of lecture program data and various responses related to its implementation are analyzed by first converting qualitative data into quantitative data using score processing guidelines as presented in the following table:

Table 2. Guidelines for Score Rating

Qualitative Data	Score
Very Good	5
Good	4
Enough	3
Less	2
Very Less	1

The collected data is then calculated by using the following formula:

$$\bar{X} = \frac{\sum X}{N}$$

Information $\bar{X}$ = average score
$\sum X$ = total score
N = number of appraisers

Next is to change the average score to a qualitative value with the following criteria of assessment:

Table 3. Total Assessment Criteria

Formula	Average Score	Classification
$X > \bar{\bar{X}}_1 + 1,8 \times sb_1$	> 4,2	Very Good
$\bar{\bar{X}}_1 + 0,6 \times sb_1 < X \le \bar{\bar{X}}_1 + 1,8 \times sb_1$	> 3,4 − 4,2	Good
$\bar{\bar{X}}_1 - 0,6 \times sb_1 < X \le \bar{\bar{X}}_1 + 0,6 \times sb_1$	> 2,6 − 3,4	Enough
$\bar{\bar{X}}_1 - 1,8 \times sb_1 < \bar{\bar{X}}_1 \le -0,6 \times sb_1$	> 1,8 − 2,6	Less
$X \le \bar{\bar{X}}_1 - 1,8 \times sb_1$	≤ 1,8	Very Less

Results And Discussion
This section describes the results of the implementation of e-learning recovery for Vertebrate courses, starting from the observation of Vertebrata lectures, including student attendance, discussion forums, independent assignments, quiz, and student responses to Vertebrata lectures by utilizing e-learning.

A. Student Activities
This section describes the implementation of Vertebrate lectures with an e-learning system to see the clothing and important things related to the implementation. Implementation is defined by the implementation or implementation. Application is the ability to use material learned into concrete or real situations. Implementation refers to actions to achieve the objectives set out in a single decision, this action seeks to turn those decisions into operational patterns and strive to achieve major or minor changes as has been decided earlier.

In this research, implementation is intended as application of e-learning lecture system. During this lecture implementation, observation based on student attendance indicator, student activeness in discussion, question, response, and response. In addition, also observed the ability of students to answer questions in the form of quizzes and create independent tasks. Here is a description of e-learning based Vertebrata lectures.

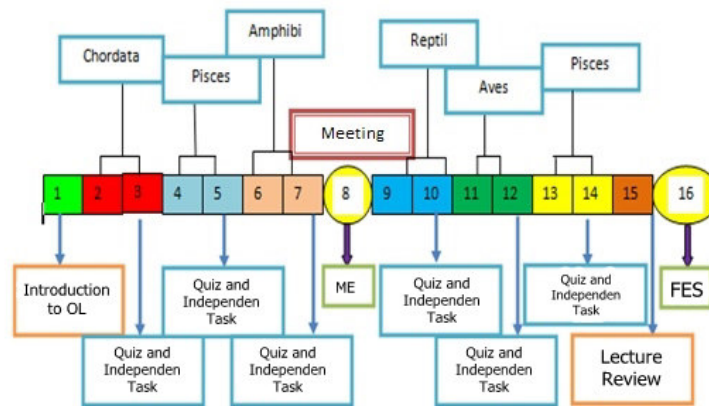*1. Time and Number of Meetings*

Figure 1. Number of Lecture Meetings and Activities

E-learning Vertebrate lectures are conducted by mixed methods between synchronous and asynchronous systems. According to Rosenberg (2001) there are two types of delivery in e-learning, namely synchronous and asynchronous. Synchronous delivery is the mode of lecture delivery where the meeting time is determined by lecturers and students. While the asynchronous delivery is where students use the materials provided through the website for use at any time so that students can access the teaching materials as needed.

Synchronous online lectures are conducted every Wednesday at 09.20-11.00 west Indonesia time's. This is intended to keep interaction between students and lecturers, especially for discussions about lecture materials that are still unclear or unintelligible. Asynchronous online courses can be done anytime and anywhere. This means that students can access e-learning is in accordance with the needs of each.

As previously described in the Vertebrate lecture syllabus, the Vertebrate lectures are held as much as sixteen meetings. The meeting includes introduction, submission of materials, and examinations, whether it is a midterm exam (ME) or a final examination semester (FES). Introduction in this case is an introduction to students about e-learning that will be used in Vertebrata lectures. In addition to the introduction, at this initial meeting also provided a short training to students to operate e-learning. This brief training is intended to ensure that technical constraints that may arise in Vertebrate lectures can be minimized. The training was conducted in a computer laboratory within the Faculty of Tarbiyah and Teacher Training (FTTT), UIN Syarif Hidayatullah Jakarta. In this case, faculty and student lecturers conduct lecture trials under the guidance of the e-learning development team.

2. Lecture Presence

The attendance of students in this lecture is the attendance recorded on logs in LMS Moodle every Monday at 09.20-11.00 WIB. The student attendance can be seen in Figure 2.
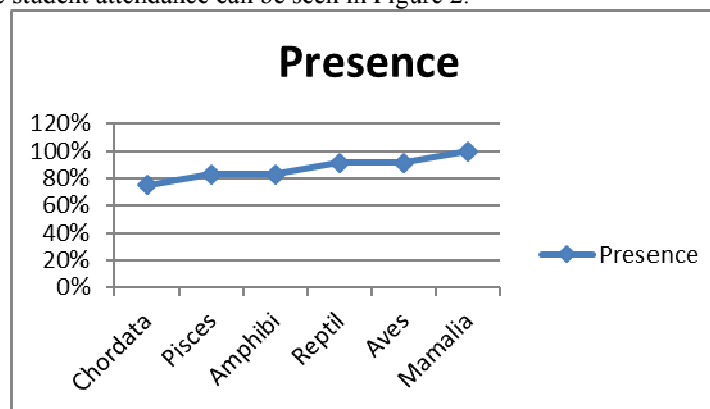

Figure 2. Graph of Student Presentation Presentation in Lectures

Based on the observation of attendance presented in the picture above, it can be seen that the attendance of students in the lecture continues to increase at every meeting. The lowest percentage of student attendance was found in the Chordata concept of 75% and highest in mammalian concept with 100% percentage. As for the concept of Pisces and Amphibi respectively 83.30%, and the concept of Reptile and Aves, the percentage of student attendance that is equal to 91.60%.

As it is known that the problems that often arise with lectures outside the classroom is the difficulty of

controlling student activities. Activities such as attendance and learning activities of students in lectures during this time are still difficult to be controlled and observed with lectures without face to face. However, this can be overcome by using this e-learning. E-learning with Moodle can overcome this. The system in Moodle allows the lecturer to easily check student attendance. The time, activity, and attendance of students in the online classroom can be viewed and examined easily. Thus, e-learning-based lectures are the same with face-to-face lectures. The thing that distinguishes it is the unlimited space and time in the lectures online with e-learning

During the lecture it appears that the average attendance of students reaches a percentage above 80% and increases over time. This is because lectures by using this system, providing breadth to students to follow the lecture without having to be bound by space and time. These results are in line with Zain, et al. (2015) who argue that thanks to the development of the second millennium information technology, the conventional learning process that has been limited by time and space undergoes an innovation process. The learning process is no longer fixed on conventional models that can only be held in the same space and time, but can be carried out in different spaces and at different times.

In addition to attendance, the activities that are carried out at the implementation stage are discussing the discussion forums used, answering the quiz given at the end of each course and doing the task independently. For these three activities the average student has done well and very well.

3. Discussion Forum

Student activity in Vertebrata lectures with e-learning, one of which is discussion on topics related to lecture concepts in discussion forums. The result of observation about student activity in discussion forums is presented by graph in the following picture:
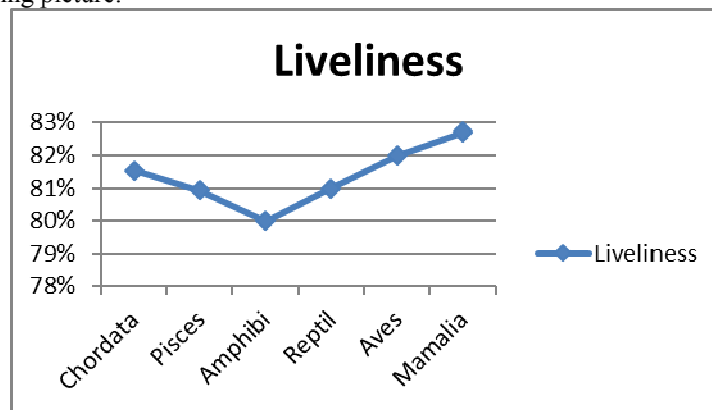

Figure 3 Student Activity Chart Following Online Discussion

In the graph above, it appears that for all students activity materials get an average of 80%. This is due to two things, namely the visualization of e-learning and the characteristics of the material. In terms of visualization, it appears that at the beginning of e-learning is shown about the history of Amphibi which takes about 20 minutes. In addition, on the public featured sub-concept featured videos longer than 15 minutes. According Chaeruman (2009), visualization of each e-learning should be given a maximum of 10 minutes. From the material side, some of Amphibi's concepts are extinct animals, so the students are less familiar with the animals.

According to research Wu and Hwang (2010), it is said that one of the factors that affect students in using e-learning is the ease factor, wealth of media interaction used, and external motivation. In this study, the attendance on the concept of Amphibian is quite high which means that students' learning motivation is also high. However, judging from the wealth of media interaction used in the Amphibious concept is quite low. It is suspected to be the cause of the low activity of students discussing the concept of Amphibi. In addition, Hamzah, et al, (2013) argues that media content is very influential in the use of e-learning.

Besides being used for discussion of lecture materials, students and lecturers also use this discussion forum to evaluate the development of assignments on the development of ICT-based teaching materials. From this forum shows that students have varied developments. Most shows excellent progress from weeks of the week in terms of material analysis, selection of the type of software or application to be used, and have begun to develop the teaching materials. The discussion forum is also a medium for students to exchange information about the resources of teaching materials that can be used as materials in the visualization design of teaching materials, respectively.

Data on the percentage of students involved in discussion forums, all recorded in the Moodle system. Based on the data obtained, on average number of students involved in the discussion during the lecture took place was 78%. This number goes into the high category. This is because, among other students already have a laptop / PC / notebook / HP that can be used to access this lecture easily. In addition, most students can access their own internet network, either through private wifi, campus wifi, modem, and quota packages.

In conventional lectures, it is often time for discussion to feel less, and students who can express their

opinions are also still dominated by certain students. With e-learning-based lectures, the system can facilitate students to convey, opinions, ideas, and ideas in writing, so that the discussion is no longer dominated by students who are active in regular lectures. However, students who had been less active had dared to express their opinions. This is in accordance with the results of research from Suhendi (2011) who said that student learning outcomes and student activeness in discussion forums on e-learning based lectures fall into the highest category.

4. Quiz

Another component of the e-learning Vertebrate lecture is a quiz. Quizzes in online courses are multiple choice tests that are loaded in e-learning and can only be open after the lecture for a material is completed. This quiz is given to get a picture of students' understanding of a material. Here is a graph of student quiz results.
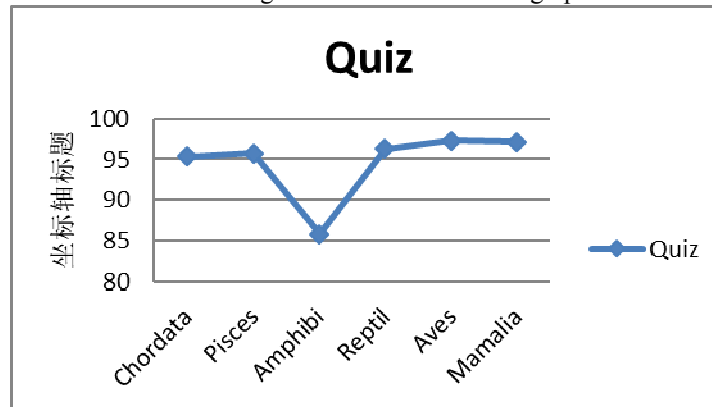

Figure 4. Graph of Student Quiz Value

Based on the above graph it can be seen that the student quiz score gets an average score above 90 for all concepts except in the Amphibi concept. This is in accordance with the fact that the discussion activity on the concept is also the lowest. Something quite different is seen in the high percentage of student attendance that is 83.3% (Figure 2).

During the lecture implementation students are asked to answer the quiz in the form of multiple choice questions. This quiz is given six times, according to the number of concepts available in Vertebrate lectures. Overall, the average student quiz score is very high with 94.62. The highest quiz score was obtained in the Aves concept with a value of 97.3 while the lowest score was obtained on the Amphibious concept with a value of 85.82 This indicates that the students' conceptual understanding of the six concepts in Vertebrate lectures has been excellent. The results of this study in accordance with the opinion Dwijanto (2013) which states that one of the characteristics of computer-based learning materials is the increasing level of understanding the concept of students through practice. In addition, the results of this study are also supported by Yuniarti (2010) which states that by using hybrid learning lectures obtained average student group scores of 72.8 are included in the good category, and this result is better than the group of students who follow conventional lectures.

5. Independent Task

Independent task a report of students' practical results conducted outside the lecture hours. Practicum in this case is given to reinforce the material understanding that has been given in Vertebrate lectures in e-learning. Here is a graph of the value of independent tasks of the six concepts given in Vertebrate lectures.
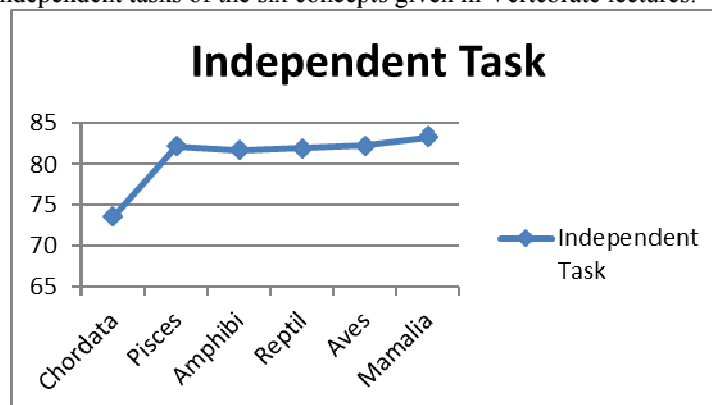

Figure 5. Graph of Student Independent-Task Value

For the value of independent tasks, it is seen that the highest results were obtained on the concept of Mammals with a value of 83.37, and the lowest on the concept of Chordata with an average value of 73.58. The

largest self-sufficiency task assigned to students to the Aves concept and the lowest score found on the Amphibi concept. Nevertheless, the average grade of the student self-employment still falls into the high category. This is because there are several components of self-assessment tasks that have not been achieved by students. Like, for example, the use of less reliable sources of validity, such as the use of sources from unofficial institutional blogs.

In addition, some of the results of this self-directed task are also used by some students to be the visualization of teaching materials based on ICT that will be developed, especially concerning the morphological, anatomical, and characteristic characteristics of several species used in the lab. This contributes positively to the material developed because of the visualization displayed in accordance with the original shape and character of the species being practiced. It is expected that by showing the original form of the species, the students who will use the teaching materials are easier to understand the material being taught.

B. Student Response

1. Student Assessment of E-Learning Program for Vertebrata Course

In this Vertebrate lecture, students are given the opportunity to assess the e-learning lectures used. Aspects of assessment consist of material aspects, aspects of media design, and aspects of technical quality. In general, student ratings of Vertebrata courses in e-learning falls into very good and good category. None of the students stated that the Vertebrata courses in e-learning falls into less or very less categories. A more complete student assessment is presented in the following graph.
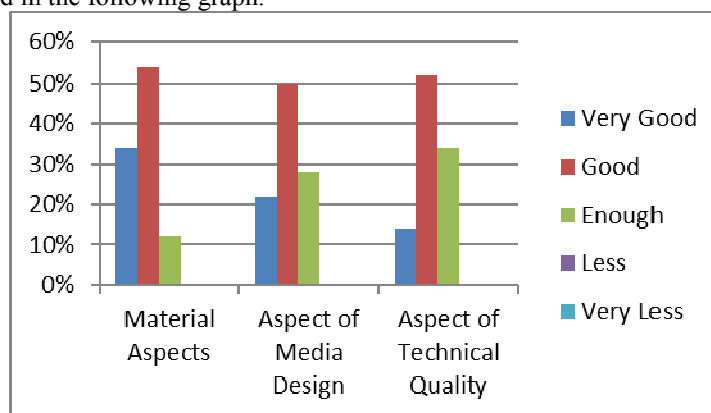

Figure 3. Graph of Student Assessment of Vertebrata Program

2. Student Response to E-Learning Lectures for Vertebrate Courses

Student response or response to lectures, became one of the aspects identified in this study. This response / response screening is done after the e-learning lecture series for the Vertebrate course is done. This is intended to find out how the response / response of students to Vertebrata lectures by using e-learning. These responses include student opinions on components, novelty, ease, and satisfaction with e-learning components. It also captured responses on student responses to lecturers and interest in using e-learning in other subjects. In general, students claim that Vertebrate lectures fall into very good and good categories. This indicates that lecture by utilizing e-learning is accepted and run by students.

Conclusions And Recommendations

A. Conclusion

Based on the results of research that has been implemented, it can be concluded that e-learning lectures for courses of Vertebrata successfully accepted and used well by students. It can also be concluded several things as follows:

1. Implementation of e-learning lectures for Vertebrate courses, as a whole goes well. Discussion forums with liveliness values above 81%, independent tasks with a score of 80.94, and a quiz with an average rating of 94.62. This indicates that discussion forum, independent assignments, and quizzes in e-learning programs can work well.

2. Student responses to e-learning developed both from material aspects, media design, implementation, and technical quality have been good. Likewise, the lecture component that includes teaching materials / materials, the appearance of e-learning, online tasks, the atmosphere of college, how to teach lecturers, and discussion forums have been expressed well by the students.

B. Recommendations

Based on the conclusions of the study, the authors recommend the form of suggestions as follows:

1. Learning with e-learning, can be tested in other subjects and at different universities with due attention to the readiness and ability of students follow the lecture.

2. Implementation of lectures in the form of e-learning is done by different methods such as synchronous and

asynchronous only.

Reference

Akmal, P.B (2015). Sistem Pendukung Keputusan Pemilihan *Smartphone* Menggunakan Metode *Analitycal Hierarchy Process* (AHP). Informasi dan Teknologi Ilmiah (INTI). ISSN: 2339- 210X, Vol.5, No.1Arifin, Zainal. *Evaluasi Pembelajaran: Prinsip-Teknik-Prosedur*. Bandung: Remaja Rosdakarya. 2011.

Anonym. (2010). *Modul Pendamping Pengembangan BERMUTU*. Direktorat Ketenagaan. Direktorat Jenderal Pendidikan tinggi. Kementrian Pendidikan Nasional. Jakarta

Borg, W.R., & Gall, M.G. (1989). Educational Research: An Introduction (5th Ed.). New York: Longman.

Chaeruman. A. Uwes. (2009*). Pembelajaran Interaktif dengan Memanfaatkan Aneka Sumber Belajar. Pusat Teknologi Komunikasi Departemen Pendidikan Nasiona*l. Jakarta: Kemdiknas.

Hardjito. (2002). *Internet Untuk Pembelajaran*. http://www.pustekom.go.id (diakses pada tanggal 21 April 2016).

Hasbullah, (2006). *Implementasi e–Learning dalam Pengembangan Pembelajaran di Perguruan Tinggi (Proceeding)*, SNPTE 2006,UNY. Yogyakarta.

Jardiknas, (2007). (*Online*). Tersedia http//. www. Jardiknas.org. (9 February 2012).

Nur, Taslim D. (2013). Strategi Perkuliahan dan Praktikum Zoologi Vertebrata dengan Menggunakan Multimedia untuk Meningkatkan Kompetensi Dasar Calon Guru IPA Biologi di STKIP KIE RAHA Ternate. *Laporan Penelitian Staf Dosen Prodi Pendidikan Biologi FKIP Unkhair Ternate*.

Nurhadi. 1996. *Kurikulum 2004, Pertanyaan dan Jawaban*. PT. Gramedia Widiasarana Indonesia, Jakarta.

Pannen, P. (2005). *Pemanfaatan ICT dalam Pembelajaran*. Presentasi pada Seminar *Sun Commitment in Education and Research Industry*. Jakarta.

Prastowo, Andi. (2013). *Pengembangan Bahan Ajar Tematik*. Diva PRESS. Yogyakarta

Purbo, W.O. (2002). *Teknologi E-Learning*. Elex Media Computindo. Jakarta

Purwanto, N (2001). *Prinsip-Prinsip dan Teknik Evaluasi Pengajaran*. Bandung: PT Remaja Rosda karya.

Pustekkom, (2006*). Teknologi Informasi dan Komunikasi*. Jakarta

Rosenberg, March Jeffrey. (2001). *E-Learning: Strategies For Delivering Knowledge in the Digital Age*. McGraw-Hill Professional.

Rosita dan Pribadi,T. (2005). *Prospek Komputer sebagai Media Pembelajaran Interaktif dalam Sistem Pembelajaran Jarak Jauh di Indonesia*. Universitas Terbuka (online)

Soekartawi. (2003). Prinsip Dasar E-Laerning: Teori dan Apliasinya di Indonesia. *Jurnal Teknodik, Edisi No. 12/VII/Oktober/2003*.

Universitas Islam Negeri Syarif Hidayatullah Jakarta. (2015). *Rencana Strategis 2015-2016. UIN Jakarta* (online) tersedia http//www.uinjkt.ac .id (5 February 2016).

Wiley, D. A. (2000). *E-learning Design And Sequencing Theory*. Disertasi. Brigham Young University

Zain,R., Zainal, A Ahmad dan Nurhadi Suryani. (2015). Implementasi Standar Mutu dan Penjaminan Mutu *e-Learning* di Perguruan Tinggi. *Makalah. Disampaikan pada Pelatihan Penjaminan Mutu e-Learning Universitas Janabadra oleh NCIE. Universitas Janabadra*.