



DESIGN A PROJECT BASED LEARNING AND AUTHENTIC ASSESSMENT MANAGEMENT SYSTEM

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ABSTRACT

Project-based learning is a learning process-oriented and results. To measure achievement of learning objectives required authentic assessment of the process and outcomes. Project management and evaluation are a separate issue for lecturers. It, therefore, requires a learning management information system (Learning Management System) that can help professors manage the project and assessment of student achievement of learning outcomes in an integrated manner. So designed a system of Project Based Learning and Authentic Assessment Management System (PBLAAMS). PBLAAMS developed through the waterfall model (analysis, design, implementation, testing, and maintenance). PBLAAMS can provide feedback directly to students to ensure the achievement of learning objectives that have been set. Additionally, PBLAAMS should be able to provide sufficient information for the lecturers to evaluate the learning process is organized.

Key Word: Project Based Learning, Authentic Assessment Management System, Waterfall Model

INTRODUCTION

Basing on the purpose of the Strategic Plan UNNES in academic areas, namely improving the quality of teaching, research and community service targeted specifically at improving the quality of academic services (academic service quality) is very clearly stated UNNES seeks to improve the quality of programs related to the transparency of the organization to ensure accountability.

Of the six new program launched massive four programs that have an effect on the administrative side. In terms of the substance of the quality of teaching and learning evaluation process has not appeared to increase significantly. An increase in the level of study programs no role model that can be used as a reference and each faculty tends to run by the style of each. It, therefore, requires special effort and institutionalized to improve the quality of learning and evaluation process that is not normative and administrative memorable.

One effort that can be done is the development of learning model based on project-oriented outcomes that are scientific and rely on the value of local wisdom imbued with the spirit of conservation. Outcome-output of the learning process to be able to make the students as agents of innovation in the field of science and technology through the engineering models or prototypes

and publications referring to the habits of the scientific community in this case is a scientific manuscript (journal).

From the study of all subjects who carried on in any program of study, subjects Practice Field Experience is one of the subjects were systematically perform authentic assessments systematically since the enactment of evaluation standards through PPL Center. Other subjects do not yet have a standard of authentic assessment so that the evaluation standards of each lecturer even for the same items may vary. Therefore, we need a model of authentic assessment that can be set as the minimum level of assessment.

Through this research will try develop a project-based learning model with authentic assessment is aided information systems.

Almost all organizations exploit information as a support system (Purwinarko dan Sukestiyarno, 2015). An information system aimed to present the information needed to manage the organization to effectively and efficiently (Sharma, 2012). The information system helps organizations to facilitate the collection, recording, organization, retrieval, and dissemination of information. The collected knowledge incorporated in the policies and

procedures within the organization and then disseminated to the stakeholders (Bapat and Soni, 2015).

This information system is designed specifically to manage the Project Base Learning (PBL) and authentic assessment that can cover face-to-face learning through interactive activities such as in the form of a progress report through activities like seminars in every meeting that refers to the habit of the scientific community.

PBL is a model of classroom activities experienced a shift from a class tend to be isolated from the outside world and a teacher-centered towards long-term activity, interdisciplinary, student-centered and integrated with the outside world (Ministry of Education, 2012). From these definitions, it appears that PBL is an active class model and centered on the learner. So lecture using the model PBL will spur the creativity of students in exploration, making decisions, interprets the data, and synthesize information in a meaningful way.

Assessment for a teacher to have a dual role, which is to obtain data on students in the lecture as well as well as a diagnosis to determine the subsequent learning process. Assessment is carried out through paper and pencil test is only able to provide limited information on the cognitive aspects. Through performance assessment lecturers are not only able to provide information on the cognitive abilities of the students, but also able to provide additional information regarding the skill set of pupils in a class, among other skills related to the talent, creativity, ethics, teamwork, behave with honesty, discipline and behavioral Other behavior that is needed not only in class but also in real life outside the classroom (Sternberg, 2007).

It is thus clear that authentic assessment and performance assessment is an evaluation that is not only seen from the cognitive aspects but also the performance and results of performance. So this model assessment will provide a better assessment of the paper and pencil test.

Self-assessment is defined as someone who is involved in making decisions concerning himself about how he learned and made progress according to Sambell, McDowell, & Brown in Luca & McLoughlin (2002). While peer-assessment defined as a process that involves individuals to judge their peers by providing consent (check) on the corresponding assessment criteria. Falchikov in Luca & McLoughlin (2002). From the two definitions can be seen that the self-assessment and peer assessment has a shape that different. Peer assessment instrument has a different focus than the self-assessment. Peer assessment is intended to engage students in the learning process and lead to cooperation in collaborative

projects and learning activities (Noonan and Duncan, 2005).

Compared to teacher assessment, self and peer assessment has many advantages. First, the involvement of students in the assessment will give direct feedback when students carry out the assessment. When students perform an evaluation by basing on the existing rubric, the student will be immediately aware of the shortcomings/mistakes made. And when the students saw the performance of another student him better value and of itself would be aware of and learn to improve to work done. When a learning process to implement self and peer assessment, the actual learning process has been to apply the highest cognitive domain so that it can be considered as learning to use Higher Order Thinking (Cheng & Waren in Peng, 2010).

Second, the implementation of peer and self-assessment is to prevent free-rider effect (Li Peng, 2010). What is meant by free-rider effect is the presence of group members who did not contribute to the group. The free-rider effect often occurs in a performance that is carried out in a group that is often difficult to avoid due to the limitations of time allocation or control by lecturers weak.

Third, peer and self-assessment can increase the active participation of students in the learning process. Peer and self-assessment are managed properly can evoke a sense of more useful (William in Peng, 2012) thereby increasing the interest of students in the learning process and learning becomes more fun.

However, peer and self-assessment has also identified weaknesses kelemahan. Beberapa reported in a study. Namely the emergence of displeasure at having to criticize friends. Besides peer and self-assessment requires additional time to do the training, preparation and monitoring of the Peng Cheng & Warren (2012).

As disclosed in Cheng & Waren research, the problem often faced by students when assessing friend is unhappy. Students will feel freer when they assess anonymously, i.e., they do not know who the students are evaluated, and students are assessed not know who is judging. To overcome the disadvantages of peer and self-assessment can be used online assessment system.

Online in the peer evaluation system allows students free of displeasure because when a judge does not interact directly with the parties assessed. Besides this assessment system provides flexibility for students assessors because it is not limited by space and time. However, an online assessment system requires more preparation to build the application system. Bouzidi and Jaillet (2009) reported that the online results of peer and

self-assessment equivalent to the evaluation conducted by a professor for the assessment of the skills of basic nature does not mean that can not be applied to skills more involved. With the training, preparation and precise instrument peer and self-assessment can be compared to teacher assessment (Zhang, 2012).

METHODS

PBLAAMS is done using models System Development Life Cycle (SDLC) or better known as the waterfall model (waterfall model) (Pressman, 2002; Sommerville, 2003) as shown in Figure 1. The model consists of several stages, including:

Requirements definition

This step is an analysis of needs that can accommodate lectures PBLAAMS face to face through a performance assessment.

System and software design

Hold this is done the overall system design based on needs analysis and design of the interface to be used by the user as well as the design of Data Flow Diagram and Entity Relationship Diagram.

Implementation and unit testing

At this stage, writing program code. This system uses the PHP programming language. PHP is a programming language that supports the concept of

server side so that it can be accessed online by multiple users simultaneously.

Integration and system testing

Testing is an implementation of a design that has been done. Testing is done on a local server with xampp. So that it can be seen that there are no system bugs before the system was launched to the public.

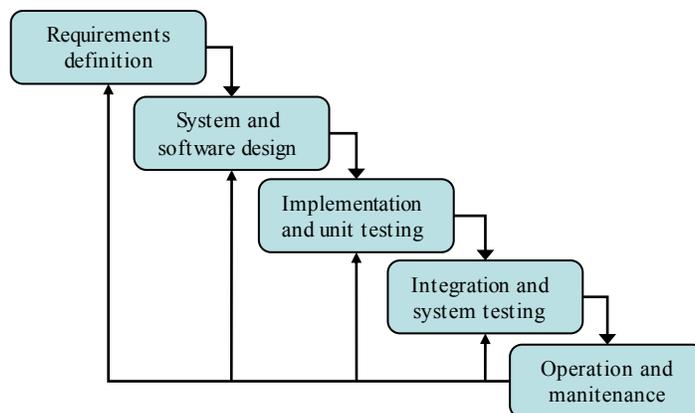
Operation and maintenance

Maintenance is done by the user to monitor the system through the system and the system log. Thus, the system administrator can easily fix any bugs that exist in a structured.

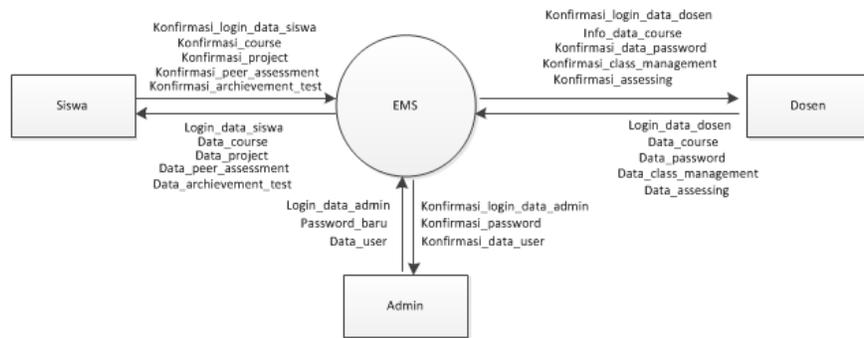
RESULT AND EXPLANATION

Data Flow Diagram (DFD) of PBLAAMS shown in Figure 2. In this context, DFD demonstrated that: a) Users can access PBLAAMS are students, lecturers and Admin; b) Students must be logged in to access the course of data, project data, peer assessment, and achievement test; c) Lecturers must be logged in to change passwords, access data course, divide the class and give the assessment; d) Admin role as manager PBLAAMS can log in to add users or change passwords.

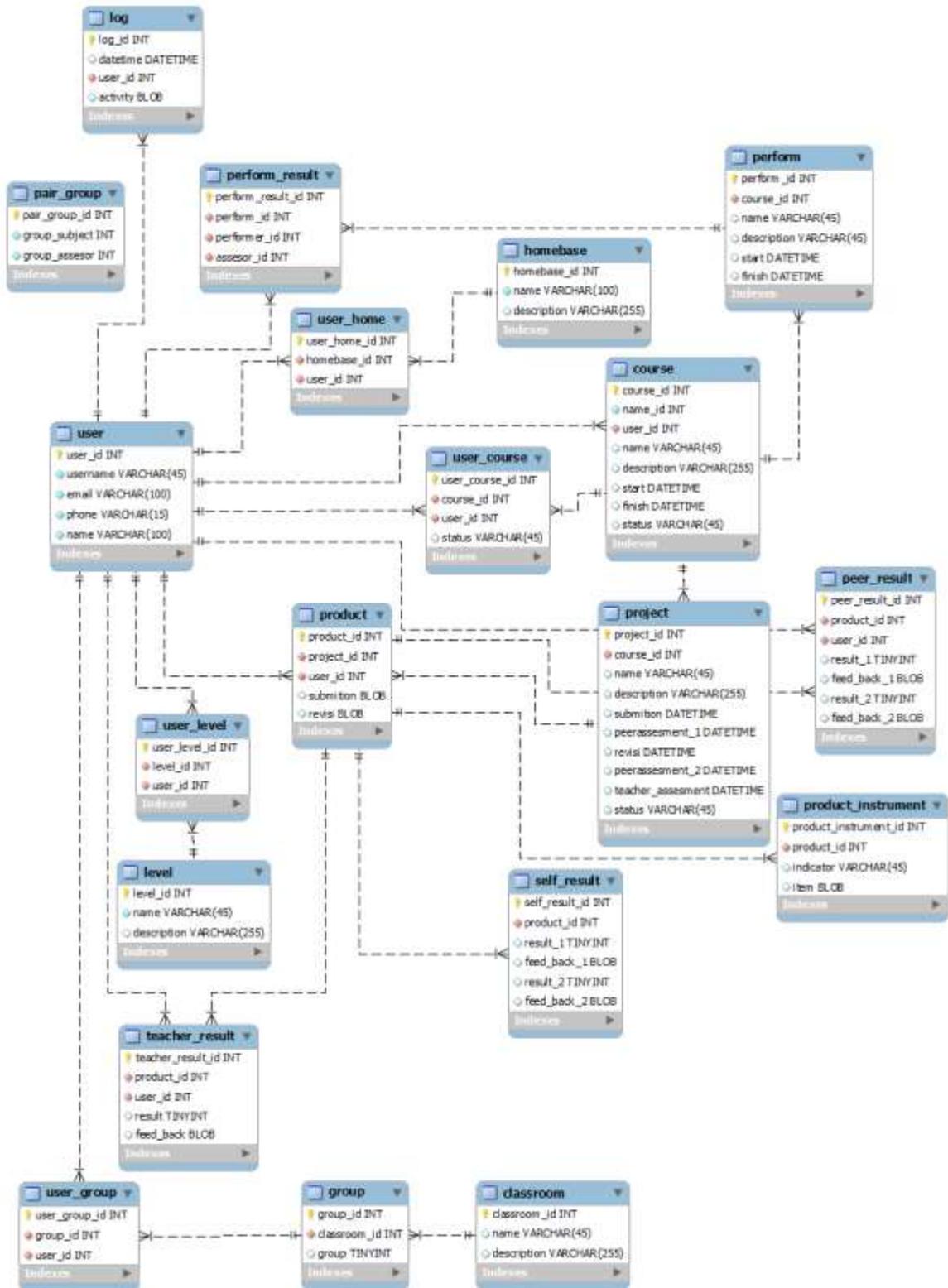
Entity Relationship Diagram (ERD) is designed according to the needs analysis. Figure 3 shows the layout of the ERD.



Figur 1. WaterFall Model



Figur 2. DFD of PBLAAMS



Figur 3. ERD

Figure 4 shows the login form of the system. Users can enter to the main page after login system success. Figure 5 shows the main page of the system.

Figure 6 shows the courses. Lecturers can make some courses as needed. There are fields need to be filled in the form courses is the course name, date started, finished date, and description.

Figure 7 shows the class management. Through this feature lecturers manage such classes make learning group (sub menu classrooms), approve or reject the student follow the lectures and (sub menus students) and pairing the assessment group.

Figure 8 shows the lesson tools. There are two sub-menus in Lesson Tools are tutorials and project. Through tutorials, feature can make the lecture material.

To faster the work, learning resources can be put in a folder in the cloud storage like box.net, Google Drive, Dropbox and others while the information presented in this web in the form of the minutes. Also, it can also be added to the video (by using youtube), image (by using Facebook) as well as information on the personal web (blogs), Wikipedia, and other sources to enrich the content.

Lecturers can assess student products produced through product assessment form. Figure 9 shows the product assessment form.

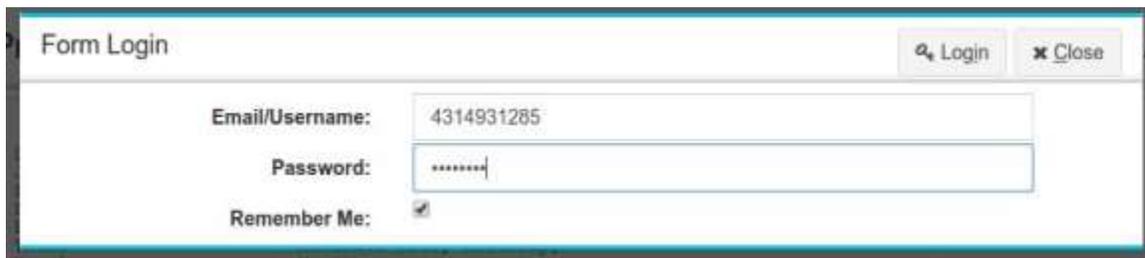
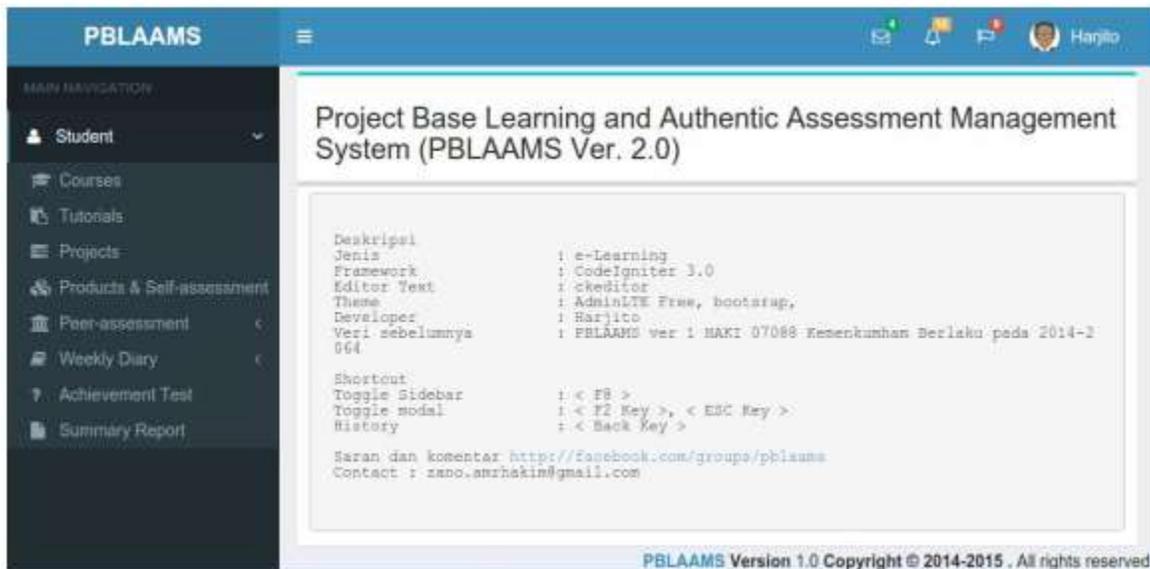


Figure 4. Login form



Figur 5. Main page

My Courses

Kimia Fisika 1 ✎

RENCANA PEMBELAJARAN SEMESTER Mata Kuliah : Kimia Fisika 1 Semester: 3 sks: 3 Kode: D3004015 Program Studi : Pendidikan Kimia Dosen Pengampu/Penanggungjawab : Hagiya, S.Pd, M.Sc. Capaian Pembelajaran Lulusan Menguasai pengetahuan tentang struktur, sifat molekul, identifikasi, pemisahan, karakterisasi, transformasi, sintesis senyawa organik dan anorganik serta aplikasinya Capaian Pembelajaran Matakuliah Menguasai pengetahuan mengenai struktur dan sifat-sifat molekul serta energi yang menyertai transformasi dari suatu keadaan ke keadaan lain dan mengimplementasikan dalam produk/masak ilmiah. Deskripsi Matakuliah Mata Kuliah ini menguji konsep-konsep kimia...

Detailed data

- Status: *Published*
- Active Period: 05 Aug 2015, 00:00 - 04 Feb 2016, 23:59
- Number of Project: 5 publish
- Number of Tutorial: 2 publish
- Number of Cognitive Test: 1 publish
- Number of Observation Sheet: 4 publish
- Number of Classroom: 4 publish
- Number of Student: 5 accepted, 0 awaiting, 0 rejected

Praktikum Kimia Fisika ✎

RENCANA PEMBELAJARAN SEMESTER Mata Kuliah : Praktikum Kimia Fisika Semester: 5 sks: 3 Kode: D3004015 Program Studi : Pendidikan Kimia Dosen Pengampu/Penanggungjawab : Hagiya, S.Pd, M.Sc. Capaian Pembelajaran Lulusan Menguasai pengetahuan tentang struktur, sifat molekul, identifikasi, pemisahan, karakterisasi, transformasi, sintesis senyawa organik dan anorganik serta aplikasinya Capaian Pembelajaran Matakuliah Menguasai pengetahuan mengenai struktur dan sifat-sifat molekul serta energi yang menyertai transformasi dari suatu keadaan ke keadaan lain dan mengimplementasikan dalam produk/masak ilmiah. Deskripsi Matakuliah Mata Kuliah ini menguji konsep-konsep kimia...

Detailed data

- Status: *Published*
- Active Period: 05 Aug 2015, 00:00 - 04 Feb 2016, 23:59
- Number of Project: 1 publish
- Number of Tutorial: 1 publish
- Number of Cognitive Test: 0 publish
- Number of Observation Sheet: 0 publish
- Number of Classroom: 1 publish
- Number of Student: 4 accepted, 0 awaiting, 0 rejected

Figur 6. Courses

My Classroom

430140003 | Kimia Fisika 1 ✎ | 🗑

Pendidikan Kimia Rombel 3

Detailed data

- Status: *Published*
- Number of Student: 0 accepted, 0 awaiting, 0 rejected

430140002 | Kimia Fisika 1 ✎

Pendidikan Kimia Rombel 2

Detailed data

- Status: *Published*
- Number of Student: 5 accepted, 0 awaiting, 0 rejected

435040001 | Kimia Fisika 1 ✎ | 🗑

Kimia Rombel 1

Detailed data

- Status: *Published*
- Number of Student: 0 accepted, 0 awaiting, 0 rejected

PPL Muntlari | Kimia Fisika 1 ✎ | 🗑

PPL SMA Negeri 1 Muntlari

Detailed data

- Status: *Published*
- Number of Student: 0 accepted, 0 awaiting, 0 rejected

430140001 | Praktikum Kimia Fisika ✎

Figure 7. Class management

My Tutorials

Tutorial 1 | Kimia Fisika 1 ✎ | 🗑



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Detailed data

- Status: *Published*

Tutorial 2 | Kimia Fisika 1 ✎ | 🗑

Figure 8. Lesson tools

Figure 9. Product assessment form

CONCLUSION

Based on the results and the above explanation, it can be concluded that the learning process can be implemented online, and allows lecturer in delivering and assessing projects from anywhere and anytime. As well as students, can do the projects from anywhere. So that these systems can be applied as a model for the assessment of the project online.

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