

MEMBANGUN KETERAMPILAN RISET ABAD KE-21 SISWA MELALUI *LEARNING MANAGEMENT SYSTEM* BERBASIS EDMODO PADA PEMBELAJARAN PROYEK BIOLOGI

ABSTRAK

Penelitian ini bertujuan untuk mengembangkan keterampilan riset abad ke-21 siswa dengan menerapkan *learning management system* (LMS) berbasis edmodo pada pembelajaran proyek biologi. Penelitian dilakukan dengan tema teknologi rekayasa pengolahan pangan. Metode penelitian yaitu *mix method* yang menggabungkan data kualitatif dan kuantitatif dengan desain penelitian *embedded*. Sampel penelitian ini terdiri dari 2 kelas XI menggunakan teknik *cluster random sampling*. Kedua kelas melakukan pembelajaran berbasis proyek dan LMS melalui aplikasi edmodo, tetapi matriks assesmen hanya diberikan pada kelas XI MIA 1. Instrumen yang digunakan adalah TOLT (tes kemampuan berpikir logis), matriks assesmen, tes keterampilan penelitian, lembar observasi dan kuesioner respon siswa. Matriks assesmen yang digunakan adalah modifikasi dari Venning dan Buisman-Pijlman dengan tiga kategori (gagal, berhasil, dan istimewa). Penelitian dilakukan selama empat pertemuan di dalam kelas dan pertemuan di luar kelas dengan menerapkan LMS berbasis edmodo untuk mengumpulkan laporan siswa serta memberikan umpan balik terhadap hasil penelitian siswa berdasarkan kriteria matriks assesmen. Data menunjukkan hasil uji statistika keterampilan riset siswa ($\alpha= 0,05$, $p= 0,000$) berbeda signifikan di kedua kelas. Hal ini didukung pula data median pada kelas LMS dengan matriks assemen (77,78) lebih tinggi dari pada kelas LMS tanpa matriks assesmen (66,67). Berdasarkan hal tersebut menunjukkan bahwa terdapat hubungan penerapan LMS dengan matriks assesmen. Hasil TOLT menunjukkan bahwa siswa dengan berpikir formal lebih baik tes keterampilan risetnya daripada yang belum formal. Namun, masih terdapat beberapa siswa yang sudah berfikir formal namun hasil keterampilan risetnya rendah. Hasil riset yang rendah dikarenakan siswa belum menguasai indikator ketampilan riset yaitu mengorganisasi data, tata cara penulisan, serta argumentasi dan sitasi. Meskipun demikian, siswa merasa penerapan LMS berbasis edmodo dan matriks assesmen sangat membantu dalam mengembangkan pengetahuan, pengalaman dan keterampilan riset mereka. Tidak hanya itu, siswa termotivasi dan antusias dalam melakukan proyek penelitian biologi tentang teknologi rekayasa pengolahan pangan.

Kata Kunci: Keterampilan Riset Abad Ke-21, *Learning Management System*, Edmodo, Pembelajaran Proyek Biologi

DEVELOPING 21ST CENTURY STUDENT RESEARCH SKILL THROUGH LEARNING MANAGEMENT SYSTEM BASED EDMODO IN BIOLOGY LEARNING PROJECTS

ABSTRACT

This study aim is to develop 21st century student research skills by applying learning management system (LMS) based on edmodo in biology learning project. This research was conducted with the theme of food processing engineering technology. Research method was a mix method that combines qualitative and quantitative data with embeded research design. Sample of this study consists of 2 classes of XI using cluster random sampling technique. Both of classes did project based learning and LMS through edmodo application, which class XI MIA 1 was given assessment matrix. Instruments used were TOLT (test of logical thinking), assessment matrix, research skill test, observation sheet and student response questionnaire. The assessment matrix used is modified by Venning & Buisman-Pijlman with three categories (unsatisfactory, pass, and distinction). The study was conducted with four classroom meetings and outside meetings by applying an edmodo-based LMS to collect student reports and provide feedback on student research outcomes based on the assessment matrix criteria. The data show that students' research skills are significantly different ($\alpha=0,05$, $p=0,000$) in both classes. This is also supported by median data on LMS class with assesment matrix (77,78) higher than LMS class without assessment matrix (66,67). Based on this it shows that there is influence of LMS implementation with an assessment matrix. TOLT results shows that students with formal thinking are better at testing their research skills than those who are not yet formal. However, there are still indicators of research skills that have not been mastered by students is organizing data, writing procedures, and arguments and citation. Nevertheless, students felt that the application of an LMS based on edmodo and matrix assessment was helpful in developing their knowledge, experience and research skills. Besides, students feel motivated and enthusiastic in doing biological research project on food processing engineering technology.

Keywords: 21st Century Research Skill, Learning Management System, Edmodo, Biology Learning Projects