# LMS-based EFL blended learning: Blackboard vs. Moodle

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This paper reports a comparative study of two Learning Management Systems (Blackboard Academic Suite 7.1 and Moodle 1.7.2) in blended courses provided by the researcher in Tokyo in spring 2007. The courses, two classes each (in total four classes), provided basic English for Information Science (ESP) and basic English for Academic Purposes (EAP) with 15 regular meetings. The two courses used a semi-identical instructional design and LMS usage for comparative purposes. The LMSs were used in order to make the most of synchronous oral interaction and asynchronous written interaction in the target language. A post-course questionnaire was given, focusing on students' evaluations of the blended course designs, online interaction, and LMS usability. The research supports a higher usability of Moodle over Blackboard in this course design and the correlation analysis revealed that this related to students' participating in online interaction and appreciation of the blended course delivery over traditional learning.

本稿は2007年春学期に東京地域の二大学で行われたLMSベースのブレンド型授業(Blackboard Academic Suite 7.1 and Moodle1.7.2)に関する比較研究を報告するものである。両コースは、各二クラス（計四クラス）で、情報科学の基礎英語（ESP）およびアカデミックイングリッシュ（EAP）をコンテンツとし、授業はいずれも15週だった。両コースは比較研究のため、同一の授業設計（ID）を旨とし、LMSの使用法も統一した。LMSは、授業内では同期的な口頭によるインターアクションに重きを置き、授業外では非同期的なライティングによるインターアクションに使用した。学期終了時にブレンド型コースデザイン、オンラインインタアクション、LMSのユーザビリティに関する学生の評価調査を行った。分析の結果、本研究の授業設計においては　BlackboardよりもMoodleのユーザビリティが高く、また、LMSの操作性の高さ、学生のオンラインインタアクションへの参加率、通常授業に対するブレンド型授業の評価の高さのあいだにプラスの相関が見られた。

This paper reports a comparative study of two Learning Management Systems—Blackboard and Moodle—in blended courses conducted in Tokyo in spring 2007. The two courses followed a semi-identical instructional design and LMS usage. The LMSs were used to make the most of synchronous oral interaction and asynchronous written interaction in the target language. The study indicates higher usability of Moodle over Blackboard in this course design and correlation analysis revealed that this

related to students' participating in online interaction and appreciation of the blended course delivery over traditional learning.

## *What are LMSs?*

LMSs (Learning Management Systems) are software packages which can be used to create and manage courses online. LMSs help in the support, reuse and sharing of digital learning objects created on the system if adequate infrastructure is provided. This study describes a blended course design using Blackboard and Moodle LMSs.

Blackboard is a commercial software from the US, formerly known as WebCT whereas Moodle is an open source program from Australia created and developed by Dr. Dougiamas (2003) and volunteer programmers worldwide. Both are multilingual and commonly used in education and other sectors worldwide (Yamaguchi, H., 2007; Moodle.org, 2007): Blackboard targets users of institutional size whereas Moodle users range from a single instructor to an institution. Figure 1 and 2 give a course view of Moodle and Blackboard respectively.

To implement these LMSs in teaching, both need server space to download the software to which the instructor(s) and the student(s) access. In the research institution, yearly licensing costs for Blackboard are about 5,000,000 yen for about 8,000 students, of which half is paid by the government. Moodle is open source software and no financial outlay is needed.

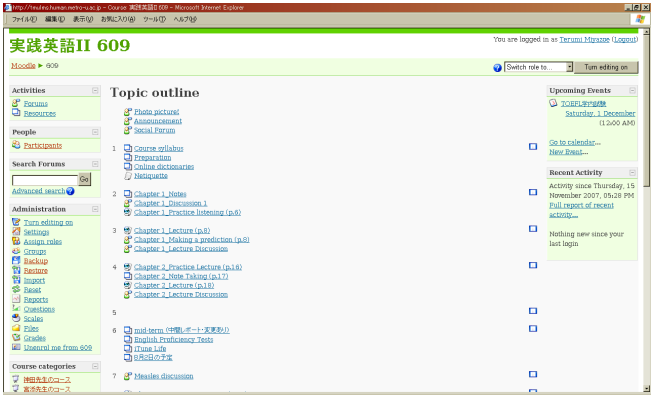


**Figure 1. A course view on Moodle**

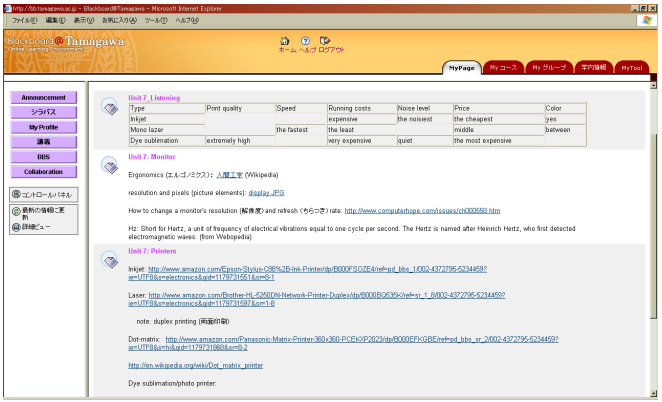

**Figure 2. A course view on Blackboard**

### Comparative studies of Blackboard and Moodle

Though reports comparing LMSs are abundant, few comparative studies between Blackboard and Moodle regarding teaching and learning effectiveness are extant.

Bremer and Bryant (2005), provide a comparative report obtained during the process of migration from Blackboard to Moodle: they described advantages of Moodle over Blackboard as 1) ease of implementation, 2) saving costs for licensing, and 3) higher functionality for discussion forums. On the other hand, they described disadvantages of Moodle to Blackboard in its functionality of 1) gradebook and 2) quiz activity import from other LMSs. A post-course online survey of the students (n=14) reveals that overall, 80% preferred Moodle over Blackboard.

Munoz and Duzer (2005) compared the two systems with 35 students, for whom this was the first experience of a complete online course, randomly assigned into Blackboard and Moodle groups: it was the first time for faculty and course developers to use Moodle. A survey on the evaluations from facilitators, course developers, and students on the courses and the systems usability found higher satisfaction levels in students using Moodle over Blackboard including notions of interaction with the instructor and among students.

Beatty and Ulasewicz (2006) report a comparative study in their university where 90% use Blackboard and 10% test Moodle. The report is a reflective essay sharing their experiences of using Moodle for the first time. In this study, many of the students were familiar with the Blackboard system as it had been used in the University. In sum, both the faculty and the students in this experiment claim a higher level of usability in Moodle. Support from local developers to build new components without waiting for a new version release was an asset. On the negative side, Ulasewicz admits Moodle is weak in peer review and the instructor's feedback to students' assignments with the version they tested.

Therefore, three prior comparative studies between Blackboard and Moodle support a higher level of usability and students' satisfaction with Moodle.

### Research questions

This study examines: 1) if blending of LMSs affect students' evaluation of the course and 2) if different LMSs affect students' participation in online interaction. To answer these, a semi-identical course design and usage of a LMS was planned to compare Blackboard and Moodle.

### Class features and course designs

Features of the universities and course configurations are summarized in Table 1. *Basic English for Computing* (Glendinning & McEwan, 2003; 2006) and *Lecture Ready 2* (Sarosy & Sherak, 2006), both being written in accessible English and published by the same publisher, were the course textbooks.

**Table 1. Features of Blackboard and Moodle groups**

| | Blackboard | Moodle |
|---|---|---|
| Course period | April to July, 2007 | April to July, 2007 |
| Course subject | Information Science | English for Academic Purposes |
| Course duration | 15 weeks | 15 weeks |
| Class duration | 90 minutes | 90 minutes |
| LMS | Blackboard 7.1 | Moodle 1.7.2 |
| Instruction languages | Japanese and English | Japanese and English |
| English level | Lower intermediate | Higher intermediate |
| Major | Engineering | Urban Environment |

The usage of Blackboard, located on the school server, is recommended in the school e-Education policy whereas Moodle is implemented as experimental research by the researcher on a private server. In both cases, students can access the system anytime anywhere within the school as well as from off-campus if they have an Internet connection and a browser.

The two student groups had different prior experiences of using PCs and LMSs. The post-course survey reveals that the Blackboard group had approximately four years and the Moodle group five years of PC experience prior to this study. Furthermore, the Blackboard group used the system in many other courses. On the other hand, the Moodle group experienced the system in this study only and no other LMS was available in the school at that time.

The current researcher has used several LMSs since 2003: it was her third semester to teach using Blackboard in spring 2007 and her first time teaching using Moodle, with one year of prior experience of learning on Moodle as a student.

Though the course subjects were different, the course design was semi-identical for comparison purposes. The LMSs were used exclusively for:

1. weekly announcements from the instructor
2. weekly presentation of the course materials
3. delivery of audio for all units
4. bi-weekly short assignments and forum discussions.

Though blended learning can take different formats with different degrees of online components in a given context (Rossett, 2002; Kelly, 2007), this study uses the blending of classroom instruction and online discussion assignments outside classes to foster the strengths and reduce the weaknesses of both (Osguthorpe & Graham, 2003). That is, the course was designed to make the most of synchronous oral interaction and asynchronous written interaction in the target language.

Asynchronous writing interaction was chosen to keep students' writing away from becoming "writing speech" (Crystal, 2001, p.25) so as to meet the course objectives for academic purposes (Miyazoe, 2006). Online discussion was given as assignments that required a minimum number of postings, gradually increasing from one to two in case of University A and from one to three in case of University B over the course, not to overload students' tasks with these

additional components (Beatty & Ulasewicz, 2006). The frequency was on average one topic per two weeks so as to give a topic enough time to be fully discussed (Bates & Poole, 2003). With the Blackboard group, because of the students' relative weakness in written English, a topic that was accessible but still relevant to the course unit was selected for each unit with 30 potential participants in a forum over the course. With the Moodle group the topic for discussion was chosen by the students from among three in the course textbook that was relevant to the unit theme: 25 potential participants in a forum.

As an instructor, the researcher did not participate in the online discussions but managed them in order to: 1) observe the natural reactions of the students' online components and 2) not double the amount of instructional content (Bates & Poole, 2003). In this sense, the online interaction was planned to be primarily student-student interaction (Moore, 1989; Anderson, 2003) with an intentional lack of "teaching presence" (Anderson, 2004, p.274) in its configuration.

The final course assessment consisted of 60% coursework (attendance and participation) and 40% final written examination with the Blackboard group and 60% coursework (attendance and participation), 20% mid-term short paper, and 20% final written examination with the Moodle group. Given the nature of language related subjects, the ratio of coursework was relatively high. The online discussion assignments were set as part of the 60% coursework without over-emphasizing it in order to avoid participant stress (Guba & Lincoln, 1982).

## *Method*

A post-course questionnaire was executed in the four classes: it consisted of 20 five-point Likert scale questions plus five open questions. Specifically, the questionnaire consists of 1) basic demographics—gender, age, scholastic year, major, years of computer usage, etc.—(Q.1), 2) specific purposes of computer usage over the last six months (Q.2), 3) usage of mobile phones (Q.5-7), 4) usage of LMS (Q.8-10), 5) evaluation of interaction on LMS (Q.11-16), and 6) overall evaluation of blended learning (Q.17-20). The questionnaire was in Japanese to avoid misunderstanding: and the original can be obtained upon contact with the researcher.

The survey was executed on the final examination day so as to ensure the largest number of respondents. The questionnaire was distributed after the examination so as not to disturb students' concentration. The collection rate is summarized in Table 2.

**Table 2. Specifications of the respondents**

| | Blackboard | Moodle |
|---|---|---|
| Date of survey | July 25, 2007 | July 26, 2007 |
| Course registration | 63 students (two classes) | 50 students (two classes) |
| Survey respondents | 58 | 46 |
| Valid samples | 51 (88%) | 37 (80%) |

All students attending the examination submitted the survey. Additionally, the students were asked to give written consent for analysis and publication, assured of anonymity

and that their responses would not affect their course evaluation: 88 out of 104 respondents (or 84%) met both requirements of fully completing the survey and giving consent.

## *Results and analysis*

Overall, the comparison of the blended course with face-to-face and LMSs was highly positive; Q.17; m=3.86 and Q.18; m=3.89; specifically, 68.2% indicated they liked the blended learning in Q.17, and 69.4% indicated that they thought the blended learning was better than traditional instruction in Q.18.

Further, Pearson correlation analysis among variables was conducted. Following the guidelines posited by Cohen (1988 in Pallant, 2001), any significant correlation (r=±.50 to±1.0) was looked for. A strong correlation was found among Q.13 & Q.14 (r=.728), Q.8.1 & Q.8.2 (r=.713), Q.17 & Q.18 (r=.655), Q.8.2 & Q.9 (r=.562), Q.12 & Q.13 (r=.545), and Q.9 & Q.17 (r=.539), being p<.001 significant. These can be interpreted that 1) higher attendance in classes and higher participation in online interaction are correlated, 2) enjoyment, participation, and ratings of usefulness of online interaction became a positive cycle, and 3) higher participation online and ease of use of the LMS system are correlated. The means for each item are summarized in Table 3.

**Table 3. Mean for Blackboard and Moodle groups of Q.8.1, 8.2, 9, 12, 13, 14, 17, and 18**

| | | Q8.1 | Q8.2 | Q9 | Q12 | Q13 | Q14 | Q17 | Q18 |
|---|---|---|---|---|---|---|---|---|---|
| N | Valid | 88 | 87 | 88 | 88 | 88 | 88 | 88 | 88 |
| | Missing | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean | | 4.47 | 4.13 | 3.67 | 3.45 | 3.10 | 3.53 | 3.86 | 3.89 |
| Std. Deviation | | 0.830 | 0.998 | 0.880 | 1.049 | 1.104 | 0.946 | 0.873 | 0.836 |

The Mann-Whitney test was applied to find that 1) in Q.8.2, Q.9, Q.17, and Q.18, the group means are statistically higher with the Moodle group than the Blackboard group and 2) in Q.9, Q.17, and Q.18, the way each group scores is statistically different (α<.005); further, bar graph representations of the group statistics for three items for both groups were made to examine their distributions (Figure 3-5).

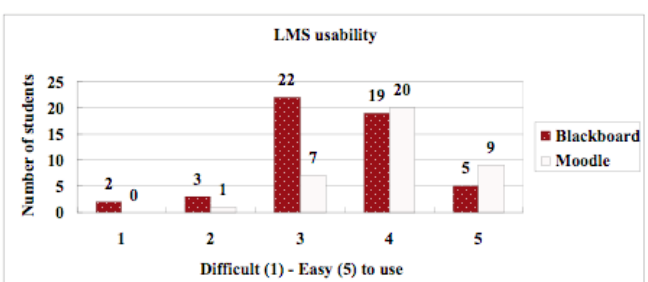


**Figure 3. Students' evaluations on LMS usability**

Q.9 concerns LMS usability and the figure shows that the Moodle group (m=4.0) found the interface easier to use than the Blackboard group (m=3.43) even though it was their first time to use it.

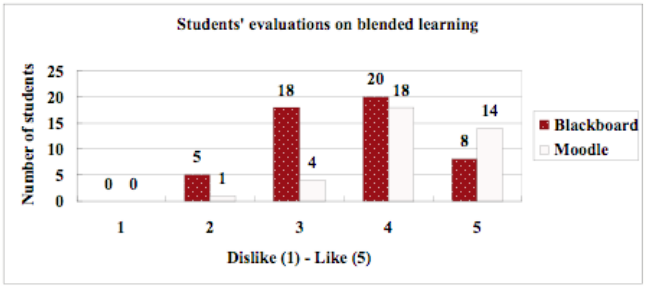


**Figure 4. Students' overall evaluation of LMS blended courses**

Q.17 concerns students' evaluation of blended learning and the Moodle group (m=4.22) liked the blended course more than the Blackboard group (m=3.61).

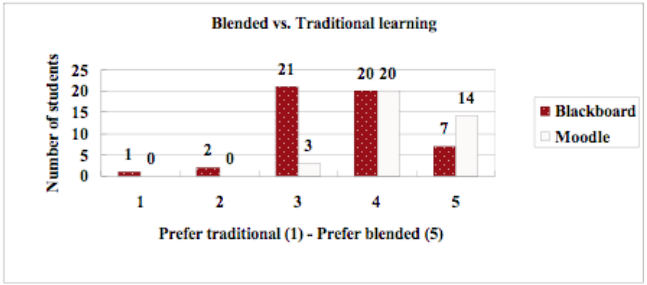


**Figure 5. Comparison between blended learning and traditional learning**

Q.18 concerns overall evaluations of blended learning vs. traditional learning without LMS components and the evaluation of the Moodle group (m=4.3) of blended learning was higher than the Blackboard group (m=3.59).

Figures 3 to 5 show that the Moodle group evaluates LMS usability and LMS blending higher than the Blackboard group. This result coincides with research by Munoz and Duzer (2005) where despite it being the first implementation, students showed higher satisfaction with Moodle than with the familiar Blackboard. This is suggestive because in the present study, 1) the Blackboard group is familiar with the system and the ICT skills of engineering majors are supposed to be fairly high, and 2) this study was conducted under completely separate conditions where only the researcher was in the position of knowing both systems and who avoided giving any information of one system to the other.

## *Discussions and conclusions*

The study found that positive evaluations of the blended course design may have derived from the higher usability of LMS and the higher usability of Moodle over Blackboard, especially elements concerning discussion forums.

These results can be partly explained by the emphasis on interaction among students in the course design because Moodle was originally created to realize social constructivism in its orientation (Dougiamas & Taylor, 2003; Miyazoe, 2008). That is, the more interactive elements are introduced and the more the system supports the intended outcomes, the higher satisfaction from the students could be expected because the aimed instructional design and the chosen system match. Especially for language teaching where interaction is the key for internalizing the target language ("Interaction hypothesis" by Long, 1981; Mitchell & Myles, 1998), the higher usability of Moodle for online interaction among learners deserves attention as this feature could directly relate to the overall learning outcomes and learners' satisfaction with a given course. In this regard, the perspective of subject adaptability to a specific LMS should be further researched.

Also, it is undeniable that the English level of University A students being slightly lower than that of University B placed certain limitations on the students' enjoyment of the merits of interactive elements in writing, which could lead to overall lower evaluations because of this. A comparative study of synchronous writing (shorter and more conversational) with a less advanced group and asynchronous writing (longer and more formal) with a more advanced group with the same blended course design using the same LMS could provide further insights into the results reported in this paper.

On a different dimension, as observed by Beatty and Ulasewicz (2006), the results reported in this paper may reflect the fact that "Moodle [is] much more intuitive and easy to use" (p.41) as an interface even for beginner instructors and learners. That is, the results could be interpreted that the engineering majors in the Blackboard group may apply finer criteria than the Moodle group, which leads to a lower evaluation of the interface. It is noteworthy that even if the two groups showed only one year of difference on average in their prior experience of using computers, this one year of difference could have a greater impact in their overall satisfaction of the given blended course design than the merits of the blended course design itself. This alerts us again to the importance of supporting students' ICT skills as a crucial aspect of course management so as to allow the students a higher acquisition of the target language in a blended course design.

Finally, this study did not examine how interactions in meeting classes and online components were related in learners' perceptions (Ginns & Ellis, 2007): it is possible that the Blackboard group was more content with meeting interaction and saw less meaning in online interaction, which lead to lower motivation to master the interface. Given the relatively small sample size in this and other studies, more research is needed to examine what factors in the LMS are more related to higher evaluation of online interaction and accordingly, higher acquisition of the target language, perhaps with a view to performing a meta-analysis.

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