

## Developing English-Medium LMS-Based Examination for International Class Selection at the State Polytechnic of Malang

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### ABSTRACT

International program is one of the implementations of internationalization in higher education. At State Polytechnic of Malang, the international program is aimed at promoting students' interest in practical fields of study while also gaining emphasis on other skills, namely communicating in English, and having experience interacting with the international community. The selection system for international programs has been developed where prospective students go through several series of tests, namely desk evaluation (files), field of study tests, English Proficiency Test (EPT), and interview tests.

The research aims to develop an international program selection system with the target of obtaining an improved selection system that can be implemented to screen international class students who meet the institution's targets/goals, especially for international students and Indonesian/local students who have a qualified academic background and adequate English background.

This research used a qualitative Research & development approach, creating a selection platform which is flexible in terms of time, it does not require additional writing equipment, and is more efficient in terms of time and is faster in the correction process, and not limited to geographic location. This research combines theory and product where the product is needs-based, namely the LMS-based International Program selection system. This LMS system was chosen because it provides the option of carrying out tests online. The object of this research is International Class applicants at State Polytechnic of Malang, consisting of 20 local students and 60 foreign students. Data collection methods, instruments used are questionnaires, interviews, focus group discussions, tests, and journals.

This LMS platform can also function for managing tests, designing tests, evaluating tests, and reporting tests. The development system in this selection is in two ways, namely: 1) the management system for the question database, 2) interactive video tutorials for prospective students for understanding the selection platform and process. In terms of the management system for the question database, we added question banks, namely adding versions of the number of questions, and grouping questions based on scientific categories and subcategories of question types based on fields of science, as well as adding a random feature of questions to increase the quality of the selection system, namely preventing prospective students from copying the work of their colleagues. In addition, this research produced interactive video simulations to help prospective students understand the selection platform independently. In short, this research improved a technology-based selection system as the follow-up of the previous research.

**Keywords:** *online selection system, international program, LMS*

### INTRODUCTION

Internationalization of education is an essential element in today's higher education system in Indonesia. The government sets Key Performance Indicators (Indikator Kinerja Utama/IKU) as a guide to improving the quality of higher education. Of the eight IKUs, the focus is on study programs that collaborate with international partners, collaborative, participatory classes, and international standards. The aim this IKU is to advance the education system in the country.

One example of the implementation of this internationalization can be seen at the State Polytechnic of Malang (Polinema), which is one of the largest and best vocational universities in Indonesia. Polinema has a vision to excel in global competition, in line with the IKU target. One of the flagship programs is the international class and double degree program. International classes at

Polinema use English as the medium of instruction, involve foreign students, and provide opportunities to take part in the international Overseas Academic Program (OAP).

International classes are becoming increasingly important in line with the policy of the Indonesian Minister of Education and Culture implementing the Independent Campus Learning program. Students now have more freedom to learn and develop the skills needed in the world of work, both at home and abroad. International classes at Polinema are the basis for students to prepare themselves for the program.

However, the existence of international classes also creates a need for a standardized student selection system. In response to this need, Polinema has initiated the development of an online-based international class selection system. However, there are obstacles in its implementation, such as opportunities for cheating and students' unfamiliarity with the LMS platform. The international student selection system that is already running at Polinema is not adequate because this system is not integrated with the Joint SNMPTN (National Selection to Enter State Universities) or SBMPTN (Joint Selection to Enter State Universities) selection. This system has accommodated prospective foreign students who are abroad, but there are still many shortcomings that cause foreign students to find it difficult to access and work with the existing selection system. Therefore, this research aims to improve LMS-based online selection for international class students.

In ongoing development, this research aims to perfect the standardized online selection system. Steps include preparing a question bank, randomizing questions on the LMS platform, and creating interactive video tutorials. All of this is expected to increase the reliability of Polinema's online international class selection system, ensuring that the prospective students selected are of high quality.

## **METHOD**

This applied innovation research uses a qualitative DBR (Design-Based Research) method. This DBR research uses several approaches involving theory and practice which are explained in the following quote: "a series of approaches, with the intent of producing new theories, artifacts, and practices that account for and potentially impact learning and teaching in naturalistic settings" (Herrington , et.al, 2007). The data collection instruments used are in-depth interviews (preliminary study), questionnaires (field testing), development journals (product development) and implementation.

The subjects of this research are prospective International Class students at State Polytechnic of Malang, consisting of foreign and local students. This research took two selection batches, namely selection of local students and foreign students. There are 8 classes or approximately 200 students who will be involved in this research. Prospective students who are the subjects of this research are high school and vocational school graduates. Meanwhile, the subjects involved in the analysis of exam questions were first year students (there were two classes of 50 students), from the English Language Study Program, Malang State Polytechnic.

Steps to improve this international class selection system include providing a bank of test items and categorizing them into sub-chapters in study areas, presenting random questions on the LMS platform to test takers, and creating video tutorials. In the previous year, the exam questions presented to prospective international students came from a package of questions prepared by the Polinema admission test writing team. This year, the test items came from the main and reserve versions of this year's package and the reserve versions of previous year's package. The main version of the admission test from the previous year was already used in the previous year's admission test, and therefore could not be included in this year's admission test. These test items were categorized based on its sub-field of study in consultation with three expert-lecturers majoring in the related field of study of Science and Social.

After the test items banks were ready, they were entered into the LMS platform with a randomization system. This method was used to reduce the potential for cheating and cooperation between test takers. The number of questions tested on students remains the same as the previous year, with the same composition of sub-fields of study, but each participant could receive different questions. Prospective students who took this test would go through two stages of the process on the LMS platform, namely the simulation stage and the actual test stage. Before taking the test in the LMS platform, test takers would have the opportunity to learn how the LMS works through interactive video tutorials and user guides that accompany the simulation test. The interactive nature of this tutorial video allows test takers to interact directly with the video and take quizzes to test their understanding regarding LMS navigation as their test platform.

## FINDINGS AND DISCUSSION

The results of this research are divided into three discussions, namely test item preparation, testing simulations in the LMS, and students' satisfaction survey. One of several innovations in this is that the international class admission test items are categorized based on sub-chapters in each field of study. Test items from the main and reserve versions of this year and the previous year are added in each sub-chapter and presented randomly to prospective international students. The goal is to avoid sharing answers between test takers. Previously, researchers consulted with expert lecturers in various departments at the State Polytechnic of Malang to categorize the test items. After the consultation process, the test items are entered into the exam platform in the LMS with categories of English, Science, and Social, with a randomization system to prevent cheating.

Figure 1. Question bank with categorization and randomization system

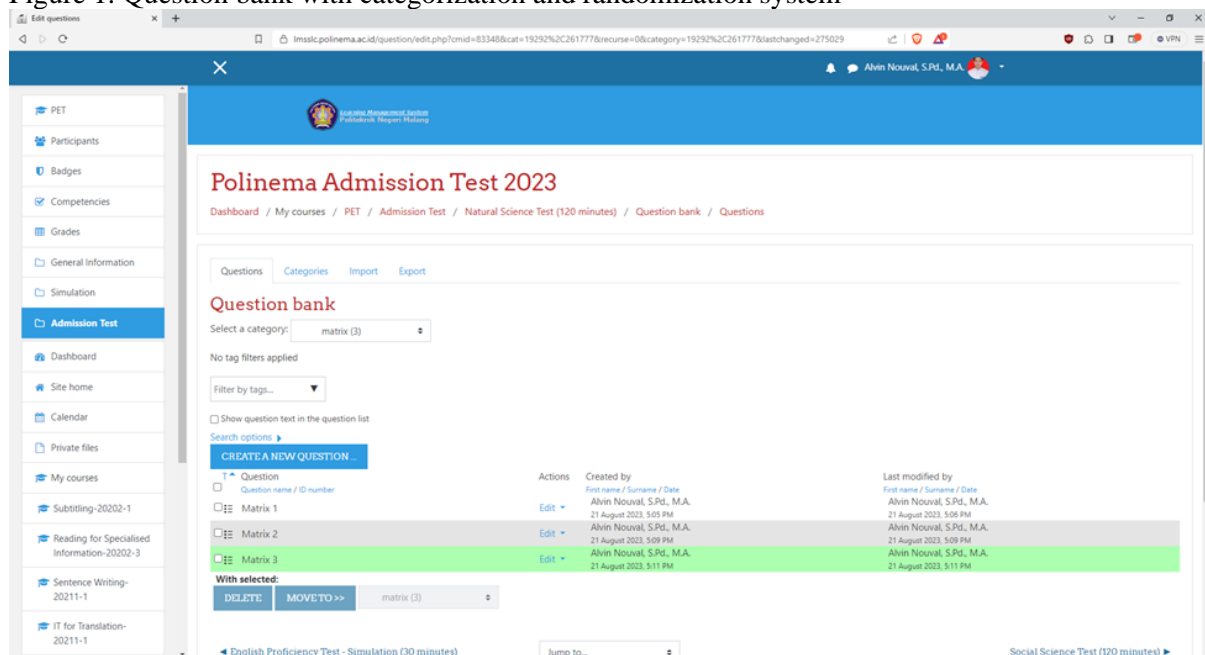


Figure 2. Sample of translated Mathematics question item for Science students

<p>Modus dari data pada tabel distribusi frekuensi berikut adalah ....</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Panjang daun (mm)</th> <th>Frekuensi</th> </tr> </thead> <tbody> <tr> <td>10 - 19</td> <td>6</td> </tr> <tr> <td>20 - 29</td> <td>13</td> </tr> <tr> <td>30 - 39</td> <td>19</td> </tr> <tr> <td>40 - 49</td> <td>15</td> </tr> <tr> <td>50 - 59</td> <td>7</td> </tr> </tbody> </table> <p>(A) 34,50          (B) 35,50          (C) 35,75          (D) 36,25          (E) 36,50</p>	Panjang daun (mm)	Frekuensi	10 - 19	6	20 - 29	13	30 - 39	19	40 - 49	15	50 - 59	7	<p>The mode of the data in the following frequency distribution table is ....</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Length of a leaf (mm)</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>10 - 19</td> <td>6</td> </tr> <tr> <td>20 - 29</td> <td>13</td> </tr> <tr> <td>30 - 39</td> <td>19</td> </tr> <tr> <td>40 - 49</td> <td>15</td> </tr> <tr> <td>50 - 59</td> <td>7</td> </tr> </tbody> </table> <p>(A) 34,50          (B) 35,50          (C) 35,75          (D) 36,25          (E) 36,50</p>	Length of a leaf (mm)	Frequency	10 - 19	6	20 - 29	13	30 - 39	19	40 - 49	15	50 - 59	7
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Figure 3. Sample of translated Mathematics question item for Social Science students

<p>Pada sebuah <i>startup</i>, pekerja diizinkan mengambil cuti selama 3 hari. Apabila sekarang adalah bulan Juni, ada berapa cara pekerja memilih hari untuk cuti?</p> <p>(A) 406          (B) 449          (C) 3654          (D) 4060          (E) 4495</p>	<p>At a <i>startup</i>, workers are allowed to take 3 days off. If it is June, how many ways can a worker choose days to leave?</p> <p>(A) 406          (B) 449          (C) 3654          (D) 4060          (E) 4495</p>
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The science and social studies admission test items were translated into English by an English lecturer who is a professional translator. The results of this translation were consulted with a certified linguist to check the accuracy and suitability of the translation results. The translation quality score of the linguist is 95/100 and is reported as:

1. The meaning is fully conveyed in Indonesian. There is no omission of parts that make understanding imperfect.
2. There are one or two terms that can be corrected but do not interfere with understanding. The text appears ready to be utilized as needed.
3. There are no errors at all in terms of grammar. The language style feels natural and the text can be read smoothly.
4. The register used in the translation is in harmony with the register in the source text. There are no significant differences that could reduce the meaning.

The next stage is trying out the items where the selected participants are asked to try to access the platform and work on the items. The main part of the Admission Test application is the exam simulation (Simulation) and the actual exam (Admission Test). Students are asked to first

study the platform used for the exam through the video tutorials provided. After that, they are given a 24-hour opportunity to try out the existing platform by working on simulation items on the same platform. Although participants can log in to the platform at this time, they cannot access the actual exam questions. Participants can only access simulation items. This stage is carried out so that students do not experience technical problems or confusion when accessing the LMS during the actual exam.

When the specified exam time arrives, participants log back into the LMS and can only access the actual exam items. Time for taking the exam is limited to 120 minutes for the Science or Social group exam and 30 minutes for the English exam. After the exam is completed or the processing time is up, the score will be automatically calculated by the system and can be accessed by the research team.

The second novelty in this research from previous research is the presentation of an interactive video tutorial and user manual that accompanies the simulation test. The interactive nature of this tutorial video allows test takers to interact directly with the video and take quizzes to test their understanding regarding LMS navigation as their test platform.

Table 1. Test taker's satisfaction survey result

No	Questionnaire item	Highly disagree	Disagree	Agree	Highly agree
1	The platform used (LMS) is intuitive and user-friendly	0 (0%)	0 (0%)	6 (20.7%)	23 (79.3%)
2	The multiple choice format is appropriate and convenient for me	0 (0%)	0 (0%)	9 (31%)	20 (69%)
3	The subject tested represent the degree I am seeking	1 (3.4%)	1 (3.4%)	5 (17.2%)	22 (75.9%)
4	I have learned the topics in the admission test in high school	0 (0%)	1 (3.4%)	18 (62.1%)	10 (34.5%)
5	The test timing was sufficient and I was able to finish it on time	3 (10.3%)	9 (31%)	7 (24.1%)	10 (34.5%)
6	Prior to taking the test, I know or have been informed about the scoring method	7 (24.1%)	5 (17.2%)	8 (27.6%)	9 (31%)

After completing the admission exam, test takers are presented with a satisfaction survey to find out their level of satisfaction and opinions about this entrance exam, as well as any suggestions for improvement they may have. This satisfaction survey consists of eight closed questions and four open questions for international prospective students. These eight closed questions cover user satisfaction in terms of LMS platform, test format, field of study tested, test difficulty level, test time allocation, and test assessment methods. The four open questions in this survey include what problems participants faced while taking the entrance test, what suggestions for improvement they could give regarding the type of questions, whether the video tutorial was useful for them and suggestions for improvement for this video tutorial, as well as the question whether the prospective students had carried out a simulation before conducting entrance tests and how these simulations impact the actual exam process.

The results of this questionnaire can be concluded that the LMS-based online international student admission system is very satisfactory in terms of platform, question format, suitability of the test with background knowledge and chosen major or study program, and level of difficulty of the questions. The unsatisfactory side for prospective students based on this survey is the insufficient time allotment and assessment methods that are not very familiar to them. Meanwhile, one of the novelties in this research is that the interactive video tutorial received positive appreciation from almost all test participants.

In the previous year, researchers had initiated the preparation of an LMS-based international class entrance exam. However, along the way there were several obstacles which were then refined in this ongoing research. This research is in line with Chappelle (2010) where innovation in technology needs to pay attention to the main motives, namely equality and efficiency. Equality in question is a standard where the form of questions developed has the same standard for foreign students or local students.

After implementing a number of novelties to improve the LMS-based international student admission system, researchers succeeded in concluding several things. The first is that the use of LMS is currently still the best choice for conducting international class admission tests online. With the versatile, flexible, effective, and efficient character of LMS, LMS shows its superiority compared to the conventional paper and pencil model of accepting new students (Cahyani et.al., 2022). The choice of this platform is also in line with current developments because more and more universities in the country are adopting online acceptance of new students using the LMS platform.

Researchers also increased the number of test items, categorization, and random presentation of test items to make this test more reliable in filtering international class candidates. Entrance exam questions are categorized based on sub-chapters in each field of study and presented randomly to test takers. Thus, it is possible for each test taker to receive different questions from every other test taker. This method can eliminate the opportunity for test takers to share answers between participants. It is hoped that the video tutorials and user manuals developed in this research can further help students prepare for international class entrance exams. Therefore, the development of this international class selection application aims to be more interactive and visual in accommodating the needs of test takers. This is in line with Chau (2014) where the application design for evaluation should have visual, interactive, acoustic features and have a clear instructional design.

## CONCLUSION

The development of an LMS platform with enriched questions and selection methods aims to manage tests, design tests, evaluate tests and better test reporting. This form of renewal in the selection system development system is in two ways, namely: 1) in the question management system, 2) presenting interactive video tutorials (interacting with videos) for prospective students in carrying out the selection. In terms of question management, developing selection content, namely adding question banks, namely adding versions of the number of questions, and grouping questions based on scientific categories and subcategories of question types based on families/fields of science, as well as adding a random feature/randomization of questions to increase the quality of the selection system, namely preventing prospective students from copying the work of their colleagues.

Meanwhile, for updates in interactive video tutorials, this research produces interactive video simulations to help prospective students understand the selection platform independently. The selection application guidebook which is also the output of this research can be used as a reference in understanding the implementation of selection, the steps in carrying out tests, types of tests and

their parts. In short, this research perfects a technology-based selection system as a continuation of previous research.

Some suggestions for upcoming research in similar areas would include:

1. Creation of questions for the selection of prospective international class students consisting of foreign students and local international class students: preparation of questions is carried out by translating written exam questions from Indonesian to English. The process of creating questions is not written directly in English. Translation adjustments to adapt questions in English need to be checked for acceptability according to the international context.
2. The selection questions are categorized based on groups or clusters which are carried out with the support of resource persons from lecturers who teach courses. There are many clusters and categories that emerged after simulation and discussion with these sources. So researchers mapped these clusters to make it easier to classify the categories that emerged. It is necessary to carry out further, more detailed and in-depth cluster mapping involving triangulation from special study field experts to study field test question developers.
3. Simulation video tutorials following the selection, as well as information and technical test implementation are quite simple and easy to access. However, it is still necessary to measure the level of effectiveness of this video for users in understanding the platform being developed. Further research needs to be done to measure user perceptions of the video, and any feedback to increase the interactive quality of the video.

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