Developing a Learning Management System Based on Materials for a Japanese Minor Education Center

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Article Info	Abstract
	This study intends to (1) design a model of the teaching material format that can accommodate the platform and features of the learning management system, (2) explain the process for creating learning material content based on a learning management system for Minority Education Center, and (3) incorporate instrument assessment into learning material based on the learning management system. (4) ascertain the practicality and validity rate of the material-based learning management system. The Four D model—Define, Design, Develop, and Disseminate—is used in this study to use the research and development (R&D) approach. The study's findings demonstrate how to create materials, create descriptions, choose formats, create criteria reference tests, and include tests in instructional materials. Teaching resources based on LMSs have been effectively created. Aspects of creed, morals, worship, fiqh, and shirah are included in the materials. Quizzes, discussion boards, and assignments are the three forms of assessment that are used when integrating the evaluation system with LMS-based instructional resources. The Materials-based LMS's overall score is classified as legitimate. The Japanese Minori Education Center's material-based learning management system has been successfully built, as evidenced by the group evaluation's satisfactory outcome.

Introduction

The lack of a thorough and systematic compilation of the actual state of the learning resources at the Minor Education Center has made it difficult for instructors and learning residents to overcome their scarcity. Meanwhile, the availability of educational resources—particularly those related to Islamic Religious Education—is crucial. Similarly, the educators' source lacks Islamic religious education and academic experience. To (1) make learning easier to implement, (2) boost performance, and (3) make resources more accessible at any time and from any location, Islamic religious education teaching materials must be developed utilizing technology-based tools like learning management systems (Introduction of Minority Education Center, 2024a).

The process of developing teaching materials involves three stages: the need analysis phase, which strengthens the foundation for the design of the materials; the design phase, which incorporates the materials into the learning management system; and the formative evaluation phase, which validates the final product of the teaching

materials. The practicality and efficacy of the product are then tested to ensure that it is acceptable and can be used in large quantities in similar educational institutions (Turnbull et al., 2020). the Minory Education Center in particular. This research concentrates on assembling the content of instructional materials, creating material descriptions, deciding on the format of instructional materials, creating test instruments, and incorporating instructional materials into the learning management system, particularly during the design process (Axmedova, 2024; Kaban, 2021).

The Minori Education Center's building is one example of innovation created by the Indonesian diaspora in Japan. The purpose of this institution is to address the concerns of Indonesian citizens (WNI), particularly those in the Indonesian diaspora, who face geographical, linguistic, and cultural barriers that are unfriendly to Muslims. This includes addressing parents' worries about providing their children with the proper education (Oktafiani, 2019). In 2023, 90,000 Indonesians were living in Japan; by 2024, that number had grown to 121,000, with the bulk of them being Muslims (Nurhadi, 2024). Teachers and education professionals took the initiative to construct educational institutions to meet these demands, and one of the programs they offered was Islamic Religious Education (IRE) to the local population (Rurisman et al., 2024).

Subsequent events revealed that the Muslim community living overseas had the same internal atmosphere over the challenge of adjusting to the educational setting that was removed from the foundations of Islamic theology. Thus, by offering language immersion for kids and adults, tahsin and tahfiz, reading and writing the Qur'an, and Islamic religious studies for all citizens to learn, this institution satisfies the desires of the Muslim community for all ages. This organization offers Shirah, Worship, Aqidah, Morals, and Fiqh specifically for IRE (Introduction of Minority Education Center, 2024).

Regretfully, learning materials that outline the complete IRE curriculum and the content preparation process have not been created methodically or systematically. In actuality, it is crucial and necessary that the educational materials in question exist. Since the teaching resources are needed immediately to fulfill the requirements of the curriculum that is provided to all learning residents, it is considered urgent (Hudiah, 2022). Similarly, instructional materials play a crucial role in supporting the execution of educational programs. The three primary components of instructional materials—content, strategy, and assessment—make it essential, according to Salam (2017). Teaching materials cover a wide range of information, including factual, conceptual, procedural, and metacognitive knowledge necessary to develop learning citizens' academic skills. Teaching materials include a range of learning activities that can be done online, offline, or in a hybrid learning environment, as well as individually and in groups (Cakir et al., 2019; Ozturk & Susuz, 2023; Vina Serevina, Sunaryo, Raihanati, I Made Astra, 2018).

Reaching different aspects of distinct learning citizenry is made feasible by the range of tactics employed; nevertheless, the learning management system platform and features cannot be accommodated by the format model of teaching materials now in use. Similarly, instructional materials offer a range of assessments that are administered in a realistic and integrative way to gauge technical skills and performance as well as intellectual capacity (Peristeri & Andreou, 2024). It is feasible to reach different aspects of diverse learning citizens thanks to

the range of tactics employed. Similar to this, instructional materials include a range of tests that are administered in a genuine and integrative way to gauge students' intellectual capacity as well as their performance and technical proficiency (Yang & Hong, 2024). However, there hasn't been a good integration of benchmark reference tests and criteria into learning management system-based instructional materials.

Given the importance of educational resources, IRE teaching materials must be created for the learning residents of Minority Education Centers. Even better if it aligns with the institution's vision and objective for Islamic education, which is to develop human learners who are virtuous, advanced, and highly skilled in science and technology as an expression of a peaceful Islamic existence (Purnama Sari & Surya, 2017). Enough support for learning resources, particularly IRE teaching materials, is required to hasten the accomplishment of the vision and goal.

Coşkun carried out a qualitative study on instructional materials that concentrated on the choice of religious education discussion materials for university-taught German courses. As is evident, the main subject of this study is the oral discourse of faiths in Germany, including Islam, Christianity, Judaism, Buddhism, and Hinduism. Studies of Islamic studies typically focus on general topics that are not covered in the curriculum for Islamic education (Coşkun, 2021). In a similar vein, Sahin's study looks at two sets of connected topics in current debates about Islam and education about the Muslim majority and minority. This study discovered that the fields of Islamic Pedagogy, Islamic Nurturing, and Islamic Religious Pedagogy were conceptually unclear (Sahin, 2018).

According to a different study by Bahiyah et al., mobile learning applications for prayer affect engaging and dynamic learning that is convenient to use at any time and from any location (Sahin, 2018). However, additional study resources are not covered in this teaching material; it solely discusses the element of worship, specifically prayer. In contrast, this study focuses specifically on the design of Islamic religious education teaching materials based on LMS, 22 which is meant for the Minori Education Center. These materials cover Shirah, Worship, Aqidah, Morals, and Fiqh. The research and development methods used in this study employ the FOUR D development model to create LMS-based IRE teaching materials that satisfy the requirements of validity, practicality, and effectiveness to be used comprehensively for children from the Indonesian diaspora as well as other young Muslim generations in Japan (Yaumi, 2024).

Given the following problem's context, the primary research question is: "How can IRE teaching materials be created at the Minory Education Center in Japan using a learning management system? Three research questions are then derived from the core problem formulation.

> (1) How well does a learning management system-based process for creating educational materials align with the curriculum, student characteristics, and Minority Education Center context?
>
> (2) What is the format model for the teaching materials that can support the learning management system's platform and capabilities, making it simple for students at the Minority Education Center to access them at any time and from any location?
>
> (3) How well does the Minority Education Center's learning management system-based curriculum incorporate benchmark/criteria reference tests?

(4) How do material-based learning management systems do in terms of validity and usefulness?

Method

An interdisciplinary strategy is required to address the numerous issues related to the lack of IRE learning resources in the context of Muslim minority communities in a multicultural setting. A comprehensive examination of several pertinent cognate science viewpoints is conducted. O'Kane and Tully combine the fields of engineering, creative arts, and business to design educational products as needed. This study is based on three disciplines from a scientific standpoint:

(1) educational technology to guide the design mechanism, teaching material format, and test integration model;

(2) Islamic Religious Education discipline to determine the curriculum and content standards; and

(3) information and communication technology to determine the Learning Management System platform (O'Kane & Tully, 2018).

The study's methodology, as demonstrated by Flagg and Dick, Cary, and Carey in the creation of instructional materials, combines qualitative data for content preparation and formatting with a quantitative (mixed method) approach to assess the validity and reliability of test instruments incorporated into instructional materials (Dick et al., 2021). Researchers (a) look for printed and non-printed sources, (b) gather materials that are pertinent to IRE teaching materials, (c) classify using scientific structure, (d) group knowledge according to procedural, conceptual, metacognition, and factual categories, (e) assemble materials using patterns in material descriptions, and (f) upload and manage in learning management systems.

The FOUR D model—Define, Design, Develop, and Disseminate—is used in this study to use the research and development (R&D) approach. The consortium is composed of three proposer teams (Ulgari et al., 2024). Based on the division of research orientation in the consortium research flowchart as illustrated in Figure 3, the flowchart in the design phase follows the following stages and steps:
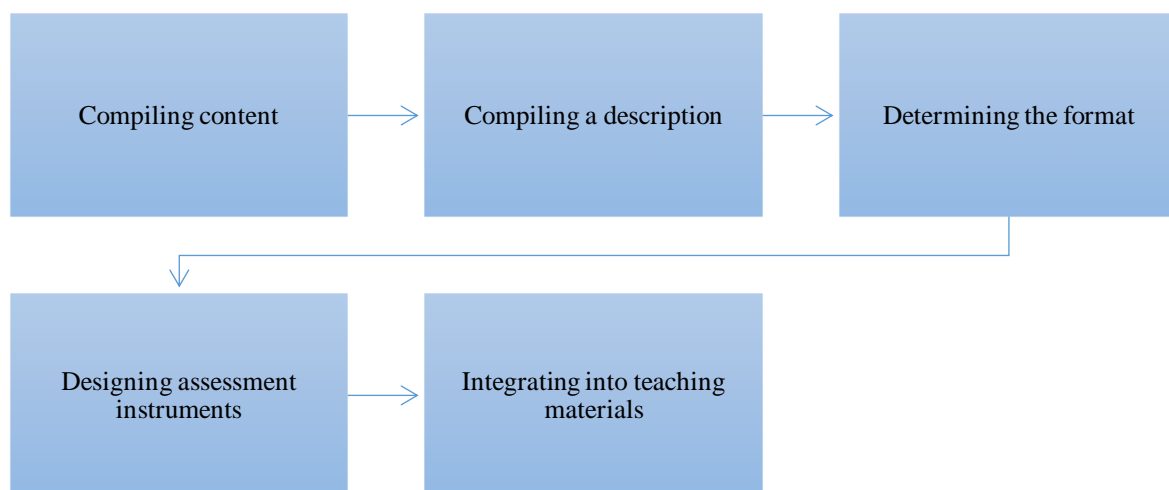

Figure 1 Design Stage Research Flow Diagram

Results

Mechanism for Preparing Teaching Materials Content Based on *Learning Management System*

The preparation of LMS-based teaching material content follows the mechanism of (1) compiling materials, (2) compiling descriptions, (3) determining formats, (4) designing criteria reference tests (5) integrating tests into teaching materials. The preparation of content has been carried out based on the results of the needs analysis (Group I Research Results). In the preparation of materials, several procedures are carried out such as choosing a topic, determining the scope, determining the content structure, and creating a knowledge structure, or it can be illustrated in the following Table 1:

Table 1 Content Construction

Theme	Subject Matter	Content Structure	Knowledge Structure
Life	Getting to Know the Pillars of Faith	Definition of Faith, Pillars of Faith, Evidence about the Pillars of Faith	Factual knowledge, conceptual, and procedural knowledge
Morals	Become Personal Integrity with Trust and Honesty	Definition of trust and honesty, scope of trust and honesty, benefits of trust and honesty	Factual knowledge, conceptual, and procedural, metacognition
Worship	Fardlu Prayer 5 Times	Definition, legal basis, mandatory and legal requirements, and implementation procedures	Factual knowledge, conceptual, procedural, and metacognition
Jurisprudence	Halal Provisions and The Haram of Food	Halal and haram Food and Beverage Provisions; Each discusses the definition, types, and benefits.	Factual knowledge, conceptual, procedural, and metacognition
Sirah	The Prophet Muhammad (peace be upon him) as a blessing for the entire universe	The struggle of the Prophet Muhammad in Mecca and in Medina, the da'wah movement, and getting to know the person of the Prophet Muhammad.	Factual knowledge, conceptual, procedural, and metacognition

The distribution of themes found in the Minori Education Center (MEC) curriculum, as determined by online interviews and documents accessed from the MEC website with Hikari School, a South Tangerang school connected to the Japanese government and society, is used to construct the LMS-based teaching material content, as indicated in table 1. Given that all of the professors at MEC are Indonesian and the students are from the

Indonesian community, the courses, content structure, and knowledge structure are created and developed using the curriculum and sources found in Indonesian elementary and secondary schools. Additionally, no source has ever been created that can serve as the primary source of information for creating Islamic Religious Education (IRE) teaching materials based on learning management systems. To accommodate students' reading and learning styles, the description of teaching materials is prepared according to a general pattern. Specifically, (1) the material is described methodically to accommodate the auditory and complete reading styles, and (2) the visual style is accommodated by presenting examples and non-examples, as well as procedural steps to accommodate the kinesthetic reading style.

Teaching Material Format that Can Accommodate the Platform and Features of *the Learning Management System*

The LMS-based teaching material format follows a platform that is integrated with the cloud-based MOODLE. This format can be seen on the LMS https://lms.katalis-minori.com/ website. It can be seen in the image above that the LMS-based teaching materials developed include Learning Resources (LC) and Islamic Religious Education (IRE). LC is a learning material for Islamic religious education from various levels (PAUD to high school) and higher education that is prepared for educators and residents to study at the Minori Education Center (MEC) in Japan. This subject matter covers aspects of creed, morals, worship, fiqh, and shirah sourced from the Qur'an and the Sunnah of the Prophet Muhammad Saw. LC is designed to accommodate sources of Islamic religious education from elementary school to high school and college.
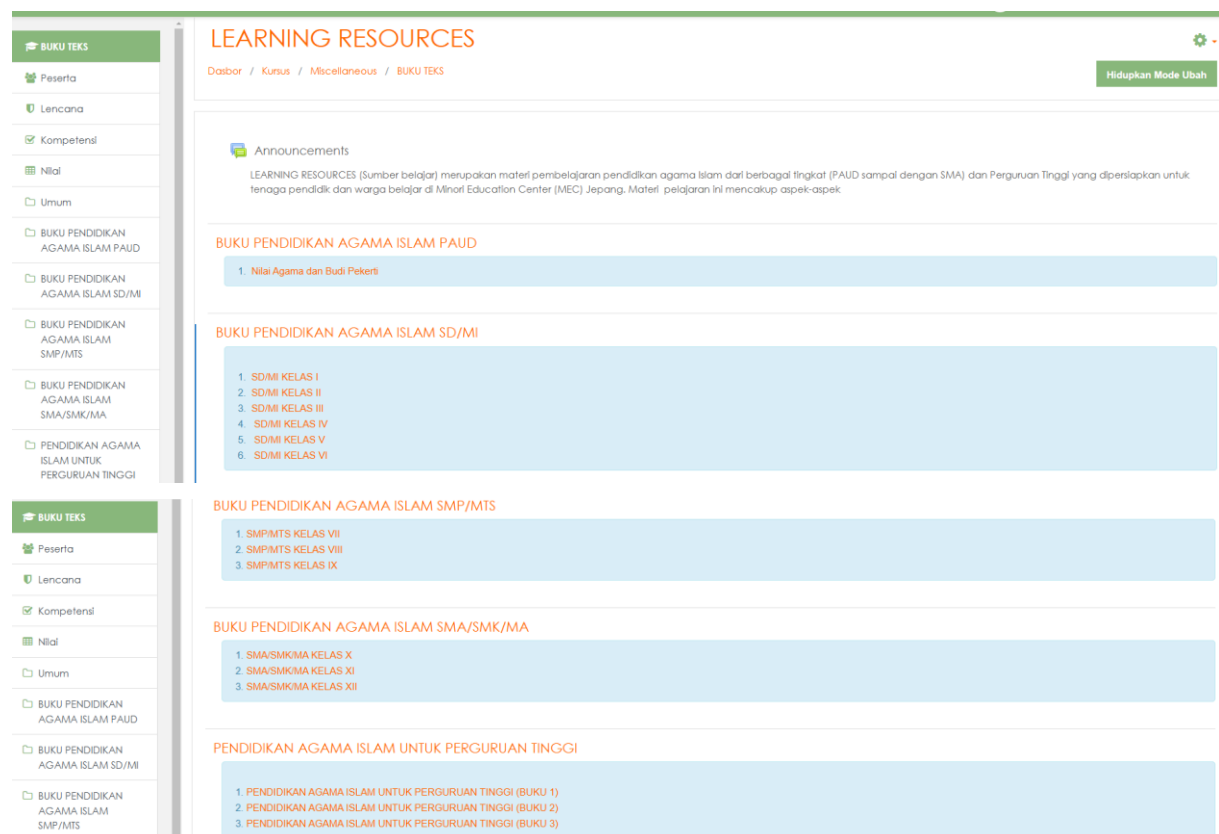

Figure 2. LMS-Based IRE Learning Resources

The learning resources provided are taken from textbooks that are formally used at the elementary/middle school and university levels. The goal is to make it easier for educators and students to get materials that suit the needs of the learning community. The Islamic religious education here is a planned and continuous conscious effort in preparing students to know, understand, appreciate, and practice the teachings of Islam which include creed, morals, worship, fiqh, and sirah which are sourced from the Qur'an and the Sunnah of the Prophet Muhammad Saw. The format of LMS-based IRE teaching materials can be illustrated as below:

Figure 3. Construction of LMS-Based PAI Teaching Materials

How to Integrate Tests and Assessments into Teaching Materials Based *on a Learning Management System*

The researcher employs three forms of assessment when incorporating the evaluation system into learning management system-based instructional materials: (1) quizzes, (2) discussion boards, and (3) assignments. Assessing cognitive learning achievement about mastery of learning materials or subjects is the primary goal of quiz implementation. The purpose of the discussion forum was to evaluate their participation in fostering social interaction among learning residents with learning resources, teachers, and other learning residents. This is to foster a kind, empathetic, and helpful attitude by cooperating and working together. In the meantime, the

assignment aims to evaluate learning residents' performance in both direct practice and their ability to handle a variety of social issues that arise.

The integration of quizzes, discussion forums, and assignments into LMS-based teaching materials is not only oriented to the ability measurement and assessment of students' attitudes and performance but also has an impact on the quality of the learning process and outcomes. In addition, educators can also assess the success of the learning carried out. The integration model can be done interactively, separately, and combined from both. First, integrative integration means that every time learning is carried out, the three types of assessments are given to measure the achievements of each learning process. Second, separate integration means that when the teaching materials are accessed and studied independently, they can also work on them anytime and anywhere, without waiting for every learning. Third, the integration model can blend between the two. During the implementation of learning, they will be given quizzes, on other occasions they can do assignments and discuss separately.
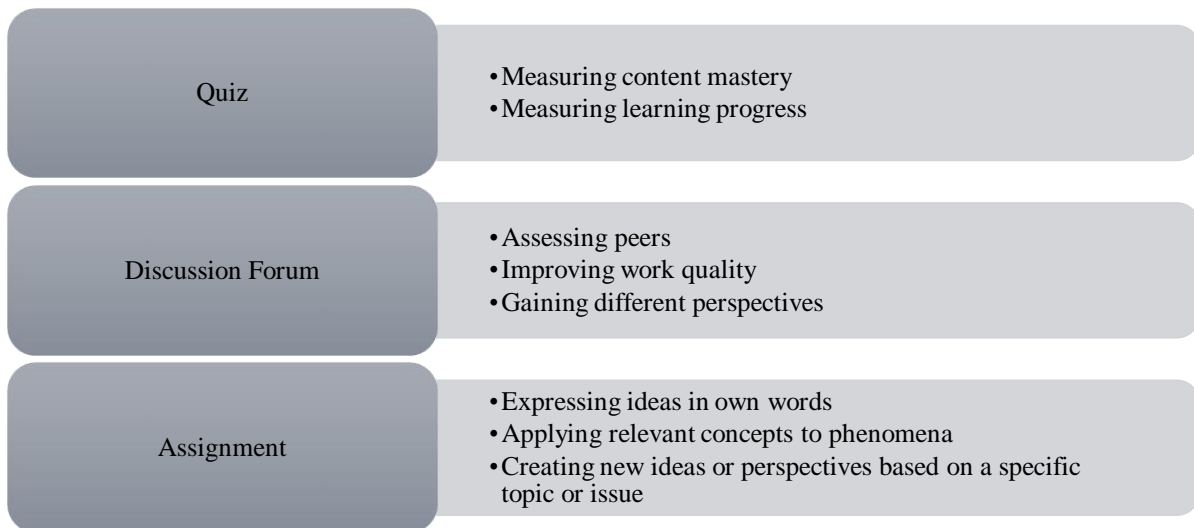
Quiz	• Measuring content mastery • Measuring learning progress
Discussion Forum	• Assessing peers • Improving work quality • Gaining different perspectives
Assignment	• Expressing ideas in own words • Applying relevant concepts to phenomena • Creating new ideas or perspectives based on a specific topic or issue

Figure 3. Integration of Test and Assessment in LMS

The Result of Experts' Validation

The result of experts' validation focuses on the LMS resources, activities, and online course design. The online instructional resources involve resources relevance, organization, knowledge construction, and language that contains fourteen (14) items of instruments as indicated in the attachment. The result of the experts' validation of the online instructional resources used in the course indicated that the mean score is 4.52, which is categorized as very valid based on the criteria ($4.5 \leq Va \leq 5$ = very Valid) as given in chapter three.

The result of the experts' validation of the instructional resources used in the course indicated that the mean score is 4.42 which is categorized as valid based on the criteria ($3.5 \leq Va < 4.5$= valid) as given in chapter three. In addition, the result of the experts' validation of the online course design used in the course indicated that the mean score is 4.40 which is categorized as valid based on the criteria ($3.5 \leq Va < 4.5$ = valid) as given in chapter three. So, the overall score of the instructional resources, activities, and online course design can be stated that:

1. The mean score of instructional resources is 4.52 which is categorized as very valid
2. The mean score of instructional activities is 4.42 which is categorized as valid
3. The mean score of online course design is 4.40 which is categorized as valid.

Therefore, the overall score of the validation result of online instructional resources, online instructional activities, and online course design is 4.45 which is categorized as valid based on the criteria ($3.5 \leq Va < 4.5$= Valid).

The Results of the LMS Evaluation

This is the learners' appraisal of using resources and activities after following the course for six weeks. There were 21 learners who participated in this evaluation. There are three tools used to uncover the learners' score; (1) constructivist OL environment survey, (2) critical incident, and (3) attitudes to thinking and learning survey. All the appraisals used in this survey are already integrated into the online course:
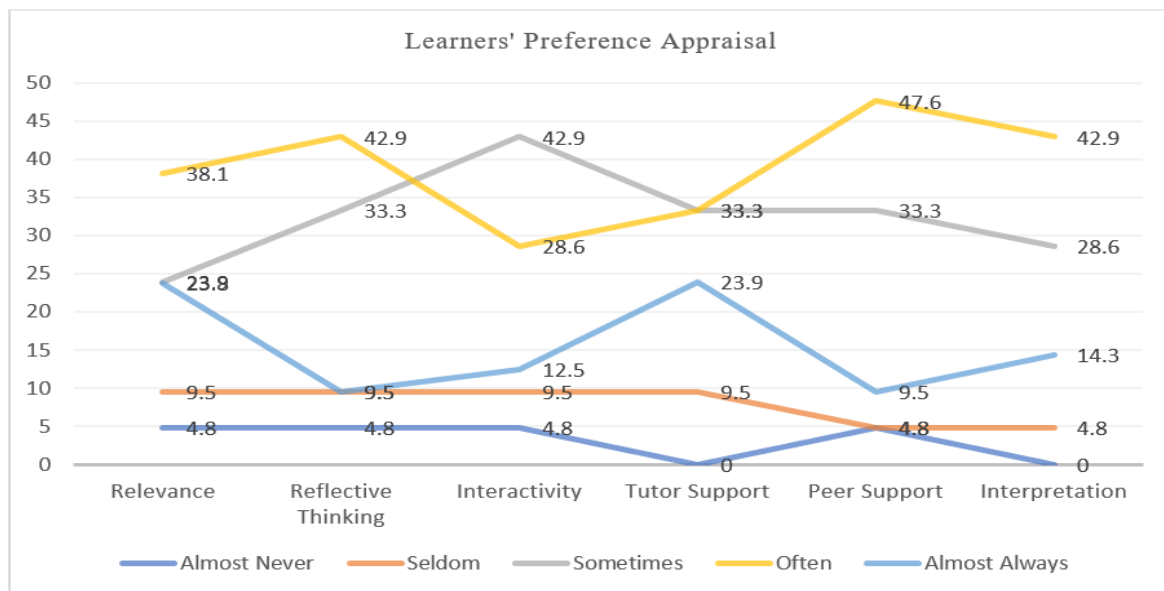

Figure 4. The Learners' Preference on Online Course Appraisal

Figure 4 shows that the majority (39%) of learners are at the level of *often*, 34% of learners are at the level of sometimes, 15,9% of learners at the level of almost always, 7.9% of learners at the level of seldom, and 3.2% of learners are at the level of rarely. Therefore, the level of learners' preferences towards online learning courses seen from the relevance, reflective thinking, interactivity, tutor support, peer support, and their interpretation of online courses are categorized as *often*. If this category is transformed into a rating system such as poor, fair, average, good, and excellence, then this category is at the *good level*.

The other appraisal is the critical incident appraisal. This is a qualitative response for gaining learners' reflection on critical moments that they remembered from the course they learned. There were 10 learners participated in this appraisal. They responded that using OL can give innovation and be considered as the new way in learning, especially for using LMS which could make the learners more surprised. The learners' engagement in OL was

very active in accessing instructional resources and activities provided on the website. The contribution of the forum and group work could also make them enthusiastic about attending the OL system although they encountered some confusing situations when they had a hard question, deadline, and late response from other parts of learning.

The small group evaluation was also focused on analyzing the learners' perception of online learning by using five criteria such as strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree, and strongly agree. The percentage rate indicated that there was only 1 (9.10%) learner who strongly disagreed with connected learning, 2 (18.2%) somewhat disagreed, 2 (18.2%) neither agreed nor disagreed 5 (45.5) somewhat agreed, and only 1 (9.10%) who strongly agree with connected learning. No student strongly disagrees with the statement "When I encounter people, whose opinions seem alien to me, I make a deliberate effort to extend myself into that person, to try to see how they could have those opinions." So, the majority of learners' attitude scale in connected learning is at the level ***somewhat agree*** towards the online learning course.

The percentage rate on separate learning indicated that there was only 1 (9.10%) learner who strongly disagreed with separate learning, 2 (18.2%) somewhat disagree, none of them responded as neither agree nor disagree, 6 (54.5% somewhat agree, and only 2 (18.2%) who strongly agree with separate learning. So, the majority of learners' attitude scale in connected learning is at the level ***somewhat agree*** towards the online learning course. It's also clear that the value of connected learning is higher than that of separate learning although both are at the same level.

Conclusion

Method for Creating Educational Resources Learning Management System-Based Content. The process of creating LMS-based instructional materials involves the following steps:

> (1) gathering materials,
>
> (2) creating descriptions,
>
> (3) deciding on formats,
>
> (4) creating reference tests with criteria. and
>
> (5) Including assessments in instructional materials.

Based on the findings of the needs analysis, content preparation has been completed.

Islamic Religious Education and Learning Resources (LC) are examples of LMS-based instructional materials. The Minor Instruction Center in Japan has created LC, a learning resource for Islamic religious instruction at several levels including higher education, for use by educators and locals. Aspects of creed, morals, worship, fiqh, and shirah derived from the Qur'an and the Prophet Muhammad Saw's Sunnah are covered in this subject. LC is made to support Islamic religious education sources for students in elementary school, high school, and college.

The researcher employs three forms of assessment when incorporating the evaluation system into learning management system-based instructional materials:

(1) quizzes,

(2) discussion boards, and

(3) assignments.

Assessing cognitive learning achievement about mastery of learning materials or subjects is the primary goal of quiz implementation. The purpose of the discussion forum was to evaluate their participation in fostering social interaction among learning residents with learning resources, teachers, and other learning residents.

In particular, the mean score for instructional resources, activities, and online course design is 4.52, which is classified as very valid; the mean score for instructional activities is 4.42, which is classified as valid; and the mean score for online course design is 4.40, which is classified as valid. These are the overall scores for the Materials-based LMS. The initial internal evaluation was on the language used in the writing of the documents, including words, phrases, clauses, phonemes, and sentences. It is valid, as indicated by the experts' mean validation score of 4.52 for online instructional resources and 4.40 for course design. 39% of students use the OL system, which is frequently and "almost always" used at the upper level. Although they were a little confused in a few activities, the learners' reflection of involvement is good; they used the internet actively in a distant activity, they were astonished by many online activities, and they took many beneficial actions. The majority of students' attitudes toward connected and separate learning range from "somewhat agree" to "extremely agree." The Japanese Minori Education Center's Material-Based Learning Management System has been successfully built, as evidenced by the small group evaluation's satisfactory outcome

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