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Moodle versus Google Classroom as Platforms for Arabic Multimedia Learning: A Comparative Preliminary Needs Analysis

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ABSTRACT

This study aims to compare Moodle and Google Classroom as platforms for delivering Arabic multimedia during the preliminary (needs analysis) stage of product development. A descriptive qualitative design with document analysis was used. Thirteen documents were analyzed: official platform documentation, a prior comparative study, five empirical studies on Arabic learning, and one systematic review. They were coded against five criteria: deployment and management, content and multimedia support, assessment and feedback, communication and live practice, and evidence from Arabic learning studies. The findings show that Moodle offers broader activity types, such as H5P, SCORM, Workshop, and BigBlueButton, but requires server administration, whereas Google Classroom is quicker to deploy and now includes Forms-based quizzes, rubrics, and Meet links. Arabic learning studies report flexibility and engagement, but also internet and account barriers. The product should therefore be designed as platform-independent units, and the platform should be chosen according to institutional capacity.

Keyword needs analysis; Arabic multimedia; Moodle; Google Classroom

مستخلص البحث

يهدف هذا البحث إلى مقارنة نظامي مودل وجوجل كلاس روم بوصفهما منصتين لتقديم الوسائط المتعددة في تعليم اللغة العربية، وذلك في مرحلة الدراسة الأولية (تحليل الاحتياجات) قبل تطوير المنتج. استخدم البحث المنهج الوصفي النوعي بأسلوب تحليل الوثائق، وحُلِّلت ثلاث عشرة وثيقة، منها الوثائق الرسمية للمنصتين، ودراسة مقارنة سابقة، وخمس دراسات تجريبية في تعليم اللغة العربية، ومراجعة منهجية واحدة. ورُمِّزت البيانات وفق خمسة معايير، هي: النشر والإدارة، ودعم المحتوى والوسائط المتعددة، والتقويم والتغذية الراجعة، والتواصل والممارسة المباشرة، والأدلة من دراسات تعليم العربية. وأظهرت النتائج أن مودل يوفر أنواعاً أوسع من الأنشطة، لكنه يحتاج إلى إدارة خادم، بينما يتميز جوجل كلاس روم بسرعة التشغيل، وقد أضاف اختبارات نماذج جوجل

وسلالم التقدير واجتماعات ميت. كما كشفت الدراسات السابقة عن مرونة التعلم وزيادة المشاركة، إلى جانب عوائق تتعلق بالإنترنت والحسابات الشخصية. وتوصي النتائج بتصميم المنتج في وحدات مستقلة عن المنصة، واختيار المنصة بحسب قدرة المؤسسة.

كلمات أساسية تحليل الاحتياجات؛ الوسائط المتعددة؛ مودل؛ جوجل كلاس روم

Introduction (المقدمة)

Arabic language learning develops four language skills, namely listening (*istimāʿ*), speaking (*kalām*), reading (*qirāʾah*), and writing (*kitābah*) (Sholikhah & Hikmah, 2023). Each skill requires a different kind of input and practice: listening needs audio, reading needs texts with support for meaning, and speaking needs opportunities for guided interaction. In the digital era, multimedia that combines words and pictures, such as video, animation, interactive exercises, and games, has been widely used to support this kind of learning because it lets learners process information through verbal and visual channels (Mayer, 2021). However, a multimedia product does not reach learners by itself. It has to be delivered, organized, and followed up through a platform, and in many institutions that platform is a learning management system (LMS). A recent systematic review of 20 studies published between 2019 and 2025 concluded that LMS use, particularly Moodle and Google Classroom, improves accessibility, interactivity, and engagement in Arabic learning, but that its effectiveness depends on teachers' digital readiness, contextualized learning materials, and institutional support (Izzan et al., 2025).

Moodle and Google Classroom are two LMS that appear repeatedly in studies of Arabic learning, but they come from different design traditions. Moodle is an open-source system that runs on a web server and offers a wide range of activities and plugins, yet it is complex and usually requires a system administrator and basic teacher training (Moodle, n.d.; Myška & Samková, 2017). Google Classroom is a cloud application that belongs to Google's education services; it is simple, requires no installation, and integrates with other Google tools (Myška & Samková, 2017). From the perspective of technology acceptance, such differences matter because perceived usefulness and perceived ease of use influence whether users accept a technology (Davis, 1989). For a team that develops Arabic multimedia, the choice of platform therefore shapes design decisions from the very beginning, including file formats, the degree of interactivity, the way learners are assessed, and the way live speaking practice is organized.

Previous studies have examined the two platforms separately. Sholikhah and Hikmah (2023) reported that Google Classroom helped a teacher deliver reading (*maharah qiroah*) materials and assignments to eighth-grade students during the Covid-19 period, although unstable internet connections and limited device storage hindered access. Qonitah and Siregar (2025) found that Google Classroom allowed flexible learning in elementary Arabic classes, but that dependence on students' personal accounts became a barrier. On the Moodle side, Abd Hamid et al. (2014) showed that an online forum on Moodle supported peer feedback in Arabic writing, Safiratuljannah et al. (2025) developed Moodle-based materials for Arabic sentence writing, and Syarifah et al. (2026) developed a customized Moodle-based LMS for Arabic grammar in higher education. Myška and Samková (2017) compared the two systems directly, but their study dealt with general education rather than Arabic, and it was conducted when Google Classroom was still a very young product; they reported, for instance, that Classroom lacked automatic test evaluation and depended on add-ons for it. Classroom now offers Forms-based quiz assignments, rubrics, and originality reports (Google Classroom Help, n.d.; Google LLC, 2025). Consequently, in the sources reviewed for this study, there is still little direct comparison of the two platforms that is oriented toward the needs of Arabic multimedia development.

Therefore, this study compares Moodle and Google Classroom as the delivery platform for Arabic multimedia, as part of the preliminary study (needs analysis) stage of a development project. The research questions are: (1) how do Moodle and Google Classroom differ in deployment and management, support for multimedia content, assessment and feedback, and communication and live practice? (2) what strengths and barriers of each platform are reported in studies of Arabic learning? and (3) what are the implications of these findings for choosing a platform and for designing Arabic multimedia products?

Methods (منهجية البحث)

2.1 Research Design

This study constitutes the preliminary study (needs analysis) stage of a research and development project aimed at developing Arabic multimedia learning products. It was carried out as part of the Arabic Multimedia Production course at the Arabic Department, Faculty of Letters, Universitas Negeri Malang. The study corresponds to the Analysis phase of the ADDIE development model (Branch, 2009), which seeks to identify learning conditions, constraints, and needs before design begins. In this study, the analysis focuses on one technical constraint of the future product, namely the platform that will deliver it.

The study employed a descriptive qualitative design with document analysis. This design was chosen because the aim was to describe and compare the

characteristics of two existing platforms and the evidence reported about them, not to test hypotheses (Creswell & Creswell, 2018). Document analysis is a systematic procedure for reviewing and interpreting documents in order to elicit meaning and develop empirical knowledge (Bowen, 2009). No questionnaire, interview, or classroom observation was conducted at this stage; field data from learners and teachers are needed in the next stage.

2.2 Data Sources, Population, and Sample

The population of data was all publicly available documents that describe Moodle or Google Classroom, or that report their use in Arabic learning. Documents were selected purposively from keyword searches conducted in November 2026 (for example, "Moodle Arabic language learning," "Google Classroom pembelajaran bahasa Arab," and "Moodle vs Google Classroom") using four criteria: (1) the document explicitly addresses Moodle, Google Classroom, or both; (2) it is an official documentation page, a vendor announcement, or a scholarly publication (journal article, proceedings paper, or systematic review); (3) for studies of learning, it concerns Arabic language learning; and (4) its text, or at least a complete abstract, was accessible. The Moodle documentation was consulted in several versions (4.0 to 5.0) to check that the activity types discussed here were consistent. The final sample consisted of 13 documents, summarized in Table 1.

Table 1. Document Sample and Data Sources

Source type	N	Documents	Purpose
Official documentation: Moodle	1	Moodle Docs, "Activities"	Identify activity types and extension options
Official documentation: Google Classroom	4	Help Center page on quiz assignments; two Google Classroom user guides; Google for Education product page	Identify teaching, assessment, and communication features
Vendor announcement	1	Google Workspace Updates (2020) on originality reports and rubrics	Identify feature availability and limits
Comparative study	1	Myška and Samková (2017)	Provide baseline criteria and conditions of use
Empirical studies on Arabic learning	5	Abd Hamid et al. (2014); Safiratuljannah et al. (2025); Sholikhah and Hikmah (2023); Qonitah and Siregar (2025); Syarifah et al. (2026)	Identify strengths and barriers in Arabic learning
Systematic review	1	Izzan et al. (2025)	Synthesize evidence across 20 studies

2.3 Data Collection Technique and Instrument

Data were collected through documentation, that is, by reading each document and recording relevant statements in a document analysis matrix. The

research team served as the main instrument, supported by the matrix, whose five criteria are presented in Table 2. The criteria were derived from the feature categories used by Myška and Samková (2017), namely content creation, communication, collection and evaluation of activities, and tools for cooperation; from the notions of perceived usefulness and ease of use in the technology acceptance model (Davis, 1989); and from the requirements of multimedia learning (Mayer, 2021). A fifth criterion, evidence from Arabic learning studies, was added to connect the platform features with the needs of Arabic learning.

Table 2. Document Analysis Matrix (Comparison Criteria)

Criterion	Indicators
Deployment and management	Hosting and installation; administrator needs; cost model; user access; devices
Content and multimedia support	Types of resources and interactive content; embedding of audio, video, and external tools; course structure
Assessment and feedback	Quizzes and automatic marking; assignments; rubrics and comments; peer assessment; plagiarism check
Communication and live practice	Forums, chat, and comments; video conferencing for speaking practice
Evidence in Arabic learning	Skill or material; level; reported strengths; reported barriers

2.4 Data Collection Procedure

Data collection proceeded in four steps. (1) Identification: documents were searched and screened against the four selection criteria in November 2026. (2) Skimming and reading: each document was skimmed and then read thoroughly, following the stages of document analysis described by Bowen (2009). (3) Recording: relevant statements were entered into the matrix under the five criteria, together with the document, year, and the version or edition where stated. (4) Cross-checking: features described in official documentation were compared with descriptions in independent studies to detect differences caused by the age of the source or by product editions.

2.5 Data Analysis

The recorded statements were analyzed using the interactive model of Miles et al. (2014), consisting of data condensation, data display, and conclusion drawing/verification. Statements were coded under the five criteria, condensed into short descriptions for each platform, and displayed in comparison tables (Tables 3 and 4). Credibility was maintained through source triangulation, namely by comparing official documentation, a prior comparative study, and empirical studies of Arabic learning, and by recording the date of each source because the platforms change over time. Findings that rest on a single source are reported as such. Finally, the comparison was translated into implications for platform choice and product design (Table 5).

2.6 Research Ethics

This study did not involve human participants, so informed consent and anonymization were not required. All data came from publicly available documents, which are cited in full; their content is paraphrased rather than copied. Platform names are trademarks of their respective owners. The documents were accessed in November 2026, and the descriptions in this article reflect their content at that time.

Results & Discussion (نتائج البحث ومناقشاتها)

Table 3 summarizes the comparison of the two platforms on the four platform criteria, and the following subsections explain the differences and relate them to the evidence from Arabic learning studies.

Table 3. Comparison of Moodle and Google Classroom

Criterion	Moodle	Google Classroom
Deployment and management	Open-source software installed on a server; needs an administrator for installation, updates, and security; no license cost	Cloud application; no installation and almost no setup; part of Google's education services; some features depend on the edition
Course structure and content	Courses built from resources and activities, such as Lesson, Glossary, Database, and Wiki; extendable with plugins	Stream and Classwork page; materials attached from Drive, YouTube, or web links
Interactive content	H5P activities, SCORM packages, and LTI external tools	Interactivity mainly through Google Forms or external tools
Assessment and feedback	Quiz with automatic marking and feedback; Assignment; Feedback; Workshop for peer assessment	Forms quiz assignment with automatic grading and grade import; rubrics; comment bank; originality reports (limits depend on edition)
Communication and live practice	Forum, Chat, and BigBlueButton video sessions	Public and private comments; Google Meet link for the class
Learner tracking	Reports, tracking, and statistics (Myška & Samková, 2017)	Assignment progress view; overall performance was reported as hard to see in 2017
Learning curve	Rich but complex; training needed for teachers and students	Minimalist and quick to learn

3.1 Deployment, Access, and Management

The clearest difference lies in how each platform is deployed. Moodle is installed on a web server, usually run by the institution, so it can be adapted

extensively, but it also needs an experienced administrator to install, update, maintain, and secure it, and teachers generally need basic training before they use it effectively (Myška & Samková, 2017). Google Classroom, in contrast, is a cloud application that requires no installation and almost no setup, and it can be used in a browser or through mobile applications on different operating systems (Myška & Samková, 2017). In terms of the technology acceptance model, Classroom therefore scores strongly on perceived ease of use, while the case for Moodle rests more on perceived usefulness, that is, on what it can do once it has been configured (Davis, 1989).

A similar pattern appears in the Arabic learning studies. The barriers reported in the school-level Classroom studies reviewed here concern access rather than management, namely unstable internet connections and limited device storage (Sholikhah & Hikmah, 2023) and dependence on students' personal accounts (Qonitah & Siregar, 2025). Such access barriers are not specific to Classroom; for Moodle they would be added to the need for server and administrator capacity. For a product developer, the implication is that platform choice must start from the institution's technical capacity and the learners' access conditions, not from the list of features alone.

3.2 Content and Multimedia Support

Both platforms can hold the typical components of an Arabic multimedia product, but they differ in how far the product can become interactive inside the platform. Moodle's documentation lists activities such as Lesson, Glossary, Database, Wiki, H5P, SCORM, and LTI external tools, and states that additional plugins can be installed from the Moodle plugins directory (Moodle, n.d.). H5P content can be added to a course as an activity and SCORM packages can be included as course content (Moodle, n.d.), so interactive exercises produced for the product can run inside the course rather than as links to outside sites.

Google Classroom works mainly as a place to distribute and collect materials. A teacher can attach documents, presentations, images, video links, and web pages to an assignment, and files stored in Google Drive are handled automatically (Myška & Samková, 2017). Interactivity is therefore obtained mostly through other Google tools, such as Forms, or through external tools (Myška & Samková, 2017). The 2017 comparison also noted that a Classroom course is organized as a chronological stream that can become confusing; later Google guides place assignments on a Classwork page separate from the stream (Google LLC, n.d.), which suggests that this limitation has been reduced, although this study did not test it. For products designed according to principles such as segmenting and signaling (Mayer, 2021), Moodle's Lesson activity, which delivers content in flexible ways (Moodle, n.d.), gives more room to present a product in short, ordered units, whereas in Classroom the units would likely have to be arranged by the teacher as separate attachments or assignments.

3.3 Assessment and Feedback

Assessment is the area where the 2017 picture has changed most. Myška and Samková (2017) listed the lack of automatic test evaluation as a weakness of Classroom, which could be only partly overcome with Google Forms and add-ons. Today a teacher can create a quiz assignment in which students complete a Google Forms quiz that is graded automatically; the grades can be imported into Classroom and shown to students immediately or after review, and the quiz can be locked on managed Chromebooks (Google Classroom Help, n.d.). Google guides further describe rubrics, a comment bank for frequent feedback, and a view of assignment progress (Google LLC, 2025), as well as originality reports (Google LLC, n.d.). When originality reports became generally available in 2020, teachers could enable them on a limited number of assignments per class without an enterprise edition, students could run them up to three times before submitting, and they worked only for Google Docs in English (Google Workspace Updates, 2020). Google now lists unlimited originality reports among its premium features (Google for Education, n.d.), so availability depends on the edition and may have changed since the announcement. Because the reports were limited to English at that time, their usefulness for Arabic texts should be checked before they are relied upon.

Moodle, by contrast, provides a Quiz activity that can be marked automatically with feedback, an Assignment activity for grading and commenting on uploaded files, Feedback for surveys, and Workshop, which is designed for peer assessment (Moodle, n.d.). Peer feedback is potentially useful for productive skills such as writing; in a task-based Arabic writing course, the Moodle forum was used as a space for peer feedback, and the quality of students' writing was reported to improve (Abd Hamid et al., 2014).

3.4 Communication and Live Practice

Both platforms support asynchronous discussion, but in different ways. Moodle offers a Forum for asynchronous discussion, a Chat for real-time discussion, and BigBlueButton for live video sessions within Moodle (Moodle, n.d.). In Google Classroom, communication takes the form of public and private comments on posts and assignments, and e-mails are sent through Gmail (Myška & Samková, 2017); a teacher can also create a Google Meet link for the class (Google LLC, n.d.).

Live interaction matters for Arabic because speaking and reading aloud need immediate modeling and correction. In the Classroom study by Sholikhah and Hikmah (2023), the teacher read the text aloud and students imitated it, and limited access to group video calls meant that practice sessions had to be combined with Zoom or Google Meet. Izzan et al. (2025) likewise identified limited opportunities for authentic *muhādatsah* practice among the constraints of LMS-based learning. These findings suggest that neither platform removes the need for a live-practice tool; what differs is how the conferencing tool is connected to the course.

3.5 Evidence from Arabic Learning Studies

Table 4 summarizes the studies of Arabic learning included in the sample. The sample is small and purposive, so it illustrates the contexts in which each platform has been reported rather than covering the field exhaustively.

Table 4. Summary of Arabic Learning Studies in the Sample

Study	Platform	Focus and context	Reported findings
Sholikhah & Hikmah (2023)	Google Classroom	Reading (*maharah qiroah*); grade 8 of an Islamic junior high school; qualitative; one teacher and 30 students	Attractive materials, easy delivery of materials and tasks, flexible time; barriers: unstable internet, limited video calls, device storage
Qonitah & Siregar (2025)	Google Classroom	Arabic in elementary school; descriptive qualitative	Flexible learning regardless of time and place; dependence on personal accounts as a barrier
Abd Hamid et al. (2014)	Moodle	Arabic writing; task-based teaching with an online forum	Writing quality improved; positive correlation between number of words and writing quality
Safiratuljannah et al. (2025)	Moodle	Arabic sentence writing (*kitabah al-jumal*) for beginner-level students; Hannafin and Peck development model	Moodle-based materials developed; feasibility examined through expert validation
Syarifah et al. (2026)	Customized Moodle	Arabic grammar (*al-qawāʿid al-naḥwiyah*) in higher education	Customized LMS developed and examined; potential for more interactive and adaptive grammar teaching
Izzan et al. (2025)	Moodle and Google Classroom	Systematic review of 20 studies (2019–2025)	Better accessibility, interactivity, and engagement; constraints: reduced motivation, limited teacher digital competence, unequal access, limited authentic *muhādatsah* practice

Two patterns can be seen. First, the Classroom studies concern school-level learners and focus on delivering materials and tasks, with flexibility as the main benefit and connectivity or account access as the main barrier. Second, the Moodle

studies concern writing and grammar learning, largely at university level, with interactivity and structured materials as the main emphasis. These patterns come from a small, purposively selected set of studies and should not be read as characteristics inherent to either platform; they may simply reflect the contexts in which each platform happened to be adopted. The review by Izzan et al. (2025) supports a more cautious reading: for both platforms, the effect depends heavily on teachers' digital readiness, contextualized materials, and institutional support.

3.6 Implications for Platform Choice and Product Design

Table 5 translates the comparison into implications for the product.

Table 5. Conditions, Platform Fit, and Product Implications

Condition or need	Platform fit	Implication for the product
Fast deployment with limited technical staff; learners already have Google accounts	Google Classroom	Package the product as files or links (video, slides, Forms exercises) that can be attached to assignments; keep units short
Institution can host and maintain a server; interactive exercises and structured course design are needed	Moodle	Build interactive exercises as H5P or SCORM content; use Lesson to sequence units; use Quiz and Workshop for assessment
Automatic marking of objective exercises	Both	Use Quiz in Moodle or a Forms quiz assignment in Classroom; keep question banks in a portable format
Speaking and reading-aloud practice	Both, with a conferencing tool	Plan live sessions (BigBlueButton or Meet) and provide recorded models for asynchronous practice
Unstable connection and limited device storage	Neither guarantees access	Keep files small and usable on low bandwidth; avoid dependence on personal accounts where possible

First, neither platform is simply better. Myška and Samková (2017) recommended Moodle for high schools and universities, or wherever effective testing and student management are needed, and Classroom for primary and some secondary schools where a supportive system must be deployed quickly. The present comparison is consistent with that view while showing that Classroom's assessment features have expanded since then, so the choice depends on the institution's capacity and on the interactivity the product requires.

Second, because the platform may not be certain when production starts, it is safer to design the product as platform-independent units, such as short videos, audio files, slides, and exercises in common formats, and to adapt only the packaging to the chosen platform. This is also consistent with the segmenting principle of multimedia learning (Mayer, 2021), since short units are easier to arrange on either platform. Third, the product specification should include the connectivity and

account conditions of the target learners, because these were the barriers most often reported in the school-level studies (Sholikhah & Hikmah, 2023; Qonitah & Siregar, 2025). No claim is made here about the effectiveness of either platform for learning outcomes; that requires testing of the product in the next development stages.

3.7 Limitations

This study relied on documents. It did not collect data from learners or teachers, did not test either platform with Arabic content, and did not check how right-to-left Arabic text and diacritics are displayed in each platform, which should be examined at the prototype stage. Platform features change frequently and depend on versions and editions, and several statements here rest on documentation or announcements of different dates. The set of Arabic learning studies is small and purposively selected, and some of them were available mainly through their abstracts, so their details are limited to what the abstracts report. Further research is needed to collect field data on learners' and teachers' needs, to pilot the product on the selected platform, and to test its validity, practicality, and effectiveness.

Conclusions (الخاتمة)

This study found that (1) Moodle and Google Classroom differ mainly in deployment and depth of features: Moodle offers a wider range of activities, including H5P, SCORM, Workshop, and BigBlueButton, but needs server administration and training, whereas Classroom is a cloud service that is quick to start and now includes Forms-based quizzes, rubrics, and Meet links; (2) studies of Arabic learning report flexibility, interactivity, and engagement as benefits of both platforms, with unstable internet, device limits, account dependence, and limited live practice as recurring barriers; and (3) the Arabic multimedia product should be designed as short, platform-independent units, with the platform chosen according to institutional capacity and the interactivity required. These findings provide a basis for the platform-related specifications of the product in the next stage. It is recommended that developers (a) check the technical capacity and the learners' access conditions before choosing a platform, (b) test the product on the chosen platform, including the display of Arabic script, and (c) complement this document-based analysis with observation, interviews, and a questionnaire with learners and teachers. Because this study did not test learning outcomes, no conclusion is drawn about which platform is more effective.

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