



Transforming Arabic Language Learning Through Digital Pedagogy: Integrating Web-Based Media in the Society 5.0 Era

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DOI: <https://doi.org/10.61987/jemr.v5i5.2914>

ABSTRACT

Keywords:

Digital Pedagogy,
Arabic Language
Learning, Society 5.0

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This study aims to analyze the digital pedagogical strategies employed by Arabic language teachers in integrating web-based media to support learning in the Society 5.0 era. A qualitative library research approach was adopted by reviewing relevant scientific journal articles, books, and scholarly documents. The collected data were analyzed using content analysis to identify key patterns and strategies in digital pedagogy for Arabic language learning. The findings reveal three major strategies: (1) the implementation of Blended Learning and Flipped Classroom models to promote flexible and student-centered learning; (2) the integration of interactive web-based media, such as Kahoot, Quizizz, Wordwall, and online language learning platforms, to enhance learner engagement and participation; and (3) the application of digital assessments that emphasize Higher Order Thinking Skills (HOTS). These strategies contribute to improving learning effectiveness, increasing student motivation, and fostering digital competencies alongside Arabic language proficiency. The study implies that strengthening teachers' digital literacy and expanding technological infrastructure are essential to achieving effective and sustainable Arabic language learning in the Society 5.0 era.

Article History:

Received: May 2026; Revised: June 2026; Accepted: July 2026

Please cite this article in APA style as:

Siregar, M. L., Masruri, A. (2026). Transforming Arabic Language Learning Through Digital Pedagogy: Integrating Web-Based Media in the Society 5.0 Era. *Journal of Educational Management Research*, 5(5), 5406-5420.

INTRODUCTION

The emergence of the Society 5.0 era has fundamentally transformed various sectors of human life, particularly education, where digital technology is expected to enhance human welfare rather than merely automate learning processes (Zou et al., 2025). Unlike the Industrial Revolution 4.0, which primarily emphasized artificial intelligence, automation, and cyber-physical systems, Society 5.0 places humans at the center of technological innovation by integrating digital technologies with social problem-solving (Nasution et al., 2024; Siregar et

al., 2025). Consequently, educational institutions are required to redesign learning ecosystems that foster creativity, collaboration, critical thinking, and digital competence. Language education, including Arabic language learning, occupies a strategic position because communication skills and intercultural understanding are essential competencies for the twenty-first century. Therefore, Arabic language teachers are expected not only to master linguistic knowledge but also to develop digital pedagogical strategies capable of creating meaningful, adaptive, and student-centered learning experiences. Such transformation is indispensable for preparing learners to participate effectively in an increasingly interconnected digital society (Selfa-Sastre et al., 2022).

Although web-based technologies have become increasingly accessible, their educational benefits largely depend on how teachers integrate them into instructional practices. Digital platforms provide opportunities to deliver authentic learning resources, interactive activities, collaborative learning environments, and continuous assessment that are difficult to achieve through conventional classroom instruction alone. Previous studies have demonstrated that technology-supported learning can improve learner engagement, motivation, and learning outcomes when accompanied by appropriate pedagogical approaches (Hazaea et al., 2021). In Arabic language education, web-based media also enable students to access authentic linguistic input, practice communication beyond classroom boundaries, and receive immediate feedback during learning activities (Badriyah et al., 2025; Nurjanah et al., 2025). Therefore, investigating digital pedagogical strategies is important because effective technology integration contributes not only to educational innovation but also to the development of learners equipped with linguistic competence and twenty-first-century skills required in the Society 5.0 era.

Despite these opportunities, many educational institutions continue to face substantial challenges in implementing effective digital pedagogy (Väättä & Ruokamo, 2021). The availability of technological infrastructure and web-based applications does not automatically improve instructional quality because many teachers still employ technology merely as a substitute for printed teaching materials (Wang et al., 2024). Instead of transforming instructional methods, digital tools are frequently limited to presenting static texts, grammar explanations, or presentation slides without encouraging meaningful interaction or collaborative learning. This issue is particularly evident in Arabic language classrooms, where teaching practices often remain teacher-centered and focus heavily on memorizing grammatical rules (qawa'id), resulting in limited opportunities for learners to develop communicative competence (Pajarianto et al., 2022). Furthermore, the gap between digitally native students and teachers

with limited digital pedagogical competence creates additional barriers to implementing innovative learning strategies that align with the human-centered vision of Society 5.0.

These challenges are increasingly reflected in classroom practices where the potential of web-based learning media remains underutilized. Although numerous digital platforms such as Kahoot, Quizizz, Wordwall, Padlet, Flipgrid, and various online Arabic learning websites are available, they are often employed only as supplementary instructional tools rather than as integral components of student-centered pedagogy. Interactive features designed to facilitate collaboration, problem-solving, and autonomous learning are frequently overlooked, while assessment practices continue to emphasize lower-order cognitive skills instead of Higher Order Thinking Skills (HOTS). Consequently, students receive limited opportunities to develop productive language skills, including speaking (*kalam*) and writing (*kitabah*), through authentic digital interaction (Mialkovska et al., 2023). This phenomenon indicates that the primary challenge is no longer technological accessibility but the capacity of teachers to design and implement comprehensive digital pedagogical strategies that effectively integrate content knowledge, pedagogy, and technology within Arabic language instruction (Tohet et al., 2025).

Previous studies have extensively examined the integration of digital technology into foreign language education, including Arabic language learning, from various perspectives. The Technological Pedagogical Content Knowledge (TPACK) framework proposed by Műezzin et al. (2023) has become one of the most influential theoretical models for explaining teachers' competencies in integrating technology, pedagogy, and subject matter. Research has also highlighted the effectiveness of web-based learning environments in improving students' engagement, motivation, and language achievement through collaborative and interactive learning experiences (Hazaea et al., 2021). In the context of Arabic language education, Kerras & Essayahi, (2022) emphasized the importance of authentic digital resources in strengthening students' receptive and productive language skills, while Pajarianto et al. (2022) demonstrated that gamification-based platforms such as Al-Abdullatif & Alsubaie, (2022) reported that digital transformation has encouraged Arabic language teachers to adopt innovative instructional media capable of supporting flexible learning environments. Collectively, these studies confirm that digital technologies have substantial potential to improve Arabic language learning when accompanied by appropriate pedagogical practices.

Despite these significant contributions, existing studies remain fragmented and predominantly focus on isolated aspects of technology integration, such as evaluating specific digital platforms, measuring students'

learning outcomes, or examining teachers' perceptions of educational technology. Limited attention has been given to investigating how Arabic language teachers systematically design, implement, and evaluate comprehensive digital pedagogical strategies that align with the human-centered principles of Society 5.0. Moreover, previous research rarely synthesizes the integration of web-based learning media with instructional models such as Blended Learning, Flipped Classroom, and digital assessment oriented toward Higher Order Thinking Skills (HOTS) within a unified pedagogical framework. Consequently, there remains a considerable research gap regarding the instructional strategies required to maximize the pedagogical potential of web-based media while simultaneously fostering twenty-first-century competencies in Arabic language education (Jeni & Syafril, 2025). Addressing this gap is essential because effective digital pedagogy extends beyond technology adoption and requires strategic instructional planning that meaningfully connects technological innovation with pedagogical objectives and language learning outcomes.

This study offers a comprehensive perspective by conceptualizing digital pedagogy for Arabic language learning as an integrated instructional strategy rather than merely a technological intervention. It proposes a systematic framework that connects instructional planning, web-based learning implementation, learner interaction, and digital assessment into a coherent pedagogical process that reflects the principles of Society 5.0. Rather than emphasizing the effectiveness of individual digital applications, this study focuses on how teachers orchestrate multiple web-based learning resources to facilitate active learning, collaboration, critical thinking, creativity, and learner autonomy. Through this perspective, the study contributes a conceptual model that can serve as a practical reference for Arabic language teachers in designing adaptive, technology-supported instruction capable of responding to contemporary educational challenges.

Based on these considerations, this study addresses the following research question: How do Arabic language teachers implement digital pedagogical strategies through web-based media to support effective learning in the Society 5.0 era? It argues that successful technology integration depends not primarily on the availability of digital platforms but on teachers' ability to integrate pedagogical knowledge, technological competence, and Arabic language content into meaningful learning experiences. Therefore, effective digital pedagogy should encompass instructional design, interactive learning activities, and authentic digital assessment that collectively promote communicative competence, higher-order thinking, collaboration, and lifelong learning. The findings are expected to provide both theoretical and practical contributions by

offering a comprehensive pedagogical framework that supports curriculum development, teacher professional development, and the sustainable implementation of web-based Arabic language learning in contemporary educational settings.

RESEARCH METHODS

This study employed a qualitative research design using the library research approach. Library research was selected because the objective of the study was to analyze and synthesize theoretical as well as empirical evidence concerning digital pedagogical strategies for Arabic language learning through web-based media in the Society 5.0 era. Rather than generating primary field data, this approach enables researchers to critically examine existing scholarly knowledge, identify conceptual patterns, and formulate comprehensive interpretations from previously published academic works. According to Amro & Iversen, (2025), library research emphasizes systematic exploration of documentary sources to construct scientific arguments, while qualitative inquiry seeks to understand social and educational phenomena through interpretative analysis (Nurbayan & Sanusi, 2025). Therefore, this design was considered appropriate because it facilitates an in-depth understanding of digital pedagogy by integrating diverse theoretical perspectives and empirical findings without requiring direct observation or participant involvement.

As a library research study, this investigation was not conducted in a specific geographical location because the primary data sources consisted entirely of documentary materials. The research focused on secondary data obtained from national and international peer-reviewed journal articles indexed in SINTA and Scopus, scholarly books on Arabic language teaching and learning, conference proceedings, and policy documents related to educational transformation in the Society 5.0 era. The selected literature was published primarily within recent years to ensure its relevance to current developments in digital education. Data were collected through systematic literature searching, document identification, critical reading, note-taking, and source classification according to the main research variables, namely digital pedagogical strategies, web-based learning media, Arabic language education, and Society 5.0. This systematic collection process ensured the credibility, relevance, and comprehensiveness of the documentary evidence analyzed in the study.

The collected data were analyzed using an interactive qualitative data analysis model adapted from Hanifah et al. (2024), combined with content analysis to interpret the findings systematically. The first stage involved data condensation, in which relevant information from the selected literature was identified, categorized, simplified, and organized according to the research

objectives. The second stage consisted of data display, where themes, concepts, and relationships among digital pedagogical strategies were systematically presented to facilitate interpretation and comparison across studies. Finally, conclusion drawing and verification were undertaken by identifying recurring patterns, evaluating the consistency of findings among different sources, and developing comprehensive interpretations regarding effective digital pedagogical strategies for integrating web-based media into Arabic language learning. This analytical process enhanced the trustworthiness of the findings by ensuring that conclusions were consistently supported by evidence derived from multiple credible scholarly sources (Paltore et al., 2025; Ritonga et al., 2022).

RESULTS AND DISCUSSION

Reconstruction of Learning Models for Arabic Language Learning

The literature synthesis demonstrates that the primary digital pedagogical strategy identified for Arabic language learning in the Society 5.0 era is the reconstruction of conventional instruction through the implementation of the Flipped Classroom model. The reviewed literature consistently indicates that traditional Arabic language teaching remains largely teacher-centered, with instructional activities dominated by lectures, grammatical explanations (qawa'id), and memorization practices that provide limited opportunities for communicative language use (Pajarianto et al., 2022). Such instructional practices are increasingly incompatible with the characteristics of digital-native learners who require flexible learning environments, interactive experiences, and opportunities for collaborative knowledge construction. Consequently, the reviewed studies emphasize that learning should no longer position teachers as the sole source of knowledge but rather as facilitators who design meaningful learning experiences supported by web-based technologies. This transformation reflects the educational philosophy of Society 5.0, where digital technology functions as an instrument for enhancing human-centered learning rather than replacing human interaction (Ghani & Daud, 2023).

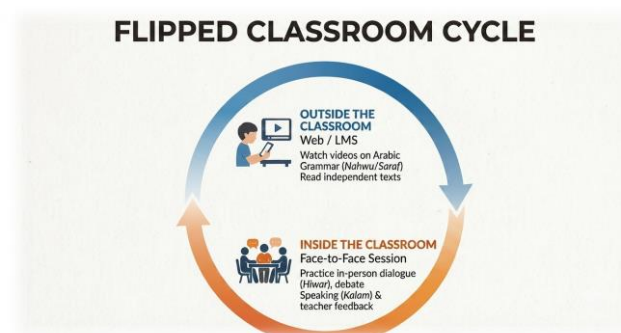


Figure 1. Flipped Classroom Cycle for Arabic Language Learning in the Society 5.0 Era

Figure 1 illustrates the instructional cycle of the Flipped Classroom model synthesized from the reviewed literature. Learning begins with an asynchronous phase in which students independently access Arabic learning resources through web-based platforms or Learning Management Systems (LMS). During this stage, students study grammar (nahwu and sharaf), listen to Arabic audio materials, watch instructional videos, and read digital texts before attending class. The subsequent synchronous classroom phase is devoted to collaborative discussions, communicative practice (kalam), text interpretation, and direct feedback from teachers. This cycle demonstrates how web-based learning extends learning beyond classroom boundaries while maximizing face-to-face interaction for higher-order language activities.

As illustrated in Figure 1, the Flipped Classroom model consists of two interconnected instructional phases. The first phase takes place outside the classroom, where students independently access instructional videos, digital reading materials, Arabic audio recordings, and interactive learning resources through web-based platforms. This asynchronous learning environment allows students to control the pace of learning, revisit instructional materials repeatedly, and prepare conceptual understanding before classroom meetings. Such flexibility is particularly beneficial for Arabic language learning because students require repeated exposure to vocabulary, pronunciation, and grammatical structures to develop receptive language skills. During the second phase, classroom sessions are transformed into interactive learning environments where students actively participate in speaking activities (kalam), collaborative text analysis, role-playing, and problem-solving tasks while teachers provide immediate guidance and corrective feedback. The findings therefore indicate that classroom time shifts from knowledge transmission toward knowledge application, communication, and collaborative learning.

These findings are consistent with previous studies reporting that Flipped Classroom improves learner autonomy, classroom interaction, and language achievement because lower-order cognitive activities are completed independently before class, allowing synchronous sessions to focus on higher-order learning processes (Hazaea et al., 2021). Nevertheless, the present study extends previous research by demonstrating that the pedagogical effectiveness of Flipped Classroom depends not merely on transferring learning materials to digital platforms but on redesigning the entire instructional process around meaningful language interaction. From the perspective of the TPACK framework, this finding confirms that effective technology integration requires the simultaneous integration of technological knowledge, pedagogical competence, and Arabic language content (Jin et al., 2025). Furthermore, these findings reinforce the human-centered philosophy of Society 5.0 by illustrating

that technology enhances rather than substitutes classroom interaction (Riwanda et al., 2024). Practically, Arabic language teachers should utilize web-based environments primarily for conceptual preparation while reserving classroom instruction for communicative practice, collaborative inquiry, and authentic language use. This pedagogical reconstruction constitutes one of the principal contributions of this study because it presents the Flipped Classroom not merely as an instructional technique but as a comprehensive digital pedagogical strategy for Arabic language education in the Society 5.0 era.

Integration of Interactive Web-Based Learning Media

The literature synthesis indicates that interactive web-based media represent the second essential component of digital pedagogical strategies for Arabic language learning in the Society 5.0 era. Rather than functioning merely as digital substitutes for printed instructional materials, web-based applications create interactive learning environments that promote learner engagement, collaboration, and continuous language practice. The reviewed studies consistently reveal that Arabic language teachers increasingly integrate platforms such as Kahoot, Quizizz, Wordwall, LearningApps, Madinah Arabic, ArabicPod101, Almaany, and Aratools to facilitate both receptive and productive language skills. Each platform contributes distinct pedagogical functions, ranging from vocabulary reinforcement and grammar practice to authentic listening, reading comprehension, and collaborative writing. Consequently, web-based media provide students with continuous exposure to Arabic beyond classroom boundaries while enabling teachers to organize flexible learning experiences adapted to learners' individual needs. These findings demonstrate that the pedagogical effectiveness of digital media depends primarily on purposeful instructional integration rather than technological sophistication alone (Hazaea et al., 2021).

An important finding emerging from the literature concerns the pedagogical contribution of gamification platforms, particularly Kahoot, Quizizz, and Wordwall, in enhancing student participation during Arabic language learning. These applications transform conventional assessment into interactive learning activities through immediate feedback, competitive challenges, and collaborative engagement. Kahoot is primarily employed to reinforce vocabulary acquisition (*mufradat*) and grammatical understanding (*qawa'id*) through time-limited quizzes that encourage rapid cognitive processing. Quizizz extends these functions by providing asynchronous learning opportunities, allowing students to complete learning tasks at their own pace while reducing performance anxiety. Similarly, Wordwall offers multiple interactive templates that facilitate sentence construction, spelling accuracy,

vocabulary matching, and grammatical analysis through game-based activities. These findings are consistent with previous studies reporting that gamification significantly increases learners' motivation, participation, and language retention because interactive digital environments reduce language anxiety and promote active engagement throughout the learning process (Pajarianto et al., 2022; Hazaea et al., 2021). Nevertheless, this study further demonstrates that the educational value of gamification is determined not by competition itself but by teachers' ability to design cognitively meaningful activities aligned with instructional objectives.

Beyond gamification, the reviewed literature emphasizes the importance of specialized Arabic learning platforms in developing authentic language competence. Digital resources such as Madinah Arabic and ArabicPod101 provide structured audio-visual materials presented by native speakers, enabling students to improve pronunciation, listening comprehension, and communicative confidence through repeated exposure to authentic language input. Likewise, web-based lexical resources including Almaany and Aratools facilitate independent vocabulary exploration, morphological analysis, and contextual interpretation by allowing students to investigate Arabic root patterns and semantic relationships more efficiently than conventional printed dictionaries. These findings support earlier research demonstrating that authentic digital language environments significantly improve foreign language acquisition because learners continuously interact with meaningful linguistic input in realistic communicative contexts (Antar & Elsayed, 2025). However, the present study extends previous perspectives by conceptualizing these platforms as components of a sustainable digital bi'ah lughawiyyah rather than isolated instructional resources, thereby promoting continuous language learning beyond formal classroom instruction.

From a theoretical perspective, these findings reinforce the Technological Pedagogical Content Knowledge (TPACK) framework by demonstrating that effective technology integration requires teachers to understand not only how digital platforms operate but also how their pedagogical characteristics correspond to specific Arabic language competencies (Allaithy & Zaki, 2025). Different digital platforms support different instructional objectives, and meaningful learning emerges when teachers strategically combine these technologies within coherent pedagogical sequences. Practically, Arabic language teachers should diversify the selection of web-based media according to instructional goals by employing gamification platforms for formative learning, specialized Arabic websites for authentic language exposure, and collaborative applications for productive language practice. Unlike previous studies that generally evaluated individual applications independently, this

study contributes a comprehensive pedagogical perspective by classifying web-based media according to their instructional functions within Arabic language education. This functional classification provides practical guidance for curriculum designers and teachers seeking to establish integrated digital learning environments that are consistent with the learner-centered philosophy of Society 5.0 while simultaneously strengthening students' communicative competence, digital literacy, collaboration, and critical thinking.

HOTS-Oriented Digital Assessment for Arabic Language Learning

The literature synthesis identifies the redesign of digital assessment as the third essential pillar of digital pedagogical strategies for Arabic language learning in the Society 5.0 era. The reviewed studies indicate that the role of assessment has shifted from merely measuring students' mastery of vocabulary (*mufradat*) and grammatical rules (*qawa'id*) toward evaluating learners' ability to analyze, evaluate, and create knowledge through authentic language use. Consequently, web-based assessment platforms are increasingly employed not only to monitor learning outcomes but also to facilitate continuous learning through immediate feedback and reflective practice. This transformation aligns with the educational philosophy of Society 5.0, which emphasizes the development of human capabilities supported by intelligent digital technologies rather than the automation of instructional processes alone (Rajab et al., 2025). Therefore, digital assessment should be viewed as an integral component of learning that continuously informs instructional improvement while simultaneously fostering higher-order thinking and communicative competence.

The reviewed literature further demonstrates that project-based digital assessment provides meaningful opportunities for students to apply Arabic language skills in authentic communicative contexts. Rather than relying exclusively on conventional written examinations, teachers increasingly employ collaborative digital projects such as Arabic-language video presentations, podcasts, digital storytelling, electronic magazines, and multimedia reports developed through web-based applications including Canva, Padlet, Flip, and other collaborative platforms. These learning products require students to integrate linguistic knowledge with critical analysis, creativity, communication, and teamwork while producing meaningful outputs that resemble real-world language use. Such findings are consistent with previous studies reporting that digital project-based learning significantly enhances learner autonomy, collaborative competence, and communication skills because students actively construct knowledge through authentic learning experiences (Hazaea et al., 2021). However, this study extends previous findings by arguing that project-

based assessment should not merely replace traditional examinations but should function as evidence of students' communicative performance and higher-order language competence within technology-supported learning environments.

Another significant finding concerns the implementation of authentic problem-based assessment through digital platforms such as Google Forms, Quizizz, Nearpod, and Learning Management Systems. Instead of asking students to recall isolated grammatical rules or vocabulary items, teachers design assessment tasks based on authentic Arabic texts, news reports, conversations, and multimedia resources that require learners to interpret meanings, evaluate information, identify linguistic structures, and solve contextual communication problems. Such assessment activities encourage students to apply analytical reasoning while simultaneously strengthening reading, listening, writing, and speaking competencies. These findings support earlier studies emphasizing that authentic learning materials improve both language acquisition and critical thinking because students engage directly with realistic communicative situations rather than artificial textbook examples (Elsayary, 2023). Nevertheless, the present study demonstrates that the educational value of digital assessment lies not only in authentic learning materials but also in the continuous feedback generated through web-based technologies, enabling teachers to monitor students' conceptual development and adjust instructional strategies accordingly.

Overall, the findings demonstrate that effective digital pedagogy for Arabic language learning is achieved through the systematic integration of instructional models, interactive web-based media, and HOTS-oriented digital assessment within a unified pedagogical framework. Unlike previous studies that generally examined these components separately, this study synthesizes them into a coherent conceptual model that explains how technology, pedagogy, and Arabic language content interact to support meaningful learning in the Society 5.0 era. From a theoretical perspective, the findings extend the Technological Pedagogical Content Knowledge (TPACK) framework by positioning digital assessment as an inseparable dimension of pedagogical design rather than merely the final stage of instruction (Amran et al., 2026). From a practical perspective, the proposed framework provides guidance for Arabic language teachers, curriculum developers, and educational policymakers in designing sustainable learning environments that integrate web-based instruction, authentic language interaction, and competency-based assessment. The principal novelty of this study lies in proposing an integrated digital pedagogical framework specifically developed for Arabic language education, thereby contributing a comprehensive reference for future research, curriculum innovation, teacher professional development, and the implementation of technology-enhanced Arabic language learning in the Society 5.0 era.

CONCLUSION

This study demonstrates that the successful integration of web-based media in Arabic language learning within the Society 5.0 era depends not merely on the availability of digital technologies but on teachers' ability to design coherent digital pedagogical strategies that integrate instructional models, interactive learning media, and authentic assessment. The findings reveal that Flipped Classroom, supported by interactive web-based platforms and Higher Order Thinking Skills (HOTS)-oriented digital assessment, creates a learner-centered environment that enhances communicative competence, critical thinking, collaboration, creativity, and digital literacy. These components function as an interconnected pedagogical ecosystem rather than as isolated instructional innovations. Theoretically, this study contributes to the advancement of Arabic language education by extending the application of the Technological Pedagogical Content Knowledge (TPACK) framework through the development of an integrated digital pedagogical framework specifically designed for web-based Arabic language learning in the context of Society 5.0. The findings also provide practical guidance for teachers, curriculum developers, and educational policymakers seeking to implement sustainable technology-enhanced language learning.

Despite these contributions, this study has several limitations that should be acknowledged. As a qualitative library research, the findings are derived from the synthesis of previous scholarly literature and therefore have not been empirically validated through classroom implementation or direct observation of teaching practices. Consequently, the proposed digital pedagogical framework should be interpreted as a conceptual model that requires further verification across different educational settings and learner characteristics. Future research is recommended to examine the effectiveness of this framework using qualitative, quantitative, or mixed-method approaches involving Arabic language teachers and students at different educational levels. Comparative studies across institutions and countries may also provide broader insights into contextual factors influencing technology integration. Such investigations are expected to refine the proposed framework, strengthen its empirical foundation, and support the development of evidence-based digital pedagogy that is responsive to the evolving educational demands of the Society 5.0 era.

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