JKTP: Jurnal Kajian Teknologi Pendidikan
Vol. 9, No. 4, November 2026: 429-438
e-ISSN: 2615-8787
DOI: 10.17977/um038v9i42026p429-438
https://journal-fip.um.ac.id/index.php/jktp

THE EFFECT OF MOOCs ON LEARNING OUTCOMES, INTEREST, AND MOTIVATION IN ENGLISH LANGUAGE LEARNING

Achmad Abrori Prawiro Kusumo, Yerry Soepriyanto, Made Duananda Kartika Degeng, Dio Lingga Purwodani
Teknologi Pendidikan, Universitas Negeri Malang, Jalan Semarang No.5 Malang, Indonesia
Corresponding Author E-Mail: achmad.abrori.2201218@student.um.ac.id

Article History
Received: 23 July 2026, Accepted: 28 October 2026, ***Published: 11 November 2026***

Abstrak
Pendekatan pembelajaran inovatif berbasis teknologi semakin dibutuhkan untuk meningkatkan keterlibatan dan prestasi akademik peserta didik. Penelitian ini bertujuan untuk menguji pengaruh pemanfaatan *Massive Open Online Course* (MOOC) sebagai media pembelajaran terhadap hasil belajar, minat belajar, dan motivasi belajar bahasa Inggris pada siswa sekolah menengah kejuruan (SMK) jurusan keperawatan. Penelitian ini menggunakan pendekatan kuantitatif dengan desain kuasi-eksperimen berupa kelompok kontrol dengan pretest dan posttest. Partisipan dibagi menjadi kelompok eksperimen yang mengikuti pembelajaran berbasis MOOC dan kelompok kontrol yang mengikuti pembelajaran dengan metode konvensional. Data dikumpulkan melalui tes hasil belajar dan kuesioner untuk mengukur minat serta motivasi belajar. Data kemudian dianalisis menggunakan metode statistik inferensial untuk menguji pengaruh secara parsial maupun simultan. Hasil penelitian menunjukkan bahwa pemanfaatan MOOC memberikan pengaruh positif dan signifikan terhadap hasil belajar bahasa Inggris, minat belajar, dan motivasi belajar siswa. Hasil analisis secara simultan juga menunjukkan bahwa pemanfaatan MOOC memberikan kontribusi yang substansial terhadap peningkatan ketiga variabel tersebut. Temuan ini menunjukkan bahwa MOOC dapat menjadi media pembelajaran yang efektif dan inovatif untuk meningkatkan kualitas pembelajaran bahasa Inggris dalam pendidikan vokasi, khususnya pada program keahlian keperawatan.

Kata Kunci: MOOC; hasil pembelajaran; minat; motivasi; bahasa Inggris

Abstract
Innovative, technology-based learning approaches are increasingly needed to enhance student engagement and academic achievement. This study investigates the effect of Massive Open Online Course (MOOC) utilization as a learning medium on students' learning outcomes, learning interest, and learning motivation in English subjects among vocational high school students majoring in nursing. A quantitative approach was employed using a quasi-experimental design with a pre-test and post-test control group. Participants were divided into an experimental group, which received MOOC-based instruction, and a control group, which was taught using conventional methods. Data were collected through achievement tests and questionnaires measuring learning interest and motivation, then analyzed using inferential statistical methods to examine both partial and simultaneous effects. The findings reveal that MOOC utilization has a positive and significant effect on students' English learning outcomes, learning interest, and learning motivation. The simultaneous analysis also indicates that MOOC utilization contributes substantially to the improvement of all three variables. These findings suggest that MOOCs can serve as an effective and innovative learning medium for enhancing English learning in vocational education, particularly in nursing programs.

Keywords*: MOOC; outcomes; interest; motivation; English Language*

To cite this article:
Kusumo, A. A. P., Soepriyanto, Y., Degeng, M. D. K., & Purwodani, D. L. (2026). The effect of MOOCs on learning outcomes, interest, and motivation in English language learning. *JKTP: Jurnal Kajian Teknologi Pendidikan*, *9*(4), 429–438. doi: 10.17977/um038v9i42026p429-438

INTRODUCTION

English has become an essential competency for vocational high school students, particularly those enrolled in nursing programs. In healthcare settings, English supports students' ability to read medical literature, understand healthcare terminology, follow professional information, and communicate with colleagues and patients in an increasingly interconnected world. For nursing students, English is therefore not merely a supplementary school subject; it is also a resource for accessing professional knowledge and preparing for future workplace demands. Developing English proficiency during vocational education can help students build a foundation for continuing professional learning and responding to information that may be available primarily in English.

Achieving these learning goals requires instructional approaches that support students' understanding while sustaining their interest and motivation. Learning media are important because they help present information, clarify concepts, and facilitate communication between teachers and learners. Kristanto (2016) explains the role of learning media in supporting the learning process, while Rochaendi et al. (2024) emphasize the importance of aligning instructional media with learners' needs and technological developments. Digital media can also provide opportunities for students to participate actively and study independently rather than relying exclusively on explanations delivered during classroom meetings (Pagarra et al., 2022). The selection of media is consequently an instructional decision: the medium should help students engage with the material and support the learning objectives, rather than simply introduce technology into the classroom.

One digital learning option is the Massive Open Online Course (MOOC). MOOCs provide online access to learning materials and can allow learners to study at different times and locations, subject to their access to devices and internet connectivity (Belawati, 2019; Fajrillah et al., 2020). Depending on the course design, a MOOC may include instructional videos, written materials, quizzes, assignments, and opportunities for discussion. These resources can present content through more than one format and provide learners with opportunities to revisit material when additional explanation or practice is needed (Hidayat et al., 2022; Achya et al., 2022). The flexibility of online courses may also support self-directed learning by allowing students to manage their learning activities beyond the scheduled classroom session (Ngo et al., 2023; Utami et al., 2024). However, the educational value of a MOOC depends on how its resources and activities are organized in relation to the learning objectives and the needs of the students.

The potential benefits of digital learning are relevant to English instruction, where students may need repeated exposure to vocabulary, examples, explanations, and practice activities. Online learning resources can give students additional opportunities to review content at their own pace. Quizzes and other assessment activities can help students check their understanding, while multimedia resources can offer alternative ways of accessing the material. These features may be particularly useful in vocational education, where students need to develop general language competencies while preparing for a specific professional field. Nevertheless, access to digital resources alone does not guarantee improved learning. Teachers still need to guide students, connect course activities with classroom objectives, and ensure that the materials are appropriate for the students' proficiency levels and learning context.

Learning interest and learning motivation are also important considerations in this context. Interest concerns students' willingness to attend to and engage with learning content, whereas motivation relates to the factors that initiate and sustain their learning efforts. These aspects can influence how actively students participate in instructional activities and how consistently they work toward learning goals. Ananda and Hayati (2020) discuss learning variables, while Sukaryawan and Kartika (2023) address the measurement of interest and perceptions in learning. In classroom

practice, learning activities that students perceive as accessible and engaging may encourage participation; conversely, instruction that offers limited opportunities for active involvement may not adequately sustain their attention. The use of a digital platform should therefore be examined not only in relation to test performance but also in relation to students' interest and motivation.

The present study addresses this context by examining MOOC utilization as a medium for English language learning among vocational high school students majoring in nursing. Specifically, it investigates three outcomes: English learning outcomes, learning interest, and learning motivation. These outcomes are considered together to provide a broader view of the potential contribution of MOOC-based instruction than achievement scores alone would provide. The study uses a quasi-experimental design involving an experimental group receiving MOOC-based instruction and a control group receiving conventional instruction. Comparing the groups before and after the instructional period allows the study to examine changes in each group and differences in their post-intervention results. The distinctive focus of the study is its simultaneous examination of these three outcomes in the context of English learning in vocational nursing education. The findings are intended to inform teachers' decisions about the use of digital learning media while recognizing that the effectiveness of such media should be evaluated in relation to both measured outcomes and the conditions in which the instruction is implemented.

Although MOOCs offer flexibility and varied learning resources, English learning in vocational high schools still requires attention to students' learning experiences and the suitability of instructional approaches. Conventional classroom instruction remains important, but the availability of additional online resources creates an opportunity to supplement classroom activities and encourage independent practice. Previous studies have examined MOOCs in different educational contexts, including comparisons of online and offline learning (Harefa, 2023), students' perceptions of benefits and barriers (Ngo et al., 2023), and the use of MOOCs for professional and educational development (Rakhra et al., 2022; Berde et al., 2024). These studies provide a basis for considering MOOCs as a learning option, but findings from other contexts should not automatically be assumed to apply in the same way to vocational high school students studying English as part of a nursing program.

METHOD

This study employed a quantitative research approach using a quasi-experimental design, specifically the two-group pretest–posttest design, to examine the effect of Massive Open Online Courses (MOOCs) on students' learning outcomes, learning interest, and learning motivation in English language learning. The study involved two groups: an experimental group, which received instruction through MOOC-based learning, and a control group, which was taught using conventional classroom instruction. Both groups completed a pretest to determine their initial abilities before the intervention and a posttest to evaluate changes following the instructional treatment (Sugiyono, 2020; Arikunto, 2020).

The independent variable in this study was the implementation of Massive Open Online Courses (MOOCs) as an instructional medium. The dependent variables consisted of English learning outcomes, learning interest, and learning motivation. Learning outcomes were measured using an objective achievement test, whereas learning interest and learning motivation were assessed using structured questionnaires based on a five-point Likert scale. The study utilized both primary data, obtained directly from the participating students, and secondary data, collected from relevant literature and supporting institutional documents.

The study population comprised students enrolled in the Nursing Study Program at Vocational High Schools (SMK). Participants were selected using a purposive sampling technique based on

predetermined inclusion criteria relevant to the research objectives. Prior to data collection, all research instruments underwent validity testing using the Pearson Product–Moment Correlation method, while reliability was evaluated using Cronbach's Alpha coefficient to ensure internal consistency and measurement accuracy (Ghozali, 2021).

Data analysis was conducted using both descriptive and inferential statistical techniques. Descriptive statistics were used to summarize participants' characteristics and variable distributions. Before hypothesis testing, the data were examined through normality and homogeneity tests to verify compliance with the assumptions required for parametric analyses. The research hypotheses were subsequently tested using a paired-samples t-test to determine significant differences between pretest and posttest scores within each group and an independent-samples t-test to compare post-intervention outcomes between the experimental and control groups. Furthermore, the effectiveness of MOOC-based instruction was evaluated using the Normalized Gain (N-Gain) Score, which measures the magnitude of learning improvement achieved after the instructional intervention (Latri et al., 2021).

RESULT

Table 1 presents the descriptive statistics of the study variables. The findings indicate that both the experimental and control groups exhibited relatively similar baseline characteristics before the intervention. The mean pretest score for English learning outcomes was 49.72 in the control group and 49.21 in the experimental group, with comparable standard deviations. Similar patterns were observed for learning motivation and learning interest, suggesting that the two groups possessed equivalent initial abilities prior to receiving different instructional treatments.

Table 1. Descriptive Statistics of Measurements

Assessment	Group	N	Mean	Std. Deviation
Learning Outcomes Pre-test	Control	18	49.7222	7.56778
	Experiment	19	49.2105	6.29443
Learning Outcomes Post-test	Control	18	71.9444	8.24958
	Experiment	19	78.1579	7.49269
Learning Motivation Pre-test	Control	18	47.8889	3.08486
	Experiment	19	47.5789	3.84875
Learning Motivation Post-test	Control	18	57.5000	2.72785
	Experiment	19	65.5789	4.41356
Learning Interest Pre-test	Control	18	37.8889	4.01305
	Experiment	19	37.9474	3.11758
Learning Interest Post-test	Control	18	42.1111	2.74159
	Experiment	18	50.1111	3.12276

Table 2. Results of the Paired T-Test for the Control Group

Variable		Mean	P value
Learning Outcomes	Pre-test	49.7222	0,000
	Post-test	71.9444	
Learning Motivation	Pre-test	47.8889	0,000
	Post-test	57.5000	
Learning Interest	Pre-test	37.8889	0,001
	Post-test	42.1111	
Learning Outcomes	Pre-test	49.2105	0,000
	Post-test	78.1579	
Learning Motivation	Pre-test	47.5789	0,000
	Post-test	65.5789	
Learning Interest	Pre-test	37.9474	0,000
	Post-test	50.5263	

The paired-samples t-test revealed significant improvements in all measured variables within both groups following the learning intervention. In the control group, the mean score for English learning outcomes increased from 49.72 to 71.94 ($p = 0.000$), whereas the experimental group demonstrated a greater improvement from 49.21 to 78.16 ($p = 0.000$). Similar trends were identified for learning motivation, with the control group's mean score increasing from 47.89 to 57.50 ($p = 0.000$), while the experimental group improved more substantially from 47.58 to 65.58 ($p = 0.000$). Learning interest also increased in both groups; however, the improvement was considerably greater among students who participated in MOOC-based learning ($p = 0.000$).

Table 3. Results of the pre-test and post-test of the Experimental Group

Variable		Mean	P value
Learning Outcomes	Pre-test	49.2105	0,000
	Post-test	78.1579	
Learning Motivation	Pre-test	47.5789	0,000
	Post-test	65.5789	
Learning Interest	Pre-test	37.9474	0,000
	Post-test	50.5263	

The independent-samples t-test demonstrated that no statistically significant differences existed between the experimental and control groups during the pretest phase for learning outcomes, learning motivation, and learning interest ($p > 0.05$). However, statistically significant differences were observed during the posttest for all three variables ($p < 0.05$).

Table 4. Results of the Independent T-Test

Variable		Mean	P value
Learning Outcomes (pre-test)	Control	49.7222	0,824
	Experiment	49.2105	
Learning Outcomes (post-test)	Control	71.9444	0,022
	Experiment	78.1579	
Learning Motivation (pre-test)	Control	47.8889	0,789
	Experiment	47.5789	
Learning Motivation (post-test)	Control	57.5000	0,000
	Experiment	65.5789	
Learning Interest (pre-test)	Control	37.8889	0,981
	Experiment	37.9474	
Learning Interest (post-test)	Control	42.1111	0,000
	Experiment	50.5263	

The effectiveness analysis based on the Normalized Gain (N-Gain) Score showed that in the control group, learning outcomes and learning motivation reached the moderate effectiveness category, whereas learning interest remained in the low effectiveness category. Conversely, all three variables in the experimental group achieved moderate effectiveness, with substantially higher N-Gain values than those observed in the control group.

Table 5. Test of Learning Method Effectiveness (N-Gain Score)

Control Group	N Gain score	Description
Learning Outcomes	0,44	Moderate
Learning Motivation	0,35	Moderate
Learning Interest	0,17	Low
Experiment Group	**N Gain score**	**Description**
Learning Outcomes	0,57	Moderate
Learning Motivation	0,66	Moderate
Learning Interest	0,57	Moderate

DISCUSSION

The findings indicate that the use of Massive Open Online Courses (MOOCs) as an instructional medium was associated with improved English learning outcomes among vocational high school students majoring in nursing. Learning outcomes are commonly understood as changes arising from the learning process across cognitive, affective, and psychomotor domains (Ropii & Fahrurozi, 2017). In the present study, the achievement test was used to assess students' English learning outcomes, while questionnaires were used to examine learning interest and motivation. Considering these outcomes together is relevant because instructional effectiveness may be reflected not only in what students can demonstrate on a test but also in their willingness and motivation to engage with learning activities. The results show that the experimental group's mean English achievement score increased from 49.21 on the pretest to 78.16 on the posttest. The control group also improved, from 49.72 to 71.94. Thus, both instructional approaches were followed by higher posttest scores, but the experimental group achieved the higher posttest mean.

The similarity of the groups' pretest means provides useful context for interpreting the posttest findings. The independent-samples comparisons reported in the study found no statistically significant initial differences between the groups in English learning outcomes, learning motivation, or learning interest ($p > 0.05$). In contrast, the posttest comparisons showed statistically significant differences in all three variables ($p < 0.05$). This pattern is consistent with a greater improvement in the group that received MOOC-based instruction. Nevertheless, the results should be interpreted in light of the quasi-experimental design: baseline similarity strengthens the comparison but does not establish that every possible influence on learning was controlled. The evidence supports the conclusion that MOOC-based instruction was associated with better post-intervention results in this sample, while further studies using additional controls and larger samples could help establish how consistently the pattern occurs in other settings.

Several features of MOOCs may help explain the observed pattern. MOOCs can organize learning resources in a structured online environment and may combine video, text, quizzes, assignments, and other activities. Such resources can give students more than one way to encounter information and allow them to revisit explanations when they need further practice. Hidayat et al. (2022) discuss video-based learning media developed through MOOC formats, while Achya et al. (2022) describe MOOC application components. These features provide a plausible instructional explanation for the improvement observed in the experimental group, although the present study did not separately test the contribution of each feature. In English learning, opportunities to review language material and complete practice activities may be especially relevant because students often need repeated exposure before they can use unfamiliar vocabulary or concepts with confidence. The value of the platform therefore lies not simply in being online, but in how its materials and learning activities support the intended instructional objectives.

The findings are also consistent with previous research that has examined MOOCs in relation to academic performance and learning experiences. Harefa (2023) compared MOOC use with offline learning in relation to learning behavior and academic achievement, while Rakhra et al. (2022) evaluated a MOOC used for dissemination and implementation across several low- and middle-income countries. Ngo et al. (2023) examined learners' perceptions of the benefits and barriers associated with MOOCs on Coursera. These studies differ in participants, subject matter, and implementation context, so they should not be treated as direct equivalents of the present investigation. However, collectively, they illustrate that MOOCs have been used for varied educational purposes and that their benefits and limitations warrant empirical evaluation. The current study contributes context-specific evidence by focusing on English learning among

vocational high school students in a nursing program and by examining achievement, interest, and motivation within the same research design.

The Normalized Gain (N-Gain) results offer a further perspective on the extent of improvement. In the control group, the N-Gain score was 0.44 for learning outcomes and 0.35 for motivation, both classified as moderate, while the score for learning interest was 0.17, classified as low. In the experimental group, the N-Gain scores were 0.57 for learning outcomes, 0.66 for motivation, and 0.57 for learning interest; all were classified as moderate. The higher N-Gain scores in the experimental group indicate that the observed improvement was greater relative to the possible improvement for each measure. The difference is particularly notable for learning interest, for which the control group's gain remained in the low category while the experimental group's gain reached the moderate category. These results support the interpretation that MOOC-based instruction was more promising than conventional instruction across the three measured outcomes in this study. N-Gain classifications, however, describe the magnitude of improvement according to the selected categorization and should be interpreted alongside the inferential tests and the study design.

Learning interest increased in both groups, but the experimental group's reported posttest mean was higher than that of the control group. The table reports a control-group mean of 42.11 and an experimental-group mean of 50.53 for posttest learning interest. This difference is consistent with the N-Gain pattern and suggests that the MOOC-supported learning experience may have helped students engage more actively with English learning. Online resources may provide flexibility in when and how students review material, while varied media and assessment activities may make the learning process more interactive. Pagarra et al. (2022) discuss the role of learning media in supporting learning, and Utami et al. (2024) address opportunities and challenges in the use of MOOCs as online learning media. These perspectives suggest that the benefits of digital media should be considered together with their design and implementation. The present study demonstrates an association between the MOOC intervention and higher interest scores, but it does not isolate which specific platform feature or learning activity was responsible for the change.

The study also has limitations that should inform interpretation and future research. The sample consisted of 37 participants in total, with 18 students in the control group and 19 in the experimental group for the reported achievement and motivation measures; the table for posttest learning interest reports 18 participants in each group, which should be checked against the original dataset. The sample and setting limit the extent to which the findings can be generalized to other vocational schools, subject areas, or student populations. In addition, the quasi-experimental design cannot rule out all alternative explanations for the differences between groups. Future research could replicate the study with larger and more diverse samples, describe the MOOC content and implementation in greater detail, and examine whether outcomes persist beyond the immediate posttest. Studies could also investigate factors such as digital literacy, technological readiness, self-regulated learning, and access to technology, which may influence how students use online courses. These recommendations build on the benefits and barriers discussed by Ngo et al. (2023) and the broader implementation questions raised in MOOC research. Overall, the present findings provide encouraging evidence for MOOC-based English instruction in vocational nursing education while highlighting the importance of careful implementation and further evaluation.

The implications of these findings for vocational nursing education are practical. English learning may support students in accessing professional terminology and information relevant to healthcare, so teachers need learning arrangements that encourage both achievement and sustained engagement. MOOC resources can be integrated with classroom teaching rather than necessarily replacing teacher-led instruction. For example, teachers may assign selected online materials before

class, use classroom time to clarify difficult language points, and follow up with practice or assessment activities. This approach would allow the online component to extend opportunities for review while preserving teacher guidance and opportunities for interaction. Such recommendations are consistent with the flexibility associated with online learning described by Belawati (2019) and Fajrillah et al. (2020). However, successful implementation requires attention to the relevance of course content, the students' readiness to learn independently, the availability of devices and reliable internet access, and the alignment between online activities and assessment. Without these supporting conditions, the flexibility of a MOOC may not translate into better learning experiences for every student.

A similar pattern emerged for learning motivation. The experimental group's mean motivation score increased from 47.58 to 65.58, compared with an increase from 47.89 to 57.50 in the control group. The experimental group also achieved a higher posttest motivation score and a higher N-Gain score (0.66 compared with 0.35). Motivation matters because students' willingness to begin, sustain, and complete learning activities can affect how much opportunity they have to practice and consolidate new knowledge. Flexible access to learning materials may allow students to return to difficult content, while quizzes and other learning tasks may provide clear short-term goals and information about their progress. These explanations are plausible interpretations rather than mechanisms directly tested in the study. The results nevertheless indicate that the MOOC-based instructional condition was accompanied by a larger increase in measured motivation than conventional instruction in the participating classes.

CONCLUSION

The findings of this study indicate that the use of Massive Open Online Courses (MOOCs) as an instructional medium was associated with positive and statistically significant improvements in English learning outcomes, learning interest, and learning motivation among vocational high school students majoring in nursing. Although both the MOOC-based and conventional instruction groups improved from pretest to posttest, the experimental group achieved higher posttest means and higher N-Gain scores across all three measured variables, with moderate gains in learning outcomes, motivation, and interest. These results suggest that MOOCs can provide a useful and flexible supplement to English instruction by offering accessible learning materials and opportunities for review and practice. Teachers are encouraged to integrate MOOC activities with classroom instruction in ways that support student engagement and independent learning, while schools should consider the availability of suitable digital infrastructure and reliable internet access. Because the study involved a relatively small sample and a quasi-experimental design, the findings should be generalized cautiously. Further research involving larger and more diverse groups, more detailed documentation of MOOC implementation, and additional factors such as digital literacy, technological readiness, and self-regulated learning is recommended to clarify the conditions under which MOOC-based instruction is most effective.

REFRENCES

Achya, R.S., Inggi, R., & Bakrim L. A. (2022). Perancangan Dan Implementasi Aplikasi Massive Open Online Course (MOOC) Modul Certificate Dan Ceremony. *Jurnal Sistem Informasi dan Sistem Komputer,* 7(1), 50-62. DOI:10.51717/simkom.v7i1.75

Alomar, M. (2025). Inclusivity And Diversity On Massive Open Online Course Platforms: A Multicultural Evaluation Of Novoed. *Journal for Multicultural Education.* 20(1), 1-13. https://doi.org/10.1108/JME-10-2023-0100

Ananda, R. & Hayati, F. (2020). *Variabel Belajar (Kompilasi Konsep).* Medan: CV Pusdikra Mitra Jaya.

Arikunto, S. (2020). *Prosedur Penelitian: Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.

Belawati, T. (2019). *Pembelajaran Online.* Jakarta: Universitas Terbuka Kemendikbudristek.

Bendezu-Quispe G, Labán Seminario LM, Arce-Huamani MÁ, Cámara-Reyes RR, Fernandez Guzman D, Caira-Chuquineyra B, (2022). Biomedical informatics: characterization of the offer of massive open online courses. *Medwave* ;22(11):2631

Berde, E., Mangesha, S. T., Mola, B. A., & Remsei, S. (2024). Massive Open Online Courses (MOOCs) for Ethiopian Educators: Evaluating MOOCs as a global development tool. *Research In Globalization.* 9(2024) 100263. https://doi.org/10.1016/j.resglo.2024.100263

Fajrillah, Sulaiman, O. K., Hamid, M. A., Simanihuruk, L., Simarmata, J., Hasibuan, M. S., Hasibuian, A., Purnomo, A., Muttaqin, & Guci, D. A. (2020). *MOOC Platform Pembelajaran Daring Abad 21.* Medan: Yayasan Kita Menulis

Falaq, F. I. (2025). Tingkat Akurasi Model AI ChatGPT dalam menyelesaikan Evaluasi Pembelajaran pada Massive Open Online Course. *Jurnal Pendidikan Nusantara.* 1(1), 29-39

Ghozali, I. (2021). *Aplikasi Analisis Multivariate Dengan Program IBM SPSS.* Semarang: UNDIP Press.

Hamdan, A., Hidayat, W. N., Kirana, K. C., & Nashiroh, P. K. (2024). Pengembangan Pembelajaran MOOC bagi Mahasiswa pada Materi Pemrograman Web Menggunakan Framework Laravel dan Bootstrap. *Edukatif: Jurnal Ilmu Pendidikan,* 6(3). 2373-2382. https://doi.org/10.31004/edukatif.v6i3.6777

Harefa, E. (2023). Analisis Komparatif Penggunaan Massive Open Online Course Dan Pembelajaran Offline Terhadap Perilaku Belajar Dan Hasil Prestasi Akademik Mahasiswa PGSD. *Jurnal Elementary.* 6(1), 5-10, https://doi.org/10.31764/elementary.v6i1.11903

Herwati, Arifin, M. M., Rahayu, T., Waritsman, A., Solang, D. J., Zulaichoh, S., Aniyati, K., Haryanto, T., Putri, S. S., & Kristanto, B. (2023). *Motivasi dalam Pendidikan Konsep Teori Aplikasi.* Malang: Literasi Nusantara Abadi Grup

Hidayat, A., Waspodo, M., & Wibowo, S. (2022). *Monograf Pengembangan Media Pembelajaran Video Berbasis Massive Open Online Courses (MOOC).* Bandung: Widina Bhakti Persada.

Kristanto, A. (2016). *Media Pembelajaran.* Subaraya: Penerbit Bintang Surabaya.

Latip, A. E. (2023). *Evaluasi Pembelajaran (Inovasi Penilaian Hasil).* Jakarta: LP2M UIN Syarif Hidayatullah.

Latri, Patta, R., Atjo, S. E. P., & Juhari, A. (2021). *Elpsa Dalam Pembelajaran Geometri.* Gowa: Penerbit Agma.

Mayasari, N. & Alimuddi, J. (2023). *Strategi Meningkatkan Motivasi Belajar Siswa.* Banyumas: CV Rizquna.

Ngo, T. T., Tran, T. T., Khuong, G., Nguyen, P. T. (2023). Students' Perception Towards Learning Massive Open Online Courses on Coursera Platform: Benefits and Barriers. *International Journal of Emerging Technologies in Learning (Online)* 18(14), 4-23. DOI:10.3991/ijet.v18i14.39903

Pagarra, H., Syawalludin, A. Krismanto, W., & Sayidiman. (2022). *Media Pembelajaran.* Bogor: Badan Penerbit UNM.

Rajagukguk, H. O., Rugaiyah, Mayasari, L. I. (2025). Massive Open Online Courses (MOOC) dalam Proses Digitalisasi Pembelajaran di Perguruan Tinggi. *Didaktika: Jurnal Kependidikan.* 14(3). 5281-5295.

Rakhra A, Hooley C, Fort M, Weber MB, Price L, Nguyen HL, Ramirez M, Muula AS, Hosseinipour M, Apusiga K, Davila-Roman V, Gyamfi J, Adjei KGA, Andesia J, Fitzpatrick A, Launois P, Baumann AA. (2022). The WHO-TDR Dissemination and Implementation Massive Open

Online Course (MOOC): Evaluation and Lessons Learned from Eight Low-and Middle-Income Countries. 1(1), *Research Square.* 1-19. doi: 10.21203/rs.3.rs-1455034/v1.

Rochaendi, E., Fuadi, A., Sholihah, D. A. (2024). *Pengembangan Media Pembelajaran.* Lampung: ITERA Press

Ropii, M. & Fahrurozi, M. (2017). *Evaluasi Hasil Belajar.* Lombok: Universitas Hamzanwadi Press

Serth S, Staubitz T, van Elten M and Meinel C (2022) Measuring the effects of course modularizations in online courses for life-long learners. *Front. Educ. 7:1008545*. doi: 10.3389/feduc.2022.1008545

Sugiyono. (2020). *Metodologi Penelitian Kombinasi (Mixed Methods).* Bandung: Alfabeta.

Sukaryawan, M. & Kartika, D. (2023). *Instrumen Sikap Saintifik, Minat dan Persepsi Terhadap Pembelajaran Konstruktivisme Lima Fhase Needham.* Palembang: Bening Media Publishing

Utami, R., Mulyadi & Utami, R. A. (2024). Penggunaan MOOC Sebagai Media Pembelajaran Online; Peluang dan Tantangan. *Jurnal Pembelajaran Inovatif.* 7(2), 49-56. http://journal.unj.ac.id/unj/index.php/jpi

Windrati, N. K., Fiani, I. D., Bintarti, A., & Asih, I. W. (2023), Pengembangan Rancangan Pembelajaran Massive Open and Online Courses (MOOCs) Public Speaking. 24(1), 9-19, DOI: 10.33830/ptjj.v24i1.3987.2023

Wirda, Y., Ulummudin, I., Widiputera, F., Listiawati, N., & Fujianita, S. (2020). *Faktor Fajktor Determinasi Hasil Belajar Siswa.* Jkarta: PPKBPPP Kemendikbud.

Yang, M., Keumurian, FJ., Elizabeth. C. N., Neufeld, C., Skrip, E., Duguid, J., Vega-Mercado, H., Rao, R. P., Rolle, M. W., (2024). Upskilling the cell therapy manufacturing workforce: design, implementation,and evaluation of a massive open online course. *Advances in Physiology Education.* 48(4), 733-741. https://doi.org/10.1152/advan.00077.2023