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Use of direct practice as an active learning innovation

Aliyyah Chantika¹, Novy Fitria Wahyuni², Sandy Salim Alamsyah³, Tegar Rifai⁴

¹²³⁴Universitas Pendidikan Indonesia, Kota Bandung, Indonesia aliyyahchantika20@upi.edu¹, novyfitriawahyuni@upi.edu², sandysalim433@upi.edu³ tegarrifai60@upi.edu4

ABSTRACT

The learning process must be made as interesting as possible so that students can easily follow the learning itself. Many innovations have been developed to create exciting learning methods. In this case, the current learning model or method is increasingly varied and has a diverse focus. This research aims to develop learning using direct practice methods and see how these methods improve students' understanding of the material. The gualitative research method, with interviews as the data collection instrument. The subjects of this research are students of the 2021 batch of Business Education Study Program at Universitas Pendidikan Indonesia. The research sample collected was 15 students. The interview results show the influence of direct learning practice on students' understanding of learning materials. From the results of this study, it can be seen that the handson learning method is considered a learning method that is fun and interesting and makes it easier for educators to deliver material. Therefore, this method is very effective in improving understanding in students.

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ABSTRAK

Proses pembelajaran harus dibuat semenarik mungkin agar peserta didik dapat dengan mudah mengikuti pembelajaran itu sendiri. Banyak inovasi-inovasi yang dikembangkan guna menciptakan metode pembelajaran yang menarik. Dalam hal ini, model atau metode pembelajaran saat ini semakin bervariatif dan memiliki fokus yang beragam. Penelitian ini bertujuan untuk mengembangkan pembelajaran menggunakan metode praktik langsung serta melihat keefektivitasan metode tersebut dalam meningkatkan pemahaman materi peserta didik. Metode penelitian yang digunakan adalah metode kualitatif, dengan wawancara sebagai instrumen pengumpulan data. Subjek penelitian ini adalah mahasiswa Angkatan 2021 Program Studi Pendidikan Bisnis di Universitas Pendidikan Indonesia. Sampel penelitian vang terkumpul adalah sebanyak 15 mahasiswa. Hasil wawancara tersebut menunjukkan bahwa terdapat pengaruh antara penggunaan praktik langsung terhadap pemahaman materi pembelajaran mahasiswa. Dari hasil penelitian ini, dapat diketahui bahwa metode pembelajaran praktik langsung dinilai sebagai metode pembelajaran yang menyenangkan, menarik dan mempermudah pendidik dalam menyampaikan materi. Oleh karena itu, metode ini sangat efektif dalam meningkatkan pemahaman pada peserta didik.

Kata Kunci: inovasi pembelajaran; pembelajaran aktif; praktik langsung.

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INTRODUCTION

Learning constitutes the central aspect of the process aimed at achieving educational goals, fostering interaction between educators and students. This pivotal factor ultimately determines the success of the learning process. In this context, educators, who assume a controlling role in the learning environment, must meticulously consider various facets that influence the entire sequence of learning activities. These considerations encompass approaches, strategies, and methods employed throughout the learning journey. Education is inherently intertwined with learning, wherein teachers, functioning as educators, disseminate knowledge and equip students with skills to navigate life challenges (Rapanta et al., 2020; Tama et al., 2018). This concurs with Gerstnet's perspective, as cited in Fitriani (2014), advocating for teachers to adopt a learner's mindset, continuously enhancing and refreshing their knowledge. This implies that in the 21st century, educators must adeptly construct an environment conducive to independent and enjoyable learning, thus kindling students' enthusiasm and engagement.

Amidst the rapid evolution of education in the global era, all stakeholders—from government bodies to societies, educators, and educational personnel—must collectively contribute to elevating the quality of education. This endeavor necessitates possessing refined, professional educational resources (Rizkita & Supriyanto, 2020). In the contemporary era, the learning ambiance has been harmonized with the times, enabling participants to engage in the learning process actively. Educators are tasked with implementing dynamic learning models that infuse the classroom atmosphere with vibrancy (Müller & Mirdenberger, 2021; Royani et al., 2018).

With technology, the learning process will be carried out more effectively. This is in line with the opinion of Centron in Fitriani (2014), who stated that the learning process by mastering science and technology would make learning faster, save time, and follow the needs of the students. Educators need to have adequate competence and follow various developments that arise in presenting material to students so that learning effectiveness occurs, which is characterized by students' understanding or mastery of the material, in other words, optimal achievement of learning objectives. In this regard, of course, educators always need to update the aspects of the methods they use during the learning process, especially in the current situation which requires the learning process to be held online. This is in line with the opinion of Zunidar (2019) who believes that an educator needs to have rich competencies related to learning methods and strategies.

Utilizing media within the learning process engenders interest, motivation, and positive stimulation among students, eliciting psychological influences in the form of enhanced learning motivation. This proposition finds support in research conducted by Puspitasari et al. (2018), investigating the impact of learning media on students' learning motivation. The study's findings suggest a notable correlation between media integration in lessons and students' learning motivation, as evidenced by their attitudinal responses. A pivotal role of learning media is to serve as an alternative channel for conveying educational messages, rendering them more tangible and expediting the learning process and its outcomes. This perspective aligns with Karo (2018), who contends that media functions as a tool or medium for delivering instructional content and messages from educators to students. Moreover,

learning media can heighten and direct students' attention, fostering learning motivation that inherently influences eventual educational achievements.

As defined by Prayitno in Saputri (2018), learning outcomes encompass all the knowledge and skills acquired and mastered by students following their engagement in the learning process. However, using the video conferencing method does not invariably prove efficacious in attaining learning objectives; this is underpinned by various factors contributing to this outcome. A practical learning experience is characterized by facilitating easier and more enjoyable comprehension for students, enabling the optimal realization of predetermined learning goals. Drawing from Robbins' perspective as cited in Darmawan (2014), effectiveness is gauged by the level of contentment derived from accomplished endeavors, thus signifying the culmination of individual objectives.

Effectiveness is not solely derived from the end product but can also be discerned through individual perceptions. Various dimensions of learning effectiveness, as outlined by Susilana & Riyana in Darmawan (2014), encompass: (1) knowledge augmentation, (2) skill enhancement, (3) attitudinal shifts, (4) behavioral adjustments, (5) adaptability, (6) integration improvement, (7) heightened participation, and (8) augmented cultural interaction. Additionally, as posited by Shadiqien (2020), learning can be deemed effective when students undergo transformative behavioral changes spanning knowledge, attitudes, and skills. This research endeavors to ascertain the efficacy of employing the direct practice as a pedagogical innovation, gauging its impact on student's comprehension of the subject matter.

LITERATURE REVIEW

Direct Learning

The learning method constitutes a pivotal manifestation of the learning strategy, serving as a conduit or instrument for delivering, illustrating, providing examples, and conducting exercises to attain the designated learning objectives (Qowim, 2020). Within this context, methods assume a paramount role within the continuum of learning systems. The triumphant execution of learning strategies profoundly hinges on the adept utilization of methods. Nuur (2018) expounds that the method comprises the ensuing components:

- 1. A description of the subject matter under study.
- 2. Facilitation of discussions and the exchange of ideas.
- 3. Engagement in activities that leverage diverse instructional tools, including laboratories and the like.
- 4. Involvement in activities within the school environment, such as visits, field work, exploration, and research.
- 5. Utilization of various learning resources, including library books and audiovisual tools.
- 6. Participation in creative endeavors such as drama, fine arts, music, handicrafts, and similar pursuits.

Expanding upon these insights, the learning method assumes a pivotal role in educators orchestrating classroom dynamics and disseminating educational content. The direct practice

method, often likened to the drill, direct, or training approaches, represents a structured pedagogical strategy. As expounded by Titin et al. (2018), the drill method functions as an educational conduit that enhances students' problem-solving skills through the integration of specialized tools that facilitate the learning journey. This pedagogical tool not only hones aptitudes and skills but also molds attitudes and habits. In this context, the direct practice method emerges as an instructional approach that extensively employs language as a communication medium. Its principal objective is cultivating proficient oral language prowess, enabling effective interaction with conversational partners. Notably, this method is characterized by repetitive exercises and practices focused on the subject matter. The process of training or practice, intrinsic to this approach, entails a learning trajectory culminating in mastery and acclimatization to execute specific tasks competently. Thus, the direct practice method is pivotal in fostering language proficiency and skill mastery among learners.

Active Learning

Prince in Robertson (2018) posited that active learning encompasses any learning approach that engages students in the educational process, thereby necessitating purposeful activities and prompting students to contemplate their actions to contribute effectively to the classroom environment. As a result of emerging queries, students can engage in in-depth discussions directly within the class. The active learning paradigm demands students' active participation to attain optimal learning outcomes (Mosteanu, 2021; Syaparuddin et al., 2020). Candy et al., in their work titled "Developing Lifelong Learners Through Undergraduate Education As Adult Learning" define active learning as a deliberate pedagogical design empowering students to take an active and responsible stance towards their learning. This paradigm shifts the role of students from mere recipients of knowledge to proactive learners, vested with accountability for their learning journey's success. In this restructured system, educators are no longer central (teacher-centered); instead, students are expected to drive their learning through self-directed learning. Self-assessment of learning progress also becomes a student responsibility, thus characterizing students as the architects of their education, entrusted with curricular content and structure (Allen et al., 2020; Milles et al., 2019).

This concurs with the research conducted by (Sinaga et al., 2017), which indicated that students' comprehension of concepts, on average, demonstrated higher achievement through direct learning, surpassing the medium-qualified average comprehension achieved via conventional learning. In implementing the direct learning model, educators are responsible for delineating learning objectives, organizing material structures, and defining fundamental skills for the upcoming semester. Educators illustrate these aspects through modeling and demonstrations, allowing students to practice and apply acquired concepts and skills, with educators providing feedback to facilitate active interaction.

In the execution of the direct learning model, students are allowed to selectively observe, internalize, and replicate skills demonstrated by the educator. Consequently, the direct learning model employs a declarative approach, prioritizing the conceptual and motor skill learning process to cultivate a more structured learning environment.

According to Arianti (2019), teachers assume the role of motivators responsible for nurturing students' learning motivation, thereby facilitating effective student learning. Effective learning, in turn, heightens students' comprehension of the subject matter. This necessitates educators to exhibit heightened creativity in order to fashion impactful classroom experiences. As advocated by Daouk et al. (2016) and Moro et al. (2021), educators can employ direct learning to ensure a comprehensive understanding of the presented material.

Several principles underpin the development of active learning, including: (1) Assigning students responsibility for their learning; (2) Empowering students to identify and access learning resources autonomously; (3) Equipping students with problem-solving capabilities; and (4) Fostering students' capacity to assess learning outcomes. It is anticipated that these four principles, working in concert, will cultivate lifelong learning competencies within students.

Evident from the aforementioned principles is the diminished role of educators within the active learning framework. In this paradigm, educators function primarily as facilitators or resources, relinquishing the role of judges who wield authority in determining the correctness or fallacy of students' learning paths. Within the learning process, educators transcend the mere transmission of subject matter, imparting moral values integral to life (Zunidar, 2019; Öhman & Östman, 2019).

Understanding of Material in Students

As stated by Bloom Benyamin in Aspar (2020), understanding is intricately linked to goals, behaviors, and responses, where an individual manifests a grasp of a message or information. Meanwhile, according to Kusmawati & and Ginanjar (2016), students can be deemed to have comprehended a subject if they can elucidate the concept in their own words and establish connections to other concepts. Nasution and Surya (2017) assert that traditional lecture-based teaching methods often render students disinterested and drowsy, fostering passivity during classroom instruction (Sapilin et al., 2019). Hence, students must cultivate the ability to maintain focus and concentration throughout the learning process to foster a robust grasp of the material. In theoretical learning, the vigor and engagement exhibited by students can significantly bolster their comprehension of the material presented by educators (Aspar, 2020). Furthermore, an essential criterion for gauging students' success in the learning journey is their capacity to comprehend the subject matter they have studied genuinely.

According to Anderson & Krathwohl in Rahmat et al. (2018), students can be deemed to have comprehended material if they satisfy seven distinct indicators. These indicators include: (1) Interpreting—signifying the capability to expound upon the material using one's own words; (2) Exemplifying—denoting the capacity to furnish examples about the studied material; (3) Classifying—reflecting the ability to categorize the material into appropriate groupings; (4) Summarizing—entailing the skill to deduce conclusions from the material; (5) Inferring—entailing the aptitude to derive patterns from a set of analogous instances; (6) Comparing—illustrating the competency to draw comparisons between the studied material; and (7) Explaining—signifying the proficiency to construct a causal model of a system. These seven

indicators serve as benchmarks to assess students' comprehension of the material they have engaged with.

Cultivating an engaging and immersive learning experience, coupled with the delivery of easily comprehensible materials, plays a pivotal role in augmenting the efficacy of the learning process, thus fostering the accomplishment of educational objectives. The trajectory of successful learning hinges upon students' continuous advancement throughout their educational journey. This perspective resonates with the insights of Sarinengsih et al. (2018), who propose that students' active participation in the learning process yields a more profound and meaningful grasp of the material as students directly interact with and experience the concepts under study. In line with expert opinions, students' mastery of the material is gauged by their capacity to summarize, reiterate, and compare concepts independently. A meticulously structured learning process tailored to the unique attributes of students possesses the potential to amplify their comprehension of the subject matter significantly.

Education Innovation

Etymologically, the term "innovation" originates from the Latin word "*innovatio*," signifying renewal or change. The verb "*innovo*" denotes the act of updating or altering. Innovation encapsulates a novel alteration intended for enhancement, distinct from preceding modifications, often deliberate and meticulously planned. According to Ansori & Sari (2020), educational innovations encompass novel concepts, materials, or methodologies perceived as new by individuals or groups intended to fulfill educational objectives or address pedagogical challenges. Consequently, educational innovation signifies recent transformations within the educational realm directed toward realizing educational objectives.

In his work titled "*Educational Innovation*" Syaefuddin elucidates that educational innovation constitutes a departure from preexisting norms, leading to the creation of novel methodologies aimed at enhancing the capacity to attain specific educational goals. Innovation manifests as an idea, practice, or artifact perceived as novel within a shifting context (Yun et al., 2020). This transformation arises in response to circumstances demanding a creative process to yield invention. However, not all reforms align with the innovation classification, as some individuals may have prior knowledge of these innovative approaches. To enhance existing dimensions, the practical implementation of educational innovation becomes imperative. The primary objective of educational innovation resides in problem-solving through diverse methods, encompassing the generation of new ideas or methodologies and the transformation (or replacement) of outdated practices, all in pursuing educational goals (Ansori & Sari, 2020).

Educational innovation holds immense significance as education is pivotal in forging a sustainable future, positioning it as an indispensable and positively impactful instrument of change (Leal Filho et al., 2019; Serdyukov, 2017). As outlined by Syafaruddin in Kadi and Awwaliyah (2017), innovation necessitates effective management, which serves as a guiding framework encompassing planning, organization, leadership, and evaluation stages to appraise accomplished and outstanding objectives.

Characteristics of Innovation

- 1. Has unique/special characteristics
- An innovation will have distinctive characteristics in terms of ideas, programs, arrangements, systems, including possible expected results.
- Has characteristics or novelty
 An innovation must have the characteristics of being a product of work and thought that
 has a degree of originality and novelty.
- 3. Innovation programs are implemented through planned programs Innovation will be carried out through a process that is not rushed, but innovation activities are carefully prepared with a straightforward program and planned.
- 4. The innovation that is rolled out has a purpose

The pursued innovation must encapsulate its intended achievements, encompassing the orientation and strategic approach delineating the path toward attaining the objectives set within the innovation system.

Karakteristik Inovasi yang Mempengaruhi Derajat Inovasi

According to Rogers, as cited in Sholahuddin et al. (2017), the characteristics of innovation can influence individuals and consumers in line with the adoption rate. There are five characteristics of innovation, according to Rogers, namely:

1. There is a relative advantage

The degree to which an introduced innovation offers benefits and advantages to individuals or communities poised to adopt it.

2. Have solidarity and understanding

The extent to which an innovation can be in line and compact with the existing value system or line with the experience of the community that will adopt it.

3. Has a degree of complexity

The extent to which the degree of complexity, difficulty, and intricacy of an innovation product is felt by society.

4. Triability

The extent to which an innovation can be tested for its reliability and benefits. An innovation result can be easily adopted if it can be seen and tested through field experience.

5. Observability

The extent to which an innovation's results can be observed. The easier an innovation result is to observe, the higher the chance that the innovation result can be adopted.

As an illustration, consider the scenario of school consolidation, particularly in elementary education, undertaken to enhance the efficiency and effectiveness of educational management. Academic institutions occupy a distinctive vantage point for equipping students with requisite knowledge. Consequently, fostering creative competencies within these institutions becomes imperative, steering the trajectory toward implementing educational innovation programs (Chandra et al., 2020).

METHODS

The method used in this research is a qualitative approach. According to Sugiyono in his book entitled "*Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*". The qualitative approach is a research method employed to investigate the condition of a natural phenomenon, with the researcher assuming the role of the principal instrument. Consequently, Notoatmodjo in his book entitled Metodologi Penelitian. Researchers must possess a profound theoretical foundation and extensive insight to effectively formulate inquiries, analyze, and construct research subjects more clearly. Techniques employed in collecting qualitative data typically exhibit a tentative nature tailored to the contextual intricacies of the research question.

This research employs interview and observation methods to delve into the effectiveness of direct practice on students' comprehension. The researcher will endeavor to depict how direct practice impacts students' understanding. Interviews were conducted with 15 participants from the Program Studi Pendidikan Bisnis, Fakultas Ekonomi dan Bisnis Universitas Pendidikan Indonesia. Observations have been made by researchers in the course class Strategi UMKM dan Kewirausahaan in the period from September to December 2022.

RESULT AND DISCUSSION

Effectiveness revolves around program outcomes that are deemed successful in aligning with previously planned goal indicators. The level of effectiveness finds its determination in amalgamating activity targets with comprehensive activity process standards, coupled with the activity's adaptability to the surrounding environment (Talkah, 2021). Consequently, the realization of an effective learning process hinges on various indicators, including the willingness of students to learn and their personal readiness, both of which should harmonize with the quality of the delivered material.

The assessment of learning effectiveness hinges on several aspects, encompassing student engagement during learning sessions, their responses to the learning experience, and individual mastery of the subject matter. Learning effectiveness encapsulates the educator's instructional conduct, capable of fostering new experiences through specific approaches and strategies to attain educational objectives. Learning effectiveness can be quantified by gauging the ratio between effectiveness and the invested study time, learning costs, and/or utilized learning resources.

The efficacy of a learning process can be discerned through students' responses to learning and their mastery of the subject matter. This evaluation can be quantified by assessing the ratio between effectiveness and the time dedicated to learning, incurred costs, and employed learning resources (Yulianto & Nugraheni, 2021). This underscores the notion that effective learning entails a transformative process spanning cognitive, affective, and psychomotor dimensions, encompassing learning outcomes, experiences, and the learning environment. Within active learning innovations, incorporating interactive quizzes emerges as a practical approach during the video conference learning experience (Gumelar et al., 2021).

The insights gathered from informant interviews during their participation in the Strategi UMKM dan Kewirausahaan course spanning September to December 2022 revealed that hands-on learning facilitated accelerated comprehension and effective assimilation of knowledge. Students found it easier to grasp the elucidated material. In this context, it is inferred that educators have successfully embraced all the facets of educational innovation, encompassing:

1. Innovation Essence

Three elements closely intertwined with the essence of innovation are technology, information and uncertainty considerations, and re-innovation. Educators have effectively amalgamated these three elements by implementing innovations through direct practice, enhancing active classroom learning.

2. Communication Chanel

Communication is a process in which participants share information to achieve mutual understanding. Effective communication holds immense significance in a classroom that brings together students and educators. Educators undoubtedly select techniques that facilitate students' rapid comprehension of the material when delivering content.

3. Time factor and decision-making process

Time plays a crucial role in the process of innovation diffusion. Educational practitioners can implement the subsequent stages of the innovation-decision process model for students, and they include:

a. Knowledge

Commencing with the inception of innovation through observing issues within the surrounding environment, novel innovations are generated to address these challenges. This phase correlates with adopting new and effective learning methods that can be applied to resolve these problems.

b. Persuasion

The phase wherein an individual enhances self-focus to gather diverse information pertinent to the innovation aligns with educators strategizing the implementation of various effective approaches for hands-on learning.

c. Decision Making

The decision-making phase pertains to an individual accepting or rejecting an innovation. After implementing this innovation, the efficacy of hands-on learning will determine its reception or dismissal.

d. Implementation

Following the decision to incorporate direct learning, its implementation in the learning process proves effective, enabling students to comprehend the material more effortlessly.

4. Social system

A social system comprises diverse units interconnected within the social order, striving collectively toward desired objectives. Within the social system, it encompasses all interactions geared towards implementing innovations through direct practical learning.

Furthermore, the instructional model employed by educators encompasses all the attributes of innovation, spanning uniqueness to its interrelation with innovation, diffusion processes, and communication. This innovation can be disseminated through the diffusion process utilizing communication channels, especially with the advancements in current technology, making communication and information dissemination more accessible.

Furthermore, this observability characteristic of innovation bears significant implications for educators. They distinctly fall within the category of observability, wherein their adopted instructional models become open to scrutiny by their colleagues. As these models are witnessed and assimilated, they become touchpoints for reference and emulation in classroom instruction. This peer observability fosters a culture of shared practices and encourages educators to experiment and innovate. In this context, educators' instructional practices serve as blueprints that inspire fellow educators to craft innovative learning environments. The perspective shared by Coll, as referenced in Lobo (2017), adds depth to this understanding. According to Coll, the stimulus for all-encompassing innovation finds its roots in the constructivist framework, wherein active learning pivots the onus of learning onto students. This pivotal shift challenges the traditional consumerist approach, where students are passive recipients of information, and instead urges them to take charge of their learning journey, transcending the role of mere content recipients.

CONCLUSION

Based on the aforementioned research findings, a definitive correlation exists between hands-on practical learning and the level of comprehension among Business Education students at the Indonesian University of Education. This relationship is evident from interview outcomes with students who were exposed to educators employing direct practical learning methodologies. Consequently, for optimal learning facilitation and enhancement, integration of direct practice is recommended as an alternative to amplify material comprehension, particularly for students. Moreover, by incorporating direct practice within the learning framework, an augmentation in students' learning motivation and the cultivation of an enjoyable learning environment can be achieved. The application of direct practice is adaptable across subjects and is not exclusive to students, but extendable to various educational tiers. Acknowledging the research's imperfections, further investigations concerning the efficacy of direct practice across various educational levels are warranted.

AUTHOR'S NOTE

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REFERENCES

- Allen, S. J., Rosch, D. M., & Riggio, R. E. (2022). Advancing leadership education and development: integrating adult learning theory. *Journal of Management Education*, 46(2), 252-283.
- Ansori, A., & Sari, A. F. (2020). Inovasi pendidikan di masa pandemi COVID-19. *Jurnal Literasi Pendidikan Nusantara,* 1(2), 133–148.
- Arianti, A. (2019). Peranan guru dalam meningkatkan motivasi belajar siswa. *Didaktika: Jurnal Kependidikan, 12*(2), 117-134.
- Aspar, F. (2020). Hubungan pemahaman materi terhadap kemampuan praktik mata kuliah korosi dan teknik pelapisan mahasiswa pendidikan teknik mesin angkatan 2016. *Jurnal Pendidikan Teknik Mesin, 7*(1), 45–54.
- Chandra, P., Tomitsch, M., & Large, M. (2020). Innovation education programs: a review of definitions, pedagogy, frameworks and evaluation measures. *European Journal of Innovation Management*, 24(4), 1268–1291.
- Daouk, Z., Bahous, R., & Bacha, N. N. (2016). Perceptions on the effectiveness of active learning strategies. *Journal of Applied Research in Higher Education*, 8(3), 360–375.
- Darmawan, D. (2014). Efektifitas penggunaan Multimedia Interaktif (MMI) model tutorial terhadap motivasi serta hasil belajar peserta didik pada materi pelajaran ilmu pengetahuan alam pokok bahasan sistem pernapasan manusia. *Edutech*, 1(3), 386–399.
- Fitriani, A. D. (2014). Pengembangan multimedia interaktif dalam pembelajaran geometri untuk meningkatkan kemampuan komunikasi calon guru sekolah dasar. *Edutech*, *13*(2), 236-245.
- Gumelar, M. R. M., Dwiyanti, G. P., & Hadiapurwa, A. (2021). Efektivitas penggunaan kuis interaktif berbasis video conference terhadap pemahaman materi pada mahasiswa. *Inovasi Kurikulum*, *18*(2), 166–177.
- Joseph Lobo, G. (2017). Active learning interventions and student perceptions. *Journal of Applied Research in Higher Education, 9*(3), 465–473.
- Kadi, T., & Awwaliyah, R. (2017). Inovasi pendidikan: upaya penyelesaian problematika pendidikan di Indonesia. *Jurnal Islam Nusantara, 1*(2), 144–155.
- Karo, I. & R. (2018). Manfaat media dalam pembelajaran. Axiom, 7(1), 91–96.
- Kusmawati, L., & Ginanjar S, G. (2016). Peningkatan kemampuan pemahaman konsep perkalian melalui pendekatan pembelajaran konstruktivisme pembelajaran

matematika di kelas 3 SDN Cibaduyut 4. *Didaktik: Jurnal Ilmiah PGSD STKIP Subang,* 1(2), 262–271.

- Leal F., W., Shiel, C., Paço, A., Mifsud, M., Ávila, L. V., Brandli, L. L., ... & Caeiro, S. (2019). Sustainable development goals and sustainability teaching at universities: falling behind or getting ahead of the pack?. *Journal of Cleaner Production, 232*, 285-294.
- Milles, L. S., Hitzblech, T., Drees, S., Wurl, W., Arends, P., & Peters, H. (2019). Student engagement in medical education: a mixed-method study on medical students as module co-directors in curriculum development. *Medical teacher*, *41*(10), 1143-1150.
- Moro, C., Phelps, C., Redmond, P., & Stromberga, Z. (2021). HoloLens and mobile augmented reality in medical and health science education: a randomised controlled trial. *British Journal of Educational Technology*, *52*(2), 680-694.
- Moșteanu, N. R. (2021). Teaching and learning techniques for the online environment: how to maintain students' attention and achieve learning outcomes in a virtual environment using new technology. *International Journal of Innovative Research and Scientific Studies*, 4(4), 278-290.
- Müller, C., & Mildenberger, T. (2021). Facilitating flexible learning by replacing classroom time with an online learning environment: a systematic review of blended learning in higher education. *Educational Research Review, 34*, 100394.
- Nasution, N. R., & Surya, E. (2017). Penerapan model pembelajaran berbasis masalah (Problem-based Learning) terhadap kemampuan berpikir kreatif matematika siswa. *Jurnal Mahasiswa PPS*, 1(1), 98-102.
- Nuur, K. N. (2018). Resource based learning dalam pembelajaran bahasa Arab. *Diwan: Jurnal Bahasa dan Sastra Arab, 3*, 33-43.
- Öhman, J., & Östman, L. (2019). Different teaching traditions in environmental and sustainability education. *Sustainable Development Teaching: Ethical and political challenges,* 1, 70-82.
- Puspitasari, P., Sari, P., Putri, J., & Wuryani, W. (2018). Pengaruh penggunaan media pembelajaran terhadap motivasi belajar mahasiswa IKIP Siliwangi. *Parole: Jurnal Pendidikan Bahasa dan Sastra Indonesia*, 1(2), 227–232.
- Qowim, A. N. (2020). Metode pendidikan Islam perspektif Al-Qur'an. *IQ (Ilmu Al-Qur'an): Jurnal Pendidikan Islam, 3*(1), 35-58.
- Rahmat, F. L. A., Suwatno, S., & Rasto, R. (2018). Meningkatkan pemahaman konsep siswa melalui Teams Games Tournament (TGT): meta analisis. *Jurnal Manajerial*, *17*(2), 239.
- Rapanta, C., Botturi, L., Goodyear, P., Guàrdia, L., & Koole, M. (2020). Online university teaching during and after the COVID-19 crisis: refocusing teacher presence and learning activity. *Postdigital science and education*, *2*, 923-945.
- Rizkita, K., & Supriyanto, A. (2020). Komparasi kepemimpinan pendidikan di Indonesia dan Malaysia dalam upaya peningkatan mutu pendidikan. *Jurnal Akuntabilitas Manajemen Pendidikan, 8*(2), 155-164.

- Robertson, L. (2018). Toward an epistemology of active learning in higher education and its promise. *Active Learning Strategies in Higher Education*, *1*, 17–44.
- Royani, I., Mirawati, B., & Jannah, H. (2018). Pengaruh model pembelajaran langsung berbasis praktikum terhadap keterampilan proses sains dan kemampuan berpikir kritis siswa. *Prisma Sains: Jurnal Pengkajian Ilmu dan Pembelajaran Matematika dan IPA IKIP Mataram, 6*(2), 46.
- Sapilin, S., Adisantoso, P., & Taufik, M. (2019). Peningkatan pemahaman konsep peserta didik dengan model discovery learning pada materi fungsi invers. *Mosharafa: Jurnal Pendidikan Matematika*, 8(2), 285-296.
- Saputri, R. & P. (2018). Penerapan multimedia interaktif dilengkapi quiz creator untuk meningkatkan motivasi belajar dan hasil belajar KKPI siswa. *Jurnal Pendidikan dan Teknologi Informasi, 5*(1), 81–88.
- Sarinengsih, S. S., L, E. N., & Pranata, O. H. (2018). Peningkatan pemahaman konsep materi simetri lipat melalui penerapan model pembelajaran learning cycle 5E. *Pedadidaktika: Jurnal Ilmiah Pendidikan Guru Sekolah Dasar, 5*(2), 9–20.
- Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it?. *Journal of Research in Innovative Teaching & Learning*, *10*(1), 4–33.
- Shadiqien, S. (2020). Efektivitas komunikasi virtual pembelajaran daring dalam masa PSBB (studi kasus pembelajaran jarak jauh produktif siswa SMK Negeri 2 Banjarmasin). *Jurnal Mutakallimin: Jurnal Ilmu Komunikasi, 3*(1), 11-21.
- Sholahuddin, S., Setyawan, A. A., & Trisnawati, R. (2017). Pengaruh karakteristik inovasi terhadap niat mengadopsi solopos epaper. *Prosiding Seminar Nasional Riset Manajemen dan Bisnis 2017, 1*, 63–84.
- Sinaga, E. K., Siregar, S., & Lubis, A. (2017). Pengaruh pembelajaran langsung terhadap pemahaman konsep matriks dan sikap ilmiah mahasiswa pendidikan teknik bangunan. *Educational Building*, *3*(2), 17–26.
- Syaparuddin, S., Meldianus, M., & Elihami, E. (2020). Strategi pembelajaran aktif dalam meningkatkan motivasi belajar PKn peserta didik. *Mahaguru: Jurnal Pendidikan Guru Sekolah Dasar, 1*(1), 30–41.
- Talkah, T. (2021). Efektivitas pembelajaran menyenangkan dengan aplikasi Quizizz di tengah pandemi COVID-19. *Attaqwa : Jurnal Ilmu Pendidikan Islam, 7*(1), 26–33.
- Tama, A. M., Rinaldi, A., & Andriani, S. (2018). Pemahaman konsep peserta didik dengan menggunakan Graded Response Models (GRM). *Desimal: Jurnal Matematika*, 1(1), 91-99.
- Titin, T., Tayeb, T., Nur, F., Angriani, A. D., & Majid, A. F. (2021). Sosialisasi penerapan metode drill berbantuan smart mathematics module dalam meningkatkan kemampuan pemecahan masalah matematika peserta didik. *Khidmah: Jurnal Pengabdian kepada Masyarakat, 1*(2), 64-77.
- Yulianto, D., & Nugraheni, A. S. (2021). Efektivitas pembelajaran daring dalam pembelajaran bahasa Indonesia. *Decode: Jurnal Pendidikan Teknologi Informasi*, 1(1), 33-42.

- Yun, J. J., Zhao, X., Jung, K., & Yigitcanlar, T. (2020). The culture for open innovation dynamics. *Sustainability*, 12(12), 5076.
- Zunidar. (2019). Peran guru dalam inovasi pembelajaran. Nishamiyah, 9(2), 41–56.