JURNAL CAHAYA EDUKASI

ISSN: 3089-9168 Volume-3, Edisi-1, Januari 2026

Epistemology and Pedagogy: Knowledge, Comprehension, and Learning in Education Re-thought a Systematic Literature Review

Rivan Fatwa Aulia[1], Miftahul Janah[2], Siti Masturoh[3], Siti Anidapriyani[4], Mufidah[5], Nur Cahya[6]*
[1,2,3,4,5,6]English Education Department, Universitas Mathla'ul Anwar, Indonesia
Email: [1]rivanfatwaaulia@gmail.com, [2]miftahuljanah1333@gmail.com, [3]sitimasturoh3rd@gmail.com, [4]Aprilynida64@gmail.com, [5]mufidahidah49@gmail.com, [6]nur.cahya@unmabanten.ac.id*

Abstract—*This research explores the interdependence of epistemology, pedagogy, and learning theory in modern-day educational reform through a systematic literature review. Reacting to rising criticisms of traditional educational frameworks that view knowledge as pre-existing and transferable, this paper highlights a move towards redefining knowledge as contextual, constructed, and socially mediated. The published peer-reviewed articles related to epistemological orientations, pedagogical practices, and learning processes are reviewed and published during the period 2019-2025, with a special focus on the constructivist and progressive approaches. As the results indicate, epistemological beliefs play a critical role in shaping the process of pedagogy; the constructivist, pragmatic, and critical epistemologies are closely related to the learner-centered instruction model and support and encourage meaning-making, inquiry, and dialogue. On the other hand, classic epistemological approaches have been associated with supporting the teacher-centered pedagogy and surface learning outcomes. Also, the alignment of teachers' epistemological beliefs is highlighted in the review as a mediating factor in curriculum Design and instruction choice. In sum, the research argues that successful and significant educational change requires consistency of assumptions on epistemology, pedagogical strategies, and learning theories. The coordination between these three areas is not optional for the creation of profound knowledge, self-directed learning in the students, and long-lasting learning in the twenty-first-century learning environment.*

Keywords—*Epistemology, Pedagogy, Learning in Education, Knowledge Comprehension, Literature Review*

I. INTRODUCTION

The recent nature of educational discourse has seen a revival of epistemology as a focal analytical tool for explaining the conceptualization of knowledge, understanding, and learning in schooling systems [1,2]. The educational reforms of the twenty-first century challenge more traditional assumptions about the immutability and transmissibility of knowledge [3], replacing them with views that preempts its socially mediated, situated, and constructed nature. They highlight that questions about the nature of knowledge and how it is gained go beyond philosophical abstraction and form fundamental issues that characterize pedagogical Design, instructional decision-making, and the goals of education [4].

A notable expression of this epistemological turn is the recent surge in the popularity of constructivist theories of learning [5], which reframe learning as an active process of meaning-making rather than a passive process of information intake. Constructivism transforms instructional practice by placing the learner as an agent who interprets experiences, engages in inquiry, and participates in understanding through social interaction [6,7]. This school has redefined classroom practice by prompting teachers to create learning experiences that prioritize exploration, dialogue, problem-solving, and real tasks. In this regard, the choices made during instruction, such as selecting the lesson format or evaluation methods, are informed by the need to recognize that profound understanding arises when individuals are involved in the teaching process, rather than being merely imparted a set of pre-established knowledge [8,9].

Through a systematic review of the selected literature, it became evident that the fields of epistemology, pedagogy, and learning theory cannot be treated as independent; instead, they form a triad that mutually influences educational practice [10,11,12]. Through the reviewed works, three overlapping insights can be identified: (a) epistemological assumptions in essence determine the way in which knowledge is valued and taught; (b) pedagogical philosophies put these assumptions into an instructional framework; and (c) learning theories operationalize these assumptions into observable processes. These components provide a consistent analytical framework for rethinking modern-day education when combined.

Epistemology itself is divided into four: 1) Epistemology of Idealism, which uses ideas and thoughts as sources, and for its application in Education is the development of a critical way of thinking, training creativity, and growing moral and spiritual values [13]. 2) Epistemology of Realism, the second part of this epistemology, knowledge must come from something objective; the application is often used in scientific research, objective observation, and measurement. It is suitable for use in the fields of social sciences, law, and science [14]. 3) Pragmatist epistemology, which considers knowledge to be correct if it is useful and has a real impact, can be applied in learning modeled on project-based learning and contextual-based learning, and is very relevant to the current independent curriculum [15]. 4) Epistemology of

ISSN: 3089-9168 Volume-3, Edisi-1, Januari 2026

extensive is related to individual freedom and choice. It can be applied to student learning autonomy, freedom, and choice of learning methods, as well as to strengthening personal responsibility [16].

According to the epistemological perspective, modern educational philosophy is turning its back on the understanding of knowledge as a fixed, universal, and transmissible entity, and instead emphasizing its contextual, constructed, and participatory character. The constructivist approach emphasizes that learners make sense rather than receive [17]. In contrast, the progressive and reconstructionist philosophies suggest that learning occurs when people ask questions, experience, and interact with one another [18]. The given paradigm shift makes epistemology one of the defining determinants of the conceptualization of learning in the education system.

The reviewed studies show that teachers' epistemological orientations mediate the influence of epistemological beliefs on curriculum and instruction in pedagogical terms. Teachers who subscribe to progressive and constructivist epistemologies exhibit greater curriculum freedom and greater flexibility in creating learning opportunities that resonate with learners' needs [19,20]. On the other hand, teachers with an essentialist or perennialist orientation are more likely to use centralized, authoritative, and content-based pedagogies, thereby limiting the possibility of adaptive learning environments. These results emphasize pedagogy as the operational component of epistemology, the means of translating abstract beliefs about what knowledge is into tangible actions of teaching.

Lastly, learning theory provides the empirical basis for and supports epistemological-pedagogical correspondence. Studies of understanding, conceptual growth, and multisensory involvement, including formal literature reviews in the field of knowledge and comprehension and constructivist research, show that learning is most efficient when learners actively, interpersonally, and meaningfully engage with knowledge. This is evidence supporting the suggestion that pedagogical strategies should be based on modern epistemological assumptions to facilitate deep learning, rather than procedural or rote knowledge.

Collectively, these three areas of concern boil down to a coherence argument: to rethink education requires repositioning knowledge as dynamic, pedagogy as responsive and learner-centered, and learning as an active process of construction rather than accumulation. A systematic literature review supports the view that epistemology provides the why, pedagogy the how, and learning theory the what of the educational change [21]. In turn, these domains should be seen as interrelated sources of the meaningful change in education in any attempt to redesign curricula, teaching models, or learning environments.

II. METHOD

This study conducted a systematic review to determine, appraise, and tabulate the pertinent findings of studies on modern games among young learners [22]. In this study, five steps of the systematic review process are used.

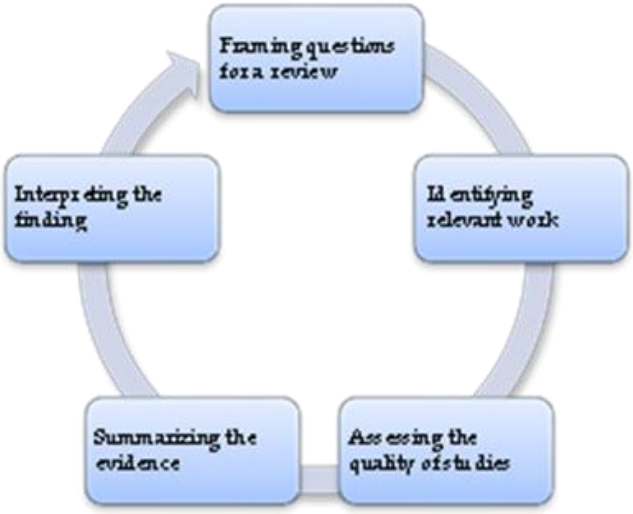

Figure 1. Five steps in the systematic review of literature

The first step in this study is to formulate review questions. The research question in this study is "How robust is empirically the proposed triad of epistemology (the why), pedagogy (the how), and learning theory (the what), especially when the literature underpinning the answer is itself preoccupied with sources and literature under the influence of Dewey, hence arguably ignoring non-Western traditions of epistemology?"

The second step involves identifying relevant scholarship by examining articles that enquire into epistemology, pedagogy, and learning theory in current educational transformations, with a special focus on constructivist changes. The articles are located in three major journals that include epistemological discourse, pedagogical innovation, and the implementation of the learning theory with digital or interactive media over the last six years (2019-2025) retrieved in the Publish or Perish database at Harzing. The journals that make up this corpus include: The British Journal of Educational Studies (n = 28), The Journal of Philosophy of Education (n = 32), and Studies in Philosophy and Education (n = 26).

The third step will be used to assess the quality of the selected studies based on strict inclusion criteria that underscore a deep empirical focus, rigorous methods, and a direct focus on the epistemology-pedagogy-learning triad in the context of educational change. Only high-quality publications are considered (n=4), including three from the Journal of Philosophy of Education, two from the British Journal of Educational Studies, and one from Studies in Philosophy and Education.

The fourth step summarizes the results of the six selected articles, highlighting the main findings related to the epistemology-pedagogy-learning triad within the framework of educational reforms. To briefly represent the evidence, the Table summarizes epistemological orientations, pedagogical strategies, and learning outcomes. This is elaborated in the results and discussion sections, which are organized into three thematic segments: the epistemological basis, pedagogical applications, and implications of learning.

ISSN: 3089-9168 Volume-3, Edisi-1, Januari 2026

The fifth step is to interpret the findings. At this point, the results are interpreted in terms of thematic synthesis, which is reached, by comparing and jointing evidence between the chosen articles. Patterns, similarities, and discrepancies in relation to epistemological orientations, pedagogical strategies, and learning processes are identified and examined appropriately. In this approach, reviewers can go beyond descriptive reporting and develop a consistent conceptual practice in the way epistemology grounds pedagogy and learning in modern educational settings.

The presentation also explains the quality, scope, and limitations of the studies included in the interpretation, in line with PRISMA recommendations [23]. The differences in research Design, learning environments, and theoretical backgrounds are critically analysed to reduce bias and unnecessary generalizations. The synthesized findings are supported by this reflective analysis, making them credible and trustworthy.

III. RESULTS AND DISCUSSION

It is a systematic literature review conducted through a transparent process that involves searching, filtering, and scrutinizing four articles on epistemology and pedagogy in education. Using predetermined inclusion and exclusion criteria, peer-reviewed articles published in 2020 and 2025 were included in the final analysis. These results are organized based on thematic synthesis of the reviewed literature.

Author (Years) N=4	Core Findings	Model strategy
Aguilar-Valdés et al. (2024) [24]	Relationship with teaching approaches, inconsistencies between beliefs and practices, relationships with other studies	Systematic Literature Review
Islami et al. (2024) [25]	The position of epistemology in education, types of epistemologies and their applications, epistemology and curriculum	Qualitative, literature review
Andrew Allen (2022) [26]	Students as the center of learning, active learning, constructivism theory	Sytematic literature review
Alemdar & Aytaç (2022), [27]	Teacher's philosophical views affect their freedom to plan, implement, and evaluate the curriculum	Qualitative correlation

From the table above, we can see that

1. Dissemination of Studies and Research Preoccupation.

The studies primarily reviewed pertained to the ordeals of educational philosophy, teacher education, curriculum studies, and learning theory. Most of the articles used conceptual analysis, qualitative designs, or theoretical reviews, but a few used empirical qualitative or mixed methods designs. This distribution evidently shows that research on epistemology and pedagogy is primarily theoretical, with a strong emphasis on conceptual elucidation and philosophical contemplation.

2. Epistemological Beliefs and Their Implications for Pedagogy.

One theme identified in the reviewed studies is that epistemological beliefs largely influence pedagogical practices. Those studies that report epistemological traditional beliefs, that learning is fixed, objective, and is passed on by the teacher to the student, were more inclined to support teacher-centered pedagogical models. On the other hand, research based on constructivist, pragmatic, or critical epistemologies focuses on learner-centered methods, including inquiry-based learning, dialogic teaching, and collaborative learning. This conceptual trend is repeated across various educational settings, indicating a powerful connection between beliefs about knowledge and instructional Design.

3. Knowledge and Comprehension re-conceptualization.

The literature synthesis indicates a common re-evaluation of knowledge and understanding in education. Instead of understanding knowledge as content to memorize, much research presents knowledge as a process that is actively constructed through interaction, reflection, and experience. Comprehension is thus conceived as a more advanced intellectual process comprising sense-making, critical interpretation, and contextual understanding. This transformation has consistently been recognized as one of the significant effects of pedagogy guided by recent epistemological viewpoints.

4. Active and Transformative Process of Learning.

The other predominant theme in the SLR is the re-conceptualization of learning as an active and transformative process. The studies reviewed indicate that learning is best when learners are active participants who question, evaluate, and use knowledge. This school of thought contradicts traditional models of transmission and is pro-pedagogical, promoting critical thinking, metacognition, and the autonomy of the learner. This point of view is outlined throughout the literature as a prerequisite to significant and sustainable learning.

5. The Requirement to Re-evaluate the Old School of Educational Approaches.

Lastly, the studies under analysis share the need to consider revising existing models of education to address modern-day challenges, including the digital transformation and the changing needs of learners, not to mention a changing social environment. Many studies argue that pedagogical innovation will be superficial unless there is a re-examination of underlying epistemological assumptions. It is the literature that is more explicit about how epistemological awareness is made a concern in pedagogical design, teacher education, and curriculum development.

The research methods used in these studies varied. Some studies used qualitative and systematic review methods. Qualitative methods were used in two studies, and two other studies used a Systematic Literature Review, with varying core findings.

The review affirms that the teacher-centered pedagogies are informed by the traditional epistemological perspectives

that conceptualize knowledge as fixed and transferable. Nevertheless, the preeminence of constructivist, pragmatic, and critical views in recent literature indicates an increased transition toward learner-centered approaches. This change is a side effect of 21st-century educational reforms, which focus on active learning, critical thinking, and learner autonomy. The fact that the epistemological views and pedagogical strategies in the studies we have reviewed are in tandem supports the point that, to effect mindful change in pedagogy, there must be equal change in beliefs regarding knowledge.

Besides, the reconceptualization of knowledge and understanding found in the results constitutes a significant break from shallow learning. The concept of comprehension in the literature is consistently portrayed as an engagement in creating meaning, not merely as content acquisition [28,29]. This observation is consistent with modern principles of learning theory that emphasize in-depth cognition, contemplation, and practical modelling. Focusing on comprehension as one of the primary learning outcomes, the studies criticize assessment and teaching methods that are based on memorization rather than on learning and understanding.

The findings also identify a growing appreciation among learners of themselves as active epistemic agents. This view represents a major paradigmatic shift in education, with students now occupying the role of co-creators of knowledge rather than being industrial consumers. The implications of such a perspective for pedagogy are crucial, as it necessitates instructional designs that facilitate dialogue, inquiry, and self-directed learning [30,31]. The literature review indicates that empowering learners as epistemic agents can improve engagement and the quality of education.

Another problem that arises from this review is that traditional educational paradigms should be reconsidered in response to social and technological change. The results indicate the possibility of superficial reform in a pedagogical innovation without epistemological reflection. The introduction of digital technologies and artificial intelligence into education, e.g., provokes some basic epistemological questions concerning the authority, validation of knowledge, and authenticity of learning [32,33]. A more reflective, more philosophically informed approach to pedagogical design is therefore called for in the literature.

Overall, this discussion shows that it is not simply a matter of methodological modification to rethink education, but rather a matter of reconsidering how knowledge is conceived and practiced in educational life. The synthesis of study results from this SLR demonstrates that achieving the level of epistemological awareness alongside the level of pedagogical innovation is crucial to the development of meaningful understanding and the attainment of sustainable learning. Such findings will be conceptually applicable to future studies and practical implications for teacher education, curriculum development, and education policy

IV. CONCLUSION

The systematic literature review supports the view that epistemology, pedagogy, and learning theory constitute a consistent, mutually reinforcing system that defines the modern practice of education. This analysis has shown that epistemological assumptions about the nature of knowledge are not only abstract philosophical standpoints but also play an active role in the design of instruction, the development of the curriculum, and classroom interactions. With the conceptualization of knowledge as dynamic, contextualized, and constructed, the shift to inquiry, cooperation, and critical-thinking approaches becomes a concern for pedagogical methods.

The results also suggest that teachers' epistemological beliefs play a crucial mediating role in linking educational philosophy to pedagogical implementation. Instructors with constructivist, pragmatic, or critical epistemological values tend to develop a flexible learning environment that accommodates learner diversity and facilitates deep learning. On the contrary, the conservative epistemological views reproduce transmissive and teacher-centered ways of doing things, thus setting in place restrictive learning and critical interactions.

Moreover, the review highlights a reconceptualization of learning as an active and transformative process in which the learner is positioned as an epistemic agent. This transformation has significant implications for the process of assessment, implying that assessment should no longer be done in a memorization style but rather through evaluations that focus on understanding, reasoning, and the application of knowledge. The article points out that pedagogical innovation, especially in the digital transformation and new technologies, needs to be on epistemological reflection so as not to embark on surface reform.

Lastly, the review recommends that more attention be paid to epistemological awareness in teacher education, curriculum planning, and educational policy. The empirical studies should be extended in the future to include other cultural and non-Western epistemological backgrounds, to diversify the discussion and provide more comprehensive reform in education. The alignment of epistemology, pedagogy, and learning theory is essential in promoting.

REFERENCES

[1] Gershunin, S. Epistemology of Education: Structure and Goals. Pushkin Leningrad State University Journal. 2025 https://doi.org/10.35231/18186653_2025_1_72.

[2] Boon, M., Orozco, M., & Sivakumar, K. Epistemological and educational issues in teaching practice-oriented scientific research: roles for philosophers of science. European Journal for Philosophy of Science. 2022; 12. https://doi.org/10.1007/s13194-022-00447-z.

[3] Tan, S., Chan, C., Bielaczyc, K., , L., Scardamalia, M., & Bereiter, C. Knowledge building: aligning education with needs for knowledge creation in the digital age. Educational Technology Research and Development. 2021; 69. https://doi.org/10.1007/s11423-020-09914-x.

[4] Kali, Y., Goodyear, P., & Markauskaite, L. Researching design practices and design cognition: contexts, experiences and pedagogical knowledge - in - pieces. Learning, Media and Technology. 2011; 36. https://doi.org/10.1080/17439884.2011.553621.

[5] Efgivia, M., Rinanda, R., , S., Hidayat, A., Maulana, I., & Budiarjo, A. Analysis of Constructivism Learning Theory. Proceedings of the 1st UMGESHIC International Seminar on Health, Social Science and Humanities (UMGESHIC-ISHSSH 2020). 2021 https://doi.org/10.2991/assehr.k.211020.032.

[6] Woodward, D., Booth, S., Allen, E., Forbes, A., Donnelly, C., & Taylor, J. Constructivism and reflective practice: An evidence-based approach to tertiary teaching. Scope: Contemporary Research Topics (Learning and Teaching). 2021 https://doi.org/10.34074/scop.4010014.

[7] Gunnlaugson, O., De Souza, R., Zhao, S., Yee, A., Scott, C., & Bai, H. Revisiting the Nature of Transformative Learning Experiences in Contemplative Higher Education. Journal of Transformative Education. 2022; 21. https://doi.org/10.1177/15413446211067285.

[8] Torralba, K., & Doo, L. Active Learning Strategies to Improve Progression from Knowledge to Action.. Rheumatic diseases clinics of North America. 2020; 46 1. https://doi.org/10.1016/j.rdc.2019.09.001.

[9] Terentev, E., Shcheglova, I., Federiakin, D., Koreshnikova, Y., & Costley, J. Active versus Passive Teaching: Students' Perceptions and Thinking Skills. Voprosy obrazovaniya / Educational Studies Moscow. 2024 https://doi.org/10.17323/vo-2024-16364.

[10] Rifai, A., , W., Wachidi, W., Taqiyuddin, Y., & Haqiqi, M. Systematic Literature Review on the Integration of Epistemological Theories in Educational Management Practices. Multicultural Islamic Education Review. 2025 https://doi.org/10.23917/mier.v3i1.10210.

[11] Delgado, E., Oyola, E., Espinoza, I., & Angulo, K. Characterization of the Epistemological, Methodological, and Pedagogical Perspective in English Language Teaching. Ciencia Latina Revista Científica Multidisciplinar. 2024 https://doi.org/10.37811/cl_rcm.v8i5.13645.

[12] Delahunty, T., & Kimbell, R. (Re)framing a philosophical and epistemological framework for teaching and learning in STEM: Emerging pedagogies for complexity. British Educational Research Journal. 2021 https://doi.org/10.1002/berj.3706.

[13] Khasawneh, O., Jarrah, A., Hani, M., & Belbase, S. Idealism as an educational philosophy of mathematics teachers in Al Ain City Schools of the United Arab Emirates. PLOS ONE. 2023; 18. https://doi.org/10.1371/journal.pone.0279576.

[14] Pesci, F. Epistemic Realism in Bradley and Early Moore. Journal for the History of Analytical Philosophy. 2021 https://doi.org/10.15173/jhap.v9i6.4294.

[15] Martela, F. Fallible Inquiry with Ethical Ends-in-View: A Pragmatist Philosophy of Science for Organizational Research. Organization Studies. 2015; 36. https://doi.org/10.1177/0170840614559257.

[16] Islami, J., Hudzaiffah, I., Kariah, S., Nurabadi, A., & Habibi, M. Epistemology and its Application in the World of Education. International Journal of Social Science and Human Research. 2024 https://doi.org/10.47191/ijsshr/v7-i11-23.

[17] Laskar, A., & Bhattacharjee, S. Teachers awareness on constructivist approach in learning. International journal of health sciences. 2022 https://doi.org/10.53730/ijhs.v6ns1.5792.

[18] Güngör, C., & Çolakoğlu, Ö. Tendencies in Educational Philosophy and Perceptions of Learning Environment: A Research on Undergraduate Students. Anadolu Journal of Educational Sciences International. 2025 https://doi.org/10.18039/ajesi.1570053.

[19] Yakubu, G., Ahmed, A., & Iyasco, M. THE IMPACT OF CONSTRUCTIVIST LEARNING THEORIES ON CURRICULUM DESIGN. International Journal of African Sustainable Development Research. 2025 https://doi.org/10.70382/tijasdr.v07i2.024.

[20] Rai, S. Reimagining Learning: The Relevance and Application of Constructivist Theory in 21st Century Classrooms. International Journal For Multidisciplinary Research. 2025 https://doi.org/10.36948/ijfmr.2025.v07i04.50004.

[21] Bukhave, E., Højbjerg, K., Nielsen, C., Engelsen, S., & Lehn, S. Ideas of Coherence Between Theory and Practice in the Training of Health Professionals: A Scoping Review. Nordic Journal of Systematic Reviews in Education. 2024 https://doi.org/10.23865/njsre.v2.5581.

[22] Martinez, L., Gimenes, M., & Lambert, E. Entertainment Video Games for Academic Learning: A Systematic Review. Journal of Educational Computing Research. 2022; 60. https://doi.org/10.1177/07356331211053848.

[23] Manzano-León, A., Camacho-Lazarraga, P., Guerrero, M., Guerrero-Puerta, L., Aguilar-Parra, J., Trigueros, R., & Alías, A. Between Level Up and Game Over: A Systematic Literature Review of Gamification in Education. Sustainability. 2021 https://doi.org/10.3390/su13042247.

[24] Aguilar-Valdés M, Almonacid-Fierro A, Valdebenito K, Sepúlveda-Vallejos S. Epistemological beliefs and teaching practice: a systematic literature review 2011 to 2021. Int J Eval Res Educ. 2024;13(2):767-773.

[25] Islami, A., et al. Epistemology and its Application in the World of Education. Doi.org. 2024;7(11):23. Available from: https://doi.org/10.47191/ijsshr/v7-i11-23

[26] Allen A. An introduction to constructivism: Its theoretical roots and impact on contemporary education. J Learn Des Leadership. 2022;1(1):1-11.

[27] Alemdar M, Aytaç A. The impact of teacher's educational philosophy tendencies on their curriculum autonomy. J Pedagog Res. 2022;6(1). doi: 10.33902/jpr.2022.166.

[28] , M., & , A. Principles of "Constructivism" in Foreign Language Teaching. Journal of Literature and Art Studies. 2017; 7. https://doi.org/10.17265/2159-5836/2017.01.013.

[29] Kravchyna, T. MODELS OF FOREIGN TEXT UNDERSTANDING. Scientific Notes of Ostroh Academy National University: Psychology Series. 2022 https://doi.org/10.25264/2415-7384-2022-15-14-18.

[30] Designing a Community of Inquiry in Online Courses. The International Review of Research in Open and Distributed Learning. 2020 https://doi.org/10.19173/irrodl.v20i5.3985.

[31] Iglesias, P., & Tejada, J. Practice as Research through Inquiry-Based Learning: A Pedagogical Intervention with Music Students in Higher Education. Education Sciences. 2024 https://doi.org/10.3390/educsci14070738.

[32] Cope, B., Kalantzis, M., & Searsmith, D. Artificial intelligence for education: Knowledge and its assessment in AI-enabled learning ecologies. Educational Philosophy and Theory. 2020; 53. https://doi.org/10.1080/00131857.2020.1728732.

[33] Bakhurst, D. Teaching, Telling and Technology. Journal of Philosophy of Education. 2020; 54. https://doi.org/10.1111/1467-9752.12414.