



## The Development of Teacher Professionalism in Implementing Curriculum and Learning Management Towards Education 5.0

Tutus Kuryani, Agus Timan\*

Program Studi Manajemen Pendidikan, Universitas Negeri Malang, Jawa Timur, Indonesia  
[tutus.kuryani.2401328@students.um.ac.id](mailto:tutus.kuryani.2401328@students.um.ac.id), [agus.timan.fip@um.ac.id](mailto:agus.timan.fip@um.ac.id)

**Abstract:** The transformation of education through curriculum and learning management is a critical aspect of adapting to modern demands. Education transformation in response to the challenges posed by Industry 5.0 and Society 5.0 demands education transformation manifested to re-conceptualization of curricula and pedagogical practices. This study aimed to assess the professional development of teachers in implementing curriculum management towards Education 5.0. The study in this article applied systematic literature review (SLR) using Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) resulting in 225 articles (5 records included) were screened. The results showed that teacher professionalism is an essential factor in improving educational systems and ensuring high-quality teaching. It is imperative to establish professional development through continuous professional development programs for teachers, advocating systemic changes that enhance teaching practices and foster collaborative learning environments to better meet the evolving needs of students.

**Keywords:** Teacher Professionalism, Development Program, Curriculum Management, Education 5.0

### Introduction

The world's complex challenges impact education policies, requiring curriculum adaptation, technology integration, and directed policy changes to achieve inclusive, quality, and relevant education (Yufarika, 2023). World has been moving through industry 5.0 and society 5.0. Industry 5.0 can enable cooperation between advanced technologies and stakeholders in the education sector to enhance the teaching-learning process (Supriya et al., 2024). While Industry 4.0 is technology-driven, Society 5.0 is value-driven, emphasizing human needs and sustainability (Teknowijoyo & Marpelina, 2022). Education 5.0 refers to the fifth industrial revolution in education by leveraging digital technologies to eliminate barriers to learning, enhance learning methods, and promote overall well-being. The concept of Education 5.0 represents a new paradigm in the field of education, one that is focused on creating a learner-centric environment that leverages the latest technologies and teaching methods (Ahmad et al., 2023).

The transformation of education through curriculum and learning management is a critical aspect of adapting to modern demands. Modernization efforts include external benchmarking, curriculum development, and character education (Minarti et al., 2022). Current approaches focus on competency-based curricula, project-based learning, and technology integration to enhance relevance and effectiveness (Laia et al., 2024). However, challenges such as social and economic gaps, practical constraints, and resistance to change persist. To address these issues, strategies like equitable access policies, educator training, and efficient management are proposed.

Teachers play a crucial role in curriculum implementation and learning management, extending beyond simply imparting knowledge to students. They are responsible for planning, implementing, and evaluating learning processes. Additionally,



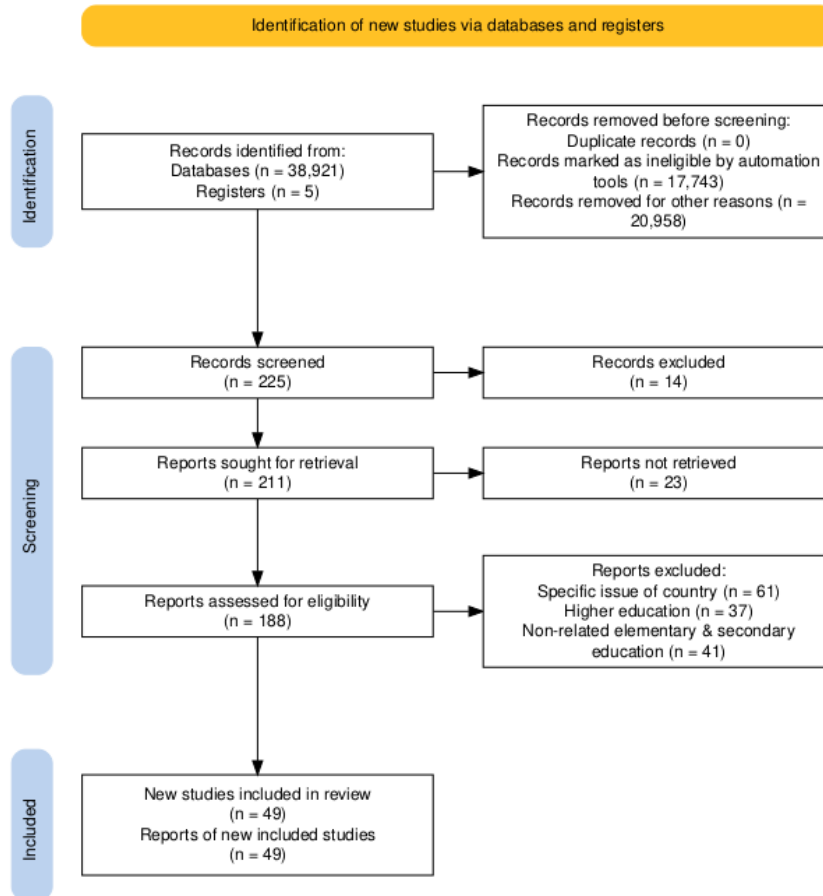
they should focus on creating innovative classroom environments and building positive relationships among all members of the learning process (Buchari, 2018; Minsih & D, 2018). To enhance their effectiveness, teachers may benefit from professional development opportunities, particularly in curriculum development and implementation (Illahi et al., 2022; Rupia, 2022).

Teacher professionalism is a crucial factor in educational improvement and national development. Investing in teacher professional development is essential for improving educational systems and ensuring high-quality teaching (Iroegbu & Ogbodo, n.d.). The development of teacher professionalism can be strengthened through cooperative learning processes, which raise consciousness and create learning cultures where tacit knowledge becomes explicit and shared (Jensvoll & Lekang, 2018). This development follows distinct phases, with research indicating that teachers in Indonesia are likely in the collegial phase of professionalism. Professional development initiatives should focus on enhancing teachers' competencies, including pedagogical, personal, social, and professional skills (Wardoyo et al., 2017).

## Method

The research approach of this study is systematic literature review (SLR) on teacher professionalism in implementing curriculum and learning management towards education 5.0. Databases were collected from ScienceDirect limited to the last ten years publication (2014-2024) and other sources identified as registers for the Indonesian research area. The study in this article applied Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) covers (1) identification, (2) screening, and (3) included.

Preparation of this study subjected identification on how (1) curriculum and learning management in education 5.0, (2) teacher roles in implementing curriculum and learning management, and (3) teacher professionalism development. Inclusion criteria to be discussed in this SLR are (1) education 5.0, (2) teacher role in curriculum and learning, (3) teacher professionalism, and (4) professional teacher. Research and review articles as well as open access and open-source type files were selected as eligible references. Exclusion was subjected to specific issues within foreign countries outside Indonesia, higher education, and non-elementary and secondary education scope resulting 49 articles to be reviewed in this study (Fig. 1).



**Figure 1.** Research Step Using PRISMA Protocol

## Results and Discussions

### Results

As many as 38.921 databases align the three objectives of this SLR stated in the method. Last ten years publication limitation and specific keywords inclusion criteria were set on the advanced search ScienceDirect menu resulting in 225 articles (5 records included) screened. Further screening to exclude non-research and review articles as well as non-open access and open source were made resulting in 188 articles. Last screening step is to remove articles containing exclusion criteria that are specific issues within foreign countries outside Indonesia, higher education, and non-elementary and secondary education scope. The final selection comprised 49 study articles.

### The Characteristic of Education 5.0

World has moved through Industry 1.0 to Industry 5.0 as well as Society 1.0 to Society 5.0 resulting in a great impact on the education system. Following these changes, education is required to be responsive to market demand. Industry 5.0 paradigm emphasizes human centricity, sustainability, and resiliency. The increase of cyber-risks resulting in continuous improvement is a necessity in cybersecurity (Ahmed et al., 2024; J. A. C. Van Der Zanden et al., 2020). While Industry 4.0 is related to digitalization,



Industry 5.0 combines human and artificial intelligence (AI). AI has brought transformative impact across various industries, highlighting its applications, implementations, and potential future implications. AI technology has the potential to significantly alter organizations globally, enhancing efficiency, productivity, and innovation across various sectors (Rashid & Kausik, 2024).

As mentioned before, education is required to follow market demand. Industry 4.0 technologies substitute low-skill routine tasks, reallocating human labor to more complex, and non-routine occupations. Thus, it's important to re-skilling and up-skilling in response to technological unemployment and job polarization (Kolade & Owoseni, 2022). Furthermore, Industry 5.0 requires skills gap fulfillment aligning rapid technological advancements by combining technical and soft skills, promoting interdisciplinary learning, and emphasizing lifelong learning (Pinto et al., 2024).

### **Teacher Roles in Curriculum and Learning Management**

Teachers in every stage of schools play important roles both in curriculum and learning management. As education policies front liners, teachers conduct education policies transformation into practical learning activities within the classrooms. Their responsibilities include adapting curricula, engaging with the students and peers, and fostering a safe, healthy and enjoyable environment. Related to Education 5.0 characteristic in technological advancements, teacher roles grow beyond integrating technology into learning required by updated curricula (Szymkowiak et al., 2021).

As it is not limited to the education industry, AI's role is applied in academic performance prediction, curriculum design, and enhancing learning environments (Martin et al., 2024). AI also enhances educational services and personal data management (Gejendhiran et al., 2020). From these two studies, AI plays two contradictory roles, supporting teachers or challenging them. A framework is needed to create AI curricula that adequately follows curriculum evaluations (Olari & Romeike, 2024). Thus, another teacher role is mastering curriculum as well as the management within.

Some curriculums are developed to meet global context and standards such as science, technology, engineering, and mathematics (STEM) as students belong to global society. Contrary, teaching is an activity where teachers adapt curriculum localization to match students and environment characteristics. Teaching competency extends beyond technical tasks and information. It identifies essential capabilities, including scientific knowledge of curriculum content, pedagogical skills, and psychosocial competence, which are crucial for effective teaching (Mihaela, 2015).

### **Teacher Professionalism Concept and Problems**

Teaching profession is regulated by four models: (1) market, (2) rules, (3) training, and (4) professional skills models that are shaped by bureaucratic, market-oriented, or professional approaches (Voisin & Dumay, 2020). In compliance with education transformation, the teacher professionalism concept is multifaceted and influenced by numerous factors. Not only knowledge authorization, professionalism also encompass competencies, autonomy, and peer networks. Teachers are strictly required mastering their subject knowledge while implementing teaching competencies such as pedagogical, personal and social skills, and professional attitude. Decision making related to teaching practices are identified as autonomy. Study found higher autonomy support from teachers significantly enhances students' entrepreneurial enthusiasm in innovation and entrepreneurship classes (Cubukcu, 2016). Other study results indicated a correlation in



perceptions of learner autonomy, though differing views on teacher autonomy were noted (Cui et al., 2024).

Teacher professionalism pathway faced challenges related both curriculum and learning practices such as the needs of education re-conceptualization, particularly in the update of curriculum and teacher training to meet modern demands (Serafin, 2016). Thus, a concept of the continuous teacher professionalism development program is needed.

## Discussions

### Curriculum and Learning on Education 5.0 Transformation

Challenging era of Industry 5.0 and Society 5.0 demand education transformation manifested to re-conceptualization of curriculum and learning practices. Some of the main issues are technology enhancement, artificial intelligence (AI) and human brain collaboration, and environmental challenges. AI has a transformative impact across various industries including education. AI technologies applied as language processing and machine learning toward real world experiences. Meanwhile, the climate education curriculum becomes an approach on enhancing climate literacy among students (Harker-Schuch et al., 2020; J. A. C. Van Der Zanden et al., 2020).

Focusing on student needs aligning global change, communication and critical thinking skills required to present on dialogical argumentation learning. In addition, related to the previous skills, information literacy has emerged during Education 4.0 transformation. Not only how to process information, but also information seeking and information sharing (Mills et al., 2014). Study found the importance of integrating emotional and cognitive constructs in language learning methodologies related to the use of computer-assisted language learning (Namaziandost & Rezai, 2024).

### Professional Teacher Development Program Models

Curriculum and learning management are embedded in the teacher profession in implementing educational policies into teaching and pedagogical practices. In Singapore, teacher professionalism policy is primarily driven by interrelated propositions such as managerial view in emphasizing government's needs and human-capital ideology, national curriculum alignment regarding managerial and professional combination, and specific values, knowledge, and skills development through rigorous teacher education and professional development. Meanwhile, Hongkong applied professional development initiatives encompass curriculum planning, professional sharing, and support for teachers. This program has significant result in the relation between teacher's collaborative practices and their perception of student learning (Bonifácio et al., 2023; Keung et al., 2021; Ro, 2020)

Aligned to the two previous countries, China proved its impact on sustainable leadership and its outcomes in green learning. United States (US) study showed constructivist beliefs and teacher efficacy, particularly in instructional strategies, were positively correlated with inquiry adoption, while autonomy showed a negative relationship. Global study across 27 countries, on the other hand, resulted in the need for policies that enhance teachers' professionalism and recognize individualism in educational settings (Lu et al., 2024; Moran et al., 2024; Shafait & Huang, 2024).

As front liners who implement government policy (in education), teachers work within a system. In order to fulfill transformative school culture, there is a need for



systemic change. Meanwhile, international schools adopted different character, professional development and teacher autonomy emphasizes the desire for fulfilling teaching opportunities and freedom from constraints in home educational systems (Bright & Heyting, 2024). Middle leaders (MLs) play a crucial role in enhancing teachers' professional learning and capacity through various strategies, including mediating instructional initiatives and fostering professional dialogue. They facilitate teacher empowerment and team building by creating structures for curriculum enactment and encouraging peer learning (Bryant et al., 2020).

Teachers have specific expectations for a technical application (TAPP) that supports their professional development (PD) and qualification application process. Teachers expressed the need for a unified structure for self-analysis, which would facilitate understanding and assessment of their competencies. Trust in colleagues and affective commitment serve as full mediators between teacher empowerment and professionalism, indicating that empowerment indirectly promotes professional growth (Leibur et al., 2023; Yao et al., 2024).

Various professional teacher development programs proposed and applied resulting improvements in curriculum and learning management. Continuous professional development (CPD) programs for science teachers in Romania have shown significant improvements in teaching practices, particularly in creating attentive learning environments and effectively using various teaching methods. The Teaching for Understanding (TfU) and Visible Thinking (VT) frameworks with the Reggio Emilia (RE) philosophy facilitated higher-order thinking experiences for students. The Think-Create-Teach (TCT) methodology significantly enhances the ability of preservice teachers to design instructional materials (Calavia et al., 2023; Petrescu et al., 2015; Salmon & Barrera, 2021).

## Conclusion

Educational transformation in response to the challenges posed by Industry 5.0 and Society 5.0, highlighting the integration of technology, AI, and climate education into curricula. Aligning teacher role as implementer of educational policies including curriculum and learning management, it is a necessity to establish professionalism through continuous professional development program for teachers, advocating for systemic changes that enhance teaching practices and foster collaborative learning environments to better meet the evolving needs of students.



## References

- Ahmad, S., Umirzakova, S., Mujtaba, G., Amin, M. S., & Whangbo, T. (2023). *Education 5.0: Requirements, Enabling Technologies, and Future Directions* (No. arXiv:2307.15846). arXiv. <http://arxiv.org/abs/2307.15846>
- Ahmed, I., Hossain, N. U. I., Fazio, S. A., Lezzi, M., & Islam, Md. S. (2024). A Decision Support Model for Assessing and Prioritization of Industry 5.0 Cybersecurity Challenges. *Sustainable Manufacturing and Service Economics*, 100018. <https://doi.org/10.1016/j.smse.2024.100018>
- Asset, A., Gabdyl-Samatovich, T. D., Ospanova, B., Begaidarova, R., & Balkiya, M. (2015). Modern Pedagogical Technologies in Communicative Competence Formation. *Procedia - Social and Behavioral Sciences*, 182, 37–40. <https://doi.org/10.1016/j.sbspro.2015.04.732>
- Banks, J. (2016). Promoting Change: Professional Development to Support Pedagogic Change in Sessional Teaching Staff. *Procedia - Social and Behavioral Sciences*, 228, 112–117. <https://doi.org/10.1016/j.sbspro.2016.07.017>
- Bonifácio, E., Carvalho, L., Marchão, A., Ratero, Á., & Rebola, F. (2023). Being a teacher in a time of pandemic. *Heliyon*, 9(11), e22069. <https://doi.org/10.1016/j.heliyon.2023.e22069>
- Bright, D., & Heyting, E. (2024). Exploring the motivations and career choices of expatriate teachers in international schools: Embracing personal growth, professional development, and teacher autonomy. *International Journal of Educational Research*, 127, 102426. <https://doi.org/10.1016/j.ijer.2024.102426>
- Bryant, D. A., Wong, Y. L., & Adames, A. (2020). How middle leaders support in-service teachers' on-site professional learning. *International Journal of Educational Research*, 100, 101530. <https://doi.org/10.1016/j.ijer.2019.101530>
- Buchari, A. (2018). PERAN GURU DALAM PENGELOLAAN PEMBELAJARAN. *Jurnal Ilmiah Iqra'*, 12(2), 106. <https://doi.org/10.30984/jii.v12i2.897>
- Calavia, M. B., Blanco, T., Casas, R., & Dieste, B. (2023). Making design thinking for education sustainable: Training preservice teachers to address practice challenges. *Thinking Skills and Creativity*, 47, 101199. <https://doi.org/10.1016/j.tsc.2022.101199>
- Chilingaryan, K., & Gorbatenko, R. (2015). Students' Professional Contests as a Tool for Motivation outside the Classroom. *Procedia - Social and Behavioral Sciences*, 214, 559–564. <https://doi.org/10.1016/j.sbspro.2015.11.760>
- Cubukcu, F. (2016). The Correlation between Teacher Trainers and Pre-service Teachers Perceptions of Autonomy. *Procedia - Social and Behavioral Sciences*, 232, 12–17. <https://doi.org/10.1016/j.sbspro.2016.10.004>
- Cui, G., Zhao, Z., Yuan, C., Du, Y., Yan, Y., & Wang, Z. (2024). The influence of teachers' autonomy support on students' entrepreneurial enthusiasm: A mediation model with student gender as a moderator. *The International Journal of Management Education*, 22(2), 100966. <https://doi.org/10.1016/j.ijme.2024.100966>
- Erichsen, K., & Reynolds, J. (2020). Public school accountability, workplace culture, and teacher morale. *Social Science Research*, 85, 102347. <https://doi.org/10.1016/j.ssresearch.2019.102347>



- Gejendhiran, S., Anicia, S. A., Vignesh, S., & Kalaimani, M. (2020). Disruptive Technologies—A promising key for Sustainable Future Education. *Procedia Computer Science*, 172, 843–847. <https://doi.org/10.1016/j.procs.2020.05.121>
- Gutierrez, A., Mills, K., Scholes, L., Rowe, L., & Pink, E. (2023). What do secondary teachers think about digital games for learning: Stupid fixation or the future of education? *Teaching and Teacher Education*, 133, 104278. <https://doi.org/10.1016/j.tate.2023.104278>
- Harker-Schuch, I. E., Mills, F. P., Lade, S. J., & Colvin, R. M. (2020). CO2peration – Structuring a 3D interactive digital game to improve climate literacy in the 12-13-year-old age group. *Computers & Education*, 144, 103705. <https://doi.org/10.1016/j.compedu.2019.103705>
- Hu, X. (2023). The role of deep learning in the innovation of smart classroom teaching mode under the background of internet of things and fuzzy control. *Heliyon*, 9(8), e18594. <https://doi.org/10.1016/j.heliyon.2023.e18594>
- Illahi, R. K., Yunita, R., & Basri, W. (2022). Analysis of The Teacher’S Role in Learning Management in a Talent-Based Curriculum. *Ta’dib*, 25(2), 235. <https://doi.org/10.31958/jt.v25i2.6857>
- Iroegbu, E. E., & Ogbodo, C. M. (n.d.). *Teacher Professionalism and Nigeria’s National Development*.
- J. A. C. Van Der Zanden, P., Meijer, P. C., & Beghetto, R. A. (2020). A review study about creativity in adolescence: Where is the social context? *Thinking Skills and Creativity*, 38, 100702. <https://doi.org/10.1016/j.tsc.2020.100702>
- Jensvoll, M. H., & Lekang, T. (2018). Strengthening professionalism through cooperative learning. *Professional Development in Education*, 44(4), 466–475. <https://doi.org/10.1080/19415257.2017.1376223>
- Keung, C., Cheung, A., Mak, B., & Tam, W. (2021). Examining role of professional development initiatives from the perspectives of Key Learning Area Coordinators and Subject Heads: A mediation analysis. *International Journal of Educational Research*, 109, 101829. <https://doi.org/10.1016/j.ijer.2021.101829>
- Kirsten, N. (2020). A systematic research review of teachers’ professional development as a policy instrument. *Educational Research Review*, 31, 100366. <https://doi.org/10.1016/j.edurev.2020.100366>
- Kolade, O., & Owoseni, A. (2022). Employment 5.0: The work of the future and the future of work. *Technology in Society*, 71, 102086. <https://doi.org/10.1016/j.techsoc.2022.102086>
- Laia, S., Firmansyah, F., Krismonika, K., & Bogha, P. (2024). Transformasi Pendidikan Melalui Pengantar Kurikulum: Tinjauan Terkini dan Tantangan Masa Depan. *EULOGIA: Jurnal Teologi dan Pendidikan Kristiani*, 4(1), 197–210. <https://doi.org/10.62738/ej.v4i1.78>
- Leibur, T., Saks, K., & Chounta, I.-A. (2023). Towards a conceptualized model of supporting teachers’ application process for acquiring professional qualifications. *International Journal of Educational Research Open*, 4, 100236. <https://doi.org/10.1016/j.ijedro.2023.100236>



- Lin, Q., & Gao, X. (2023). Exploring the predictors of teachers' teaching autonomy: A three-level international study. *Teaching and Teacher Education*, *135*, 104338. <https://doi.org/10.1016/j.tate.2023.104338>
- Lu, C., Obenchain, K., & Zhang, Y. (2024). Exploring teachers' inclination towards adopting inquiry-based learning in social studies: Insights from teacher professional identity. *Teaching and Teacher Education*, *145*, 104628. <https://doi.org/10.1016/j.tate.2024.104628>
- Martin, F., Zhuang, M., & Schaefer, D. (2024). Systematic review of research on artificial intelligence in K-12 education (2017–2022). *Computers and Education: Artificial Intelligence*, *6*, 100195. <https://doi.org/10.1016/j.caeai.2023.100195>
- Matewos, A. M., Marsh, J. A., McKibben, S., Sinatra, G. M., Le, Q. T., & Polikoff, M. S. (2019). Teacher learning from supplementary curricular materials: Shifting instructional roles. *Teaching and Teacher Education*, *83*, 212–224. <https://doi.org/10.1016/j.tate.2019.04.005>
- Mihaela, P. L. (2015). Dimensions of Teaching Staff Professional Competences. *Procedia - Social and Behavioral Sciences*, *180*, 924–929. <https://doi.org/10.1016/j.sbspro.2015.02.245>
- Mills, L. A., Knezek, G., & Khaddage, F. (2014). Information Seeking, Information Sharing, and going mobile: Three bridges to informal learning. *Computers in Human Behavior*, *32*, 324–334. <https://doi.org/10.1016/j.chb.2013.08.008>
- Minarti, S., Rohimiya, F. S., & Wardi, Moh. (2022). The Distinctive Character In The Modernization Of Islamic Education Through Curriculum And Learning Management. *Pedagogik: Jurnal Pendidikan*, *9*(2), 156–173. <https://doi.org/10.33650/pjp.v9i2.4419>
- Minsih, M., & D, A. G. (2018). PERAN GURU DALAM PENGELOLAAN KELAS. *Profesi Pendidikan Dasar*, *1*(1), 20. <https://doi.org/10.23917/ppd.v1i1.6144>
- Moran, E., Sloan, S., Walsh, E., & Taylor, L. (2024). Exploring restorative practices: Teachers' experiences with early adolescents. *International Journal of Educational Research Open*, *6*, 100323. <https://doi.org/10.1016/j.ijedro.2024.100323>
- Namaziandost, E., & Rezai, A. (2024). Interplay of academic emotion regulation, academic mindfulness, L2 learning experience, academic motivation, and learner autonomy in intelligent computer-assisted language learning: A study of EFL learners. *System*, *125*, 103419. <https://doi.org/10.1016/j.system.2024.103419>
- Olari, V., & Romeike, R. (2024). Data-related concepts for artificial intelligence education in K-12. *Computers and Education Open*, *7*, 100196. <https://doi.org/10.1016/j.caeo.2024.100196>
- Petrescu, A.-M., Negreanu, M., Drăghicescu, L. M., Gorghiu, G., & Gorghiu, L. M. (2015). Innovative Aspects of the PROFILES Professional Development Programme Dedicated to Science Teachers. *Procedia - Social and Behavioral Sciences*, *191*, 1355–1360. <https://doi.org/10.1016/j.sbspro.2015.04.578>
- Pinto, R., Žilka, M., Zanolli, T., Kolesnikov, M. V., & Gonçalves, G. (2024). Enabling Professionals for Industry 5.0: The Self-Made Programme. *Procedia Computer Science*, *232*, 2911–2920. <https://doi.org/10.1016/j.procs.2024.02.107>



- Popa, C., Laurian, S., & Fitzgerald, C. (2015). An insight Perspective of Finland's Educational System. *Procedia - Social and Behavioral Sciences*, 180, 104–112. <https://doi.org/10.1016/j.sbspro.2015.02.092>
- Possamai, J. P., & Allevato, N. S. G. (2024). Teaching mathematics through problem posing: Elements of the task. *The Journal of Mathematical Behavior*, 73, 101133. <https://doi.org/10.1016/j.jmathb.2024.101133>
- Rapanta, C. (2021). Can teachers implement a student-centered dialogical argumentation method across the curriculum? *Teaching and Teacher Education*, 105, 103404. <https://doi.org/10.1016/j.tate.2021.103404>
- Rashid, A. B., & Kausik, M. A. K. (2024). AI revolutionizing industries worldwide: A comprehensive overview of its diverse applications. *Hybrid Advances*, 7, 100277. <https://doi.org/10.1016/j.hybadv.2024.100277>
- Ro, J. (2020). Curriculum, standards and professionalisation: The policy discourse on teacher professionalism in Singapore. *Teaching and Teacher Education*, 91, 103056. <https://doi.org/10.1016/j.tate.2020.103056>
- Rupia, C. (2022). Teacher Roles in of Learning Materials Management in the Implementation of Competency Based Curriculum (CBC). *East African Journal of Education Studies*, 5(2), 344–350. <https://doi.org/10.37284/eajes.5.2.801>
- Salmon, A. K., & Barrera, M. X. (2021). Intentional questioning to promote thinking and learning. *Thinking Skills and Creativity*, 40, 100822. <https://doi.org/10.1016/j.tsc.2021.100822>
- Serafin, C. (2016). The Re-conceptualization of Cooperative Learning in an Inquiry-oriented Teaching. *Procedia - Social and Behavioral Sciences*, 217, 201–207. <https://doi.org/10.1016/j.sbspro.2016.02.064>
- Shafait, Z., & Huang, J. (2024). Examining the impact of sustainable leadership on green knowledge sharing and green learning: Understanding the roles of green innovation and green organisational performance. *Journal of Cleaner Production*, 457, 142402. <https://doi.org/10.1016/j.jclepro.2024.142402>
- Stark, K., & Bettini, E. (2021). Teachers' perceptions of emotional display rules in schools: A systematic review. *Teaching and Teacher Education*, 104, 103388. <https://doi.org/10.1016/j.tate.2021.103388>
- Supriya, Y., Bhulakshmi, D., Bhattacharya, S., Gadekallu, T. R., Vyas, P., Kaluri, R., Sumathy, S., Koppu, S., Brown, D. J., & Mahmud, M. (2024). Industry 5.0 in Smart Education: Concepts, Applications, Challenges, Opportunities, and Future Directions. *IEEE Access*, 12, 81938–81967. <https://doi.org/10.1109/ACCESS.2024.3401473>
- Szymkowiak, A., Melović, B., Dabić, M., Jeganathan, K., & Kundi, G. S. (2021). Information technology and Gen Z: The role of teachers, the internet, and technology in the education of young people. *Technology in Society*, 65, 101565. <https://doi.org/10.1016/j.techsoc.2021.101565>
- Teknowijoyo, F., & Marpelina, L. (2022). Relevansi Industri 4.0 dan Society 5.0 Terhadap Pendidikan Di Indonesia. *Educatio*, 16(2), 173–184. <https://doi.org/10.29408/edc.v16i2.4492>
- Voisin, A., & Dumay, X. (2020). How do educational systems regulate the teaching profession and teachers' work? A typological approach to institutional foundations



and models of regulation. *Teaching and Teacher Education*, 96, 103144.  
<https://doi.org/10.1016/j.tate.2020.103144>

- Wardoyo, C., Herdiani, A., & Sulikah, S. (2017). Teacher Professionalism: Analysis of Professionalism Phases. *International Education Studies*, 10(4), 90.  
<https://doi.org/10.5539/ies.v10n4p90>
- Yao, H., Ma, L., & Duan, S. (2024). Unpacking the effect of teacher empowerment on professionalism: The mediation of trust in colleagues and affective commitment. *Teaching and Teacher Education*, 141, 104515.  
<https://doi.org/10.1016/j.tate.2024.104515>
- Yufarika, S. D. (2023). Tantangan Dunia Pendidikan Dan Implikasinya Terhadap Perubahan Kebijakan. *Ar-Rosikhun: Jurnal Manajemen Pendidikan Islam*, 2(2), 156–161. <https://doi.org/10.18860/rosikhun.v2i2.21812>
- Zheng, X., Ismail, S. M., & Heydarnejad, T. (2023). Social media and psychology of language learning: The role of telegram-based instruction on academic buoyancy, academic emotion regulation, foreign language anxiety, and English achievement. *Heliyon*, 9(5), e15830. <https://doi.org/10.1016/j.heliyon.2023.e15830>