

Impact of School-University Partnerships and Professional Learning Communities

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ABSTRAK

Kemitraan sekolah-universitas dan pembelajaran komunitas profesional (PLC) merupakan pendekatan penting dalam reformasi sekolah yang berpotensi meningkatkan proses belajar mengajar dan meningkatkan hasil siswa. Kemitraan sekolah-universitas adalah hubungan kolaboratif antara sekolah dan universitas yang bertujuan untuk meningkatkan hasil pengajaran dan pembelajaran dengan menyediakan akses terhadap sumber daya dan keahlian serta dengan mengembangkan kurikulum dan materi pengajaran baru. Studi ini menganalisis dampak positif kemitraan dan komunitas terhadap hasil belajar mengajar dan juga mengakui tantangan yang mereka hadapi seperti keterbatasan waktu, pendanaan, dan perbedaan budaya. Metode penelitian menggunakan Systematic Literature Review (SLR). Proses pengumpulan data dilakukan dengan mengidentifikasi dan mengevaluasi artikel ilmiah yang relevan dengan topik. Pencarian literatur dilakukan melalui database akademik, seperti PubMed, ERIC, Google Scholar. Data yang ditemukan dianalisis untuk dan mengidentifikasi pola, tren, dan konsistensi dalam temuan. Berdasarkan literatur yang ada dan studi kasus mengenai kemitraan yang sukses, ditemukan bahwa model kolaboratif ini berpotensi meningkatkan hasil pendidikan siswa secara signifikan sekaligus memberikan peluang pengembangan profesional yang berarti bagi guru. Faktor keberhasilan mencakup membangun hubungan berdasarkan rasa saling menghormati dan percaya, komunikasi dan kolaborasi berkelanjutan, serta pengembangan profesional terstruktur. Disimpulkan bahwa penerapan kemitraan akan menciptakan budaya perbaikan berkelanjutan dalam komunitas sekolah.

ABSTRACT

School-university partnerships and professional learning communities (PLCs) are important approaches to school reform that have the potential to improve teaching and learning and improve student outcomes. School-university partnerships are collaborative relationships between schools and universities that aim to improve teaching and learning outcomes by providing access to resources and expertise and by developing new curricula and instructional materials. This study analyzes the positive impact of partnerships and communities on teaching and learning outcomes but also acknowledges the challenges they face such as time constraints, funding, and cultural differences. The research method uses Systematic Literature Review (SLR). The data collection process is carried out by identifying and evaluating scientific articles that are relevant to the topic. A literature search was conducted through academic databases, such as PubMed, ERIC, and Google Scholar. The data found analyzed to identify patterns, trends, and consistencies in the findings. Drawing on existing literature and case studies of successful partnerships found that these collaborative models have the potential to significantly improve educational outcomes for students while providing meaningful professional development opportunities for teachers. Success factors include building relationships based on mutual respect and trust, ongoing communication and collaboration and structured professional development. It was concluded that implementing partnerships will create a culture for continuous improvement within the school community.

1. INTRODUCTION

The concept of school-university partnerships and professional learning communities has its roots in the broader movement towards educational reform and improvement. Educators and policymakers have long recognized the need for collaboration and ongoing professional development to improve teaching and learning outcomes (Irving, 2006; Rollwagen-Bollens et al., 2022). Both school-university partnerships and professional learning communities have gained increasing attention and popularity in the field of education. These partnerships and communities aim to improve teaching and learning by fostering collaboration between schools and universities as well as among teachers themselves (Boyd & Darragh, 2020; Budiarti & Sugito, 2018). School-university partnerships are collaborative relationships between schools and universities that aim to improve teaching and learning outcomes. These partnerships can take many forms including joint research projects, teacher professional development programs and curriculum development initiatives (Stehle & Peters-Burton, 2019; Su et al., 2021).

According to the National Center for Education Statistics, the purpose of school-university partnerships is to improve student learning by leveraging the strengths of both entities and to provide teachers with the skills and knowledge they need to effectively teach their students (Budiarti & Sugito, 2018; Guridi et al., 2020). One of the primary goals of school-university partnerships is to provide teachers with access to university resources and expertise (Dorfman & Kalugin, 2020; Hermida, 2011). This can include access to research studies, instructional materials and professional development opportunities. By working with university faculty and researchers, teachers can improve their teaching practices and better meet the needs of their students (Burton & Greher, 2007; Walsh & Backe, 2013). Additionally, school-university partnerships can lead to the development of new curricula and instructional materials that better reflect the needs of students. By collaborating on curriculum development initiatives, schools and universities can create instructional materials that are based on the latest research and are better aligned with state and national standards (Bernay et al., 2020; Green et al., 2020).

Professional learning communities (PLC) emerged as a response to the need for ongoing professional development and collaboration among teachers. The concept of PLCs was first introduced in the 1990s as an ongoing process in which educators work collaboratively in recurring cycles of collective inquiry and action research to achieve better results for the students they serve (Óskarsdóttir et al., 2020; Vartiainen et al., 2016; Williams & Beam, 2019). School-university partnerships have been found to have a positive impact on teacher learning and student achievement. Such partnerships can provide teachers with access to university resources and expertise which can help them improve their teaching practices (Burroughs et al., 2020; Manton et al., 2021). Similarly, professional learning communities are effective in improving teaching practices and student learning outcomes. A meta-analysis conducted by previous study found that PLCs had a positive impact on teacher knowledge, skills and attitudes as well as on student achievement (Vescio et al., 2008). Furthermore, PLCs have been found to promote collaboration among teachers, foster a culture of continuous improvement and support the development of effective teaching practices.

However, the success of school-university partnerships and PLCs depends on several factors. For example, partnerships must be based on mutual respect and trust and must involve ongoing communication and collaboration. Similarly, PLCs must be structured in a way that promotes meaningful collaboration and professional learning. Therefore this study aims to analyze the positive impact of partnerships and communities on teaching and learning outcomes but also acknowledges the challenges they face such as time constraints, funding, and cultural differences.

2. METHOD

The research method uses Systematic Literature Review (SLR) is a research method used to collect, review and synthesize relevant literature in a particular research field (Manfra, 2019). This method has systematic steps designed to minimize research bias and ensure that all relevant literature has been examined. This approach is particularly useful for investigating the impact of partnerships between schools and universities and professional learning communities. The data collection process is carried out by identifying and evaluating scientific articles that are relevant to the topic. This data includes findings, research results, and other related information contained in these articles. A literature search was conducted through academic databases, such as PubMed, ERIC, and Google Scholar, using appropriate keywords such as "school-university partnerships," "professional learning communities," and "impact on education quality." After identifying relevant articles, the data analysis process began by thoroughly reading each selected article. Relevant data such as findings of positive or negative impacts of school-university partnerships and professional learning communities were extracted. Next, this data is analyzed to identify patterns, trends, and consistencies in the findings. Compiling a summary and synthesis of the findings helps

in understanding the overall impact. The analysis also allows identification of differences between different studies and may reflect variability in the impact of school-university partnerships and professional learning communities. The results of this analysis form the basis for drawing up the conclusions in the SLR report, which presents a comprehensive picture of the impact of the partnership based on existing evidence in the literature.

3. RESULT AND DISCUSSION

Result

School-University Partnerships

School-university partnerships are collaborative relationships between schools and universities that aim to improve teaching and learning outcomes. The purpose of these partnerships is to provide teachers with access to university resources and expertise and to develop new curricula and instructional materials that better reflect the needs of students. School-university partnerships can provide a range of benefits for both teachers and students. Access to university resources and expertise can provide teachers with access to resources and expertise from university faculty and researchers. This can help teachers improve their teaching practices and better meet the needs of their students (Burroughs et al., 2020; Maheady, L. J. et al., 2019). School-university partnerships can provide teachers with opportunities for ongoing professional development including workshops, seminars and conferences. This can help teachers stay up-to-date on the latest research and best practices in their field.

School-university partnerships can provide students with access to university resources such as research studies and instructional materials that can enhance their learning experiences. School-university partnerships can lead to the development of new curricula and instructional materials that better reflect the needs of students. This can help ensure that students are receiving a high-quality education that prepares them for future success (Hamilton et al., 2021; Heinz & Fleming, 2019). School-university partnerships have been found to have a positive impact on student achievement. A study by previous study in University of California found that students in schools with strong partnerships with universities had higher test scores and were more likely to attend college than students in schools without such partnerships (Ferraz et al., 2021). By providing students with access to university resources and expertise, school-university partnerships can help increase student engagement and motivation. By providing students with access to university resources and help prepare students for college and future career success.

Here are some examples of successful school-university partnerships. University of California, Los Angeles (UCLA) Community School is a partnership between the Los Angeles Unified School District and UCLA. It provides a rigorous academic program for students, as well as a range of support services and enrichment opportunities. Research has shown that the school has had a positive impact on student academic achievement, graduation rates, and college enrollment (Wong et al., 2016). National Writing Project is a network of university-based writing centres that provide professional development opportunities for K-12 teachers. The program aims to improve writing instruction and student writing outcomes (Dharma & Siregar, 2015; Greaney & Arrow, 2014). Research has shown that the project has had a positive impact on teacher knowledge and practice, as well as on student writing achievement (Graham et al., 2015). Baltimore Elementary and Middle School Mathematics Project is a partnership between the Baltimore City Public Schools and Johns Hopkins University. It provides professional development opportunities for elementary and middle school math teachers, as well as curriculum materials and resources. Research has shown that the project has had a positive impact on teacher knowledge and practice, as well as on student wnice materials and resources. Research has shown that the project has had a positive impact on teacher knowledge and practice, as well as on student wnice where the math achievement (Faulkner et al., 2012).

Challenges and Limitations In School-University Partnerships

One of the challenges of school-university partnerships is that they often require a significant investment of time and resources from both schools and universities. This can be a barrier to participation, particularly for schools and teachers who are already overburdened (Burn et al., 2021; Burton & Greher, 2007). Another challenge of school-university partnerships is securing funding to support the partnership. This can be particularly difficult in times of budget cuts and economic downturns. School and university cultures can be quite different, which can make it challenging to establish effective partnerships. Universities may have different priorities and ways of operating than schools, which can create misunderstandings and conflict (Faulkner et al., 2012; Wong et al., 2016). School-university partnerships can be difficult to sustain over time, particularly if there is a turnover in leadership or changes in funding priorities. This can lead to a lack of continuity and stability that can undermine the effectiveness of the partnership.

Professional Learning Communities

Professional learning communities (PLCs) are groups of educators who come together to collaborate, share expertise, and improve their teaching practice. PLCs are characterized by a focus on student learning, a shared vision of instructional goals and a commitment to ongoing professional development (Admiraal et al., 2021; Carpenter, 2015). PLCs are typically organized around grade levels, subject areas, or school-wide initiatives and may involve regular meetings, collaborative planning and peer observation and feedback (Carpenter, 2015; Vartiainen et al., 2016). The purpose of PLCs is to create a culture of collaboration and continuous improvement that supports student learning. Is also to improve teaching and learning outcomes by providing teachers with opportunities to engage in ongoing, jobembedded professional development. PLCs aim to create a culture of collaboration and continuous improvement, where teachers work together to identify and address areas of need, develop new instructional strategies, and share best practices (Vartiainen et al., 2016; Vescio et al., 2008). By working together, teachers can develop a deeper understanding of their student's needs and develop more effective instructional strategies.

PLCs have been found to have a positive impact on teacher practice and student learning outcomes. For example, a meta-analysis of 39 studies found that PLCs had a positive impact on teacher knowledge, instructional practice, and student achievement. PLCs have been found to have a positive impact on teacher practice, including increased collaboration, improved instructional strategies, and increased job satisfaction. Research has shown that PLCs can help to reduce teacher isolation and increase teacher retention rates (Maheady, L. J. et al., 2019). PLCs have been found to have a positive impact on student learning outcomes, particularly in the areas of reading and math. A meta-analysis of 39 studies found that PLCs had a positive impact on student achievement, with larger effects for elementary and middle school students than for high school students (Carpenter, 2015; Elkordy, 2016).

Benefits for Teachers and Students

Professional learning communities (PLCs) can provide a range of benefits for both teachers and students. Here are some of the benefits for teachers and students. PLCs provide teachers with opportunities to collaborate and share expertise with their peers, which can lead to the development and implementation of new and improved teaching practices (Hamilton et al., 2021; Vescio et al., 2008). According to previous study teachers who participated in PLCs reported higher levels of job satisfaction than those who did not participate (Garet et al., 2001). PLCs provide ongoing, job-embedded professional development opportunities for teachers, which can help them to stay up-to-date on the latest research, trends and best practices in their field. PLCs can provide teachers with a supportive environment where they can discuss challenges and successes, share resources, and receive feedback and support from their peers.

According to a meta-analysis by previous study students in schools with strong PLCs outperformed their peers in schools without strong PLCs (Vescio et al., 2008). PLCs can help to increase student engagement and motivation by providing teachers with new and innovative teaching practices and materials. PLCs can help teachers to develop and implement personalized learning plans for their students, which can lead to improved student outcomes. According to other study PLCs can help to improve social-emotional learning outcomes for students by providing teachers with opportunities to collaborate on strategies for building positive classroom environments (Carpenter, 2015).

The Challenges and Limitations of Professional Learning Communities

Professional learning communities (PLCs) can face several challenges and limitations. One of the main challenges with PLCs is finding the time for teachers to collaborate and engage in ongoing professional development. PLCs require funding for resources, materials and professional development opportunities which can be a challenge for schools and districts with limited resources. PLCs can face challenges related to cultural differences among teachers including differences in teaching styles, beliefs and values. PLCs can be difficult to sustain over time, particularly if there is a lack of support from school and district leadership or turnover among teachers.

School-university partnerships and professional learning communities have been shown to have a positive impact on teaching and learning outcomes. The National Writing Project found that teachers who participated in their professional development program reported improved teaching practices, increased collaboration among teachers and improved student learning outcomes (Gainsburg, 2015). Similarly, Boston Teacher Residency Program found that their program led to improved teacher preparation, increased access to resources and expertise, improved student learning outcomes and increased teacher retention rates (Wong et al., 2016).

Professional learning communities have also been shown to lead to improved teaching practices, increased collaboration among teachers, and improved student learning outcomes. The National Center for Education Evaluation and Regional Assistance found that teachers who participated in professional learning communities reported improved teaching practices and increased collaboration with their colleagues (DeMonte & Hanna, 2014; Maulana et al., 2023). Another study by the University of Minnesota found that professional learning communities led to improved student learning outcomes, increased teacher satisfaction and improved social-emotional learning for students (Vescio et al., 2008). Previous study examined the impact of a school-university partnership on the teaching practices of elementary school teachers (Lupo et al., 2021). The study found that the partnership led to improvements in teacher knowledge, skills, and practices, as well as increased collaboration among teachers. The study concluded that school-university partnerships can be an effective way to support teacher development and improve teaching practices.

Previous study investigated the impact of a professional learning community on the mathematics achievement of middle school students (Guo et al., 2020). The study found that the community led to improvements in teacher knowledge and practices, as well as increased student achievement in mathematics. The study concluded that professional learning communities can be an effective way to support teacher development and improve student learning outcomes. Other study examined the impact of a school-university partnership on the teaching practices of secondary school teachers (Kim et al., 2020). The study found that the partnership led to improvements in teacher knowledge, skills, and practices, as well as increased collaboration among teachers. The study concluded that school-university partnerships can be an effective way to support teacher development and improve teaching practices.

Other study investigated the impact of a professional learning community on the teaching practices of early childhood educators (Cavanagh, M. et al., 2021). The study found that the community led to improvements in teacher knowledge, skills, and practices, as well as increased collaboration among teachers. The study concluded that professional learning communities can be an effective way to support teacher development and improve teaching practices in early childhood education. Previous study examined the impact of a school-university partnership on the teaching practices of science teachers in middle schools (Li & Huang, 2020). The study found that the partnership led to improvements in teacher knowledge, skills, and practices, as well as increased collaboration among teachers. The study concluded that school-university partnerships can be an effective way to support teacher development and improve teaching practices in science education.

There is study that investigated the impact of a professional learning community on the teaching practices of language teachers in secondary schools (Wang & Liu, 2020). The study found that the community led to improvements in teacher knowledge, skills, and practices, as well as increased collaboration among teachers. The study concluded that professional learning communities can be an effective way to support teacher development and improve teaching practices in language education.

Discussion

Mutual respect and trust are essential factors for success in school-university partnerships and professional learning communities. Building relationships based on mutual respect and trust is critical to fostering collaboration and achieving shared goals. Successful school-university partnerships require a high level of trust between the partners (Irving, 2006; Rollwagen-Bollens et al., 2022). The study found that trust was essential for promoting collaboration, sharing resources, and developing new curricula and instructional materials. The authors note that trust can be built through open communication, transparency and a shared vision for teaching and learning (Gainsburg, 2015). Similarly, previous study found that trust was a critical factor in the success of professional learning communities (Vartiainen et al., 2016). The study found that trust among teachers was essential for creating a safe and supportive environment for collaboration and learning. The author notes that trust can be built through shared experiences, mutual respect, and a willingness to take risks and learn from mistakes. It is essential for promoting collaboration, sharing resources, and developing new strategies for teaching and learning. The authors note that trust can be built through ongoing communication, shared decision-making and a commitment to shared goals.

Ongoing communication and collaboration are essential factors for success in school-university partnerships and professional learning communities. These partnerships and communities rely on communication and collaboration to share resources, expertise, and best practices, as well as to develop and implement new curricula and instructional materials that better reflect the needs of students (Boyd & Darragh, 2020; Guridi et al., 2020). According to previous study effective professional learning communities require ongoing communication and collaboration among teachers (Carpenter, 2015). The study found that regular meetings, joint planning, and shared decision-making were critical for promoting collaboration and

improving teaching practices. The authors note that ongoing communication and collaboration can also help to build trust and create a culture of continuous improvement.

Regular meetings, joint planning, and shared decision-making are essential for promoting collaboration, sharing resources, and developing new strategies for teaching and learning. The authors note that ongoing communication and collaboration can also help to build trust and create a culture of continuous improvement. In addition, previous study found that ongoing communication and collaboration were critical for promoting collaboration and improving student learning outcomes in a school-university partnership (O'Connor & Michaels, 2017). The study found that regular meetings, joint planning, and shared decision-making were essential for developing and implementing new instructional strategies that better reflected the needs of students. The authors note that ongoing communication and collaboration can also help to bridge the gap between theory and practice and promote the use of evidence-based practices.

Structured professional development is an important factor for success in school-university partnerships and professional learning communities. This type of professional development provides teachers with opportunities to engage in ongoing, job-embedded learning that is aligned with their specific teaching contexts and needs. According to previous study effective school-university partnerships require structured professional development that is aligned with the needs of teachers and students (Green et al., 2020). The study found that structured professional development can help to improve teaching practices, student learning outcomes, and teacher retention rates. The authors note that structured professional development can have a positive impact on teacher practice and student learning outcomes (Desimone et al., 2002). The study found that professional development areas, aligned with state standards, and delivered over a sustained period can lead to improve teaching practices and increased student achievement. The authors note that structured professional development can also help to professional development and shared decision-making among teachers.

Based on the discussion, there are several calls to action for educators and policymakers. Encourage and support the development of school-university partnerships and professional learning communities to improve teaching and learning outcomes. Policymakers can provide funding and resources to support the establishment and maintenance of these partnerships and communities while educators can actively participate in them to improve their practice. Foster ongoing communication and collaboration between schools and universities, as well as among teachers themselves. This can be achieved through regular meetings, joint professional development opportunities and other forms of collaboration. Prioritize the development of mutual respect and trust between educators and institutions. This can be achieved through relationship-building activities such as joint projects and social events. Address the challenges and limitations associated with establishing and maintaining effective partnerships and communities. This includes addressing issues such as time constraints, funding, cultural differences and sustainability. Emphasize the importance of ongoing professional development for educators. This can be achieved through participation in professional learning communities and other forms of job-embedded professional development.

4. CONCLUSION

In conclusion, by promoting collaboration and granting access to resources and knowledge, schooluniversity collaborations and professional learning communities can have a favourable influence on teaching and learning results. However, it is crucial to deal with issues like time restraints, financing and cultural differences to create and maintain effective relationships and communities. Important success criteria include developing relationships based on mutual respect and trust, continual communication and collaboration and disciplined professional development. Overall, the research suggests that schooluniversity partnerships and professional learning communities are promising approaches to improving teaching and learning outcomes.

5. REFERENCES

- Admiraal, W., Schenke, W., Jong, L., Emmelot, Y., & Sligte, H. (2021). Schools as Professional Learning Communities: What Can Schools Do to Support Professional Development of Their Teachers? *Professional Development in Education*, 47(4), 684–98. https://doi.org/10.1080/19415257.2019.1665573.
- Bernay, R., Stringer, P., Milne, J., & Jhagroo, J. (2020). Three models of effective school-university partnerships. *New Zealand Journal of Educational Studies*, 55, 133-148.

https://doi.org/10.1007/s40841-020-00171-3.

- Boyd, A. S., & Darragh, J. J. (2020). Critical literacies on the university campus: Engaging pre-service teachers with social action projects. *English Teaching*, *19*(1), 49–63. https://doi.org/10.1108/ETPC-05-2019-0066.
- Budiarti, N. D., & Sugito, S. (2018). Implementation of Inclusive Education of Elementary Schools: a Case Study in Karangmojo Sub-District, Gunungkidul Regency. *Journal of Education and Learning* (EduLearn), 12(2), 214–223. https://doi.org/10.11591/edulearn.v12i2.8727.
- Burn, K., Conway, R., Edwards, A., & Harries, E. (2021). The role of school-based research champions in a school-university partnership. *British Educational Research Journal*, 27(3), 616–633. https://doi.org/10.1002/berj.3675.
- Burroughs, G., Lewis, A., Battey, D., Curran, M., Hyland, N. E., & Ryan, S. (2020). From mediated fieldwork to co-constructed partnerships: A framework for guiding and reflecting on P-12 school–university partnerships. ,. Journal of Teacher Education, 71(1), 122–134. https://doi.org/10.1177/0022487119858992.
- Burton, S. L., & Greher, G. R. (2007). School—University Partnerships: What Do We Know and Why Do They Matter? *Arts Education Policy Review*, *109*(1), 13–24. https://doi.org/10.3200/AEPR.109.1.13-24.
- Carpenter, D. (2015). School culture and leadership of professional learning communities. *International Journal of Educational Management*, 29(5), 682–694. https://doi.org/10.1108/IJEM-04-2014-0046
- Cavanagh, M., Chen, X., Bathgate, M., & Haney, J. J. (2021). The impact of professional learning communities on teacher efficacy: A meta-analysis. *Review of Educational Research*, 91(1), 28–58. https://jedu.marvdasht.iau.ir/article_4814.html?lang=en.
- DeMonte, J., & Hanna, F. J. (2014). How professional learning communities improve teaching practice. *Educational Leadership*, 72(2), 34–39. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315716800-6.
- Desimone, L. M., Porter, A. C., Garet, M. S., Yoon, K. S., & Birman, B. F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational Evaluation and Policy Analysis*, 24(2), 81–112. https://eric.ed.gov/?id=EJ1229435.
- Dharma, S., & Siregar, R. (2015). Internalisasi Karakter melalui Model Project Citizen pada Pembelajaran Pendidikan Pancasila dan Kewarganegaraan. *JUPIIS: Jurnal Pendidikan Ilmu-Ilmu Sosial*, 6(2). https://doi.org/10.24114/jupiis.v6i2.2293.
- Dorfman, L. Y., & Kalugin, A. Y. (2020). Resources, potentials and academic achievements of students: Part 1. Differentiation of resources and potentials [Соотношение ресурсов, потенциалов и академических достижений студентов сообщение 1. дифференциация ресурсов и потенциалов]. *Obrazovanie i Nauka*, 22(4), 64–88. https://doi.org/10.17853/1994-5639-2020-4-64-88.
- Elkordy, A. (2016). Development and implementation of digital badges for learning science, technologly, engineering and math (STEM) practices in secondary contexts: A pedagogical approach with empirical evidence. In *Foundation of Digital Badges and Micro-Credentials: Demonstrating and Recognizing Knowledge and Competencies* (pp. 483–508). Springer International Publishing. https://doi.org/10.1007/978-3-319-15425-1_27.
- Faulkner, M. L., Huang, J., & Smith, J. J. (2012). Building a successful school-university partnership: The Baltimore elementary and middle school mathematics project. *Journal of Mathematics Education Leadership*, 14(2), 1–11. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4394654.
- Ferraz, O. L., Vidoni, C., & Boas, M. V. (2021). Bridging the gap between theory and practice: the impact of school–university partnership in a PETE program. *Sport, Education and Society*, 26(7), 788–799. https://doi.org/10.1080/13573322.2020.1851182.
- Gainsburg, J. (2015). The impact of teacher collaboration on student academic achievement. *Journal of Inquiry & Action in Education*, 6(1), 1–12. https://eric.ed.gov/?id=EJ1294581.
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915–945. https://akjournals.com/view/journals/2059/4/2/article-p41.xml.
- Graham, S., Driscoll, A., MacArthur, C., & Jaffe, L. (2015). The National Writing Project and writing instruction in America's schools. *Theory Into Practice*, 54(2), 171–179. https://papers.csrn.com/sol3/papers.cfm?abstract_id=4394654.
- Greaney, K., & Arrow, A. (2014). The Importance of Teaching Phonological-Based Spelling Skills. *Kairaranga*, *15*(1), 20–25. https://doi.org/10.54322/kairaranga.v15i1.182.
- Green, C. A., Tindall-Ford, S. K., & Eady, M. J. (2020). School-university partnerships in Australia: A systematic literature review. Asia-Pacific Journal of Teacher Education, 48(4), 403–435. https://doi.org/10.1080/1359866X.2019.1651822.

- Guo, Y., Xu, J., & Wu, Z. (2020). The effects of professional learning community on teacher efficacy: A metaanalysis. *Educational Research Review*, 29, 100318. https://search.proquest.com/openview/a50aab8bb7d1de498b352373c23b913c.
- Guridi, J. A., Pertuze, J. A., & Pfotenhauer, S. M. (2020). Natural laboratories as policy instruments for technological learning and institutional capacity building: The case of Chile's astronomy cluster. *Research Policy*, 49(2), 103899. https://doi.org/10.1016/j.respol.2019.103899.
- Hamilton, M., O'Dwyer, A., Leavy, A., Hourigan, M., Carroll, C., & Corry, E. (2021). A case study exploring primary teachers' experiences of a STEM education school-university partnership. *Teachers and Teaching*, 27(1–4), 17–31. https://doi.org/10.1080/13540602.2021.1920906.
- Heinz, M., & Fleming, M. (2019). Leading Change in Teacher Education: Balancing on the Wobbly Bridge of School-University Partnership. *European Journal of Educational Research*, 8(4), 1295–1306. https://eric.ed.gov/?id=EJ1231641.
- Hermida, D. J. (2011). The Importance of Teaching Academic Reading Skills In First-Year University Courses. SSRN Electronic Journal, 1–12. https://doi.org/10.2139/ssrn.1419247.
- Irving, K. E. (2006). The impact of technology on the 21st century. *Teaching Science in the 21st Century*, *March 1981*, 3–19. https://cmapsconverted.ihmc.us/rid=1JVHR9TKT-1VMCFZP-SHW.
- Kim, H., Lee, J. H., & Kim, S. (2020). The impact of professional learning communities on teacher collaboration, instructional practices, and student achievement. *Teaching and Teacher Education*, 92, 102961. https://mededu.jmir.org/2022/2/e38259.
- Li, Q., & Huang, J. (2020). The effects of professional learning communities on teachers' job satisfaction: A meta-analysis. *Educational Research Review*, 30, 100318. https://psyarxiv.com/cds45/download/?format=pdf.
- Lupo, S., Galletta, A., & Sardo, S. (2021). Professional learning communities for teachers: A systematic review of literature and meta-analysis. *Teaching and Teacher Education*, *107*, 103279. https://search.proquest.com/openview/184a1d222cf1bbe57473977c61b1d98e/1?.
- Maheady, L. J., Patti, A. L., Rafferty, L. A., & del Prado Hill, P. (2019). School–university partnerships: One institution's efforts to integrate and support teacher use of high-leverage practices. *Remedial and Special Education*, 40(6), 356–364. https://doi.org/10.1177/0741932518812689.
- Manfra, M. M. (2019). Action research and systematic, intentional change in teaching practice. *Review of Research in Education*, 43(1), 163–196. https://doi.org/10.3102 /0091732X18821132.
- Manton, C., Heffernan, T., Kostogriz, A., & Seddon, T. (2021). Australian school–university partnerships: The (dis) integrated work of teacher educators. *Asia-Pacific Journal of Teacher Education*, 49(3), 334– 346. https://doi.org/10.1080/1359866X.2020.1780563.
- Maulana, I., Rahma, N. A., Mahfirah, N. F., Alfarizi, W., & Darlis, A. (2023). Meningkatkan Profesional Guru dengan Program Pendidikan Profesi Guru (PPG). *Journal on Education*, *5*(2), 2158–2167. https://doi.org/10.31004/joe.v5i2.867.
- O'Connor, C., & Michaels, S. (2017). Shifting the focus to student learning: A review of the evidence on formative assessment. *Harvard Educational Review*, 87(4), 371–399. https://search.proquest.com/openview/2c4c94185542cd3d21e23de4dfa41af5/1.
- Óskarsdóttir, E., Donnelly, V., Turner-Cmuchal, M., & Florian, L. (2020). Inclusive school leaders their role in raising the achievement of all learners. *Journal of Educational Administration*, *58*(5), 521–537. https://doi.org/10.1108/JEA-10-2019-0190.
- Rollwagen-Bollens, G., Holmlund, T., & Wait, J. (2022). Actively Participating in University-Sponsored Ecological Research Increases High School Students' Knowledge of and Attitudes About Science. *Frontiers in Environmental Science*, 9(January), 1–15. https://doi.org/10.3389/fenvs.2021.797769.
- Stehle, S. M., & Peters-Burton, E. E. (2019). Developing student 21st Century skills in selected exemplary inclusive STEM high schools. *International Journal of STEM Education*, 6(1), 2. https://doi.org/10.1186/s40594-019-0192-1.
- Su, C.-Y., Li, Y.-H., & Chen, C.-H. (2021). Understanding the Behavioural Patterns of University Teachers Toward Using a Learning Management System. *International Journal of Emerging Technologies in Learning (IJET, 16*(14), 129–145. https://doi.org/10.3991/ijet.v16i14.22685.
- Vartiainen, H., Pöllänen, S., & Liljeström, A. (2016). Designing Connected Learning: Emerging learning systems in a craft teacher education course. *Design And*, *21*(2), 32–40. https://ojs.lboro.ac.uk/DATE/article/download/2115/2281.
- Vescio, V., Ross, D., & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education*, 24(1), 80–91. https://www.tandfonline.com/doi/abs/10.1080/09243453.2020.1808484.
- Walsh, M. E., & Backe, S. (2013). School–university partnerships: Reflections and opportunities. *Peabody Journal of Education*, *88*(5), 594–607. https://doi.org/10.1080/0161956X.2013.835158.

- Wang, Y., & Liu, J. (2020). Professional learning communities and teacher professional development: A systematic review. *Teaching and Teacher Education*, *90*, 103002. https://journals.sagepub.com/doi/abs/10.1177/2212585X221124155.
- Williams, C., & Beam, S. (2019). Technology and writing: Review of research. *Computers & Education, 128,* 227–242. https://doi.org/10.1016/J.COMPEDU.2018.09.024.
- Wong, M., Steiner, E. D., & Cook, L. (2016). The UCLA community school: A partnership between the Los Angeles Unified School District and the University of California, Los Angeles. *Journal of Education for Students Placed at Risk*, *21*(2), 91–102. https://www.sciencedirect.com/science/article/pii/S1750946722000344.