Pedagogie-digitala.ro Institute for Education (Bucharest)

Revista de Pedagogie Digitala 2025, vol. 4, nr. 1, pp. 63-72

ISSN 3008-2013 doi.org/10.61071/RPD.2562

Educational Decision-Making in Digital Education: A Conceptual Review of Data-Driven, Data-Based, and Data-Informed Approaches

Evelina Brazauskienė

Klaipėda University, Faculty of Social Sciences and Humanities (Klaipėda, Lithuania)

evelina.brazauskiene@ku.lt

https://orcid.org/0009-0008-9127-896X

Abstract: Theoretical differences between data-driven decision-making (DDDM), data-based decision-making (DBDM), and data-informed decision-making (DIDM) approaches have received relatively limited attention in digital pedagogical environments. This conceptual review draws on peer-reviewed literature between 2009 and 2025 to clarify these differences and examine their pedagogical implications. While DDDM is often reliant on systematic data use and predictive tools, DBDM is concerned with collaborative interpretation supported by digital dashboards and formalized methodologies, and DIDM integrates professional judgment with digital evidence and ethical considerations. The analysis highlights the impact of digital environments – such as learning management systems, digital trace data, and new AI-supported tools – on educational decision-making. Each approach has distinct benefits and challenges that have implications for teacher professional development and learning as well as institutional practices. An understanding of these differences is essential to effectively balance technological capabilities with pedagogical expertise, as well as to foster ethical and context-aware data use in contemporary education.

Keywords: data-driven decision-making, data-based decision-making, data-informed decision-making, digital education, data literacy, conceptual review

Received: 26.08.2025. Accepted and published: 01.09.2025

Citation:

Brazauskienė, E. (2025). Educational Decision-Making in Digital Education: A Conceptual Review of Data-Driven, Data-Based, and Data-Informed Approaches. *Revista de Pedagogie Digitala, 4*(1) 63-72. Bucharest: Institute for Education. https://doi.org/10.61071/RPD.2562

Introduction

Decision making is central to education, shaping how teachers plan instruction, how schools allocate resources, and how policymakers design reforms. Over the past two decades, the expansion of digital technologies and the proliferation of educational data have encouraged a shift away from decisions guided primarily by intuition, tradition, or professional judgment, toward approaches that explicitly incorporate data. This shift has been described using a range of overlapping terms, e.g. *data-driven*, *data-based*, and *data-informed decision-making*.

Although often used interchangeably, and, according to Zhao and Hu (2024), the terms are basically identical, these concepts reflect distinct perspectives on the role of data in education. **Data-driven decision-making** implies that data are the primary or even exclusive determinant of choices, potentially overshadowing professional expertise or contextual knowledge. **Data-based decision-making**, by contrast, emphasizes the systematic collection and use of data as a foundation for decisions, but allows for professional interpretation and contextual factors to play a role. **Data-informed decision-making** goes a step further, positioning data as one valuable input alongside professional judgment, pedagogical experience, and local knowledge in shaping educational decisions.

Clarifying these distinctions is not merely semantic. Each approach reflects a different balance between evidence and professional judgment and therefore has implications for how schools engage with data, how teachers perceive their professional autonomy, and how policy frameworks are designed. With growing reliance on digital platforms and trace data in education, such conceptual differences need to be clarified in order to make sense of how technology is reshaping educational decision-making. The present article explores these differences, examining the conceptual boundaries between data-driven, data-based, and data-informed decision-making, and analysing their relevance for contemporary educational practice and policy.

The aim is to analyse different data-driven, data-based, and data-informed decision-making approaches in education and present their practical significance for teachers' professional activities and the school community. Objectives:

1. To compare data-driven, data-based, and data-informed decision-making approaches in education, revealing their foundations, differences, and interrelationships.
2. To outline the practical significance of these approaches for teachers' professional activities, emphasizing the potential benefits, possible challenges, and ethical aspects.

1. What Is Data in Education?

Scholars usually distinguish several types of educational data (Hamilton et al., 2009; Mandinach & Gummer, 2016):

1. **Student-level data**
    - Demographic information (age, gender, socio-economic background, language, etc.)
    - Academic performance records (grades, test scores, course completion)
    - Learning behaviours and engagement (attendance, participation, digital activity logs)
    - Social-emotional or behavioural indicators (motivation, collaboration, wellbeing)
2. **Instructional data**
    - Curriculum content, teaching methods, and instructional materials
    - Assessment tasks, rubrics, and feedback records
    - Lesson observations or teacher self-reflections
3. **Institutional/administrative data**
    - School resources and infrastructure
    - Staffing and professional development records
    - Enrolment, retention, and graduation rates
4. **Contextual data**
    - Family and community background
    - Policy frameworks and accountability systems
    - Societal and cultural factors influencing learning

In the digital era, this notion of data has expanded: alongside traditional student records, schools and universities increasingly collect **digital trace data** from learning management systems, e-learning platforms, and online interactions. This includes logins, time on task, patterns of resource use, or even multimodal signals such as audio, video, and biometric inputs.

Data is essential for decision-making in education because it provides **objective evidence** about learners, teaching practices, and institutional performance. Without data, many educational decisions that are ranging from lesson planning to policy reforms are at risk of being based on intuition, assumptions, or tradition rather than on demonstrable needs and outcomes. By systematically collecting and analysing data, educators and policymakers gain insights into what is working, what challenges exist, and where resources or interventions are most needed.

At the classroom level, data allows teachers to **diagnose students' strengths and weaknesses**, adapt instruction to diverse learning needs, and monitor progress over time. For school leaders, it supports evidence-informed choices about curriculum design, staff development, and the allocation of resources. At the policy level, aggregated data enables governments and agencies to evaluate the effectiveness of educational programs, ensure equity across student groups, and plan long-term strategies for system improvement.

In this way, data functions not only as a tool for **accountability** but also as a foundation for **continuous improvement**, helping to create more personalized, adaptive, and equitable learning environments.

In education, the opposite of data-based decision-making is often found in **intuition- or tradition-based decision-making**, where choices are guided by personal beliefs, professional experience, or long-standing practices rather than systematic evidence. While such approaches may draw on valuable insights from teachers' tacit knowledge and institutional culture, they risk reinforcing biases and overlooking patterns that only become visible through data. By contrast, data-based decision-making (DBDM) aims to complement professional judgment with empirical evidence, ensuring that instructional and policy decisions are not only contextually informed but also grounded in demonstrable trends and outcomes.

Learning management systems and other systems generate significant amounts of data that can be mined to gain insights into student performance and learning outcomes (Gaševic et al., 2017; Kostopoulos, Kotsiantis, 2021). The ability to leverage data effectively has seen the development of analytical techniques and tools to support teachers and administrators in making informed decisions that improve the learning experience (Maseleno et al., 2018; Li et al., 2022). As educational institutions began adopting technology-based learning environments, the need for understanding data became increasingly evident to understand the learning process and the pedagogical methods used. This shift was from static assessment techniques to more dynamic and data inspired techniques, with the focus being on real-time feedback and personalized learning experiences. The emergence of data and therefore learning analytics in educational institutions to close performance gaps and make learning environments more inclusive (Torisi-Steele et al., 2019), places a requirement on teachers to use data as a basis for their professional decisions about learning and teaching in order to influence the latter (Wurster, Bez, Merk, 2023).

Educational data has been gathered incessantly, ranging from student attendance data and inspection reports to end-of-year examination results and national and international standardized test results (Thompson, Sellar, 2018). Yet education is typically portrayed as a profession in which teachers' decisions are intuitive and gut-driven. Education policy makers contend that to enhance performance, decisions should be made using data (Schildkamp, Kuiper, 2010). However, there are several ways to ground decisions on data.

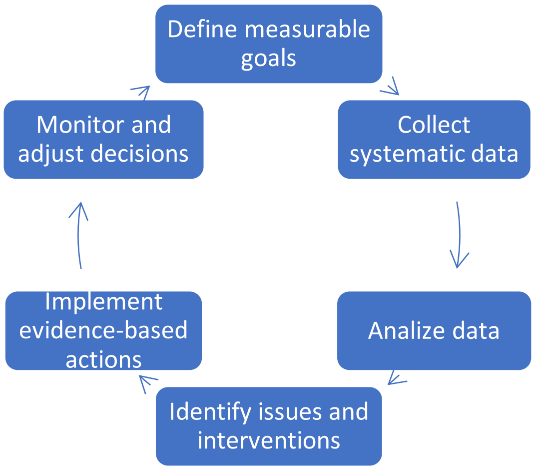
2. Data-Driven Decision-Making

Data-driven decision-making (DDDM) refers to the practice of making decisions in an organization on the basis of objective, systematically gathered data, as opposed to intuition or personal experience. The practice is of particular interest in domains where data analysis is increasingly becoming part of daily business. In industry, for example, DDDM is widespread in preventive equipment maintenance, production planning and forecasting with big data, IoT sensors or artificial intelligence (Bousdekis et al., 2021). In education, DDDM is seen in the application of data to trach student progress, guide changes in teaching approach and inform decision making at all levels, from classroom to educational policy (Datnow, Hubbart, 2015; Visscher, 2021). The method is premised on the belief that regular utilization of data enables the discovery of issues, formulation of precise interventions, and increased accountability (Mandinach, Gummer, 2016).

DDDM necessitates a sound data infrastructure in addition to skills in data literacy for administrators and teachers, as well as the capacity to decipher data and implement findings in practical settings (Mandinach, Gummer, 2016). Its success is contingent upon an organizational culture of reflection, collaboration, and ongoing improvement (Gill et al., 2014). Technology progress, particularly in big data and machine learning, continue to expand the possibilities of DDDM. Adaptive methods allow addressing challenges like concept drift – phenomena in which patterns and relations in data shift over time, making the previous models less relevant (Lu et al., 2020). Such methods enable decisions to me modified in real-time to ensure sustained accuracy and applicability. The advantages of DDDM manifest through its potential to facilitate evidence-based decision-making that enhances students' performance and maintains the effectiveness of the education system (Gill et al., 2014).

Figure 1

DDDM cycle



The integration of technology in DDDM enables teachers in the more effective collection, processing, and analysis of data related to student performance and involvement. Sophisticated learning management systems and analytical software allow for the capture of both academic and behavioural data, which enables real-time progress monitoring and the deployment of targeted interventions. Effective use of DDDM technologies requires improving teachers' data literacy and providing administrative support to ensure that decisions are based on valid and contextual data (Alonzo et al., 2024). Digital technologies enable more accurate diagnosis of learning needs, choosing appropriate teaching methods, and continuous progress monitoring. These technologies increase teachers' data literacy, provide more open feedback, and foster teacher-administrator-community collaboration. Through the use of technology in daily teaching, choices become more evidence-informed, accountability increased, and personalized learning environments are created, resulting in long-term improvement in education quality (Ali, Sreekala, 2025).

3. Data-Based Decision-Making

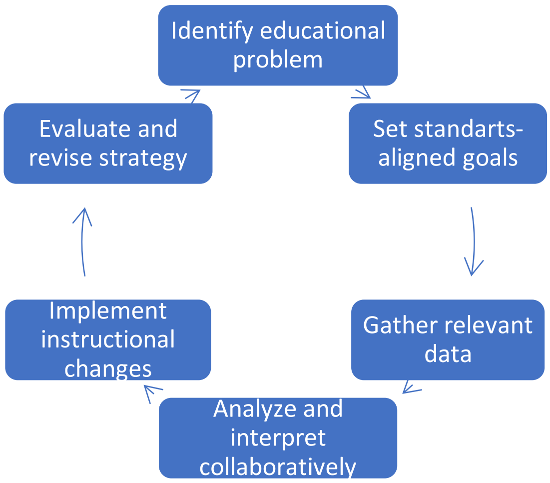
Data-based decision-making (DBDM) in education refers to the regular and systematic gathering, analysis and utilization of learning data to enhance teaching and student learning. While terms DDDM and DBDM are occasionally used interchangeably, DBDM generally focuses on the educational setting, specifically tracking student learning, giving feedback and adapting instruction to meet individual needs (Van der Kleij et al., 2015; Visscher, 2021).

DBDM, as defined by Cramer, Little, and McHatton (2014), is a systematic process aimed at problem identification, goal setting, data collection, analysis and interpretation, and application of the findings in order to bring about continuous improvement. The process involves a number of interrelated steps: problem definition, goal setting, data selection, analysis, interpretation and decision implementation. The process starts with the clarification of the problem or issue to be resolved. Second, data sources are chosen. Through analysis, data is processed and interpreted to identify trends and cause-and-effect relationships. Decisions are made through collaboration among educators, administrators, and other stakeholders to ensure the incorporation of various viewpoints. Lastly, there is a phase of implementation and monitoring, during which the effectiveness of decisions taken is assessed and, if needed, the strategy is revised. The cyclical nature of the process ensures that DBDM is transformed into a tool for continuous improvement rather that a single event. Effective use of DBDM demands clearly articulated, measurable tasks, with a fit to predetermined standards, as well as effective data interpretation that enables the application of solutions.

Evidence suggests that the most DBDM efforts are usually implemented at the primary educational level, whereas both secondary educational institutions and virtual learning environments are comparatively unexplored (Tayem, Bourgeois, 2024). The use of digital technologies such as learning management systems and learning analytics platforms support the aggregation and real-time analysis of student performance and engagement data and thus enables personalized interventions (Decabooter et al., 2023). Effective DBDM programs include data literacy training for teachers in combination with collaborative data analysis that, in turn, improves decision quality and its impact on student outcomes (Decabooter et al., 2023;Tayem, Bourgeois, 2024).

Figure 2

DBDM cycle



Digital technologies can be incorporated in DBDM, as a key tool for the efficient data collection, analysis, and utilization in education planning. Technology enables not just the incorporation of data from different sources and the generation of interactive indicator maps, but also the making of decisions founded on contextual data. Moreover, decision support systems can enhance students' upper-level thinking abilities. An empirical study in Indonesia revealed that a technology-based decision support system implemented in the teaching process significantly enhanced the critical thinking ability of students by allowing teachers to track student progress in real time and offer targeted feedback (Ginting et al., 2024).

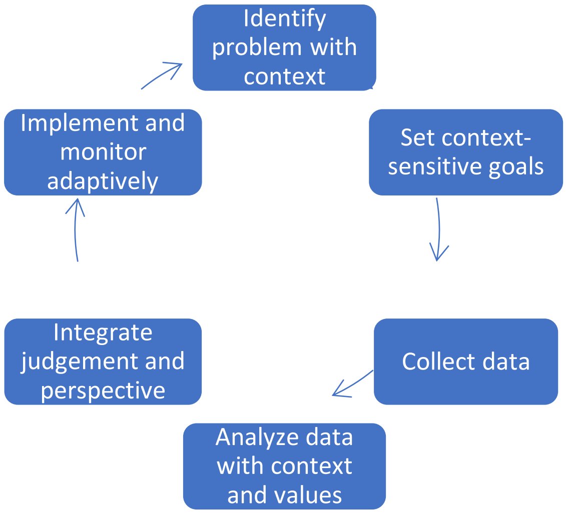
4. Data-Informed Decision-Making

In recent years, an emerging approach in data use in schools has attracted considerable attention, known as data-informed decision-making (DIDM). In this approach, the decision-making process is not exclusively determined by the results of data analysis; instead, data takes on an informative role, with definitive decisions being made through synthesizing this data with professional experience, educational context understanding and values. This approach has the potential to improve student success and the quality of the learning experience. Unlike previous approaches, this type of data use moves beyond a limited focus on academic achievement measures or standardized test results, embracing an inclusive range of data that may provide insights into a range of school activities (Schildkamp et al., 2019; Fernandes, 2021).

As Wang (2021) suggests, DIDM acknowledges that data offers a necessary foundation for action but that its real worth is only actualized if mixed with educators' professional judgement, contextual insight, and educators input. Decisions, in this manner, are not just evidence-based but also responsive to local contexts. In education, DIDM is the capacity of teachers to utilize data literacy competencies to make and enact decisions to enhance student learning. It entails problem identification, goal setting, data gathering, analysis, and interpretation. In contrast to the data-driven process, DIDM calls for and equitable integration of data and qualitative information. Furthermore, emerging technologies, such as generative artificial intelligence, can support and enhance this process and teachers' confidence in making decisions (Lee, Lee, 2025).

Figure 3

DIDM cycle



Although the use of data in education is not new, traditional data evaluation systems did not allow teachers to evaluate information comprehensively, so the use of IT tools became an opportunity to use resources for systems that would meet the needs of data evaluation (Aburizaizah, 2021). Recognizing that data can only provide information, but not be the sole basis for decisions due to a focus solely on academic achievement, machine learning algorithms can be used as part of artificial intelligence to calculate the impact of decisions taken in specific situations, considering contextual factors. Various factors arise during the learning process, such as stress levels, emotional state, and more, can affect learning. Artificial intelligence-powered tutors can help not only in the process of learning, but also, using various sensors that monitor the student's body language, pulse, and perspiration, can provide not only learning assistance, but also social and emotional support (Wang, 2021).

5. DDDM, DBDM and DIDM Differences, Usage Advantages and Application Challenges

Table 1

Differences between DDDM, DBDM and DIDM

Approach	Basis for decisions	Process	Data types	Importance of context	Role of technology
DDDM	Decisions are based on systematically collected data and its analysis	Data collection → analysis → decision → implementation	Quantitative, standardized data	Low. Data is considered objective and forms the basis for decisions	Learning analytics, prediction tools, real-time data
DBDM	Data is the basis for decisions, but a broader process and collaboration are involved	Problem identification → goal setting → data collection → analysis → interpretation → implementation → monitoring	Academic and learning data	More inclusive, solutions are adapted to the needs of the school or classroom	Learning management systems, diagnostic tests, feedback systems
DIDM	Data provides information, but decisions are complemented by teachers' experience, context, and values	Data analysis is combined with professional decision-making	Broad spectrum of data	Important, decisions are made taking into account context and culture	Data analysis tools, AI, but only as support tools for decision-making

Data-driven decision-making often leads to formative assessment, which makes it possible to focus on students' daily learning, overall achievements related to summative assessment, linking them to what is known and what is to be taught, and providing opportunities to change traditional teaching practices in order to improve teaching and learning outcomes (Kaspi, Ventaktraman, 2023). The use of DDDM to adapt teaching methods to students' needs based on data, with the aim of providing teachers with data on student achievement and analysing it so that they can develop appropriate teaching strategies that support the learning process, as a result, teachers can improve their teaching methods and increase student engagement and understanding during the learning process, diagnose areas for improvement, and ultimately contribute to improving student achievement (Nisa, Kurniawati, 2024). However, DDDM is not a clear decision-making process; it emphasizes the importance of data in the decision-making process in general terms, but does not provide specific practical principles that school leaders can use to guide their decisions. School leaders may not be aware of how all the nuances of data collection and analysis affect data interpretation, thus limiting their ability to make informed decisions (Wang, 2019).

Data-based interventions have various benefits in the educational process. These interventions improve teacher and student engagement and help improve student academic performance. The use of data helps teachers perform daily teaching tasks, monitor student progress, and obtain information about student learning activities in the classroom, and allows teachers to compare students' current and previous learning in order to assess progress (Zakaria, Latif, 2023). When working with students with special needs, DBDM is closely linked to specific teaching objectives and can enable educators to make informed decisions about the selection, adaptation, and modification of interventions to meet the individual needs of students, improving the response of students with academic and behavioural problems to interventions. However, for DBDM to be used successfully, teachers need to have data collection and analysis skills so they can track progress and make sure interventions are effective (Karimah, Kurniawati, 2024).

When applying DIDM, it may be important to provide systematic support to teachers from their own schools, appropriate training in working with data, and sufficient practice time and resources to enable them to do their work effectively, thereby increasing the effectiveness and efficiency of their practice. The DIDM system provides an opportunity to explore assessment processes, structures, mindsets, and culture, and allows educators to draw on a variety of information sources and types to make systematic, evidence-based decisions about teaching (Varier, Yun, 2023).

Although teachers have access to large amounts of data, the development of this competence focuses on the ability to solve technical problems and pays too little attention to critical, ethical, and personal approaches to data management in education (Papamitsiou, 2021), which poses the risk of evaluating data only quantitatively, using an automated decision-making process (Atenas, Havemann, Timmermann, 2023).

Attention to ethical concerns surrounding data use has increased. In creating data use practices, there must be a consideration to the needs of the students and data utilization to develop integrated view of the student. Without ethical checks in data usage, there are possibilities of cognitive errors, fragmented application of data, or over-reliance on one indicator, which can result in misinterpretations (Mandinach, Jimerson, 2021). Value lists or accountability audits alone are not enough to support ethical data use (Schäfer, Clausen, 2021). Data use culture tends to rely on a positivist ideology, disregarding possible social and technical issues, and as such, ethical data use is not typically well-prepared for (Di Cara et al., 2022).

Conclusion

According to the analysis, it can be concluded that a clear comprehension of the distinctions between data assisted decision-making approaches is required for their effective implementation. These approaches vary according to the basis for the decisions, process phases, types of data, and the degree of context consideration, so the right choice is conditioned by concrete educational contexts and purposes. The utilization of data in the educational process provides great possibilities to individualize teaching, enhance evidence-based decisions, and make learning environments more inclusive. Finding a good balance between technological potential and pedagogical knowledge is crucial for data use and successful implementation of these approaches. Schools should not only consider digital infrastructure and data analytics software but also facilitate teachers’ data literacy, ethical awareness, professional judgement and provide proper organizational, methodological, and institutional support. Data use integration with teachers’ professional experience, values, and the cultural context of education are necessary to consider when seeking best data implementation practice in education and preventing misinterpretation and limited pedagogical autonomy.

References

Aburizaizah, S. J. (2021). Data-Informed Educational Decision Making to Improve Teaching and Learning Outcomes of EFL. *Journal of Education and Learning*, *10*(5), 17-29. https://doi.org/10.5539/jel.v10n5p17

Ali, F., Sreekala, S., P. (2024). Assessing ICT as a Catalyst for Evidence-Based Decision Making: A Theoretical Literature Review. *Texila International Journal of Academic Research, 12*(3). https://doi.org/10.21522/TIJAR.2014.12.03.Art017

Alonzo, D., Quimno, V., Townend, G., Oo, C., Z. (2024). Using information and communication technology (ICT)-based data systems to support teacher data-driven decision-making: Insights from the literature (2013–2023). *Educ Asse Eval Acc, 36*, 433–451. https://doi.org/10.1007/s11092-024-09443-8

Atenas, J., Havemann, L., Timmermann, C. (2023). Reframing data ethics in research methods education: a pathway to critical data literacy. *International Journal of Educational Technology in Higher Education, 20*. https://doi.org/10.1186/s41239-023-00380-y

Bousdekis, A., Lepenioti, K., Apostolou, D., & Mentzas, G. (2021). A review of data-driven decision-making methods for Industry 4.0 maintenance applications. *Electronics, 10*(7), 828. https://doi.org/10.3390/electronics10070828

Cramer, E. D., Little, M. E., & McHatton, P. A. (2014). Demystifying the Data-Based Decision-Making Process. *Action in Teacher Education*, *36*(5–6), 389–400. https://doi.org/10.1080/01626620.2014.977690

Datnow, A., & Hubbard, L. (2015). Teacher capacity for and beliefs about data-driven decision making: A literature review of international research. *Journal of Educational Change, 17*(1), 7–28. https://doi.org/10.1007/s10833-015-9264-2

Decabooter, I., Warmoes, A., Consuegra, E., Van Gasse, R., & Struyven, K. (2024). The data coach chronicles: A systematic review of human support for making data-based decision-making a success. *Teaching and Teacher Education*, *146*, 104641. https://doi.org/10.1016/j.tate.2024.104641

Di Cara, N. H., Zelenka, N., Day, H., Bennet, E. D., Hanschke, V., Maggio, V., ... & Wells, K. (2022). Data Ethics Club: Creating a collaborative space to discuss data ethics. *Patterns, 3*(7). https://doi.org/10.1016/j.patter.2022.100537

Fernandes, V. (2021). Exploring leadership influence within data-informed decision-making practices in Australian independent schools. *Studia Paedagogica, 26*(4), 139–159. https://doi.org/10.5817/SP2021-4-7

Gašević, D., Kovanović, V., Joksimovíc, S. (2017). Piecing the learning analytics puzzle: a consolidated model of a field of research and practice. *Learning Research and Practice, 3*(1), 63-78. https://doi.org/10.1080/23735082.2017.1286142

Gill, B., Borden, B. C., & Hallgren, K. (2014). *A conceptual framework for data-driven decision making in education*. Mathematica Policy Research.
Lu, J., Liu, A., Song, Y., & Zhang, G. (2020). Data-driven decision support under concept drift in streamed big data. *Complex & Intelligent Systems, 6*(1), 157–163. https://doi.org/10.1007/s40747-019-00124-4
Mandinach, E. B., & Gummer, E. S. (2016). A perfect time for data use: Using data-driven decision making to inform practice. *Educational Psychologist, 51*(2), 71–82. https://doi.org/10.1080/00461520.2016.1173350

Ginting, S. H. N., Ruziq, F., & Wayahdi, M. R. (2024). Decision support system on students' critical thinking skills in ICT based educative learning. *Journal of Science and Social Research, 7*(4), 1793–1799. http://jurnal.goretanpena.com/index.php/JSSR

Karimah, A. N., & Kurniawati, F. (2024). Precision in special education: Insights from a systematic review on data-based decision making. *Jurnal Kependidikan: Jurnal Hasil Penelitian dan Kajian Kepustakaan di Bidang Pendidikan, Pengajaran dan Pembelajaran*, *10*(4), 1485-1495. https://doi.org/10.33394/jk.v10i4.13369

Kaspi, S., & Venkatraman, S. (2023). Data-Driven Decision-Making (DDDM) for Higher Education Assessments: A Case Study. *Systems*, *11*(6), 306. https://doi.org/10.3390/systems11060306

Kostopoulos, G., Kotsiantis, S. (2021). Exploiting semi-supervised learning in the education field: a critical survey., 79-94. https://doi.org/10.1007/978-3-030-76794-5_5

Lee, J., & Lee, J. (2025). Generative AI chatbot for teachers' data-informed decision-making: Effects and insights. *Educational Technology & Society*, *28*(3), 298–317. https://doi.org/10.30191/ETS.202507_28(3).TP06

Li, Q., Duffy, P., Zhang, Z. (2022). A novel multi-dimensional analysis approach to teaching and learning analytics in higher education. *Systems, 10*(4), 96. https://doi.org/10.3390/systems10040096

Mandinach, E. B., Jimerson, J. B. (2021). Data ethics in education: a theoretical, practical, and policy issue. *Studia paedagogica*, *26*(4), 9-26. https://doi.org/10.5817/SP2021-4-1

Maseleno, A., Sabani, N., Huda, M., Ahmad, R., Jasmi, K., Basiron, B. (2018). Demystifying learning analytics in personalised learning. *International Journal of Engineering & Technology, 7*(3), 1124. https://doi.org/10.14419/ijet.v7i3.9789

Nisa, A. Z., & Kurniawati, F. (2024). A systematic literature review of data-driven decision making: professional development program and its impact in enhancing teachers efficacy. *Jurnal EDUCATIO: Jurnal Pendidikan Indonesia*, *10*(2), 241-250. https://doi.org/10.29210/1202424879

Papamitsiou, Z., Filippakis, M.E., Poulou, M., Sampson, D., Ifenthaler, D., Giannakos M. (2021). Towards an educational data literacy framework: enhancing the profiles of instructional designers and e-tutors of online and blended courses with new competences. *Smart Learn. Environ. 8*(18). https://doi.org/10.1186/s40561-021-00163-w

Schäfer, M., T., Clausen, N., M. (2021). Participatory data ethics. A practical approach. *Mensch und Computer 2021.* https://doi.org/10.18420/muc2021-mci-ws06-316

Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education*, *26*(3), 482–496. https://doi.org/10.1016/j.tate.2009.06.007

Schildkamp, K., Poortman, C. L., Ebbeler, J., & Pieters, J. M. (2019). How school leaders can build effective data teams: Five building blocks for a new wave of data-informed decision making. *Journal of educational change*, *20*(3), 283-325. https://doi.org/10.1007/s10833-019-09345-3

Tayem, A., & Bourgeois, I. (2024). Data-Based Decision Making by Teachers in K-12 Schools: A Scoping Review. *Canadian Journal of Learning and Technology*, *50*(3), 1-23. https://doi.org/10.21432/cjlt28781

Thompson, G., & Sellar, S. (2018). Datafication, testing events and the outside of thought. *Learning, Media and Technology*, *43*(2), 139–151. https://doi.org/10.1080/17439884.2018.1444637

Torrisi-Steele, G., Wang, V., Galaige, J. (2019). Practice perspectives on learning analytics in higher education., 45-56. https://doi.org/10.4018/978-1-5225-9531-1.ch004

Van der Kleij, F. M., Vermeulen, J. A., Schildkamp, K., & Eggen, T. J. H. M. (2015). Integrating data-based decision making, Assessment for Learning and diagnostic testing in formative assessment. *Assessment in Education: Principles, Policy & Practice, 22*(3), 324–343. https://doi.org/10.1080/0969594X.2014.999024

Varier, D., & Yun, S. (2023). A review of research on assessment use: implications for preparing early childhood educators for data-informed decision-making. *Journal of Early Childhood Teacher Education*, *44*(4), 1067–1092. https://doi.org/10.1080/10901027.2023.2257157

Visscher, A. J. (2021). On the value of data-based decision making in education: The evidence from six intervention studies. *Studies in Educational Evaluation, 69*, 100899. https://doi.org/10.1016/j.stueduc.2020.100899

Wang, Y. (2019). Is Data-Driven Decision Making at Odds with Moral Decision Making? A Critical Review of School Leaders' Decision Making in the Era of School Accountability. *Values and Ethics in Educational Administration*, *14*(2), n2. https://files.eric.ed.gov/fulltext/EJ1233012.pdf

Wang, Y. (2021). When artificial intelligence meets educational leaders' data-informed decision-making: A cautionary tale. *Studies in Educational Evaluation*, *69*, Article 100872. https://doi.org/10.1016/j.stueduc.2020.100872

Wurster, S., Bez, S., Merk, S. (2023). Does learning how to use data mean being motivated to use it? Effects of a data use intervention on data literacy and motivational beliefs of pre-service teachers. *Learning and Instruction*, *88*, 101806. https://doi.org/10.1016/j.learninstruc.2023.101806

Zakaria, Z., & Latif, A. A. (2023). Obstacles to effective data-based interventions: A systematic review of teachers' data literacy. *International Journal of Academic Research in Progressive Education and Development*, *12*(3), 1708-1726. http://dx.doi.org/10.6007/IJARPED/v12-i3/19221

Zhao, S., & Hu, Y. (2024). Data-Driven Instructional Decision-Making Models: A Literature Review. *Science Insights Education Frontiers*, *25*(2), 4183-4198. https://doi.org/10.15354/sief.24.re431

Author Biography

Evelina Brazauskienė specializes in digital pedagogy and educational research, focusing on teachers' competencies in data literacy and data-informed decision-making within general education. Her research explores how educators develop and apply data-related competencies to improve teaching and learning, as well as the role of digital technologies in fostering inclusive and effective educational environments. She is a second-year PhD student at Klaipėda University, Faculty of Social Sciences and Humanities, where she also contributes to research and teaching at the Department of Pedagogy.