David R. Cole
Mehri Mirzaei Rafe
Gui Ying Annie Yang-Heim   *Editors*

Educational Research and the Question(s) of Time

Springer

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"*Educational Research and the Question(s) of Time* is a groundbreaking collection that delves deep into the often-overlooked dimension of time in education. Edited by David R. Cole, Mehri Mirzaei Rafe, and Gui Ying Annie Yang-Heim, this book brings time out of the shadows and showcases its vital role in understanding education and research. With diverse chapters covering various contexts, this book offers fresh perspectives on time's impact on teaching, learning, and research. It is a must-read for educators, researchers, and anyone interested in the intricate relationship between time and education."

—Michael A. Peters, *Distinguished Professor at Beijing Normal University, China*

"*Educational Research and the Question(s) of Time* is a fascinating book on a subject very rarely focused on in education. Time. Early in the book, the editors argue it is an analysis of time 'in itself' not time as part of, partner or contributor to something else. Research informing the edited book is collectively called the 'maelstrom of time,' maelstrom being a powerful, swirling, coming together. The diverse chapters capture the many dimensions of time through personal reflections, documenting educational happenings and its cosmological gravity. Timing, slowing down, speeding up, temporality, timescapes, timetables, diffracted, free, and the finality of time are themes threaded through this intriguing, edited collection. I would recommend it to anyone who ever considered how as teachers and researchers we find ourselves trapped in narrow definitions and regimes of 'time'."

—Karen Malone, *Professor of Environmental and Childhood Studies, Swinburne University of Technology, Australia*

"This edited collection: *Educational Research and the Question(s) of Time* couldn't be more timely. It offers the reader ample opportunities to dwell upon the possibilities that exist to challenge and resist the weight of progress narratives and neoliberal preoccupations with efficiency. Together the chapters avoid the linear, progressive, Time's-(killing)-arrow mode of the Techno-Heroic story', as Ursula Le Guin (186, p. 153) expresses it. This collection deserves a slow and careful engagement and a willingness to think otherwise about life in the Anthropocene as it plays out within, through, and beyond educational contexts."

—Jayne Osgood, *Professor in Education, Centre for Education Research and Scholarship, Middlesex University, UK*

"This outstanding and overdue collection provides astute critiques of the measured, linear description of time that striates our work and lives as educational scholars and researchers. Authors reach across nations and disciplines and time to offer new concepts, ideas, and ontologies from philosophy (Deleuze, Bergson), physics (Barad), and literature (T. S. Eliot) to inspire us to think time differently, perhaps as imaginary and even imperceptible, and to let it loose to re-organize the world."

—Elizabeth Adams St. Pierre, *Professor of Educational Theory and Practice, University of Georgia, USA*

"The question of time has been neglected in educational research, yet it is fundamental to our understanding of curriculum, pedagogy, and subjectivation. This important collection opens novel pathways toward a new philosophy of time for educational research. The authors draw attention to the temporalities of education across diverse contexts and provide practical insights that respond to the demands of our historical conjuncture."

—Sam Sellar, *Professor of Education, Dean of Research, University of South Australia, Education Futures, Australia*

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Foreword

Education is about change, and the study of changes involves time. Time appears therefore as an unavoidable issue to consider in education. Most research assumes that time is an external factor that constrains learning and development or eventually provides researchers and practitioners with a framework to describe how educational processes evolve. Such assumptions usually rely on a taken-for-granted view on time that does not constitute *per se* the topic of educational inquiry. Thus, most research in education considers time as a dimension that does not require to be systematically questioned (Slattery, 1995). When learners, educators, and researchers challenge their own experiences of change, and time becomes a locus of inquiry, researchers must determine how to interpret what is at stake. Identifying time in its plurality of expressions (e.g., biological, psychological, social temporalities) and questioning their relations, their meanings, and the values attributed to them is not an easy task. As a scholar who studied the temporal and rhythmic dimensions of educational processes for over 20 years, I am therefore particularly appreciative of the contribution made by David R. Cole, Mehri Mirzaei Rafe, and Gui Ying Annie Yang-Heim, and the authors who participated in this volume. This book constitutes indeed a very valuable resource to enrich our understanding of the intertwined changes that organize the fabric of our lives, the ways we analyze, interpret, and evaluate them in the contemporary context, and how we relate to them through heterogeneous educational practices.

When I first designed and facilitated in 2009 at Columbia University, a course titled *Time and Learning: Developing the Rhythms of Empowerment*, my drive was to explore with graduate students the connections between the development of critical reflection, educational practices and research, and their own experience of time, often lived as a source of tensions, stress, or even suffering. To help participants question their own experiences, I first started to select empirical research and theories borrowed from other disciplines (e.g., biology, psychology, sociology, anthropology, and philosophy of time). This experiment led me to formulate questions regarding the specificities inherent to the study of time in educational sciences, the evolution of temporal constraints that determine how educational processes are organized and lived, and the meanings of emancipatory education, in a context marked by a ubiquitous feeling of temporal scarcity and acceleration. A few years later, I addressed

these questions more systematically. Realizing how much the study of time in educational research was a fragmented and underdeveloped scientific territory, the writing of a dedicated monograph (Alhadeff-Jones, 2017) brought me to re-organize the contributions of a broad range of research, informing the ideas of time and rhythm in educational sciences, from philosophy to history of education, and from school instruction, curriculum design and arts education to vocational training, lifelong learning, and educational policies.

Since I started immersing myself in this literature, I have observed and followed with great interest the rapid increase of contributions, explicitly dealing with the temporal and rhythmic dimensions inherent to educational phenomena. I believe that the recent multiplication of such publications, and the organization of dedicated academic conferences, reveal nowadays a significant momentum (e.g., Burke & Manathunga, 2020; Facer et al., 2022; Gurtner et al., 2018; Lesourd, 2006; Maubant et al., 2018; Maubant & Roquet, 2021; Pineau, 2000; Roquet, 2018; Roquet & Biasin, 2024; Saint-Jarre & Dupuy-Walker, 2001; Schmidt-Lauff & Schreiber-Barsch, 2019; Schmidt-Lauff, 2023; Vostal, 2021). With this momentum, new challenges emerge, associated with the concurring production of a broad variety of research, in heterogeneous educational contexts, expressing different epistemological, theoretical, and methodological options. Such a phenomenon led, for instance, to the constitution in 2023 of the Spaces, Times, and the Rhythms of the Education of Adults and its Movements (STREAM Network), an international research network within the European Society for Research in the Education of Adults (ESREA), with the aim of relating and organizing the research interests of scholars working in different countries and linguistic areas around the world.

Similarly, I perceive the achievement of the editors and authors of this volume as a significant attempt to organize a rich and heterogeneous collection of English-speaking contributions on time and educational research into a coherent whole. On the one hand, this book clearly demonstrates the vigor and the interest of the current reflections conducted on the relations between time, temporalities, rhythms, and educational research. On the other hand, it shows the value of gathering such a broad spectrum of contributions into a single volume. They demonstrate indeed the importance to determine how to identify, interpret, and evaluate the relations through which experiences of time influence educational processes, including the way they are lived subjectively, how they are framed in the current historical period, and the rhythmic configurations they may display. Such an editorial project is also important because it materializes relations between researchers and practitioners, from different regions of the world, demonstrating a shared concern for the experience of time, as an entry point to better understand the transformations and challenges that affect education and research nowadays. Thus, this edited volume provides the reader with a critical mass of observations, reflections, references, and propositions that may reinforce a broader interest for this topic and feed our temporal imagination (Facer, 2023). Considering more specifically their contribution, each chapter of this book participates to at least one of three axes of research that appear to me as particularly strategic for the development of a critical agenda, focused on time and education (Alhadeff-Jones et al., 2022, p. 434).

First, many of the authors who participated to this editorial project focus on better understanding the *constraining effects of the temporalities that shape educational situations and environments*, whether formal or informal. They demonstrate the importance (a) to discriminate the heterogeneous temporalities (e.g., biological, psychological, and social rhythms) that determine and influence the unfolding of educational processes; and (b) to interpret the limitations they introduce in the ways people envision their experience of change and the way they feel, act, and think in a given context. Many contributions to this book open stimulating avenues to take into consideration heterogeneous forms of « temporal constraints » (Alhadeff-Jones, 2017) that influence education. Environmental concerns raise, for instance, new questions related to the ways we learn to understand the meaning of « sustainability » and take into consideration the temporalities of the Anthropocene, or those of the « more-than-human » worlds that shape our present and our future. Beyond the domination of clock time, envisioning how learning evolves also requires one to question the fluidity of our experiences and our desires, and how they relate to the temporalities of the institutions that constrain our lives, including formal education. It also suggests one to question how we experience the fragmentation of the temporalities that shape the unfolding of educational processes through the lifespan. It may involve studying different timescales, contrasting long-term perspectives with the urgency of everyday life, or questioning the pace of changes—whether technological or cultural ones—that we are collectively experiencing.

Many chapters in this book provide the reader with key insights related to a second axis of research that focuses on the *temporalities that are constitutive of educational processes* themselves, and more broadly the temporal dimensions of knowledge production. From that perspective, what is at stake is to identify relevant frameworks to interpret and evaluate the temporal features that characterize learning, transformational, developmental, as well as research dynamics. Thus, some contributions highlight the nonlinear, non-progressive, non-homogenous temporalities of learning and development. Other chapters stress the importance of adopting a processual perspective, questioning the transitional and liminal dimensions inherent in transformations, or the patterns that characterize specific educational temporalities. Some authors explore the time of being and becoming in and through educational processes, when others focus on the temporalities of learning activities, the ways they relate to different curricula, or the importance to connect past, present, and future to interpret how change occurs. Ways of knowing and relating to time also play a crucial role that questions the choice of expressions used to describe them, as illustrated with the references to distinct notions, such as « intuition », « timelessness », « timeliness », « *chronos* » or « *kaïrós* ». Moreover, referring to the different ways, we experience time demonstrates the relevance of integrating the study of rhythmic phenomena, including biological, psychological, social, or spiritual ones.

Finally, several chapters gathered in this volume contribute to a third axis of research that focuses on *the experience of time as a trigger for critical inquiry*. What is at stake is the capacity to question how we learn to interpret and eventually regulate the heterogeneous temporalities that are constitutive of our lives, especially when they are conflicting with each other. Experiences such as temporal

pressures, temporal dilemmas (e.g., balancing work and family life, human and more-than-human needs), rhythmic dissonances (conflicting experiences related to environments that valorize heterogeneous rhythms), schizogony (the experience of split temporalities), or temporal double binds (contradictory temporal constraints imposed on us) should indeed appear as opportunities for learners and educators to question how they relate to themselves, others, and their surrounding environment (Alhadeff-Jones, 2017, 2019). Many of the following chapters illustrate well what is at stake when temporal equity, social, environmental, and educational justice are questioned. Some authors explore for instance how reflecting on the experience of time constitutes a practice of resistance. Other contributors discuss how to challenge a mainstream conception of time understood as a commodity, how to trigger temporal disruptions, or how to subvert the temporal knowledge valued and prioritized in curriculum and pedagogy. Some chapters also focus on the ways to challenge the temporalities of knowledge production itself. Thus, several of these contributions highlight the relation between the capacity to consider the experience of time as a trigger for critical inquiry and different strategies, including embracing uncertainty and contradictions, transcending western-centric conceptions of time, keeping future open to maintain imagination and hope, challenging assumptions and conceptions about progress, questioning the rhythms of transformational processes—such as educational reforms—or privileging nature-based initiatives, as a way to reconnect with different temporalities.

Taken altogether, the publication of this edited volume constitutes a symbolic « time stamp », that may mark and reveal the ongoing development of an emerging field of study. By drawing our attention to the significance of the questions raised and the richness of the resources mobilized, this book sustains a renewed conception of criticality, a form of « rhythmic intelligence » (Alhadeff-Jones, 2023), more sensible to the temporalities and rhythms through which people learn, change, and evolve throughout the span of their lives. It is my hope that such a conception of criticality, explicitly informed by heterogeneous time and rhythm theories, as well as by empirical data, may eventually lead to the development of more appropriate pedagogical resources, strategies, and policies to address the contemporary challenges that shape education and society in the early twenty-first century.

Geneva, Switzerland   Michel Alhadeff-Jones

References

Alhadeff-Jones, M. (2017). *Time and the rhythms of emancipatory education*. Routledge. https://doi.org/10.4324/9781315727899

Alhadeff-Jones, M. (2019). Beyond space and time: Conceiving the rhythmic configurations of adult education through Lefebvre's rhythmanalysis. *Zeitschrift für Weiterbildungsforschung*, https://doi.org/10.1007/s40955-019-0133-0

Alhadeff-Jones, M., Cappa, F., Dakka, F. & Finnegan, F. (2022). Spaces, times and the rhythms of critique and emancipation in adult education. In L. Formenti, A. Galimberti, & G. Del Negro

(Eds.), *New seeds for a world to come. Policies, practices and lives in adult education and learning* (pp. 433–440). Milano: Ledizioni.

Alhadeff-Jones, M. (2023). Developing rhythmic intelligence: Towards a critical understanding of educational temporalities. *Sisyphus—Journal of Education, 11*(1), 10–34. https://revistas.rcaap.pt/sisyphus/article/view/26894/21490

Burke, P. J., & Manathunga, C. (Eds.). (2020). The timescapes of teaching in higher education. *Teaching in Higher Education, 26*(6).

Facer, K. (2023). Possibility and the temporal imagination. *Possibility Studies & Society, 1*(1/2). https://doi.org/10.1177/2753869923117179

Facer, K., Siebers, J., & Smith, B. (Eds.). (2022). *Working with time in qualitative research.* Routledge.

Gurtner, J.-L., Pauli, C., Schork, J., & Genoud, P. (Eds.). (2018). Les temps de l'éducation et de la formation [The times of education and formation]. *Revue Suisse des Sciences de l'Education, 40*(3).

Lesourd, F. (Ed.). (2006). Les temporalités éducatives. Approches plurielles [Educational temporalities. Plural approaches]. *Pratiques de Formation/Analyses, 51–52.*

Maubant, P., Biasin, & Roquet, P. (Eds.). (2018). *Les temps heureux des apprentissages* [The happy times of learning]. Champ social.

Maubant, P., & Roquet, P. (Eds.). (2021). *L'archipel des temps de la formation* [The archipelago of times in adult education]. Champ social.

Pineau. (2000). *Temporalités en formation. Vers de nouveaux synchroniseurs* [Temporalities in adult education. Toward new synchronizers]. Anthropos.

Roquet, P. (Ed.). (2018). Rythmes et temporalités en formation [Rhythms and temporalities in adult education]. *Education Permanente, 217.*

Roquet, P., & Biasin, C. (Eds.). (2024). Continuités et discontinuités des temporalités dans les sphères éducatives, formatives et professionnelles [Continuities and discontinuities of the temporalities in educational, formative, and professional spheres]. *Recherches & Educations, 26.* https://journals.openedition.org/rechercheseducations/13969

Saint-Jarre, C., & Dupuy-Walker, L. (Eds.). (2001). *Le temps en éducation. Regards multiples* [Time in education. Plural perspectives]. Presses de l'Université du Québec.

Schmidt-Lauff, S., & Schreiber-Barsch, S. (Eds.). (2019). RaumZeit in der Erwachsenenbildung [Space-time in adult eduction]. *Zeitschrift für Weiterbildungsforschung, 42*(2). https://link.springer.com/journal/40955/volumes-and-issues/42-2

Schmidt-Lauff, S. (Ed.). (2023). Time and temporalities in (adult) education and learning. *Sisyphus—Journal of Education, 11*(1). https://revistas.rcaap.pt/sisyphus/issue/view/1598

Slattery, P. (1995). A postmodern vision of time and learning: A response to the National Education Commission Report 'Prisoners of time'. *Harvard Educational Review, 65*(4), 612–633.

Vostal, F. (Ed.). (2021). *Inquiring into academic timescapes.* Emerald Publ.

Preface

This edited book came about after a presentation in 2022 at the American Educational Research Association (AERA) conference that I (David R. Cole) could not attend due to lingering worries about COVID 19. I gave the presentation about educational research and time remotely from Australia, and it was hosted by Mehri Mirzaei Rafe. The presentation caught the attention of a representative from Springer, who commissioned this book as a result. Beyond the specific mechanism of how this edited book has come into being is the broader and deeper engagement with questions of time that have driven much of my research in education since the 1990s. Time as a concept and integral part of teaching and learning and research is frequently overlooked or reduced to another factor in the teaching and learning process, rather than taking on a life of its own. This collection is a remedy to the potential neglect of time as an active factor in education and research. Rather, the amassed contents of these chapters present a positive alternative to not properly attending to time in education. Here, time is brought out of the shadows and examined in detail in diverse contexts and for different motives and shown to be vital in terms of understanding the nature of education and its research.

All chapters have been double-blind reviewed.

Penrith, Australia David R. Cole
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About the Editors

David R. Cole is one of the founders of the research field, "Deleuze and Education," that he began in the 1990s at the University of Warwick. Since that time, he has published seventeen influential and award-winning research books in the field (e.g., *Education, the Anthropocene, and Deleuze/Guattari* (Brill)) and more than 130 other important publications, as well as working collaboratively on fifteen international research projects amounting to more than $600,000 in funding, for example, a study that examines the efficacy of overseas university placements funded by the Australian government for $250,000. He has been researching in the field of environmental education for the last five years and has initiated a research website to further those ends: https://iiraorg.com/. His mission is to translate cutting edge research in the Anthropocene into educational theory and practice that helps to make a difference to the transition economy. He is currently employed as an associate professor in education and cultural analysis at Western Sydney University, Australia.

Mehri Mirzaei Rafe is a university lecturer and assistant professor at Texas Women's University. She holds a Ph.D. in the philosophy of education from the University of Tehran. She currently specializes in the analysis of complex data sets using statistical operations. Her previously study used the philosophy of Roy Bhaskar to critically analyze education. Her current interest lies in the formation of Muslim women's rights in the USA, especially concerning matters of sexuality.

Gui Ying Annie Yang-Heim is an assistant professor at Illinois State University in the United States of America (USA). She has taught literacy instructions, classroom organization, reading assessment and intervention, and social justice for early childhood and elementary education at a tertiary level. She attained her Ph.D. degree, specializing in Curriculum and Professional Studies, from the University of South Australia, Australia, in 2021. As a class teacher for over a decade, Dr. Yang-Heim has taught various subjects, primarily literacy and numeracy, from Kindergarten to

High School in China, Australia, and the USA. She has presented research papers at international conferences, including the American Educational Research Association (AERA) conference, and the Australian Association for Research in Education (AARE) conference, has research articles published in journals, and recently has a book published with Springer Nature. Dr. Yang-Heim has acted as a regular proposal reviewer for journals and conferences. She also serves as an area chair for International Research on Literacy Learning and Teaching (Area 12) of the LRA—Literacy Research Association and a section editor for the *International Journal of Literacy and Educational Studies.* Her research interests focus on exploring the learning needs of early childhood/elementary students from diverse cultural, linguistic, racial, and socio-economic backgrounds.

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Chapter 1
Educational Research and the Question(s) of Time

David R. Cole, Mehri Mirzaei Rafe, and Gui Ying Annie Yang-Heim

Abstract During the COVID pandemic (2020–2) time stood still. Schools were shut. (Clearly, not all schools were shut, not everyone was lonely. These statements present a taste of the drama and time questions in education that were caused by the pandemic.) Socialising was banned. Teachers, children, and parents were isolated in their homes. Beyond a metaphor, the breaking of clock time, by which education is usually run, sent individuals spiralling off in multiple directions. People found isolation and a dead, lonely time, cut off from contacts and forced to learn alone. Others discovered a 'holiday time' as the novelty of not going to school and staying at home provided a break from the frequently grinding repetition that education can become. This book is figured at the emergence of the post-pandemic, and asks the question: *What is the time dimension in educational research, and how does it equate to practice?* Every chapter deals with this question differently, and this move sets up the fundamental malleability of time in education and research, even though the unnerving regularity of clock time in education tries its best to defy this very malleability. What is interesting and shall be pursued in this opening chapter, is that the forces that seek to reassert the domination of clock time in and through education post-pandemic, are at the same time challenged in this very procedure by the bottom-up perturbations of new online learning, lingering health concerns, an uncertain economic outlook, and, perhaps most disturbingly, climate change. This chapter is located at the fulcrum of these energetics and maps their internal tensions and potential.

Keywords Education · Time · Research · Repetition · Change · Post-pandemic

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1.1 Introduction

Everything in education happens in time. The fundamental object of education is learning, which could be understood as being oriented to the future but performed in the present. This is because the facts, skills, practices and knowledge that are learnt in education have value in terms of what the agent can do with them (cf., Cole, 2019, p. 230). Likewise, pedagogy, which is linked to learning, must also be orientated to the future yet rooted in the present moment as a continuous, relational, 'now'. In combination, this collected volume of essays contends that time has not been fully and adequately considered as a significant dimension in and by educational research as future-orientated yet in the present. In qualitative research, time is usually figured as the 'temporal', which is has its roots in phenomenology, and a human subject thinking in time (e.g., Wertz, 2011, pp. 26–54). In quantitative research, time is frequently reduced to the time axis, and coordinates such as t_1 and t_2 that designate a measurable amount of time over which changes and longitudinal effects of an intervention or specific psychometric attributes are calculated (e.g., Wilkie et al., 2005). This volume marks a move beyond these theses of time, and seriously considers 'time-in-itself' as an object beyond the human and beyond reduction to differentiated Cartesian (dy/dx) coordinates and a 'graph of time' (Bonato et al., 2009).

Recently, this epoch, which demonstrates a fundamental question that pertains to time-in-itself, has been renamed as the Anthropocene, a new geological era created by human inhabitation of the planet Earth (cf., Cole, 2021, pp. 1–21). This redesignation of an age of humans has profound consequences in terms of time, such as reducing the emission of Greenhouse gases within a certain time frame (e.g., by 2050) to avoid catastrophic climate change and the full unveiling of the sixth great extinction event. Further, there are a whole host of other questions around human behaviour and society that must be changed 'in time' to complement the move to net zero by 2050, for example, significantly working with the circular economy (CE), and halting deforestation and overfishing (i.e., ecological and biodiversity destruction) in time for planetary revitalisation alongside the net zero target. However, even though the science of these vital matters of global significance has been settled (Waters et al., 2016), in education, perversely, the transformation of teaching and learning imperatives due to climate change are 'stuck in time' (hence, this leads to the notion of the time dimension in education as static and as unresponsive to exterior time constraints). Educational research, even though containing strategies and methodologies for change such as those of grounded theory and action research—whereby change is, in the main, encouraged (e.g., Greenwood & Levin, 2006), is perpetually stymied in the illusion that research is separate from action and change on climate (and other matters) in the contexts of teaching and learning, wherein the change needs to happen, for example, by reducing emissions and by enacting new lifestyles for sustainable future(s), beyond empty rhetoric, hollow promises or greenwashing. This volume surmises that wrestling fully with the question(s) of time in educational research is an approach to achieve the acceleration and merging of

inquiry and action with respect to understanding the nature of change (in/as time) and implementing these findings through practice.

Education is in every context ritually set into place at the start of the year through the design, reinforcement, and policing of the timetable. Teachers, students, and the administration in institutions work to hold this time structure in place for the rest (or part) of the year like a clock (cf., Lingard & Thompson, 2017). However, this collection suggests that the global situation is too precarious and too dangerous for the timetable to dictate all action in education and to remain immutable for the rest of the year. For example, the advent of catastrophic climate change in a global context requires systematic, communal, and agreed upon educational practices at the local level to address specific issues that face these communities, such as how to survive flooding, how to deal with extreme heat, coping with food shortages, what to do about mass migration encouraged by climate change, and how to avoid the resulting future economic collapses (cf., Cole, 2012, pp. 1–16) that will be produced by global warming. This volume suggests that the questioning of the universal timetable (education as clock time), and how learning is intentionally cut up and segmented in and by the rituals of education, often set at the beginning of the school year, is a vital fulcrum for the question(s) of time in educational research, and that shall be addressed in this volume through concepts such as the invention of inner time as *durée*/duration (Alhadeff-Jones, 2017, p. 193).

1.2 Qualitative Time

Educational research that deploys interviews, focus groups, observation, (auto)biography, creative writing and artefact analysis is most frequently termed as qualitative. The time dimension runs through every transcript, the fieldnotes, and pieces of research writing that can be produced about qualitative educational practice, setting up a three-way time interface between the time of the actual educational practice, the time as represented in the notes of the researcher(s), and the time as presented in the eventual analysis of the data. As observed in an Australian study (Thompson et al., 2023), this three-way interface is further complexified by the nature of educational practice that frequently has multiple simultaneous tasks running through it, setting up, as they term it a 'meta' time category and a subsidiary time 'use' category:

As one may see from this Table 1.1, the qualitative time dimension in educational research is a continuous interface between frequently conflicting activities. Hence, the definite segmentation of education time into discrete zones, e.g., teaching time, learning time, planning time, marking time, and time for other activities such as socialising or creativity is already complicated by the qualitative intermingling of activities through the meta and use values of time (Thompson et al., 2023). The purpose of this study (Thompson et al., 2023) is to determine the implications of these different responsibilities for a teacher's workload, and to show how a 'Teacher Time Use' app can encourage teachers to record, segment, and manage their time(s) appropriately. Further, qualitative research into the time dimension of education

shows how the intermingling of activities in time can happen, not only as discrete actions that need to be managed for a teacher's workload to be effective, but as a system of bottom-up energies, or potentials, that can come together and enhance/reinforce each other, for example, by contributing to the 'affects' of teaching and by producing dramatic shifts in thinking and feeling to augment the educative experience (Cole, 2011).

Admittedly, below the surface of a representational approach to qualitative time that cuts up and segments time into different activities and meta categories, are overall arcs of time, that run through any teaching learning context, and can be approached, for example, through narrative research (Spector-Mersel, 2010), biography (e.g., Kridel, 2013, pp. 23–41), and understanding the loops, non-linear action, and ways in which time can bend and alter a situation from within (Cole et al., 2021). Education rests on many traditions, value systems, and societal concerns for children, adolescence and in terms of youth development (Cole et al., 2020; Cole & Moustakim, 2022), that will affect the perspective of qualitative time and concentrate research on certain aspects of education, that prioritise and make adjustments to time to fit in with prevailing and dominant normative matters (Hlebowitsh, 2009, pp. 15–21), for example, regarding what counts as learning. The prevailing factor that overrides contemporary education is time as related to work, and the manners in which time is refigured and curtailed as 'efficiency', 'productive', 'monetary' and as defining a general relationship between learning and working as the motor for economic

Table 1.1 Meta categories of time use and time activities (Thompson et al., 2023, p. 6)

Meta category of time use	Time use activities
Face-to-face teaching activities	Learning interactions Feedback on student work Minor learning disruptions Significant behavioural interruptions Managing resources
Preparation and admin tasks	Planning and preparing lessons Data entry related to teaching, assessment and reporting Marking, feedback and other tasks related to assessment and reporting
Student wellbeing responsibilities	Out of class learning conversations with students Communicating with parents/carers about student learning Homeroom/pastoral care duties
Activities outside the classroom	Playground duties or supervisory roles Co/extracurricular activities Mentoring other teachers/supervising student teachers Additional/specialist roles Union duties Professional development All other meetings Email Other administrative duties

activity. Qualitative time as a feature of educational research and the question(s) of time delves purposefully into these matters, questions them, and sets up a critical paradigm with respect to time, education and work, so that the boundless stress that is present in the corporation driven work environment can be purposefully diluted and resolved when it comes to its effects on teaching and learning environments.

1.3   Quantitative Time

In contrast to qualitative research that investigates the time dimension via methods such as observation and interview, quantitative research deploys instruments such as surveys with items and scales and tests subjects through, for example, examinations and Q tests (cf., Wilson, 2023). Hence, the time dimension is implicit in the quantitative research as a measurable 't', whether it is seconds, hours, days, months, years, decades and/or centuries. The time dimension as such has nothing to do with the subjective experience of time, but is figured in terms of whatever scale time is deployed at, and that can determine, for example, rates of decay to be presented as an equation thus:

$$\tau \frac{dV}{dt} + V = f(t)$$

where τ represents the exponential decay constant and V is a function of time t.

In a parallel manner, time as a factor in quantitative research in education is integrated into equations and formulas that serve various functions as suggested by Table 1.2. These functions (Table 1.2) are resolved through statistical treatment of data sets. Johnson (2001) has usefully extended the classification of quantitative research (Table 1.2) to explicitly include the time dimension (Table 1.3). Thus, the different classifications of quantitative research in education (Table 1.2) are reduced to 'descriptive', 'predictive' and 'explanatory' below (Table 1.3).

This book includes the research classifications as defined by (Table 1.2) and works across these functions to demonstrate how educational research relates to quantitative time. In Johnson's terms (2001) the time dimension in quantitative research resolves into 'retrospective', 'cross-sectional' and 'longitudinal' research, the most commonplace being longitudinal research that measures effects over time. In addition to the three time dimensions of quantitative research that Johnson (2001) suggests, the dimensions are subject to the research objectives of 'descriptive' 'predictive' and 'explanatory' as has been already mentioned. As a result, Johnson (2001) produces a useful taxonomy of time dimensions and research objectives, with nine categories as can be seen in Table 1.3. In sum, these categories (Table 1.2) help to present how quantitative time works in terms of research objectives and the time dimensions, and how statistical operations can be resolved in terms of time. The time dimension as set out here for quantitative research (Table 1.3), conforms to the depiction of past, present and future, with the research objective of 'predictive' also being anchored

Table 1.2 Quantitative research classifications from leading textbooks in education and related fields (Johnson, 2001, p. 9)

Education	
Ary et al. (1996)	Causal-comparative, correlational, and survey
Best and Kahn (1998)	Descriptive
Creswell (1994)	Survey
Crowl (1996)	Survey, correlational, group comparison
Fraenkel and Wallen (2000)	Correlational, causal-comparative, and survey
Gall et al. (1996)	Descriptive, causal-comparative, and correlational
Gay and Airasian (2000)	Descriptive, causal-comparative, and correlational
Krathwohl (1997)	Survey, after-the-fact natural experiments, ex post facto, causal comparison, and meta-analysis
McMillan and Schumacher (2000)	Descriptive, correlational, comparative, ex post facto, and survey
Slavin (1992)	Correlational and descriptive
Tuckman (1994)	Ex post facto
Vockell and Asher (1995)	Descriptive (status), criterion group, correlational, and meta-analysis
Wiersma (1995)	Survey
Education and related fields	
Cook and Campbell (1979)	Passive observation
Kerlinger and Lee (2000)	Nonexperimental and survey (i.e., explanatory survey)
Pedhazur and Schmelkin (1991)	Predictive and explanatory nonexperimental

Table 1.3 Types of research obtained by crossing research objective and time dimension (Johnson, 2001, p. 10)

Research objective	Time dimension		
	Retrospective	Cross-sectional	Longitudinal
Descriptive	Retrospective, descriptive study (Type 1)	Cross-sectional, descriptive study (Type 2)	Longitudinal, descriptive study (Type 3)
Predictive	Retrospective, predictive study (Type 4)	Cross-sectional, predictive study (Type 5)	Longitudinal, predictive study (Type 6)
Explanatory	Retrospective, explanatory study (Type 7)	Cross-sectional, explanatory study (Type 8)	Longitudinal, explanatory study (Type 9)

in a conception of the future. Hence, quantitative time, which leads to statistical operations on data sets, straddles the past and present, and works to understand patterns in the behaviours and factors that it uncovers, that might help to explain the future. In an educational context of precarity and oscillation (e.g., Chacko & Price, 2021, pp. 4603–4611), the future-oriented quantitative time calculations might be extremely important, for example, in terms of understanding how jobs, skills and education need to proceed under climate change (cf., Haegeman et al., 2013).

1.4 *The Time Maelstrom*: Beyond the Qualitative and Quantitative Divide

Beyond qualitative and quantitative time in education as functions of the research methods that proceed them, or mixed-methods time, which is a combination of both (Johnson & Onwuegbuzie, 2004, p. 20) is the real time of education as experienced by students, teachers, administrators and researchers alike (Crow et al., 2017, p. 270). I will term this real dimension of time as the 'time maelstrom', as its analysis can lead either to the micro time of personal reflection and memory, or to the cosmic time of the universe, fundamentally dependent on gravity and its effects on spacetime (Rugh & Zinkernagel, 2009). In terms of the micro or personal time: We all have the memory of 'time standing still' as one watches the clock not advancing in a long academic session, and one is anticipating a more exciting after class activity. We all remember the first time we entered a classroom, whether as a student, teacher, or researcher. Thus, time as a maelstrom is a set of coordinates that we experience and remember, that joins us together in similar occasions, and that gives us common ground to discuss and compare what we understand and desire as/from education before separating us into our own subjective time dimension. The cosmic time of the universe is a backdrop and portal to the ways in which the laws of time, such as Einstein's general theory of relativity impinge upon the everyday lives of educators and students (Born, 1962, pp. 10–37). In contrast, one of the greatest fictional writers on time said:

> In theory one is aware that the earth revolves, but in practice one does not perceive it, the ground upon which one treads seems not to move, and one can live undisturbed. So, it is with Time in one's life. (Proust, 2016, p. 466)

This book, through its integrated, focused and substantial effort to understand educational research and the question(s) of time, illuminates this quote from Proust (2016), in that the invisible, and often ignored time dimension is its primary concern. This collection of chapters presents an analysis of time 'in itself', and not as a contributory and/or tangential matter with respect to education and research. In summary, this aggregation of research has found that the focus on time in education reveals three important themes, which are distributed amongst the chapters, and could be collectively known as the 'maelstrom of time':

1.41 There is a time connected to all aspects of pedagogy, which could be known as 'teacher's time'. The teacher has a history, memory, and narrative arc that will affect everything that happens in the classroom (Carter, 1993). However, institutional, curricula and societal concerns will also impinge upon a teacher's time, especially, for example, if the teacher works in a governmental school; wherein predesignated syllabi and other pedagogic constraints, such as having to satisfy promotion criteria for teaching and learning and managerial positions, could hold back the teacher in terms of devoting sufficient time to personal teaching satisfaction and focusing on the most enjoyable aspects of a teacher's time, that should make the job worth doing, and add genuine value to the time spent working as an educator in the first place, e.g., by developing thoroughgoing relationships with the children (Fraser et al., 1998, pp. 65–70). This book demonstrates the facts of increasing time demands upon a teacher's pedagogy yet allows for and retheorises the subjective and creative escape routes beyond the potential maelstrom of stress, repetition, and machinic societal concerns, which are frequently piled on teachers today (Table 1.1). Of course, this collection designates more with respect to its analysis of education and time than the classroom teacher as the educator and pedagogic expert, which could succumb to the regressive black hole of overwork and time poverty. For example, higher education figures widely in these chapters as an important site for the exploration of pedagogy, research and time (e.g., Palmer et al., 2010, pp. 35–47). The evidence presented here suggests that higher education, rather than acting as a haven for time-free pedagogic experimentation and new modes of teaching and learning that move against the time poverty seen in other parts of the education sector, is itself blighted by increasing over regulation and intensification of pedagogic control and surveillance (cf., Smaller, 2015). In sum, the pedagogy of higher education, whether it involves teaching undergraduate, postgraduate, or higher degree by research also shows the heightened characteristics of exterior intervention and control, brought about, for example, by the financialization of the university sector (Slaughter & Rhoades, 2004). Under these conditions, time is reduced to monetary considerations, and made scarce, as multiple tasks and considerations mount up for the university academic, because they must focus on retaining their jobs under ever escalating pressure and the new work regimes that require everything that academics do to be industry-friendly, financially quantifiable (via 'cost–benefit-analysis') and potentially fundable. As such, this is the end of freedom for innocent academic thinking and intellectual work that is not directly tied to explicit financial gain in time, and thus quality time for intellectual pedagogy apart from making money for the institution is made scarce and literally extinguished (cf., Freire, 2000, pp. 12–34).

1.42 Often depicted as opposite to teacher's time, but thoroughly related in every manner, is student or 'learning time' (Gromada & Shewbridge, 2016). There is the frequent but outdated misconception that is challenged throughout this work that students come to classrooms as *tabula rasas,* to be written on by educationalists and the learning intentions as designated by the curriculum

and syllabus authority (McKernan, 2007, p. 105). Thus, student agency is diminished, and the learning time is a forced, one-way process that discounts students as the creators of their own minds in time. This book addresses the issue of learning agency and time, as students, however young, come to the classroom already having learnt from their environments, families, the media and the societies in which they have hopefully been properly nurtured. This is where the time maelstrom can have its most dramatic effects, where the turbulence from outside learning and its time can conflict against any learning in the time of the classroom (Csikszentmihalyi, 2014, pp. 151–172). For example, nowadays, teenagers grow up with access to ubiquitous social media, wherein unregulated messages to earn money fast, to become rich, and to display this wealth through conspicuous consumption are sent and received. In contrast, the teenagers at school will be extolled to study text and data thoroughly, use scientific method to come to rational conclusions with evidence, and to think carefully with respect to their opinions and values. Thus, the fast-learning time of contemporary capitalism may clash with the often deliberately slow learning time of educative structures (Harland, 2016) that can in principle subvert fast capitalism. One might say that it is the job of the teacher to manage such time clashing, but the difference in learning time in the wider world and the time situation of the classroom is an undercurrent that flows beneath students, teachers and schools alike, that may emerge in discussions, exercises, and the consciousnesses of everyone present when tasks are presented, or media viewed. In corollary, the time maelstrom of learning presents the most stringent and turbulent effects in contemporary education that is primarily accelerating and is related to the third major theme that this research presents and is detailed below.

1.43 Teacher time and learning time is complemented by the larger historic time that we find ourselves embedded within in as practitioners of education and its research. Historic time is dealt with throughout the book and may be understood through the global societal pressures and forces that we are living through, e.g., capitalism, global warming, the post-pandemic. Even though historic time is hard to characterise as one is living through it, and is more straightforward to comprehend retrospectively, it does have definite effects on education and its research, such as the previously mentioned contrast between classroom learning time and out of classroom learning time (Shapley et al., 2011) as routed through technology. Firstly, capitalism and its effects on time have been theorised through the notion of accelerationism (Sellar & Cole, 2017), and the notion that the mechanisms of capitalism are accelerating time. Whilst this thesis is hard to uphold in terms of objective (time-based) evidence, the interlocking mechanics of profit-driven, demand led market economics, do lend themselves to the exhaustive capturing and use of time, all figured with the aim of making money (Sundararajan, 2017, pp. 45–68). Education as part of this equation becomes job training and is accelerated in its goal directedness to train and deliver monetary skills rather than to give pause to think or to create. Secondly, we are unequivocally in a historic state of global warming caused

by anthropogenic effects, such as the burning of fossil fuels, often referred to as the Anthropocene (Steffen et al., 2007). This time is causing, for example, a countdown to 2050, as it has been designated as the date whereby we need move beyond the burning of fossil fuels and go to 'net zero'. The drive to net zero by 2050 combined with climate change will cause perturbations in society, living conditions, and global conflicts, which will define the period of history that we are living through, and this includes education and its research as players in this historic period. Lastly, we are in a post-pandemic time. Time seemed to stand still during the pandemic, as we were told to stay at home, and lockdowns were endured. Children were educated at home, and universities reverted to online learning. Now, society is accelerating post-pandemic, though the 1920s 'boom time', that was a result of the 1919 pandemic does not seem to be repeating (Flynn, 2020). Rather, global inflation has taken hold with its auxiliary effects such as cost of living pressures causing widespread poverty. In conclusion, the time maelstrom is constituted by the triumvirate of teacher, learning, and historic time, which this research addresses throughout the chapters, and is a basis for ongoing research into the effects of time on education and change.

1.5   Further Questions of Time and the Self in Education

Whenever a teacher, student, or anyone involved with education reflects on their practice and performance, they are travelling in time between the present and the past to effect a change in behaviour and an outcome for the future (Easterby-Smith et al., 2000, p. 790). This action has been termed as being that of a reflective practitioner, which was famously theorised by Schön (1987). More recent theorisations that follow the new materialist approach to educational research and time have introduced the notion of diffraction (Bayley, 2020) to replace reflection, as the process of looking back to understand past actions and change for the better from the present onwards is a question of disentangling material lines of inquiry, wherein the matter of the inquiry, including the researcher's own perspective will impinge upon and impact what is known and how time is used in the inquiry (Petersen, 2018, pp. 10–15). There are fundamental questions for this book that are connected to the nature of the time interactions involved with such operations, and the interconnections made and dissected through retrieving memories, analysing them, and acting on them through improved/changed teaching and learning practices. If these operations are material flows, it is hard to reconcile the human self as stable within the context of such flows, if there is a 'self' involved, as Schön (1987) insists, time and the self are entwined, as the section from Deleuze's book on Kant demonstrates:

> In one sense Kant goes further than Rimbaud.

> For Rimbaud's famous formula 'I is another' relates back strangely to an Aristotelian way of thinking: 'Too bad for the wood which finds itself a violin! If the copper wakes up a bugle, that is not its fault' …

For Rimbaud, it is thus a question of the determining form of a thing in so far as it is distinguished from the matter in which it is embodied: a mould as in Aristotle.

For Kant, it is a question of the form of time in general, which distinguishes between the act of the I, and the ego to which this act is attributed: an infinite modulation, no longer a mould.

Thus, time moves into the subject, in order to distinguish the Ego from the I in it.

It is the form under which the I 'affects' the ego, that is, the way in which the mind affects itself.

It is in this sense that time as immutable form, which could no longer be defined by simple succession, appeared as the form of interiority (inner sense), whilst space, which could no longer be defined by coexistence, appeared for its part as the form of exteriority.

'Form of interiority' means not only that time is internal to us, but that our interiority constantly divides us from ourselves, splits us in two: a splitting in two which never runs its course, since time has no end. A giddiness, an oscillation which constitutes time. (Deleuze, 1984, p. ix)

In this introduction to his book on Kant (Deleuze, 1984) above, Deleuze sketches out the differences in the notion of time that sets out the stakes for this collection of chapters. In the Aristotelian/Rimbaud influenced notion of time and the self, the self is a mould, time is part of the substance of this mould that depends on change (and not the other way around)—i.e., time is not an active part of the self. In contrast, Kant (1998) introduces time into the self, to divide the I from the ego, and thus sets up a potentially infinite process of divisions of the self, that one could assimilate with the workings of the mind (as division). This work deals with the 'form of interiority' as described by Deleuze (1984) and as educational research as a continual process of time conjunction, disjunction and connection (three modes of synthesis), as the mind works out how and when learning has taken place in the classroom and how best to augment these processes. Deleuze (1994) went on to produce a theory of time in his book, *Difference and Repetition* that is influenced by Kant (1998) and is a complex and moving structure of three different syntheses of time—the passive synthesis of the living present, the passive synthesis of the pure past, and the static synthesis of the future (Voss, 2013). These syntheses give a means to reformulate research as the forms of interiority of time, as passive and active (i.e., passive with respect to past and present, active as synthesis, and making the future, and hence not time as part of a mould) and in consequence a purposeful method to recreate data as time coordinates and the constructions of events as time-based images (cf., Bowker, 2008, pp. 23–47). Deleuze (1994) was also influenced by Bergson (2013) in his reformulation of the state of interiority of time, and worked against a mechanical, succession only, measurement dominated notion of time, to enhance the idea that one has a rich internal life that should be reflected in research (and as educational research to enhance change). The chapters in this book follow on from the notion that time is embedded as an active force of the mind and that should be considered with respect to education and research as a pivotal synthetic aspect of how novel thinking happens with respect to a data set (cf., Suter, 2011, pp. 78–90). Hence, this collection of chapters does not assume an objective observer, or the self as a

mysterious black box, but includes all the time-based processes of the exterior world as entering and leaving the self through the action and events of education. The aim is to make educational research responsive and connected to the vicissitudes of time that are experienced as life and nature.

1.6   Conclusion(s)

As educators, whether in early childhood, school, or university contexts, we can frequently misjudge and mishandle the time dimension as it occurs in our practices. This is because children and students come to the classroom with their own learning times, which may negatively impact upon the time of the designated session, and the length of time that had been allotted to any specific learning task (Fisher et al., 1981). As a classroom teacher, dedicated to studying the world's great literature, I distinctly remember the frustration and exasperation that I felt as a committed teacher, when the school bells rang for the end of the class, and I had been on the verge of communicating a 'great idea' from literature and the class were very nearly accepting it. This memory/action/division is provoked by the artificial segmentation of time by the timetable, in contrast to the unknown length of time that it would take to communicate a great idea from literature and the class to fully appreciate this idea—through the transmission of affects (Cole, 2009). Yet, what is the solution to this conundrum? Open timetables with variable time slots for different subjects? How could that be organized, for example, in the context of busy secondary education? How would teachers know where to go and at what time to teach anything? At its heart, with the sustained call to fully investigate educational research and the question(s) of time, this collection of work suggests a different mode of operation for education. This new mode of education does not baulk at the first signs of practical, exterior, and/or previous models of education shutting down the imperative to change in and as time. In sum, {Time = Change} according to the following chapters, and the task at hand is to enact this change, rather than allowing oneself as an educator or learner to be trapped by and in the regimes and control networks that signify and maintain education as a static (top down) time dimension (Fenwick, 2010, p. 120). In contrast, time must be dynamic, open, and multivariant.

References

Alhadeff-Jones, M. (2017). *Time and the rhythms of emancipatory education: Rethinking the temporal complexity of self and society*. Routledge.

Ary, D., Jacobs, L. C., & Razavieh, A. (1996). *Introduction to research in education* (5th ed.). Harcourt Brace.

Bayley, A. (2020). Diffraction for performance research: A new materialist approach to theory/practice. *Performance Research, 25*(5), 1–3.

Bergson, H. (2013). *Time and free will. An essay on the immediate data of consciousness* (F. L. Pogson, Trans.). Routledge (Original work published 1910).

Best, J. W., & Kahn, J. V. (1998). *Research in education* (8th ed.). Allyn and Bacon.

Bonato, A., Golovach, P., Hahn, G., & Kratochvíl, J. (2009). The capture time of a graph. *Discrete Mathematics, 309*(18), 5588–5595.

Born, M. (1962). *Einstein's theory of relativity*. Courier Corporation.

Bowker, G. C. (2008). *Memory practices in the sciences*. MIT Press.

Carter, K. (1993). The place of story in the study of teaching and teacher education. *Educational Researcher, 22*(1), 5–18.

Chacko, E., & Price, M. (2021). (Un)settled sojourners in cities: The scalar and temporal dimensions of migrant precarity. *Journal of Ethnic and Migration Studies, 47*(20), 4597–4614.

Cole, D. R. (2009). Deleuzian affective literacy for teaching literature: A literary perspective on multiple literacies theory. In D. Masny & D. R Cole (Eds.), *Multiple literacies theory* (pp. 63–78). Brill.

Cole, D. R. (2011). The actions of affect in Deleuze: Others using language and the language that we make…. *Educational Philosophy and Theory, 43*(6), 549–561.

Cole, D. R. (2012). Surviving economic crises through education. *Global Studies in Education, 11.* Peter Lang.

Cole, D. R. (2019). Analysing the matter flows in schools using Deleuze's method. *Studies in Philosophy and Education, 38*(30), 229–240.

Cole, D. R. (2021). *Education, the anthropocene, and Deleuze/Guattari.* BRILL.

Cole, D. R., Bradley, J. P., & Lee, A. T. G. (2021). A pedagogy of the parasite. *Studies in Philosophy and Education, 40*, 477–491. https://doi.org/10.1007/s11217-021-09761-0

Cole, D. R., & Moustakim, M. (2022). The flash of a van: A cartography of a mobile educational initiative in the Claymore district of Sydney. *European Educational Research Journal, 21*(6), 900–921.

Cole, D. R., Parada, R. H., Gray, T., & Curry, C. (2020). Learning attribution in the Duke of Edinburgh's International Award (DoEIA). *Journal of Adventure Education and Outdoor Learning, 20*(1), 49–67.

Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings.* Rand McNally.

Creswell, J. W. (1994). *Research design: Qualitative and quantitative approaches.* Sage.

Crow, G., Day, C., & Møller, J. (2017). Framing research on school principals' identities. *International Journal of Leadership in Education, 20*(3), 265–277.

Crowl, T. K. (1996). *Fundamentals of educational research* (2nd ed.). Brown & Benchmark.

Csikszentmihalyi, M. (2014). *Applications of flow in human development and education.* Springer.

Deleuze, G. (1984). *Kant's critical philosophy. The doctrine of the faculties* (H. Tomlinson & B. Habberjam, Trans.). The Athlone Press (Original work published 1963).

Deleuze, G. (1994). *Difference & repetition* (P. Patton, Trans.). Columbia University Press (Original work published 1968).

Easterby-Smith, M., Crossan, M., & Nicolini, D. (2000). Organizational learning: Debates past, present and future. *Journal of Management Studies, 37*(6), 783–796.

Fenwick, T. J. (2010). (Un)doing standards in education with actor-network theory. *Journal of Education Policy, 25*(2), 117–133.

Fisher, C. W., Berliner, D. C., Filby, N. N., Marliave, R., Cahen, L. S., & Dishaw, M. M. (1981). Teaching behaviours, academic learning time, and student achievement: An overview. *The Journal of Classroom Interaction, 17*(1), 2–15.

Flynn, B. (2020, March). The inexorable rise of the pandemic state? Second-guessing the long-term political repercussions of COVID 19. In *Irish politics forum* (Vol. 18). Online at: https://politicalreform.ie/2020/03/18/the-inexorable-rise-of-the-pandemic-state-second-guessing-the-long-term-political-repercussions-of-covid-19/. Accessed December 30, 2023.

Fraenkel, J. R., & Wallen, N. E. (2000). *How to design and evaluate research in education* (4th ed.). McGraw-Hill.