

## Until the Miracle Arrives, We Can Learn from Others

Alan Ruby and Colleen McLaughlin

This is the second set of cases about implementing education reforms. It includes cases from parts of the world, notably Africa and Latin America, that were not included in the first volume. It also includes cases from environments that are not well resourced. Reviewing the first volume, Yi Liu (2023) rightly commented that while it covered a range of sites, the focus was ‘mainly on developed nations’ and accordingly the ‘ideas and recommendations’ might not apply ‘to less developed contexts that have their own set of expectations and understandings of education reform’ (143).

We continue to present cases that help us understand the realities of implementing reforms. Looking across the literature about education reforms over the last forty years we do not see a lot of material that addresses how education reform is enacted at the system level. We do see a lot of attention paid to the motivations driving reforms and the ideologies shaping the way reforms are presented. For example, many of the more visible reform proposals in the late 1990s and following decade assumed that competition, site level professional autonomy, common standards and transparency about student performance would bring about change in classroom practice (see Sahlberg, 2023, 3). But many of these reforms erred by assuming that these ‘ends’ were processes that would transform what happens in schools. There was a naïve belief that students’ learning would improve because these desired ends or principles were celebrated. There was little attention paid to motivating professionals to adopt different practices or to afford some activities more time and importance in schools. Nor was there much attention paid to what social support measures were needed to ensure that students were ready to learn and that schools could focus primarily on student learning.

This is one reason we are presenting cases which describe how reforms were delivered or enacted. Not all are examples of success, some show how the incentives that were offered proved to be dysfunctional. But they all show how reforms can be pursued across a school system. Some of the cases also illustrate the disjunction between what has been inherited from a prior government or colonial power and the new ways of acting being promoted or imposed by the current government or authority figure. This tension between legacy and innovation (Ros, 2021), between tradition or how we do things around here and the novel and different often impedes the successful implementation of reforms.

Our aim is to avoid offering ‘magic bullets’ like instructional alignment (Cohen, 1987), school choice (Chubb and Moe, 1990), competency-based education (Musiiementa, 2023) or any piece of technology just released. As many have pointed out, like Larry Cuban (2010), ready-made, quick solutions do not sit well with the realities of schools where there are multiple actors, multiple purposes and long-time horizons.

Yet we understand that there are rational justifications for studying and emulating models of ‘best practice’ or lessons from ‘High Performing Education Systems’ (Le, 2020). Designing reforms or formulating policy rationally, drawing on the evidence of what works and poring over effect sizes is attractive. It aligns with ideas of efficiency and prudent use of public funds. In one sense this collection of cases follows that tradition by pointing to strategies and processes that produced the intended results and highlighting those that did not. But the cases also show that there are democratic elements in policy making, such as including those affected in the process and being transparent and accountable. It also encompasses the notion that understanding the needs, aspirations, traditions and values of the ‘populace’ is more likely to produce policies that can be successfully implemented. Our training encourages us to pursue the rational, the scientific and the proven but our practice and experience tell us that context, culture and the sovereignty of peoples also matter. Ideally there is some balance – the point where ‘once in a lifetime . . . hope and history rhyme’ (Heaney, 1991).

But until that miracle arrives, we suggest relying on the capacity of people to make informed choices and accept the consequences of those choices when they are enacted. Those choices are best made on evidence mediated by an understanding of the environment. Boswell (2023) draws on Schon’s classic reflective practitioner to encourage us to use both eyes, the rational and the democratic.

To the rational eye it makes sense to look at ‘what works’, to learn from the successes of others. It is economical, making effective use of time and resources. It encourages fidelity of implementation and celebrates forward planning and aligning resources and priorities. But the democratic eye sees the differences between sites even in seemingly homogenous communities. It also sees the value of professional practice and the importance of agency – the capacity of well-prepared educators to respond to differences among their students and to engage with and listen to the voices and aspirations of others. The cases we offer here illustrate aspects of this duality, the paradox between rational and responsive approaches to reform.

---

## 1.1 THE PARADOX OF RATIONALITY AND RESPONSIVENESS

Collectively the cases here and in the earlier volume point to the virtues and shortcomings of the wonderfully linear and stable models of policy formulation that shaped school reform ideas and strategies for the last forty years or more. The virtues flow from the technical work that went into designing logical models of change. Goals were clarified and specified and materials developed, produced and delivered. Sometimes there was training and professional development on why and how to enact new policies, but they were not always delivered on time or to everyone. The shortcomings come from the assumption that centrally designed policies would work in all communities and sites and that fidelity of implementation would occur naturally. Both assumptions persist despite evidence to the contrary. They persist because rational policy making models are attractive, they are economical, evidence based and effective in identifying what needs to be done. They also overlook what Berman and Fox (2023) identify as the paradox of effective implementation, ‘fidelity and adaptation are both essential’ (46) if a reform is to be enacted across multiple sites.

To illustrate the paradox, we have opted to present cases where the focus of the intended reform addresses strategies that seek to change behaviour by adjusting an existing practice or by introducing a new practice. Sometimes the change in practice is all that is overtly intended. At other times, changes in one practice are intended to have consequent beneficial effects on other parts of the system or institution.

We are focused on implementation, on how a reform was enacted. But we take an inclusive view of implementation, including acts of design, testing and modification as well as the delivery or rollout. It also includes

any attendant process which hopes to identify success or failure. This inclusive framing does not degrade into a simple linear process of conception, proclamation, compliance and triumph. The steps are, in at least some measure, iterative with constraints encountered in initial stages of testing and delivery shaping design and recalibrating expectations of success or failure.

But we have sought to assemble cases where there is some rational approach to reform. This is sometimes a discernible logic model that sets out assumed linkages between changes in incentives and policies and consequent behaviour. Sometimes the model is under-specified and in others flawed. Models tend to be simplifications of events or phenomena, especially process models which are meant to guide the transformation of policy or research into action (Nilsen, 2015). One step follows the other from decision to action, to evaluation to reappraisal and the cycle begins again. One ready example is Barber's (2015) and Barber, Rodriguez and Artis's (2016) 'deliverology' model of implementation that was influential during Tony Blair's time as Prime Minister of the United Kingdom. It is a circular loop of six steps which had central goal setting and regular data collection and monitoring. There is a capacity for learning and adjustment 'if necessary' but authority seems to be centrally held. The emphasis on delivery evokes images of packages being left on doorsteps, labelled 'open here'. There is no immediate role for the policy enactor or for the recipient of the service, while the client or consumer is a passive recipient.

We are drawing attention to these logic models and theories of change because over the last fifty years this stylised approach to project design and execution has become increasingly pervasive. The Logic Framework approach to project design came out of the international aid community in the late 1960s where there was a concern that implementation and evaluation of aid projects were poorly executed and lacked rigor. The main problems that were hampering projects were planning that was 'vague', a lack of management responsibility and adversarial approaches to evaluation. The response was to draw on the scientific rigor that was embedded in the defence and space industries which had a clear sense of purpose and defined goals and a focus on sequential actions. The log frame (see, for example, Practical Concepts Incorporated, 1979) encouraged a clear statement of desired ends, certainty about management responsibility, articulation of the key steps and actions and an emphasis on evaluation as a tool to help in implementation not simply a summative act.

This paradigm shift was picked up by other aid agencies and the international development banks and eventually by grant makers and philanthropies. Sometimes the idea that reform programmes should be more structured and have explicit assumptions about actions and consequences was expressed as ‘theories of change’. This term seems to come out of the evaluation field in the 1990s and encourages evaluators and programme designers to make explicit assumptions about how a particular outcome will be achieved. Advocates of a robust theory of change delineated five desirable components. These include a clear appreciation of the context, especially those factors that could help or hinder execution; a statement of outcomes and the pre-conditions that lead to the outcome: indicators of progress and completion. There should also be a description of the intervention, its activities or steps and a clear statement of the assumptions about the context and how change works in the environment (see Reinholz and Andrews, 2020). These five conditions are in the same family as the ten pre-conditions that Gunn (1978) set out as necessary for ‘perfect administration’. These range from adequate and timely resources to a ‘valid theory of cause and effect’ and ‘complete understanding of, and agreement upon’ the objectives (170–171). The tenth of Gunn’s set, the capacity to ‘demand and obtain perfect obedience’ reinforced his observation that to offer them as an ‘ideal’ would have costs that ‘might properly be regarded as unacceptable in a free society’ (174–176). One feature of that free society would be a capacity for individuals to act in the best interests of others and themselves, within the bounds of common law.

The logic models are not the only models of implementation.

---

### 1.1.1 Practice Knowledge and Practitioner Agency

The rational models of reform and policy making make assumptions about human nature. Hayes (2001) argues that how we appraise rational policy models depends on what we think about human nature and what services should be provided by the State. If we believe that individuals are infinitely amenable to direction, be it by fiat or incentives, we look for policies specifying processes and outcomes and willingly follow them. The cases here show that this is not just a simplistic ideal, it is one that is bound to fail even in relatively autocratic settings. Some of these failures come because of self-interest, with policies being subverted, evaded or ignored when the mix of incentives is askew and fails to reward service. Others come because the policy does not produce a quality of service that meets the aspirations of the

community. But a subtler and more pervasive source of failure is the absence of any role for or appreciation of the individual or group who are expected to execute the policy. It is assumed that they will be willing and able to enact the policy faithfully. There is no place for the individual to interpret and apply the policy so it suits the situation. There is no acknowledgement that it is personally satisfying to assess the circumstances and adapt the policy to fit, to craft a response or to use skill and expertise. There is no explicit place in these rational models, the ideals of perfect implementation, for practitioner knowledge and practitioners' professional norms of behaviour.

These omissions persist in the design and execution of school reforms even though the importance of teachers' practical knowledge has been documented for decades (see, for example, Shulman, 1987 and Wallace and Loudon, 1992). Practical knowledge guides action on a day-to-day basis and is 'person and context bound' shaped by experience and beliefs; it should be the starting point for designing reforms not an omission or oversight (Van Driel, Beijaard and Verloop, 2001).

To highlight the importance of practice knowledge and practitioner agency we present some cases which illustrate how actors at the school site respond to and interpret reforms. Our pursuit of these cases is shaped by our own experiences in the field and our professional interests. It is an interest that goes back to the early 1970s when the Australian Schools Commission funded an Innovations programme. It was a small grants programme that invited proposals that would bring about some observable change in practice. It was 'not based . . . on the classic research and development model', nor was there any 'expectation that everything will be replicable, highly controlled, approved and disseminated on a "lighthouse principle"' (217). But there was a belief that the programme would change how teachers thought about and pursued their craft and increase their 'level of confidence in their own ability to develop more effective programs' (McKinnon, 1976, 218). The modest sums of money and professional support from independent consultants were tools to pry open the seemingly monolithic state-wide public-school systems and their Catholic parochial system counterparts. The programme was relatively short-lived and when budget constraints limited federal government expenditures on education it was an easy 'savings' option as it had little political support. But it did illustrate one way to strategically intervene in educational practice. It supported teachers and school communities as they sought to construct better practices, to try new ways of doing something tailored for their circumstances. It created space for innovation and for the application of practical knowledge.

---

## 1.2 CULTURE AND VALUE

Our emphasis on practice knowledge and implementation that aligns with circumstances leads us to re-emphasise the importance of culture and value. This is not to dismiss the benefits of planning and the contribution technical work makes to formulating policies and programmes but by themselves the rational acts do not guarantee successful implementation or successful outcomes. Technical wisdom does not trump culture. Sen (2004), writing on how culture matters, observes that culture does not work in ‘isolation from other social influences’ but it does ‘help to illuminate our understanding of the world’ (50) and of why things work or do not work. Nor does an appreciation of culture mean that ideas or practices from other cultures or nations should be dismissed as aliens or designed for other times or places or simply as ‘not from here’. And it does not mean slavish imitation, ‘Learning from elsewhere involves freedom and judgement . . . volitional agency’ (Sen, 2004, 52).

Nor should reform design and implementation ignore context. Harris and Jones (2018) compared school leadership development across seven education systems and noted that, too often, ‘culture and context are just a benign backdrop for policy implementation, so largely irrelevant and unimportant’ (204). The result is a disconnect between aims and activities, goals and resources, ends and capabilities.

---

### 1.2.1 How These Cases Differ

These cases are more narrowly focused than most of those in our first book, which tended to look at the whole school or entire system changes. In some ways these cases are simpler, more constrained, more narrowly focused and easier to comprehend. Yet in other ways they are tied to the complexity of their political and economic environment which can seem to limit their relevance to other policy environments or systems. We have tried to distil from them the elements that fostered or thwarted success. In this way the volume is a valuable complement to the first book as a resource for discussions with policy makers and administrators. While we do aim our books at policy makers and key stakeholders, we also address them at practitioners, people who are responsible for execution, people who are tasked with translating ideas or decisions into action. Our focus is on them because we believe they are the principal arbiters of what happens in the daily lives of learners,

which is where improvement takes place. But we are also addressing policy makers because we think they will make better choices and allocate resources more effectively if they are more informed about the realities of delivery. And we hope this book will also offer some insights to people who design and develop new policies and programs by making them aware of the limitations of particular intervention points and by illustrating the ways in which apparently focused interventions have consequences across a system or an institution.

To highlight these themes, we have assembled cases that display different forms of the policy implementation gap. The initial conceptions of the gap between design and execution were simplistic and technical. Following Pressman and Wildavsky's definition of implementation as 'the ability to forge subsequent links in the causal chain so as to obtain the desired results' (1973, xv) gaps were most observable between aspiration, sometimes expressed as a law or regulation, and practiced observable behaviours. The cases here show that gaps occur at many different links of the causal chain. They illustrate that getting from a goal, intention or law to action and outcome is not a matter of ensuring the links in the chain are connected and healthy. There are people involved, with different values, capabilities and aspirations. All with some degree of agency to shape behaviour and practice. It is this capacity for action, the exercise of professional judgement or protecting self-interest, that shapes and reshapes policies as they are enacted.

To illustrate the variety of ways policies are reshaped we have assembled cases of strategies which seek to achieve some desirable end by changing a specific element or practice. Some seek to change the rewards, the compensation for teachers in terms of salaries or in access to promotions or positions of greater status and responsibility. Some seek to achieve an end by adjusting or improving the assessment regimes which judge student achievement, and they seek to drive change by intervening in the high stakes exit exams. Others seek to change the fundamentals of the curriculum or some key process of learning like reading or basic literacy and numeracy. We looked for these types of cases because we wanted to test the proposition common to many rational and centralised policy making processes that focused changes were more likely to be successful. The argument is that, by limiting change, addressing some necessary end or specific challenge rather than creating an ideal, disruption would be confined, fidelity would be greater, opposition less strident and timelines shorter.

While the examples are focused on parts of a system of schooling – the aspirations for the reforms were not always directly tied to what was being

changed. For example, the reforms to textbooks in Portugal were aimed to bring about a larger shift in the education system than improving the quality of learning materials. Similarly, the changes in the teacher compensation systems in Kazakhstan and the Kyrgyz Republic were expected to change the ways teachers engaged with students in and outside the classroom, not just shift the method for calculating individuals' wages.

This approach necessarily omits examples of the competing models of 'Comprehensive School Reform' (CSR) that were promoted by the US Federal Department of Education and enthusiastically pursued in many US public school districts in the 1990s and 2000s. Slavin, one of the leading proponents of a popular CSR model, described the approach as one 'in which each of the elements is carefully and planfully integrated around a shared conception of how students will learn and develop' (2007, 4). These elements will be aligned and should cover teaching, professional development, curriculum, learning resources and technology as classroom management and relationships with the community. While numerous studies of the effectiveness of CSR programs found that the stable and specific policies they fostered encouraged lasting change and fidelity of implementation (Desimone, 2002), others like Rowan, Camburn and Barnes conclude that 'efforts at comprehensive school reform are time-consuming and difficult, and they proceed with uneven success across schools' (2004, 2). Whatever the final assessment of its impact, CSR in US public schools was characterised by competing external models and still operates as an external model of change, adopted and abandoned by individual schools and districts, delivering coaching and training and materials. The models did not, in Fullan's assessment, 'alter the capacity of the school to engage in improvement' (2001, 5). The models were also designed and promoted by actors separate from the agencies responsible for the day-to-day operation of the schools. In short, the goal of CSR was misguided, expecting and pursuing broad changes without attending to the issue of sustaining change and seeing it enacted across a system. In contrast, all of the cases here are nested in systems of education, with national or provincial agencies responsible for the quality of education.

---

### 1.2.2 Wider Coverage and Recurring Themes

The first set of cases did not include analyses or commentary on school reforms in either Africa or Latin America; an omission we were conscious of and hope to offset here. There are three cases from sub-Saharan Africa, one each from South Africa, Ghana and Rwanda, and one from Peru. They cover

different dimensions of education. The first in the set is Jansen's exploration of the debatable assumption that proclaimed policies will be readily and faithfully enacted in a system like that of South Africa, where 350,000 teachers are working on over 25,000 sites. Avornyo's study of the introduction of a play-based approach to early years education in Ghana also highlights the gap between policy announcement and execution across a system of schooling. Similarly, Williams shows that the central edict of fee-free schooling in Rwanda has been variously interpreted and at times evaded and embroidered at the school level. All three are examples of the gap between policy adoption and implementation. To different degrees all three show that political processes shape and reshape a policy ideal as it is conceived and enacted. Sometimes the political process distorts the ideal to an extent that the policy 'fails' or falls short of expectations. And they show, as do the other seven cases, that failure is not simply a product of flaws or missed steps in a logic model. It can stem from under-valuing the role of the individual practitioner, ignoring the probability that teachers will interpret the policy, drawing on their professional repertoire and their assessment of the audience. Central policy makers seem to assume that teachers and school leaders will simply follow a script, acting out a regimen. They also seem to assume that parents and other stakeholders want uniformity of treatment rather than a service tailored to the aspirations and capabilities of the individual. Both assumptions belie the notion that individuals can and should have a voice in the nature and quality of social services, especially those services that serve the common good. They ignore the arguments that culture matters and that professional practice demands customising services to align with the client.

The same theme of tension between centrally determined policy and local application is explored by Priestley and Humes as they survey the successes and shortfalls of Scotland's curriculum reforms over twenty years. Their account avoids the temptation of a stylised model and encompasses internal and external actors, the importance of culture and the power of 'performative' policies that invoke standards and student assessment regimens. They also discuss teachers as curriculum makers, whose agency is shaped by circumstances. A desire to exercise professional judgement is not simply innate but a quality that can be supported and legitimated. Conversely it can also be constrained by regulation, by the absence of resources and misalignment between curriculum and assessment. Agency and the exercise of professional competence can also be constrained by the ways schools are governed or overseen.

The churn of structural arrangements that has cascaded over schools in England in the last forty years, and particularly in the last fifteen years, is documented here by Dudley and Robson. They reflect on the turmoil created by the pursuit of the principles of market-driven social services and user-choice and a desire to diminish the role of intermediary government (Local Education Authorities and Councils) in favour of a regulatory national government and independent public and privately owned service providers. The net result so far has been to strip away the support that sustains and enables professional practice and the adaptation of policies to suit local conditions.

The Peruvian case by Balarin shows another side of the ideological seesaw that disrupts implementation. She recounts how the relatively successful rollout of a pedagogical reform was abandoned after a year. The support services and processes of negotiation and persuasion that fostered success were halted because they were costly and did not produce immediate results. The political cycle moved faster than the pace of reform and consensus building around the value and benefits of the new approaches. Crato's essay on the use of textbooks in Portugal also illustrates how political beliefs can overshadow even a sustained period of success. It recounts how a program that focused on high quality curricula and learning materials aligned with assessment practices and was pursued consistently over fifteen years and six ministers of different political parties was quickly abandoned. This focus on standards and assessment and an emphasis on supporting trained and experienced teachers ended. Final exams ceased and curricular flexibility was introduced.

There are three cases from post-Soviet states. We include a case by Schwanbeck of an attempt to improve teacher salaries and conditions in the Kyrgyz republic as a strategy to improve quality, an attempt that was thwarted by poor design. It also shows how policy was re-interpreted, ignored and thwarted by action at the school site. We also look at Frumin's account of a more gradual change in how teacher salaries are calculated in neighbouring Kazakhstan. It shows a degree of political caution and a distaste for abrupt change in a system that has changed often and abruptly in its first thirty years as a newly independent state. The third case in a post-Soviet state is Mehisto and Kitsing's examination of how Estonia implemented policies focused upon increasing equity. They highlight the array of enabling social policies and programmes that promote equality and help children focus on learning while they are at school. The Estonian case shows the power of a national, commonly held, existential imperative to become and remain independent.

That vision was formed and maintained democratically and slowly. It is a timely reminder of some of the lessons from our first set of cases that reform dogma or imposed, imported simple, formulaic solutions do not work as well or last as long as programs built and enacted with engagement and participation. Reaching consensus requires time; rushing solutions in school reform ruins more than it achieves.

## References

- Barber, M. (2015). *How to Run a Government: So That Citizens Benefit and Taxpayers Don't Go Crazy*. London: Allen Lane.
- Barber, M., Rodriguez, N., & Artis, E. (2016). *Deliverology in Practice: How Education Leaders Are Improving Student Outcomes*. Thousand Oaks, CA: Corwin.
- Berman, G. & Fox, A. (2023). *Gradual: The Case for Incremental Change in a Radical Age*. New York: Oxford University Press.
- Boswell, J. (2023). *Magical Thinking in Public Policy: Why Naïve Ideals about Better Policymaking Persist in Cynical Times* (Oxford, online edn: Oxford Academic, 19 January 2023), available at <https://doi-org.proxy.library.upenn.edu/10.1093/oso/9780192848789.001.0001>, last accessed 21 June 2023.
- Chubb, J. E. & Moe, T. M. (1990). Choice is a panacea. *Brookings Review*. Summer, p 142.
- Cohen, S. A. (1987). Instructional alignment: Searching for a magic bullet. *Educational Researcher*, 16(8), 16–20.
- Cuban, L. (2010). The allure of 'Magic Bullets' in school reform, available at <https://larrycuban.wordpress.com/2010/03/31/the-allure-of-magic-bullets-in-school-reform/>, last accessed 15 March 2024.
- Desimone, L. (2002). How can comprehensive school reform models be successfully implemented? *Review of Educational Research*, 72(3), 433–479.
- Fullan, M. (2001). Whole school reforms: Problems and promises, available at <https://michaelfullan.ca/wp-content/uploads/2016/06/13396044810.pdf>, last accessed 2 May 2024.
- Gunn, L. A. (1978). Why is implementation so difficult? *Management Science in Government*, 33, 169–176.
- Harris, A. & Jones, M. (2018). Why context matters: A comparative perspective on education reform and policy implementation. *Educational Research for Policy and Practice*, 17, 195–207.
- Hayes, M. T. (2001). *The Limits of Policy Change: Incrementalism, Worldview, and the Rule of Law*. Washington, DC: Georgetown University Press.
- Heaney, S. (1991). *The Cure at Troy: A Version of Sophocles' Philoctetes*. New York: Noonday Press.
- Le, M. H. (2020). Where be the 'magic bullet' for educational change? Vietnam and the quest of policy borrowing from abroad. *Journal of Educational Change*, 21, 455–466.
- Liu, Y., (2023). Implementing educational reform: Cases and challenges. *Comparative Education*, 59(1), 141–143.
- McKinnon, K. R. (1976). The innovations and teacher development programmes of the schools commission. *The South Pacific Journal of Teacher Education*, 4(3), 213–219.
- Musiimenta, M. K. (2023). Competency based curriculum: A magic bullet for skilling youths in Uganda?, available at: <https://stireducation.org/competency-based-curriculum-a-magic-bullet-for-skilling-youths-in-uganda/>, last accessed 15 March 2024.

- Nilsen, P. (2015). Making sense of implementation theories, models and frameworks. *Implementation Science*, 10, 53, <https://doi.org/10.1186/s13012-015-0242-0>.
- Practical Concepts Incorporated. (1979). *The Logical Framework; A Manager's Guide to a Scientific Approach to Design & Evaluation*. Washington, DC: Practical Concepts Incorporated.
- Pressman, J. L. & Wildavsky, A. B. (1973). *Implementation: How Great Expectations in Washington Are Dashed in Oakland: Or, Why It's Amazing That Federal Programs Work at All, This Being a Saga of the Economic Development Administration as Told by Two Sympathetic Observers Who Seek to Build Morals on a Foundation of Ruined Hopes*. Berkeley: University of California Press.
- Reinholz, D. L. & Andrews, T. C. (2020). Change theory and theory of change: What's the difference anyway? *International Journal of STEM Education*, 7(2), <https://doi.org/10.1186/s40594-020-0202-3>.
- Ros, V., (2021). Legacy-innovation challenges in post -Soviet higher education: Scholars' academic transformation in Cambodia and Kazakhstan. *Open Journals in Education*, 13 (5S), 110–117.
- Rowan, B., Camburn, E., & Barnes, C. (2004). Benefiting from comprehensive school reform: A review of research on CSR implementation. In *Putting the Pieces Together: Lessons from Comprehensive School Reform Research*, edited by C. Cross, Washington, DC: The National Clearinghouse for Comprehensive School Reform, 11–52.
- Sahlberg, P. (2023). Trends in global education reform since the 1990s: Looking for the right way. *International Journal of Educational Development*, 98, <https://doi.org/10.1016/j.ijedudev.2023.102748>.
- Sen, A. (2004). How does culture matter? In *Culture and Public Affairs*, edited by V. Rao & M. Walton. Washington, DC: World Bank, 37–59.
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57, 1–22.
- Slavin, R. E. (2007). *Comprehensive School Reform*, available at: [www.successforall.org/wp-content/uploads/2016/02/Comprehensive-School-Reform.pdf](http://www.successforall.org/wp-content/uploads/2016/02/Comprehensive-School-Reform.pdf), last accessed 15 March 2024.
- Van Driel, J. H., Beijaard, D., & Verloop, N. (2001). Professional development and reform in science education: The role of teachers' practical knowledge. *Journal of Research in Science Teaching: The Official Journal of the National Association for Research in Science Teaching*, 38(2), 137–158.
- Wallace, J. & Louden, W. (1992). Science teaching and teachers' knowledge: Prospects for reform of elementary classrooms. *Science Education*, 76, 507–521.