



Department
for Education

School improvement systems in high performing countries

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Executive summary

Introduction

- School improvement is a key priority area for the government. The aims of this research review are to provide:
 - A comprehensive review of the evidence on effective school improvement activity in five countries with high-performing school systems.
 - An assessment of the limitations of the available evidence and, where possible, its applicability to England.
- Based on the 2015 PISA results, four of the countries (Estonia, Germany, Singapore and Taiwan) are identifiable as ‘high performing and improving’. The inclusion of Finland provides an example of a high performing country that is not improving. This allowed an investigation of the reasons behind any decline, any improvement activities instigated to address this, and any evidence of effectiveness and impact.

Methodology

- Published evidence was gathered by searching online bibliographic databases, reviewing the websites of relevant organisations and professional networks, and examining the reference sections of pertinent published materials.

Key findings

How the education systems identify and support low performing schools

Education systems

- Countries vary in the extent to which their education systems are centralised. Estonia, Finland and Germany have decentralised education systems and school level education is the responsibility of local authorities (Estonia and Finland) or Federal States (Germany). The school education systems in Singapore and Taiwan exhibit larger degrees of central control. Schools in all the countries follow a centrally prescribed curriculum, although there is an increased tendency, even in traditionally highly centrally controlled countries such as Singapore and Taiwan, to loosen the central curriculum to allow teachers to tailor and innovate.

Factors associated with countries high-performing education systems

- Although a disparate array of factors is associated with the high performance of the education systems in Estonia, Finland, Germany, Singapore and Taiwan, there are some common factors between these countries. These include: high levels of equity in education outcomes/achievement (Estonia and Finland); teacher quality (Finland and Singapore);¹ support for pupils from disadvantaged populations (Finland and Taiwan); reform that promotes independent pupil learning, creativity and critical thinking (Singapore and Taiwan).

Identification of low-performing schools

- In Germany and Taiwan, low-performing schools are primarily identified through school inspections, whereas in Singapore, Estonia and Finland, they are largely identified through school self-evaluation. In Singapore and Estonia, self-evaluation is supplemented by external inspections, which in Singapore are compulsory for all schools but in Estonia are targeted at specific schools.
- Dederling and Muller (2011) note that empirical research on the effects of school inspection is scarce, not only in Germany, but also in other countries with longer traditions in the field, such as the United Kingdom and the Netherlands. In a longitudinal study, Gaertner et al. (2014) found no verifiable effect of inspection in stimulating school improvement despite the intended aims of school inspections in Germany.
- Schools identified as in need of improvement through school inspections in Germany and Taiwan are required to agree improvement plans with the local authorities, meet the requirements by a specified deadline and demonstrate successful implementation in a follow-up external evaluation. In Estonia, follow up evaluations by inspectors are not routinely conducted.
- When low-performing schools are identified through self-evaluation in Singapore, Estonia and Finland, the schools formulate, implement and evaluate school improvement activities through their school development plans. These are monitored locally in Estonia and Finland, while in Singapore the Ministry of Education works closely with schools, especially through geographic school clusters, which are headed by Cluster Superintendents. Cluster Superintendents are responsible for supervising the schools in their clusters, developing personnel according to training needs, facilitating collaboration between schools and

¹ This could be disputed in the case of Finland, where, although teachers are highly qualified and selection is competitive, evidence shows that they do feel unprepared to teach their subject (see Section 5).

ensuring that the practices of the top performing schools are shared across the cluster.

Support available to low-performing schools

- Support available to schools in need of improvement includes:
 - Assistance from school inspectors (Germany and Taiwan) and government advisors (Estonia, Germany and Singapore).
 - Deployment of teachers and school leaders from other schools to provide advice and support in low-performing schools (Finland, Germany, Singapore and Taiwan).
 - School-to-school collaboration via clusters of schools (Singapore), school visits and attendance at conferences (Taiwan) and building learning communities with schools engaged in similar projects (Taiwan).
 - Assistance from independent consultants and organisations, including school improvement consultants, university academics, management consultants and foundations (Finland, Germany and Taiwan).
 - Additional resources for schools operating under difficult circumstances (Finland, Singapore) or for teachers' continuing education (Estonia).
- In all of the countries, training and support for schools in need of improvement is largely provided to schools by central, regional and local government authorities and/or charitable organisations at no cost to the school.

School improvement processes and outcomes

Continuous Professional Development

- Both Estonia and Finland (with an historically high-performing, but not currently improving system) have recently instigated new professional development frameworks in response to concerns about variability in teaching quality and, in Finland's case, a decline in pupil outcomes. In both countries, there are indications of more central involvement in professional development but it is too early for researchers to be able to establish how effective this practice is.
- Singapore has a tightly structured, centrally-controlled professional development programme linked to different teaching tracks and which seems to be viewed positively by teachers (Yang, 2018).

- There are no centrally prescribed career ladders for teachers in either Germany or Taiwan. Professional development in Taiwan centres on specific funded programmes, particularly through the School Actualization Programme (SAP), and there is some evidence that, while having benefits, this approach adds to teacher workload (Lin H., 2014).

Pupil assessment and data systems

- Finland², alone of the countries in this study, does not use national standardised tests, while practice in Germany varies between states. High stakes testing remains the norm in Estonia, Singapore and Taiwan.
- Research in Germany found that practitioners in deprived areas felt that standardised data ignored their own particular circumstances and saw comparisons as being about control rather than supporting improvement. Thus, the authors (Demski and Racherbäumer, 2017) question the efficiency of standards-based reform, instead recommending improving data literacy in teachers and developing better organisational frameworks for data collection as tools for school improvement. However, they acknowledge that there is very little evidence regarding the degree to which data analysis leads to changed practice.

Curriculum

- Mourshed et al. (2010) propose a link between high-performing systems and greater autonomy for schools and teachers in curricula and pedagogy. Of the countries in this review, the degree of autonomy exercised at school-level varies. In particular, Singapore and Taiwan have historically exercised a tight central control on schools although this is beginning to be relaxed.
- In Estonia and Finland³, teachers develop a school curriculum based on the framework of the national curriculum with the aim of specifying the learning outcomes at class level, adding locally relevant and pupil profile-related content, and determining the learning processes and assessment principles.
- Singapore has reduced the prescribed content of its curriculum so that teachers can focus on laying a strong foundation of knowledge and skills involving inquiry-based processes but there remains significant central control.
- In Germany, teachers are required to follow a detailed, centrally prescribed curriculum but have a large degree of pedagogical freedom.

² A traditionally high-performing country but not an improving one.

³ A traditionally high-performing country but not an improving one.

- Taiwan has a tightly defined national curriculum and attempts through the SAP to foster curriculum innovation have met with only moderate success.

Teacher and principal compensation

- Mourshed et al. (2010) suggest that high-performing countries generally have an appropriate reward and remuneration system for teachers.⁴ In Estonia, teacher salaries are among the lowest in the OECD. This has been identified as an issue for recruitment and retention (OECD, 2018). The literature does not describe similar concerns with how teacher salary impacts on recruitment and retention regarding the other countries in this report.

Effects of interventions on target groups

- Even high performing school systems have groups of pupils where performance is comparatively poor – typically migrants, those from low socio-economic backgrounds and those living in rural or isolated areas. Where performance has improved for such groups in the countries in consideration, it is often difficult to point to a particular strategy being responsible given the multi-faceted approaches to school improvement that countries have taken.
- Success of interventions to improve the performance of migrant pupils has been mixed. In Germany, efforts to improve the performance of migrant pupils have been helped by reforms to the tracking system, in which children are assigned to secondary schools by ability,⁵ including the introduction of more comprehensive schools (European Commission, 2015a; Davoli and Entorf, 2018), whereas, in Finland, a curriculum approach to supporting pupils without Swedish or Finnish as a first language have been less successful (European Commission, 2018a).
- Estonian efforts to improve the performance of schools in Russian-speaking areas have largely been successful. A key change was making it obligatory to teach

⁴ Mourshed et al. (2010) report that teachers' salaries improve relative to other professions as the system moves along the school improvement journey. It would follow that high performing systems would have teacher salary levels at at least the level for similarly educated professionals.

⁵ Traditionally, at age 10, children moved into either a Gymnasium (for academic students), Realschule (for intermediary students), or Hauptschule (for the less academic). Several measures, with variation across the 16 federal Governments, were taken to relax the system including delaying the age when children are assigned to different secondary schools, combining Realschulen and Hauptschule, and introducing more comprehensive schools.

Estonian to children aged four and above in all non-Estonian speaking pre-schools and kindergartens (Khavenson and Carnoy, 2016).

- In Taiwan, efforts to improve the results of pupils in rural areas and/or from a low socio-economic background have been hampered by the lack of commitment from some teachers and, in some teachers, a lack of the necessary professional skills and knowledge to implement the initiatives successfully (Chen and Yu, 2016).

Planned changes to support school improvement

- Plans for the future include:
 - Additional funding to address teacher shortages in Estonia and Taiwan.
 - Reforms to curricula in Finland and Taiwan.
 - A focus on digital skills in Germany and Taiwan.
 - A competency framework for principals in Estonia.
 - Revised professional development for teachers in Finland.
 - A relaxation of examinations and reporting in Singapore to allow for an increased focus on learning enjoyment.

Conclusions

- There is a lack of comparative research to use as a basis for making systematic evidence-based judgements on which approaches to school improvement work best and in what circumstances.
- Regardless of whether their school improvement systems are based on school inspections or self-evaluation by schools, all the countries considered in this review place a strong emphasis on school-to-school collaboration and peer-to-peer support, although the mechanisms through which this is organised vary.
- The school improvement activities instigated by the countries in this review are, for the most part, not time-limited but intended to provide sustainable improvements. Thus, the majority of improvements relate to building the technical skills of teachers and, linked to this, providing increased autonomy for schools to adapt and deliver the curriculum to reflect the needs of the pupils in the school.
- Given that the policy strategy in England for raising pupils' attainment has included the use of inspections to hold schools to account, there may be lessons to be learned from Germany and Taiwan, which have achieved high-performing status whilst also using inspection-led systems to identify and support low-performing schools.

- Although most Federal States in Germany use an inspection-led system, they do so in different ways than in England. Specifically, they operate low-stakes systems, with inspection results not generally published and the emphasis of inspection being placed on school quality process criteria rather than outcomes. As a result, schools identified as in need of improvement are often located in socially privileged areas and/or perform well in terms of outcomes. This stands in contrast to the approach in England where the focus is on pupil outcomes and schools located within socio-economically challenging areas are disproportionately represented among the schools deemed to be failing. However, there is no systematic evidence demonstrating a link between this and Germany's high-performing status.
- There is increasing recognition internationally that inspection feedback alone does not necessarily lead to school improvement actions and that at least some degree of external follow-up is needed (Gray, 2014). The three countries considered in this review that use school inspections (Germany, Estonia and Taiwan), vary in the degree to which they participate in the subsequent improvement journey of low-performing schools. It is difficult to identify potential lessons for England due to a lack of research on the impact of different levels of involvement by school inspectors in the school improvement process.
- The school improvement systems, and the responsibilities of different stakeholders within them, are clearly delineated in each of the five countries. This is pertinent because it has recently been suggested that in England there is a need for greater coherence and alignment between different school improvement initiatives and different stakeholders within England's diverse school improvement system (Gilbert, 2017, Cruddas, 2018).
- Mourshed et al.'s (2010) contention is that high performing education systems are characterised by principals and teachers having considerable degrees of autonomy over teaching and learning. This is consistent with the expansion of academies and multi-academy trusts (MATs) in England, which is intended to drive school improvement by providing schools with greater autonomy. Interestingly, the present review indicates that teachers in different high performing countries do not necessarily regard increased autonomy as intrinsically better. This suggests research in this area might be helpful in England in order to establish appropriate levels of autonomy in the English system.
- The way in which countries in this review organise the professional development of teaching staff varies from tightly-controlled processes in Singapore to purely local arrangements in Germany. Although Dreer et al. (2017) notes that the evidence of a link between the professional development of teachers and a sustained change of practice that could lead to improved pupil outcomes is weak, nonetheless Estonia and Finland are both instigating more central control of this in

response to concerns about variability in teacher quality. The results of these changes may be of interest to England once details of their implementation and impact become available.

Section 1 Introduction

Background to the review

School improvement is a key priority area for the government. For the Department for Education (DfE), school improvement activities are those by which schools can raise standards – the changes they can make and the strategies they can use to improve pupil outcomes. These activities have formed a central part of changes to the education landscape in England over the past two decades, which include the growth of school partnerships and school-to-school support, the changing role of local authorities, the expansion of school autonomy, and changes to accountability structures. The DfE recognises that in developing policy in this area, it could be helpful to build on the evidence base on school improvement systems internationally in a way that is sensitive to the context of the education system in England.

Focus of the review

This review considers school improvement systems in five countries with high performing school systems (Estonia, Finland, Germany, Singapore, and Taiwan) which were selected for the following reasons:

- They are included in a list of 12 high-performing countries identified by the Center on International Education Benchmarking based on pupils' achievement in science, mathematics and reading in the 2015 PISA results.
- They provide a mix between geographically close countries with similar challenges to England, including ethnically diverse populations and the main language of instruction not being the home language of significant numbers of pupils (Germany, Estonia and Finland), and Asian systems (Singapore and Taiwan).
- They include countries that have a history of being studied as high performers (Finland, Germany and Singapore) as well as countries where literature is only just emerging on how they have achieved recent improvements in PISA and which therefore could provide new insights (Estonia and Taiwan).
- Based on the 2015 PISA results, four of the countries (Estonia, Germany, Singapore and Taiwan) are identifiable as 'high performing and improving'. Finland provides an example of a high performing country whose three-year trends were below OECD averages in PISA 2015. This allows an investigation of the reasons behind any decline, any improvement activities instigated to address these, and any evidence of effectiveness and impact.

- In line with the Department's priorities, the five countries of interest show equity in education, with the proportion of low achievers in reading, mathematics, and science being equal or below the OECD average.

This review summarises, synthesises and critically reviews the existing literature, policy details and relevant published statistics relating to school improvement systems in the selected countries. It also provides an assessment of the limitations of the available evidence and, where possible, its applicability to England.

The key research questions are as follows:

1. What is the structure of the education system within these countries and how do school improvement systems operate within them?
2. What policies and interventions are there that focus on improving school quality? Who delivers school improvement interventions?
3. Who funds programmes aimed at school improvement and how?
4. How are schools in need of improvement identified, and who leads on this?
5. What interventions have been found to be effective in improving school quality? Are there any differences in effectiveness by context or target?
6. What impact have these school improvement practices had?
7. What time frames do school improvement policies operate on? How do these systems aim to ensure sustainability beyond the intervention?
8. Has there been any future planning for further development of the school improvement systems within these countries?

Methodology

The evidence review was guided by a protocol that detailed the procedures to be followed including: the search terms/keywords; the locations/sources to be searched; the screens each study passes through for inclusion in the review; and the processes for recording and storing references and summarising literature. This ensured consistency and transparency in the execution of the review. The review included evidence published in English since 2010. Further details of the methodology are provided in Appendix 1.

Section 2 How the education systems identify and support low performing schools

Introduction

This section provides summaries of the education systems in studied countries and the drivers behind their success, as well as exploring the ways in which the countries identify low performance, the support available to low-performing schools and, where evidence is available, the impact this has had.

Summary

Education systems

- The countries comprise a mix between European (Germany, Estonia and Finland) and Asian education systems (Singapore and Taiwan). Estonia, Finland and Germany have decentralised education systems and school level education is the responsibility of local authorities (Estonia and Finland) or Federal States (Germany). The school education systems in Singapore and Taiwan exhibit larger degrees of central control. Schools in all the countries follow a centrally prescribed curriculum, although there is an increased tendency, even in traditionally highly centrally controlled countries such as Singapore and Taiwan, to loosen the central curriculum to allow teachers to tailor and innovate.

Factors associated with countries high-performing education systems

- Although a disparate array of factors are associated with the high performance of the education systems in Estonia, Finland, Germany, Singapore and Taiwan, there are some common factors between some of these countries. These include: high levels of equity in educational outcomes/achievement (Estonia and Finland); high teacher quality (Finland and Singapore); support for pupils from disadvantaged populations (Finland and Taiwan); reform that promotes independent pupil learning, creativity and critical thinking (Singapore and Taiwan).

Identification of low-performing schools

- In Germany and Taiwan, low-performing schools are primarily identified through school inspections, whereas in Singapore, Estonia and Finland, they are largely identified through school self-evaluation. In Singapore and Estonia self-evaluation is supplemented by external inspections, which in Singapore are compulsory for all schools but, in Estonia, are targeted at specific schools.

- Germany operates a low-stakes inspection system in which findings are generally not shared beyond the school, whereas Estonia operates a high-stakes inspection regime which is moving towards a risk-based approach.
- Studies of the German system have so far been unable to establish a link between inspections and enhanced school improvement. Dederling and Muller (2011) noted that empirical research on the effects of school inspection is scarce, not only in Germany, but also in other countries with longer traditions in the field such as the United Kingdom and the Netherlands. In a longitudinal study, Gaertner et al. (2014) found no verifiable effect of inspection in stimulating school improvement despite the intended aims of school inspections in Germany. Schools identified as in need of improvement through school inspections in Germany and Taiwan are required to agree improvement plans with the authorities, meet the requirements by a specified deadline and demonstrate successful implementation in a follow-up external evaluation. In Estonia, follow up evaluations by inspectors are not routinely conducted.
- When low-performing schools are identified through self-evaluation in Singapore, Estonia and Finland, they formulate, implement and evaluate school improvement activities through their school development plans. These are monitored locally in Estonia and Finland while in Singapore the Ministry of Education works closely with schools, especially through geographic school clusters, which are headed by Cluster Superintendents. Cluster Superintendents are responsible for supervising the schools in their clusters, developing personnel according to training needs, facilitating collaboration between schools and ensuring that the practices of the top performing schools are shared across the cluster.

Support available to schools

- Support available to schools in need of improvement includes:
 - Assistance from school inspectors (Germany and Taiwan) and government advisors (Estonia, Germany and Singapore).
 - Deployment of teachers and school leaders from other schools to provide advice and support in low-performing schools (Finland, Germany, Singapore and Taiwan).
 - School-to-school collaboration via clusters of schools (Singapore), school visits and attendance at conferences (Taiwan) and building learning communities with schools engaged in similar projects (Taiwan).

- Assistance from independent consultants and organisations, including school improvement consultants, university academics, management consultants and foundations (Finland, Germany and Taiwan).
- Additional resources for schools operating under difficult circumstances (Finland, Singapore) or for teachers' continuing education (Estonia).

In all of the countries, training and support for schools in need of improvement is largely provided to schools by central, regional and local government authorities and/or charitable organisations at no cost to the school.

Findings

Estonia

Education system

In Estonia, education is compulsory from ages seven to 17. Schools follow a national curriculum through to the ninth grade (age 16-17), at which point pupils decide whether to attend upper secondary school for three more years in order to follow an academic or vocational route. Estonia's school system is decentralised and local authorities are responsible for planning and maintaining the quality of education (Erss, 2018).

High performing status

It has been widely suggested that Estonia's high performing status is primarily due to the commitment of the Estonian school system to equity and inclusiveness (e.g. Vukovic, 2018; Butrymowicz, 2016; Centre on International Education Benchmarking n.d.(a)), which includes the use of a school allocation system that integrates pupils from different neighbourhoods so that children from economically diverse backgrounds are frequently in the same classroom and, therefore, get a very similar educational experience.⁶ Other factors highlighted as contributing to Estonia's success include:

- extensive support for pupils who have difficulties in studying or with disciplinary problems;
- encouraging deep relationships to develop between teachers and pupils by allowing teachers to stay with the same pupils in grades 1 to 3 (age 7-10) and sometimes up to grade 6 (age 13);

⁶ In addition, all pupils are entitled to a free school lunch, free textbooks, free school transport and many extracurricular activities (Vukovic, 2018).

- a relatively high level of teacher autonomy;
- Estonian teachers spending less time on administrative tasks and on ‘keeping order’ and more time on teaching and learning than those in many other countries;
- teachers having a relatively small set of aligned textbooks, curriculum materials, national sampling assessments and high-stakes exit exams, which helps to keep the system focused and on track;
- a methodical approach being applied to goals that are tightly linked to the kinds of activities and outcomes expected on international assessments (Vukovic, 2018; Hatch, 2017; Butrymowicz, 2016; Centre on International Education Benchmarking, n.d. (a)).

Identifying and supporting low-performing schools

Estonia uses a combination of national inspections and self-evaluation, although the former are not intended to identify low-performance. In Estonia, national evaluations focus on the education system and there is no separate school inspectorate. Full-scale inspections of schools are not conducted. Instead, the Ministry of Education and Research carries out individual school inspections, primarily for licensure applications or to investigate particular issues such as complaints made against an educational institution (Center for Economic Studies, 2015; Inspectorate Report, 2016; Vainikainen and Koivisto, 2018; Hatch, 2017).

In the case of targeted school inspections, inspectors identify a school’s strengths and areas in need of improvement. Failure to put in place requirements following an inspection can lead to penalty payments or even the revocation of the school’s educational licence. However, school inspectors do not routinely return to schools in order to check whether the school is fulfilling the proposals and precepts set by the inspectors (Gray, 2014; European Commission, Directorate-General for Education and Culture, 2015).

In Estonia, low-performing schools are generally expected to self-identify as part of the school self-evaluation system (Centre on International Education Benchmarking, n.d.(a)). This involves schools undertaking their own self-evaluations at least once every three years in order to ascertain their strengths and the areas in which improvement is required (Vukovic, 2018).⁷ These evaluations inform schools’ strategic development plans which have a timeframe of at least three years and are required by law (Vukovic, 2018; European Commission, Directorate-General for Education and Culture, 2015; OECD 2016). School principals are responsible for establishing the procedures for internal

⁷ There is no information available in English on how schools spend on their self-evaluations.

evaluations and for compiling and overseeing the implementation of their schools' development plans. The literature indicates that school principals generally involve not only their school management team and board of trustees but also teachers, school employees, pupils and parents (Vukovic, 2018; Santiago et al., 2016; European Commission, Directorate-General for Education and Culture, 2015).

School self-evaluations and the use of school development plans are not directly linked to other quality assurance measures. Evaluation reports are meant for internal use of schools (including school owners⁸ and boards of trustees⁹) and are not gathered or reviewed by the Estonian Ministry of Education and Research. It should be noted that both Santiago (2016) and the Center on International Education Benchmarking (n.d.(a)) raise questions about the robustness of the school self-evaluation system in Estonia on the grounds that there is insufficient external scrutiny of the process and, consequently, the degree of consistency of practices across schools is unclear.

Estonian schools are responsible for their improvement activities, under the supervision of their owners (mostly the local governments). Schools can utilise government advisers trained in providing advice on conducting internal evaluations, and the Estonian Ministry of Education is considering training advisors on school improvement activities (Gray, 2014). The government's central list of advisors for school self-evaluation includes approximately 200 advisors, all of whom are school leaders or other members of school leadership teams (Santiago, et.al. 2016). There are no specific procedures or rules for observing whether school activities improve following inspections. However, if a school's results do not sufficiently improve, the school owner (local authority, state or private entity) may intervene (Gray, 2014).

Part of the national funds available for continuing education for teachers is channelled to schools through local authorities. Schools decide on the use of these funds on the basis of their needs and development plans. Local authorities may allocate additional resources for teachers' continuing education and mandate the ways in which they may be used. Since 2013, a number of the continuing education courses have been arranged centrally, especially by universities and training providers offering teacher training, and with content reflecting national education priorities (Eurydice, 2018).

⁸ School owners in Estonia can be the municipality (local government), the state or a private entity. They are responsible for appointing the school leader, for approving the school statutes and for school closure.

⁹ Board of trustees includes the school owner; teacher representatives; representatives of parents, graduates and organisations supporting the school (and these must not be school employees); a representative of the pupil council if this exists (in upper secondary schools there must be a pupil representative).

Finland

Education System

Education is compulsory in Finland from ages seven to 16. At upper secondary level pupils have flexibility in choosing between general and vocational education and training options. The Finnish education system is decentralised and a significant level of authority and responsibility is at the local level, most commonly in municipalities or joint municipal authorities (Klein, 2017; OECD, 2013). Municipalities and schools are obliged to prepare local curricula based on the National Core Curriculum.

High performing status

Although Finland continues to perform above the OECD average for these subjects, PISA (2015) reported a downward trend in Science, Reading and Mathematics.

As Andere (2015) observes, it is widely held that one of the main reasons behind the high, equal, and hitherto consistent performance in PISA by Finnish pupils is that the country has a well-educated and highly trained teaching workforce that is selected from the best students in the country. Other factors identified as contributing to Finland's education system outperforming most countries in international testing include:

- the importance attached to education in Finland/Finnish culture;
- a pupil-centred approach for teaching;
- high levels of equity in education outcomes/achievement;
- support for children from disadvantaged populations;¹⁰
- allocation of additional funds by the Ministry of Education for immigrant pupils, low-income pupils, children in single parent families and those with parents who are unemployed or undereducated;
- a particular focus on addressing the learning needs of special needs pupils (Burg, 2018; Andere, 2015; Centre on International Benchmarking, n.d.(b)).

There is no systematic research relating to the recent dip in Finland's performance in PISA, both in terms of pupils' learning outcomes and equity of the education system. However, Pasi Sahlberg, a well-known Finnish educator, suggests that it is a result of a combination of:

- a downward trend in Finnish schoolboys' educational performance, which is related to the diminished role of reading for pleasure among boys;

¹⁰ This includes a daily hot meal, psychological counselling, and health and dental service.

- Children in general spending more time on screen-based media and less time with books and reading;
- spending cuts (due to austerity) which have led to school mergers, increased class sizes, and limited access to professional development and school improvement;
- that Finland does not shape its national education policies to be aligned with PISA in order to increase PISA scores (Helm, 2016).

Identifying and supporting low-performing schools

In Finland, school inspections were abolished in the early 1990s and national evaluations focus on the education system, not on individual schools (Center for Economic Studies, 2015). However, municipalities are required by law to evaluate schools under their supervision on an annual basis (Mahfooz and Hovde, 2010; Center for Economic Studies, 2015). The municipalities are free to determine quality assurance locally (Vainikainen and Koivisto, 2018) and thus are responsible for deciding on the areas of focus, methods and frequency of the quality assurance procedures although they may delegate decision-making on this matter to schools. In practice, there is a strong focus on self-evaluation of schools (Vainikainen and Koivisto, 2018) and schools in need of improvement are identified through these processes. As yet, there have not been any attempts to introduce accountability systems at the local level. Instead, local monitoring is mainly based on observation and self-report questionnaires with the aim of improving practices rather than negatively sanctioning schools for failing to meet pre-defined standards (Vainikainen and Koivisto, 2018).

In Finland, education providers/municipalities offer three main types of support for schools identified as in need of improvement through school self-assessment:

- The first involves education providers/municipalities facilitating partnerships between schools based on their knowledge of broader network of schools operating under their supervision. This involves education providers/school owners deploying staff to work in different institutions from their own in order to support schools in addressing challenging issues. School-to-school and peer-to-peer support has been used in the Finnish school improvement system and the professional development of teachers since the mid-1990s (Brill et al., 2018; Strauss, 2014; Smith et al., 2012). In 2015 the Finnish National Agency for Education launched a national school network scheme called Lighthouse (Majakka), which comprises six regional sub-networks and involves a bottom-up, school-led approach to development and innovation (Riina, 2019; ET2020 Working Group Schools, 2018; Vainikainen and Koivisto, 2018). Membership of the network, which was introduced to encourage peer-to-peer learning opportunities between schools, is voluntary and includes schools with varying

development needs (ET2020 Working Group Schools, 2018).¹¹ According to Riina (2019:49): “In this scheme, local schools organise and offer professional development and professional learning opportunities to each other free of charge. Various flexible professional learning models exist that are published in a good practice guide by the National Agency for Education: schools organise a training event, offer peer observation possibilities for teachers from nearby schools, offer expert help or coaching to other schools, make their own planning material available for reuse, etc. The focus is on effective use of local resources in order to respond to local needs”. The network relies on the willingness of network actors to support one another and no funding is offered to the schools involved in the network (ET2020 Working Group Schools, 2018: 367).

- Second, educational providers/school owners (municipalities) may also employ school improvement consultants to assist with school improvement. Mikko Salonen, a leading Finnish school improvement consultant, provides an indication of the processes involved in an interview published by an education website (Rabin, 2017). When he is commissioned by school proprietors to work with poorly-performing schools, he generally begins by working with a school’s administration to define the present state of the school, establish the goals for the development and assistance process, and determine what his role will be and how much money and time is available. The school’s proprietor may also be involved at this stage. Subsequently, the school’s development process is introduced to the whole school community. The aims at this point are to achieve a shared understanding of the key goals of the process and create a vision of how these goals can be achieved. Following this, the various problems that need to be addressed are defined as individual development questions that promote the key goals of the intervention through deliberation and collaboration. The school’s problems are then tackled through goal-oriented and systematic action that increases the school’s capacity to face similar challenges in the future.
- Third, the allocation of resources to different schools is decided at a municipal level and, as a result, education providers/municipalities may also provide additional resources for schools achieving lower learner outcomes. For example, in Helsinki, differences between schools are larger than in the rest of the country due to differences in the socio-economic structure of the residential areas. These differences are further exacerbated by less strict regulations regarding parents’ choice of school in Helsinki compared with most other Finnish municipalities

¹¹ As of 2018, over 250 schools were involved and, due to the perceived success of the initial network which centred on basic education, networks were launched in upper secondary education and early childhood education (ET2020 Working Group Schools, 2018).

(Bernelius, 2013; Vainikainen, 2014). To counteract these differences, Helsinki has a positive discrimination system to provide additional resources to schools working in difficult circumstances. The additional resources involve modest sums but schools can spend the money in whatever way they find most useful, such as hiring a resource teacher (a teacher without their own class to teach) or by reducing class sizes (Vainikainen and Koivisto, 2018). The Ministry of Education allocates additional funds for low-income students, for students in single parent families, for students with parents who are unemployed and immigrant students who have resided in Finland for less than four years. Municipalities are allowed to distribute these funds to schools as they see fit. This often includes allocating funds to hire additional staff to support high-need students (Center on International Benchmarking, n.d.(b)).

Germany

Education System

Education is compulsory from ages 6 to 18 in Germany (two years more than the OECD average). Germany has a decentralised education system and school-level education is the responsibility of the 16 federal states (*Länder*), each of which has their own education department, policies and administrative traditions (Dedering et al., 2015). Following the primary school stage, secondary education in the *Länder* is characterised by division into the various educational paths placing different emphasises on academic and vocational education. While the national government has put in place national standards and assessment for primary and secondary schools, the range of subjects, curricula, certificates and transitions between the school types can be differently regulated in different *Länder*.

High performing status

Following a poor showing in PISA 2000, Germany has adopted a series of reforms aimed at improving the overall achievement of pupils and enhancing the achievement of disadvantaged pupils (Davoli and Entorf, 2018) which include lengthening the school day; expanding early childhood education; providing more autonomy to schools; reforming tracking at the secondary level; and creating national standards for pupil performance (Davoli and Entorf, 2018). Germany's PISA results have steadily improved since 2003 and the country was in the top tier of performance in the 2015 PISA (Davoli, and Entorf, 2018; Centre on International Benchmarking Germany, n.d.(d)). However, Germany still faces challenges in ensuring an equitable education for all of its pupils regardless of their socio-economic status (Centre on International Benchmarking. Germany, n.d.(d)).

Identifying and supporting low-performing schools

School inspections were introduced in all 16 German states between 2004 and 2008 after the disappointing PISA results in 2000, following a trend that began much earlier in many countries (Dedering and Muller, 2011).

The 16 federal states in Germany set their own educational goals and have differing administrative traditions. Accordingly, there is no national, unified system of school inspection. However, “the general approach is the same in all states (...) in terms of using a uniform inspection process based on standardised instruments, and there is the implicit expectation that the inspection results will provide the impetus for school improvement” (Dedering, 2015:171). While schools are also generally required by the Länder to carry out their own internal evaluations using the Länder’s frameworks for school quality, the areas to be evaluated are determined by the schools themselves (Center for Economic Studies, 2015). The relationship between self-evaluation and the school inspection process is unclear in the English language literature reviewed for this study.

Because the experiences with high-stakes accountability in the US and UK were seen as serving as a ‘cautionary tale’ (due to perceived side effects such as ‘teaching to the test’, schools’ reluctance to enrol pupils unlikely to perform well in tests and the demotivation of teachers), accountability measures in Germany are deliberately ‘low-stakes’ (Thiel et al., 2017). Consequently, German schools with particularly poor inspection outcomes are not subject to negative consequences and outcomes are not published (Dedering and Muller, 2011; Demski and Racherbäumer, 2015). Sanctions, such as closing schools or replacing staff, are very rare (Dedering, 2018; Dedering and Muller, 2011; Centre on International Benchmarking, n.d.(c)).

Dedering (2018) finds that, in Germany, the emphasis of inspection is on the quality of school processes rather than pupil outcomes. Consequently, the link between evaluation results and the social context of schools is comparatively weak and the failing schools category often includes those in socially privileged areas and/or with pupils that perform well in tests. This contrasts with the Anglo-American approach where the focus is on pupil outcomes and schools that are within socio-economically challenging areas are disproportionately often among the failing schools (Dedering, 2018).

Schools that are identified as low performing/failing¹² by inspections are offered assistance in developing improvement plans by inspectorate staff as well as other state

¹² Only four states identify schools as failing through school inspections; other states do not use this category (Dedering, 2018: 143).

ministry experts. They are required to agree their improvement goals with the responsible school supervisory authority and participate in a follow-up evaluation after a specified period of time. If the follow-up evaluation has a positive outcome, the schools are then declared to be so-called 'turnaround schools'.¹³ Schools in especially urgent need of improvement in any given state are earmarked for shorter inspection cycles.

Failing schools are able to take advantage of governmental and non-governmental external consultants and support programs in all states and many schools make use of this external consultation. Governmental support is organised in the Länder at central, regional and local level and is mainly provided by state institutes for quality development (Landesinstitute für Qualitätsentwicklung) or departments of these state institutes. The institutes and their departments offer access to a variety of support measures using teachers who are working in their spare time or who have been temporarily delegated as consultants (Dedering et al., 2015). Non-governmental support is offered by foundations such as the Bertelsmann Foundation and the Robert Bosch Stiftung, which are used to support school improvement across a number of German states. For example, the Robert Bosch Stiftung has developed an inter-state initiative designed to improve support for struggling schools in high need areas. This comprises a community of practice involving representatives from school administrations, school supervisory bodies, state institutions, and pilot projects across seven German federal states. Within the community of practice, participants gain insights into the approaches of other states and learn from each other. Dedering et al. (2015) note that non-governmental support is also offered by management consultants and freelance consultants, but do not indicate who commissions these consultants.

Dedering (2018:147) provides an overview of the services that are offered by the regional school authority in the German federal state of Lower Saxony. Schools that have been identified as having serious deficiencies are given priority in making use of these services, which include advisory services, further training courses and qualifications. Schools are provided with support in three areas:

- School quality - support in this area is directed at school principals, school committees, project groups and steering groups. The purpose is to assist schools in setting up organisational structures that will support the change processes required to achieve their improvement goals.
- General teaching quality - schools are provided with support in all matters relating to the development and evaluation of general teaching quality. There is a particular emphasis on team development within the teaching staff of schools.

¹³ There are no official statements available concerning what happens if the outcome is negative

- Subject specific teaching quality - schools are also given support in the development and evaluation of subject-specific teaching quality. According to Dederling (2018:147), “the services offered are mainly directed at symposia (among other things, in German, Math and Science) and include the development and continuation of the school’s own work schedules, providing advice at symposia, working on examples of skills-oriented lessons (learning methods to activate pupils) and differentiation in subject lessons (individualized forms of learning, setting exercises, etc.)”.

One study found the evidence of the effectiveness of tools provided to support self-evaluation in German schools to be rather weak. Hartong (2012) conducted a case study centred on the work in Lower Saxony of the Bertelsmann Foundation which developed an instrument to support self-evaluation in schools (SEIS) that also allows schools to establish networks in which they share and compare their results. Results are not published outside the network. The Foundation supports schools in finding partners for action planning and collaborative working. Based on case study interviews, Hartong (2012) argues that, because of the contractual arrangements with the Foundation which include commitments on the use of particular tools, schools lose a degree of professional autonomy. She also found evidence of the impact of using the SEIS instruments “rather vague” when it came to improving teaching practice and that, in many schools, practice differed from those agreed-upon changes during the self-evaluation process.

The relatively recent introduction of inspections in Germany, plus the variation in approaches amongst the states, has enabled evaluation of the impact of the differing systems and so more information on impact is available for Germany than elsewhere. The following paragraphs look at approaches to inspections in different states, how these are changing, and the impact of changes where evidence is available.

The state of Berlin improved schools’ engagement with inspection results through requiring schools to produce an action plan. With the schools themselves not subject to sanctions or penalties in Germany, the inspectorate and the Institute for School Quality in Berlin noted that few schools took action as the result of inspection; as a consequence, schools were required to produce an action plan within six months of inspection with the inspectorate providing consultancy where needed. The reforms had an impact; the Berlin inspectorate’s report for 2011/12 noted ‘the increased willingness of the schools, school supervision bodies and district school authorities to work with inspection results.’

Selders and Bohm-Kasper (2013) and Gaertner et al. (2014) found no verifiable effect of inspection in stimulating school improvement, despite the intended aims of school inspections in Germany. In a longitudinal study during the phasing in of school inspections in Berlin and Brandenburg, covering inspected and uninspected schools, Gaertner et al. (2014) found that principals’ and teachers’ perceptions of school quality were highly stable, irrespective of the introduction of school inspections. Over the period

of the study, most schools made efforts to improve the quality of their school including through increased parental involvement and greater use of self-evaluation and this bore no measurable relation to whether or not a school was inspected. The authors speculate that this may be because, within the period investigated, other reforms were implemented, such as increased autonomy for schools, the establishment of resources for self-evaluation, and the introduction of centralised pupil achievement tests and school-leaving examinations. Gaertner et al. (2014: 504) conclude that “inspections do not derive their legitimacy directly from their contribution to school improvement, but from their contribution to accountability”. There are indications that the trend towards increased inspections in Germany may be reversing, with three states (Hesse, Schleswig-Holstein and Thuringia) abolishing inspections altogether (Dedering, 2018). Dedering (2015) notes in relation Schleswig-Holstein, the first of the states to abolish inspections, that they have been replaced by “other instruments such as performance tests” (Dedering 2015: 175).

Dedering (2018) notes that some German federal states whose school inspection procedures originally identified failing schools have now distanced themselves from this procedure. For example, Lower Saxony introduced a new, simplified inspection framework which focuses on teaching and learning and in which there is no category of ‘failing schools’ as the inspection concentrates on processes rather than outcomes (inspectors do not have access to the schools test results). Reports are not published, with the revised approach intending to strengthen the relationship between inspection and school support and improvement (Gray, 2014). We have not found any recent anglophone studies to indicate whether this change has met its aims.

Singapore

Education System

Education in Singapore is compulsory from ages 6 to 15. Pupils are admitted to one of four pathways in secondary school, which are designed to cater to different strengths and interests. There are ‘bridging programmes’ that allow pupils to transfer across parallel courses of studies (Brill et al., 2018; National Centre on International Benchmarking, n.d.(d)). The Singaporean school education system is centrally controlled with a well-developed national curriculum.

High performing status

According to the academic literature, the key factors behind Singapore’s success in the global educational rankings are teacher quality, school leadership, system characteristics (such as high academic standards and expectations) and educational reform that promotes independent pupil learning, creativity and higher order thinking (Deng and Gopinathan, 2016). Chua (2014) argues that, while strong central decision-making has

been credited for Singapore's high performance on international tests, concerns were raised about the degree of responsiveness and innovation that such a centralised system could support. As a result, the Ministry of Education started to give bounded autonomy to schools to make local decisions, although this has largely been confined to the co-curriculum area (Dimmock and Tan, 2016).

Identifying and supporting low-performing schools

In Singapore, the school self-evaluation and improvement model is, as Chan et al. (2016: 3) note, based on the "belief that continual and sustainable school improvement is most effective when it is initiated and owned by schools themselves. This decentralised but systematic approach to school improvement is designed to allow the Ministry of Education to use a light touch in monitoring schools and to provide assistance to schools when necessary".

Schools use the School Excellence Model (SEM) to guide continual school improvement via their annual cycles of self-evaluation, planning and implementation and input from external assessors during six-yearly external validation exercises by Ministry of Education teams. These teams are designed to feed into and support the schools' own improvement processes by providing support and counselling from university academics and successful school leaders. Within schools, heads of departments typically lead strategic planning and curriculum improvements at the departmental level for school improvement planning (under the School Excellence Model), and are responsible for keeping each department on track against school goals.

The school cluster system plays a key role in Singapore's school improvement system. Singapore is divided into four zones (North, South, East and West), each led by a Zonal Director, who is responsible for school improvement within that zone. Each of the zones is split into around seven school clusters, which are headed by Cluster Superintendents. Cluster Superintendents are school principals who are assigned to the role by the Ministry of Education and who may be reassigned to a school after a period of time in the role. The Ministry of Education does not regard the Cluster Superintendent role to be higher in the role hierarchy than the role of school principal.

School clusters comprise of 12 to 14 schools, usually a mix of primary schools, secondary schools and junior colleges.¹⁴ Cluster Superintendents work closely with the schools in their clusters. They regularly visit the schools and meet monthly with the principals to discuss school improvement planning, the allocation of resources and inter-

¹⁴ Junior Colleges offer two-year pre-university courses that lead to either the Singapore-Cambridge GCE Advanced Level or the International Baccalaureate Diploma.

school school collaboration.¹⁵ This arrangement serves a key role in Singapore's delegation of responsibilities to the school level. The Cluster Superintendents distribute government resources across schools in their clusters, contribute to strategic planning and support Ministry of Education policies and priorities at the school level.

Cluster Superintendents moderate teachers' and school leaders' performance management grades across their clusters before these are submitted to the Ministry of Education. Drawing on their knowledge of the potential of teacher leaders in the clusters, they can transfer teacher leaders between schools within their cluster and can suggest that principals release their teacher leaders for other assignments and professional development. This may involve well-regarded teachers and school leaders being assigned to help schools and teachers who are struggling. These processes operate alongside and contribute to a centralised personnel posting policy whereby principals work within six-year cycles (two SEM cycles), at the end of which they posted to a different school, which may be in a different school sector (e.g. a principal from a school in the elementary sector may be assigned to a secondary school (Centre for International Education Benchmarking, 2017; Chan et al., 2016; National Centre on International Benchmarking, n.d.(d)).¹⁶

The school cluster system serves as a key platform for professional development and facilitates networking, sharing and collaboration among the member schools, with a particular emphasis on sharing the practices of the top performing schools across the cluster. The Cluster Superintendents develop, guide and supervise the principals and school leadership teams in their cluster. They also develop teachers in their clusters according to training needs and identify teachers with potential for career development.

In addition to allocating financial resources to school clusters, the Ministry of Education provides schools with a set grant (called an Opportunity Fund) to use flexibly for low-income pupils and pupils from ethnic minority groups. Schools use these funds to provide enrichment activities, buy in additional help, or to purchase books or computers, as required (Singaporean Ministry of Education, 2018; Centre for International Education Benchmarking, n.d.(d)). According to the Singaporean Ministry of Education (2018: 41), "(t)he grants are disbursed to the schools based on enrolment to be used over three years, and adjustments are made yearly to take into account fluctuation in enrolment".¹⁷

¹⁵ The Ministry of Education also undertakes school visits and consultations.

¹⁶ According to the Centre for International Education Benchmarking (2017), it is difficult for teachers to progress up the career ladder unless they have served in schools containing high proportions of disadvantaged pupils.

¹⁷ The Singaporean Ministry of Education (2018: 11) report that: "Opportunity Fund grants for each three-year cycle are disbursed in two tranches. For the grant from 2016 – 2018, the first tranche of \$51.9 million was disbursed in January 2016 to all institutions based on 70% of the three-year cycle of the allocation framework. An additional \$0.8 million was disbursed during the financial year based on enrolment changes in schools and institutions; and balance 30% of Opportunity Fund Grants to eligible schools.

The Ministry of Education also provides subsidies (called Financial Assistance Schemes) directly to students from low-income families for travel to and from school, school meals and educational activities (Centre on International Benchmarking, n.d.(d)).

Taiwan

Education System

In Taiwan, compulsory education is from ages 6 to 18. There are separate academic and vocational upper secondary schools for pupils aged 16 to 18. The Ministry of Education sets national curriculum guidelines in key subject domains, known as Learning Areas, for primary and lower secondary schools. Traditionally, the education system in Taiwan has been centrally controlled, but there is a trend towards decentralising control of the system.

High performing status

The Taiwanese education system has been routinely criticised for placing too much emphasis on examinations and relying heavily on rote memorisation, rather than the creative application of knowledge (Shin, et al. 2018). Policymakers have attempted to address this perceived shortcoming through a series of on-going educational reforms which aim to develop the ability of teachers to foster the critical thinking and literacy skills necessary in a fast-changing global economy (Shin et al., 2018). In addition, reforms in 2014:

- extended compulsory education from 9 to 12 years;
- introduced 'exam-free' pathways to upper-secondary school;
- made school curricula more flexible and pupil-centred with schools now responsible for developing their own curricula based on a new national education framework;
- and increased financial assistance from the Ministry of Education for disadvantaged pupils (e.g. Shin, 2018; Magaziner, 2016; Lin et al., 2014; Centre on International Education Benchmarking, n.d.(e)).

Identifying and supporting low-performing schools

In Taiwan, responsibility for inspections varies according to school phase. Local government is responsible for school inspection at the primary and lower secondary levels. Schools that are rated as 'in observation' in any aspect of the assessments are required to formulate plans to improve themselves with the support of school inspectors from the local Bureau of Education (Rothman, 2018). If a school does not improve, there are additional follow-up assessments focused on areas of weakness.

Taiwan's Ministry of Education inspects upper secondary schools and intervenes with those rated as low performing. The low-performing designation is based on the Ministry's inspectors' evaluation of school management and school leadership practices rather than pupil test scores (Rothman, 2018; Centre on International Education: Taiwan, n.d.(e))¹⁸. Low performing schools are provided with an on-site counselling group, comprising of university professors and experienced principals, which coaches the leaders of low-performing schools for one year. A follow-up assessment is conducted the following year to make sure performance has improved (Centre on International Education Benchmarking, n.d.(e)).

School improvement processes at upper secondary level predominantly operate through the School Actualization Program (SAP), which is a broader policy, designed to improve the quality of senior high schools in Taiwan. The SAP policy program receives applications from schools for funding of school projects which are reviewed annually by a Ministry of Education appointed committee. Schools that are successful in securing funding for their project are required to attend a school convention in May, where the concepts and administrative procedure of SAP are explained. Consultants assigned by the Ministry of Education visit schools, diagnose problems and provide suggestions for school improvement. Visits take place once per semester.

Opinions and reports from the consultations usually have an influence on the school project reviews. The consultants are teams of one principal from a senior high school and one university professor for each SAP school. These are drawn from a group of experts appointed by the Ministry (known as the hybrid group), the membership of which has expanded and changed over time. We have been unable to find information on the process for appointing these experts in the literature. In the February following the first consultation, SAP schools have to report how they have implemented the consultants' recommendations ahead of an audit by the consultants. The second consultation is held during March or April. After that, a review committee convened from the group of experts will review the results of that year's projects in April. Opinions and reports from the consultations usually have an influence on the school project reviews (Lin, 2014; Lin, Y-J, 2016).

Table 1: The annual SAP schedule

¹⁸ "This division in responsibility is in response to the relatively new policy of extending basic education through upper secondary. The government is focused on helping ensure that all pupils have access to high-quality upper secondary education.

April	May	October- November	February	March - April	April
School project review	School convention	First consultation	School report (audit)	Second consultation	School project review (audit)

Source: (Lin, 2014: 6)

In 2015, the MoE added a regulation to SAP that enables it to select individual schools and provide them with funds to implement specific projects even though they do not meet the criteria for SAP funding via this application process (Lin, Y-J, 2016).

In addition to cooperating with external consultants/experts, schools are also expected to build their internal capacity, to evaluate the effects of implementation and to action the outcomes (Lin, Y-J, 2016; Lin, Y-L, 2014). They are also expected to engage in a two-stage process of school-to-school activities. In the first stage, schools attend the 'conference for interscholastic interchange' or visit other schools successful in executing SAP projects. In stage two, schools further build collaborative learning communities composed of schools whose project topics are similar. The intention is that school representatives from the different schools learn and grow with each other. Beyond these stages, schools' collaborative work is broadened to include exchanges of learning with Taiwanese or foreign senior high schools and universities (Lin, Y-J, 2016). Schools are responsible for submitting mid- and long-term plans to local governments for development of school-level budgets (Centre for International Education Benchmarking, n.d.(e)).

The SAP aims to support school improvement through developing the capability of teachers and school leaders. Three principal approaches are used: self-evaluation, external experts' support and inter-school activities as described above. There is limited evidence of impact of the SAP on school improvement. In interviews conducted by the hybrid group of experts directing the programme in 2010, many schools recognised the benefits of taking part in the SAP (described in Lin H., 2014). Schools were able to implement curriculum experiments inside the school, for example, problem-based curricula. In addition, experimental pedagogic practice was found to be spreading in and between schools (Lin H., 2014). However, Lin Y-J (2016) found that schools working in collaborative networks often focused on problems around the implementation of SAP rather than on working together to improve learning. Moreover, implementation causes a heavy burden on teachers, including in providing information ahead of expert visits (Lin Y-J., 2016; Lin H., 2014).

Section 3 School improvement processes and outcomes

Introduction

This section explores the school improvement activities in high-performing countries. The activities are characterised under aspects of teaching and learning identified by Mourshed et al. (2010) as common in a sample of countries with improving school systems.

Mourshed et al.'s (2010) research, which was published by McKinsey & Company, sought to understand which elements of school improvement were specific to the individual system and which were of broader or universal relevance. The report identified a group of six interventions central to teaching and learning that the researchers found occurred with equal frequency across all performance improvement journeys, regardless of where a country's systems sat within that journey (characterised as from 'poor' to 'excellent'):

- Technical skill building (continuous professional development): strengthening professional development for new and tenured teachers and principals.
- Pupil assessment: assessing pupils at the regional or national level for various grades and subjects.
- Data systems: gathering, analysing, and sharing data on system performance (schools, pupils, educators, geographic areas), and using data as a tool to direct the allocation of system support.
- Revised standards and curriculum: defining what pupils should know, understand, and be able to do, and creating the accompanying teaching content.
- Teacher and principal compensation: introducing a reward schemes for high performance, and structuring teacher and principal compensation in accordance with the role they play.
- Policy documents and education laws: facilitating the improvement journey by articulating the aspirations, objectives, and priorities of the reform program.

While only Singapore, of the countries in focus for this report, featured in Mourshed et al. (2010), it would be anticipated that high-performing countries would reflect the end

destinations of the described journeys; consequently, we have looked at the outcomes of school improvement approaches under the above headings, with the exception of policies which are covered in Section 2 of this report.

Summary

Continuous Professional Development

- In Singapore, there are clear, centrally-controlled professional development opportunities linked to different teaching tracks.
- In both Estonia and Finland (an historically high-performing, but not currently improving system), more central control of teachers' professional development is being instigated in response to concerns about variability in teaching quality.
- There are no centrally prescribed career ladders for teachers in either Germany or Taiwan.
- Dreer et al. (2017) and Courtney (2018) both question the link between school improvement and the professional development of teachers, noting the weakness of evidence that it leads to sustained changes in practice and the high degree of variability in approaches among high performing countries. Nonetheless, teacher development is seen as a strength of the Singapore system and as a strand of school improvement in Estonia and Finland.
- The school improvement activities instigated by the countries in this review are not time-limited but intended to provide sustainable improvements. Thus, the majority of improvements relate to building the technical skills of teachers and, linked to this, providing increased autonomy for schools to adapt and deliver the curriculum to reflect the needs of the pupils in the school. This has led to new competency-based development frameworks for teachers in Estonia and Finland; a modular programme for mathematics and science teachers in Germany; the creation of the Academy of Singapore Teachers; and a programme just beginning in Taiwan that encourages experienced teachers to develop school learning communities.

Pupil assessment and data systems

- Finland alone of the countries in this study (and with the one system not currently improving) does not use national standardised tests, while practice in Germany varies between states. High stakes testing remains the norm in Estonia, Singapore and Taiwan.
- Research in Germany found that practitioners in deprived areas felt that standardised data ignored their own particular circumstances and saw

comparisons as being about control rather than supporting improvement. Demski and Racherbäumer (2017) question the efficiency of standards-based reform, instead recommending improving data literacy in teachers and improving the organisational frameworks for data collection as tools for school improvement. However, they acknowledge that there is very little evidence regarding the degree to which data analysis leads to changed practice.

Curriculum

- Mourshed et al. (2010) propose a link between high-performing systems and greater autonomy for schools and teachers in curricula and pedagogy. OECD (2011) concurs, arguing that PISA results suggest that, when autonomy and accountability are intelligently combined, they tend to be associated with better pupil performance. Of the countries in this review, the degree of autonomy exercised at school-level varies. In particular, Singapore and Taiwan have historically exercised a tight central control on schools, although this is beginning to be relaxed.
- In Estonia and Finland (which, although still performing ahead of OECD averages in Science, Mathematics and Reading, has experienced a downturn in PISA results), teachers develop a school curriculum based on the framework of the national curriculum, with the aim of specifying the learning outcomes at class level, adding locally relevant and profile-related content, and determining the learning processes and assessment principles.
- Singapore has reduced the number of outcomes in its curriculum so that teachers can focus on laying a strong foundation of knowledge and skills involving inquiry-based processes but there remains significant central control.
- In Germany, teachers are required to follow a detailed centrally prescribed curriculum but have a large degree of pedagogical freedom.
- Taiwan has a tightly defined national curriculum and attempts through the School Actualization Program to foster curriculum innovation have met with only moderate success.

Teacher and principal compensation

- Mourshed et al. (2010) suggest that high-performing countries generally have an appropriate reward and remuneration system for teachers. In Estonia, despite its high-performing status, teacher salaries remain among the lowest across OECD countries and this has been identified as an issue for recruitment and retention (OECD 2016a). The literature does not describe similar concerns with how teacher salary impacts on recruitment and retention regarding the other countries in this

report where teacher pay is more in line with averages for similarly educated adults.

Findings

Continuous Professional Development

This section looks at the initial training and continuing professional development of teachers which Mourshed et al. (2010) refer to as ‘technical skill building’. Their findings suggest that high-performing countries will have strong professional development systems for teachers and school leaders, although approaches vary considerably among the countries in this study. Dreer et al. (2017) note that research on the sustained impact of professional development is weak, with most studies evaluating the acquisition of knowledge, skills and motivation through participants’ perceptions, rather than how these transfer into practice. Courtney (2018) argues that, in five education system case studies (Australia, Canada, Estonia, Finland and Singapore), there was no positive association between having a high-performing education system (according to PISA) and creating and following a career-progression structure for teachers or leaders.

Estonia

Teacher training in Estonia is a five-year masters programme; to increase recruitment, new accelerated programs have been instituted that allow graduates with a degree in another subject area to undergo intensive training and earn a teaching certification in two months (Center on International Education Benchmarking, n.d(a)). No evaluation of this initiative has been found in the Anglophone literature.

The OECD (2016a) states that, despite its high-performing status, “the most critical problems of the Estonian education system are related to teachers”. This relates in part to the low social status of teaching in Estonia: only 14% of Estonian respondents to the OECD’s Teaching and Learning International Survey (TALIS) in 2013 agreed that the teaching profession is valued in society, compared to an OECD average of 31%.

Kitsing (2011) noted that small rural schools in Estonia had a more supportive social environment for children, but less professional teaching staff and poorer pupil academic results than urban schools. To counteract these issues, new professional standards for teachers were adopted in 2013 to assess future teachers’ readiness to enter the profession and provide a competency-based framework for continuing professional development (Lees, 2016). Courtney (2018) cautions that it was the former system (in which teachers needed to attend 160 hours on professional-development courses, carry out a self-evaluation and undergo both an internal and external evaluation) that produced the education system that has succeeded so well in PISA assessments, although Santiago et al. (2016) described it as overly complex and resource intensive. Courtney

(2018) sees the revised model, “when it realises its claims to be entirely competency or standards based”, as being closer to those used by a number of other countries (e.g. Australia, Singapore and Canada (Ontario)).

Teachers in Estonia are responsible for selecting appropriate professional-development activities from a range of providers, guided by school leaders and in line with a professional development plan that takes account of school objectives (Santiago et al. 2016). However, professional development for teachers and school leaders changed in 2014 from being entirely locally arranged to having a degree of centralised involvement through funding to institutions and universities tasked with collecting, developing and disseminating knowledge about teaching and learning (Courtney, 2018; Eurydice, 2018). This move is linked to The Estonian Lifelong Learning Strategy 2020 (see section 7) (Eurydice, 2018). Santiago et al. (2016) see the lack of a distinct professional status for Estonian school leaders as problematic for the sustainability of Estonia’s high-performing status. Targeted programmes now exist for aspiring, new and experienced leaders (Santiago et al., 2016). No information on outcomes and any impact of these measures was found in the Anglophone literature.

Finland

Historically, the quality of its teachers was seen as the main reason for Finland’s consistently high performance as measured by PISA (Andere, 2015), although it must be noted that Finland is not an improving country. Because the Finnish system places so much emphasis on school and teacher autonomy, there were no clearly defined career ladders. However, professional development in Finland is currently in a state of flux (Courtney, 2018). The 2013 TALIS survey (OECD) found a much higher proportion of Finnish teachers than the OECD average feeling unprepared to teach the content of their subject (28% compared with an average of 7%) and that fewer than the average participated in professional development or engaged in professional networks. In 2016, the Ministry of Education and Culture appointed a Teacher Education Forum to advise on reforms to the core education, induction and in-service training of teachers (Kumpulainen, 2017). Following its report, the Ministry committed in 2017 to allocate EUR 60 million to improve teachers’ competence over three years through a systematic and coherent framework for development to respond to challenges including deteriorating learning outcomes (Finnish Ministry of Education and Culture, 2017). No evaluation has yet been made available concerning their enactment (Courtney, 2018).

Germany

A nationwide programme which aimed for a sustainable improvement of the professional development of mathematics and science teachers was introduced in Germany - the SINUS programme (Enhancing the Efficiency of Teaching in Science and Mathematics). This was a modular programme that allowed schools to select their own modules and

which could subsequently be enhanced with additional modules. SINUS helped teachers, working in teams within their own schools and across networks, to identify strengths and weaknesses in their own teaching as well as providing ideas for developing classroom approaches. An evaluation of this programme showed that pupils attending SINUS schools performed significantly better in science and mathematics than those in non-SINUS schools, particularly in lower secondary and in comprehensive schools rather than gymnasiums¹⁹ so helping narrow the gap between high and low socio-economic groups (Salzer and Prenzel, 2014). Decentralised versions of the programme continue to run in some states.

Successful transfer of learning to the classroom is predicted only by individual variables and depended primarily on the extent to which teachers were initially prepared to participate in training according to a study focused on a teacher development programme in Germany with the objective of empowering teachers for school improvement (Dreer et al. 2017). For the researchers, this emphasised the necessity of preparing teachers adequately for professional development and for ensuring that teachers with a low motivation for transferring their learning into practice are not selected for training.

Singapore

Education policies from 1997 onwards have been intended to provide Singaporean pupils “with knowledge and skills required for a globalised economy and workforce as well as better prepare them for the challenges of the 21st century” (Chew 2016, p. 165). Central to these changes was workforce reform with stringent criteria introduced to select applicants for Singapore’s sole teacher training institute (the National Institute of Education, or NIE).

Chew (2016) sees the creation of the Academy of Singapore Teachers in 2010 as key to the provision of professional-development programmes and activities. Its aim is ‘to build a teacher-led culture of professional excellence for the teaching fraternity’, in which aim Chew (2016) sees it as largely succeeding. Teachers participate in subject groups led by a core team of excellent school teachers or by specialists from the Ministry of Education and NIE. The role of these leaders is to enhance teachers’ curriculum knowledge, pedagogical skills and assessment literacy.

Singapore has a tightly prescribed view of professional development linked to track (teaching, leadership, specialist teacher) and level (Yang, 2018; Courtney, 2018; Chew, 2016). The Teacher Leader Programme (TLP) is a series of three programmes that develops leaders among teachers on teaching tracks designated as Senior Teachers,

¹⁹ Gymnasiums are schools that prepare pupils for higher academic educations and are similar to grammar schools.

Lead Teachers and Master Teachers. The programme is aligned with the Teacher Growth Model (TGM), which aims to nurture teachers as ethical educators, competent professionals, collaborative learners, transformational leaders and community builders (National Institute of Education). Yang (2018) views this approach as positive:

“Singapore’s clearly-defined and articulated career tracks have led to the development and retention of teaching talent based on individual interests and abilities and is an integral part of the human capital system in our country’s high-performing education system. Leadership is not only distributed, but teachers are allowed to assume important roles in enhancing the capacity of their fellow teachers in various ways in each track.”

Nevertheless, Wise (2016) notes that not all Singapore’s PISA success can be attributed to these reforms: “60% of high school, and 80% of primary school age pupils receive private tuition” (unpaged).

Taiwan

Oversupply of teachers in Taiwan has led the Ministry of Education (MoE) to think critically about how to limit the profession to only the most qualified candidates. Measures included restricting those institutions offering teacher training to only the highest quality providers following evaluations.

There is no formal teacher evaluation system in Taiwan or formal career ladder. Teachers are obliged by law to engage in teaching-related research and professional development, but there is no nationally-defined minimum number of hours for teachers so this varies by local government bureaus (Centre on International Education Benchmarking, n.d.(e)). The MoE is implementing a new program (operational at end 2018) to allow teachers with at least three years of teaching experience to volunteer to take responsibility for developing school learning communities. The anglophone literature contains no evaluation of the impact of teacher development nationally or locally in Taiwan.

Pupil assessment and data systems

Pupil assessments and data systems are difficult to separate in the literature as the results from the former feeds heavily into the latter. Mourshed et al. (2010) comment that data plays a powerful role in improving systems as it enables system leaders to identify whether pupil outcomes are improving or not and thereby allocate attention and resources to the areas of highest need and, secondly, it holds educators across the system accountable for raising pupil outcomes. The educational reform agenda in many countries reflects a growing emphasis on school autonomy alongside schools’ accountability for pupil outcomes. OECD (2011) argues that PISA results suggest that,

when autonomy and accountability are intelligently combined, they tend to be associated with better pupil performance.

In all four high-performing and improving systems in this review, test outcomes are used to understand performance at a school level; only in Finland, where the most recent PISA scores show a deterioration in performance, is testing used only to understand system-level performance. In Germany, national comparative testing and state-wide exams have replaced the tradition of teachers collectively developing their own examinations (Demski and Racherbäumer, 2015; Errs, 2018). In Estonia, standardised tests exist at the end of each school stage, although only the exams in grades 9 and 12 are so-called high-stakes tests. In the lower grades, the purpose of tests is purely diagnostic and they are not graded (Ministry of Education and Research, 2014). National examinations are taken at the end of both the primary and the secondary phase in Singapore, and in the final year of the lower secondary phase in Taiwan. There is only one standardised test in Finland which is used to support university entrance, but sample-based diagnostic tests are carried out by the national authorities.

Erss (2015) argues that the emphasis of Estonian education policy on local, school-based decision-making regarding the curriculum and school management, combined with centralised exams used to create ranking lists of schools, puts considerable pressure on teachers. Rankings strongly influence pupils' school choice and public opinion of school quality, putting pressure on teachers to be accountable for the performance of their pupils. German teachers in Erss' research (2015), on the other hand, tended not to view themselves as directly accountable for pupil achievement because pupils have their own responsibilities. German teachers who had also taught in Estonia concluded that Estonian teachers were under more pressure to be personally answerable for pupil achievement, particularly in the case of poor results. The Finnish teachers in the research emphasised the responsibilities of both parts of the equation, teachers and pupils, taking a similar view to those teaching in Germany, while Estonian teachers regarded the final exam as the ultimate goal and proof of the effectiveness of each teacher's work.

Mourshed et al. (2010) argue that, as system performance rises, accountability also expands, moving from centre-led standardised pupil assessments to also include school and teacher self-evaluation. In line with this, Estonia instigated compulsory self-evaluation in 2006, although Kukemelk et al. (2011) found that, three years after its implementation, this had still to bed in. Many schools were still operating the previous managerial system. While teachers were generally less involved than intended in planning and identifying their own developmental needs, the research did find that, in the view of teachers, the majority of schools had: improved their developmental plan; were providing in-service training for all staff on planning; and were comparing pupil test

results with the national average. In addition, a fairly high proportion of schools were collaborating with other schools to support pupil development (Kukemelk et al., 2011).

In Germany, the effective use of externally as well as internally generated data, is considered to be a key competence of successful principals in a rather low-stakes test-regime (known in Germany as data-wise leadership) (Demski and Racherbäumer, 2015). Findings from research in two states show that principals made use of internal data, including pupil feedback and observations, but that pupil assessment, state-wide comparative tests, and school inspections proved to be of relatively little use for the principals' professional practice (Demski and Racherbäumer, 2015). This seems to be because teachers and principals experienced difficulties in 'recontextualising' standardised feedback instruments in a way that made sense for their own schools. However, the researchers found that generating and using data can be particularly helpful for schools in challenging circumstances for analysing their particular context and for establishing a culture of evaluation in order to develop and try out new strategies. Subsequent research, combining three different studies, by the same authors suggested that data use might be lower in schools in challenging circumstances despite these advantages (Demski and Racherbäumer, 2017). Moreover, practitioners in deprived areas who felt that standardised data ignored their own particular circumstances were likely to become 'negative' and 'defiant', seeing comparisons as being about control rather than supporting improvement. Thus, the authors question the efficiency of standards-based reform, instead recommending improving data literacy in initial teacher training and professional development and improving organisational frameworks for data collection as tools for school improvement (Demski and Racherbäumer, 2015; Demski and Racherbäumer, 2017). However, they acknowledge that there is very little evidence regarding the degree to which data analysis leads to changed practice.

Ramstek et al., (2015) explored how school leaders used feedback from mandatory state-wide proficiency tests intended to quality assure instruction in the low-stakes context of Germany where there are no rigorous consequences for schools with below average results. The researchers found that performance testing is a delicate issue in schools, with policy-makers wishing to avoid negative side effects so that supervisory authorities lack the legislative foundation to use performance data as a measure of control and support. While principals understood the evaluative power of mandatory testing, only a minority were taking action to implement a systematic data-based evaluation process in their school. Ramstek et al. (2015) argue that developing expertise in data analytics, alongside distributed leadership and shared responsibilities, is necessary for data-based school improvement but, although on the reform agenda, this was not widespread in Germany.

Mourshed et al.'s (2010) study of school improvement systems suggests that high performing education systems reward principals and teachers with greater autonomy

over teaching and learning. However, Errs (2015) found that teachers in different countries prefer different amounts of autonomy, with Estonian and German teachers preferring more precise guidelines and rules than Finnish teachers. This was particularly the case for younger, less experienced teachers who found reassurance in boundaries and common rules.

Teachers in Estonia, Germany and Finland have considerable pedagogical autonomy (Erss, 2015; Center on International Education Benchmarking, 2018a). Schools in Estonia have a high degree of autonomy within a system that is less standardised than many Anglo-American systems (Hargreaves and Harris, 2015). As well as pedagogical autonomy, schools in Estonia and Finland have organisational autonomy regarding relatively independent budget allocation and staff selection (Errs, 2018). Teachers in Finland have control over their classrooms, lesson plans, and hours outside of teaching. Principals do have decision-making responsibilities for the school budget, but they do not have a great deal of authority over the teachers – there is no tradition of principals observing teachers in order to evaluate them (Center on International Education Benchmarking, 2018b).

Mourshed et al., (2010) give Singapore as an example of how a system shifts in emphasis as it goes through the various stages of the entire improvement journey, from poor to great, in the way that it has decreased central guidance on teaching and learning as its system performance has risen. However, Courtney (2018) argues that the National Institute of Education and the Academy of Singapore Teachers have considerable responsibility for, and influence on, teachers, teaching, leaders and with consequently comparatively low levels of autonomy and trust. However, Dimmock and Tan (2016) see this as not that Singapore, has defied the trend towards devolution and autonomy, but that it has followed the trend to a lesser degree than others as the Singapore Ministry of Education (MOE) has managed to maintain control in the process of granting limited autonomy to schools and principals.

Standards and curriculum

Singapore and Estonia hold in common a commitment to inquiry-based approaches to education (Scott et al., 2018) which has led to Singapore's 'teach less, learn more' strategy which reduces the number of learning outcomes mandated in the national curriculum so that teachers can focus on laying a strong foundation of knowledge and skills involving inquiry-based processes (Ministry of Education Singapore, 2017). Recent curricula shifts reflect policy makers' beliefs that traditional forms of education that 'teach to the test' are insufficient to prepare young people for the knowledge-based economies in OECD member countries, which require innovative skills (Scott et al., 2018). In Estonia, the strategy for lifelong learning has led to a focus on developing interdisciplinary skills such as creativity and entrepreneurship (Lees, 2016).

Curricular autonomy varies in Estonia, Finland and Germany. In Estonia and Finland, teachers develop a school curriculum based on the framework of the national curriculum, with the aim of specifying the learning outcomes at class level, adding locally relevant and profile-related content, and determining the learning processes and assessment principles. Põder and Lauri (2014) argue that Estonian school policy, especially regarding curricula, has been heavily influenced by Finland. In Finland, an additional tier of curriculum exists as the municipal curriculum, where representatives of local schools determine the local priorities (Errs, 2018). From 2014–2017, Finland reformed the national core curricula at all levels of education to form a coherent line throughout the entire education system. The aims were to build on the strengths of the Finnish education system and, at the same time, to meet the challenges of a rapidly changing and complex world through promoting life-long learning, the holistic development and well-being of all learners, and to improve skills for living in a sustainable way (Halinen, 2018). Finland and Estonia both place emphasis on digital skills in their curricula which, in Finland, have been particularly emphasised in the new curricula (Sulkunen, 2017). Initiatives begun in the 1990s in Estonia to improve digital skills included ensuring all pupils had access to computers, upskilling teachers and developing the curriculum and learning environment through the Tiger Leap programme. The success of this programme is now developing into a broader aim to ensure competitiveness in the global information economy (Lees, 2016).

Germany's disappointing 2000 PISA results led to increased standardisation of the curriculum and comparative testing but, unlike some countries, which implemented tests soon after developing standards for pupil performance, Germany rolled out the implementation of standards in a careful, deliberate way, giving time for schools and teacher-education institutions to adjust to the new expectations before putting in place tests to measure whether pupils have met them (Rothman, 2017). Most German teachers are not required to develop their own school curriculum; rather they must follow a detailed centrally prescribed curriculum (Errs, 2018).

The School Actualization Program (SAP) is intended to be a driver of improvement in Taiwan, including in the curriculum where participants are expected to develop new approaches tailored to their circumstances. Lin H. (2014) found that the additional work involved in participation placed a burden on even the most enthusiastic teachers and jeopardised the aims of introducing innovative practice. Moreover, the social expectations from parents, together with the strict national curriculum framework, forced most of the experimental curriculum to take place only after school and on weekends.

In order to provide senior high schools and vocational schools with high-quality curricula and instruction using a pupil-centred approach, Taipei's municipal government in Taiwan initiated a funded five-year Leading Program of Curriculum and Instruction for Senior High and Vocational Schools in May 2012. To avoid putting pressure on schools,

paperwork is kept to a minimum. Lin (2016) found that the programme boosted the pace of curriculum development in these schools and argued that this is a consistent and lasting policy to improve the school-based featured curriculum and teachers' professional development. The underlying logic is that, once schools develop their own school-based, curriculum they can sustain continued improvements in their curriculum and instruction.

Teacher and principal compensation

Mourshed et al. (2010) found that the overwhelming majority of countries in their sample had an appropriate reward and remuneration system in place for the level of skills of their principals and teachers with salaries increased once the system had made significant progress in achieving improvement goals. Schleicher, (2011) comments that PISA data tends to show that high-performing education systems prioritise ensuring the quality of teachers, including through attractive compensation, over other interventions such as reducing class size.

The above does not appear to be true in the case of Estonia where, despite its high-performing status, teacher salaries remain among the lowest across OECD countries, even though secondary teachers' salaries increasing by 51% between 2011 and 2016 (OECD, 2018). It is only since 2013 that national minimum salaries have been set. Teachers also earn less than similarly educated workers. The compensation of individual teachers is defined at the school level, thus varying greatly across subsystems (state, municipal, private) and across municipalities. Schools typically take into account a range of factors including teachers' years of experience, extra qualifications and professional development activities in setting pay (Santiago et al., 2016). OECD (2018) recommends that, to make teaching an attractive profession and reach the goal of 13% of teachers under 30 by 2020 set by Estonia's Lifelong Learning Strategy, the country must offer competitive salaries and good pay progression.

Section 4 Effects of interventions on target groups

Introduction

This section looks at how the countries in this review have introduced interventions aimed at improving outcomes for particular cohorts of pupils. Even where overall performance is good, most school systems have groups of pupils where results are comparatively poor – typically those whose first language is not the common language of instruction, those from low socio-economic backgrounds and those living in rural or isolated areas (of course, these groups are not mutually exclusive). Where performance has improved for such groups in the countries in consideration, it is often difficult to point to a particular strategy being responsible, given the multi-faceted approaches to school improvement described in section 3 above.

Summary

- In Germany, efforts to improve the performance of migrant pupils have been helped by reforms to the tracking system²⁰ in which pupils are assigned to secondary schools based on ability, whereas, in Finland, a curriculum approach to supporting pupils without Swedish or Finnish as a first language have been less successful.
- In Estonia, drives to improve the performance of schools in Russian speaking areas, motivated by their comparative poor PISA performance, have largely been successful. A key change was making it obligatory to teach Estonian to children aged four and above in all non-Estonian speaking pre-schools and kindergartens.
- In Taiwan, efforts to improve the results of pupils in rural areas and/or from a low socio-economic background have been hampered by the lack of commitment from some teachers and, in some teachers, a lack of the necessary professional skills and knowledge to implement the initiatives successfully.

²⁰ Traditionally, at age 10, children moved into either a Gymnasium (for academic students), Realschule (for intermediary students), or Hauptschule (for the less academic). Several measures, with variation across the 16 federal Governments, were taken to relax the system including delaying the age when children are assigned to different secondary schools, combining Realschulen and Hauptschule, and introducing more comprehensive schools.

Findings

Miyako Ikeda, senior analyst on the PISA team at the OECD, argues that one of the most significant changes in Germany was structural reform of the secondary school system, delaying the age of assigning children to the different kinds of secondary school and introducing more comprehensive schools (European Commission, 2015). The outcomes of PISA 2000, which showed the extent to which socio-economic background was tied to educational performance, supported the argument that streaming children at the age of 10 was not working. Davoli and Entorf (2018) argue that tracking pupils into differing-ability schools as early as at age 10 (compared to the OECD average of 14) significantly increases educational inequality for those in low socio-economic groups or from a migrant background. The introduction of comprehensives that do not segregate by ability provides more language support and scope for integration, although a large majority of secondary pupils, particularly in the Western part of Germany, still undergo some early tracking (Davoli and Entorf, 2018).

Another important lesson in Germany was to prioritise support for the lowest achievers, with overall improvements in reading and maths largely due to changes in this group (European Commission, 2015).

In Finland, the National Core Curriculum for Instruction Preparing Immigrants for Basic Education (2009) was introduced to support pupils with an immigrant background who are not proficient in the Finnish or Swedish language and/or with other learning difficulties so that they can attend basic education. The curriculum is differentiated according to age, learning capabilities and background to support pupils' balanced development and integration into society. The national core curricula for vocational education and training and for Preparatory Education for General Upper Secondary Education (2014) also aim to support migrants and foreign-language speakers (Gomendio, 2017). However, young people with an immigrant background continue to perform significantly worse than native-born people (European Commission, 2018a). PISA tests show that, in 2015, the difference between schools remained one of the lowest internationally and that the largest variation occurs within schools.

Almost one-third of the Estonian population is formed by the ethnic Russian community. In 1997, the Ministry of Education initiated a development plan for Russian-speaking schools as part of the 1997-2007 Activity Plan for a unified Estonian education system. Since then, supporting the language studies of children with Estonian as a second language and supporting studying in Estonian in general, has been prioritised. Since 2009, it has been obligatory to teach Estonian to children aged four and above in all non-Estonian speaking pre-schools and kindergartens. To support this, the state has allocated money for salaries for Estonian teachers in pre-schools and kindergartens, supported teachers' training and issued study materials. Although it is not compulsory to teach in Estonian in middle schools, the majority of schools teach some of the subjects in

Estonian (Lees, 2016). Khavenson and Carnoy (2016) argue that the primary driver for these changes was to raise already high national average Estonian PISA scores even higher by closing the gap between Estonian and Russian medium pupils. In this they have been largely successful (Khavenson and Carnoy, 2016; Tartu, 2017).

Taiwan instituted two targeted programmes: the Educational Priority Area Program (EPAP), which started in 1996, and the After School Alternative Program (ASAP), which began 10 years later. While the EPAP focused on pupils located in remote areas to improve their learning by investing more resources in school and neighbourhood facilities, the ASAP was intended to help pupils from disadvantaged backgrounds and low-achieving pupils throughout the nation offering after-school homework instruction to disadvantaged pupils. By 2011, these two programs were integrated into a nationwide policy seeking to adopt the idea of differential instruction and extending learning time during after-school hours or summer and winter breaks. Despite an increased focus on remedial education in elementary and secondary schools throughout Taiwan as a systemic approach toward closing achievement gaps, pupils from lower socio-economic backgrounds and those in remote areas have shown little improvement in academic achievement (Chen and Yu, 2016). Chen and Yu (2016) attribute the patchy impact of the programmes to differing levels of commitment to the programmes' aims from teachers as well as well as the degree to which teachers are equipped with the professional knowledge and practical strategies to support effective implementation.

Section 5 Planned changes to support school improvement

This section looks at future planning for further development of the school improvement systems within the countries considered in this review.

Summary

Plans for the future include:

- Additional funding to address teacher shortages in Estonia and Taiwan.
- Reforms to curricula in Finland and Taiwan.
- A focus on digital skills in Germany and Taiwan.
- A competency framework for principals in Estonia.
- Revised professional development for teachers in Finland.
- A relaxation of examinations and reporting in Singapore to allow for an increased focus on learning enjoyment.

Findings

In Estonia, the Ministry is considering training new school advisors whose task would be to help school leaders develop school activities. This is planned to be implemented within the next few years. To combat teacher shortages, made more acute by the aging profile of the profession, fully aligning teachers' salaries with the earnings for full-time workers with tertiary education by 2020 is a goal of Estonia's most recent national strategic plan, the Estonian Lifelong Learning Strategy 2020.

The Estonian Lifelong Learning Strategy 2020 recommended that the Ministry of Education and Research specify competency requirements for principals. The competencies would be used to recruit principals, provide feedback on their performance and appraisal, and guide ongoing professional learning. The Strategy also suggested launching a training program for future school leaders although this has not yet been implemented (Center on International Education Benchmarking, 2018a).

Finland is taking a series of additional measures to increase quality in education, partly in response to the recent dip in the PISA performance of Finland's 15-year olds (Courtney, 2018). In addition to introducing new curricula at all levels of education, the 'Basic Education Forum' is convening researchers, experts, teachers, principals, pupils, parents, municipalities and all other levels of administration to introduce the 'future basic school'. It will strengthen the diversity of teaching and learning models, use individualised

instruction and support the systemic development of expertise, while increasing cooperation within and beyond schools (European Commission, 2018).

In 2016, the Ministry of Education and Culture in Finland appointed a Teacher Education Forum to reform the core education and induction in-service training of teachers as part of the government's key project on new comprehensive schools. The objective of the development programme is to ensure that teacher education remains attractive and strong, and that prospective teachers assimilate an enquiry-based and creative approach to their work (Gomendio, 2017).

There is a consensus that, in light of demographic changes in Germany, and with a view to the emerging need for skilled workers, great efforts must be made to develop the German education system in the years ahead. Efforts are focusing above all on the challenges for the education system associated with the integration of immigrants and digitalisation in the school (Eurydice, 2018). Although disparities have decreased between immigrant and non-immigrant pupils and between pupils of high and low socio-economic background, these disparities still exist and need to be reduced further. Gender gaps, indicating that girls outperform boys in reading and boys outperform girls in Mathematics, have to be closed (Salzer and Prenzel, 2014).

In order to improve the balance between the joy of learning and education standards, and to give teachers more space to explore new ways of making learning enjoyable and lasting, the Ministry of Education in Singapore announced changes to come into effect from mid-2019 (Straits Times, 2018). Primary 1 and 2 pupils will no longer sit for major exams and parents will not receive reports of the results of their tests and assessments. There will also be no mid-year exams for in the first year of secondary school to allow pupils to adjust to the secondary school curriculum. No mid-year exams will be set for Primary 3 & 5 and Secondary 3, which are also transition years when pupils are exposed to new - and often more rigorous - content. The information contained in 'results slips', which go to parents, will be much reduced, including through the removal of notification of the pupil's position in class.

In Taiwan, The Ministry of Education has announced that it is considering a complete overhaul of the Teacher Training Act to include: a review of qualification requirements; subsidies for teacher-training universities to select quality internship organisations; and opening up the option for teachers at schools and preschools in remote areas and overseas to use their past period of teaching experience to waive the internship requirement. In addition, the Forward-looking Basic Infrastructure Program with, as its base, the need to blend information technology from education practice into teaching and digital learning, will plan forward-looking or innovative special teaching development. The "Education Development Guidelines for Schools in Remote Areas" will strengthen

educational measures including the drawing up of generous budgets, the flexible use of personnel, and the improvement of benefits for teachers in remote schools.

Section 6 Conclusions

There is a lack of comparative research to use as a basis for making systematic evidence-based judgements on which approaches to school improvement work best and in what circumstances. Nonetheless, our review of the available literature provides some important insights into the school improvement processes used in four high performing countries that are continuing to improve (Estonia, Germany, Singapore and Taiwan) and one high performing country that is not currently improving (Finland).

Gray (2014) notes that most countries in Europe now have some form of national or state inspection of schools, although they vary regarding whether inspection reports are available to the general public. In many cases, such as in Estonia, countries are moving from a regular cycle of inspections to a more risk-based approach (for example, triggered by low results or as the result of complaints). English policy strategy for raising pupils' attainment has included the use of inspections to hold schools to account. Acting on recommendations and assessments following these inspections are largely for the schools themselves, though Government provides a range of assured interventions and resources, including ensuring high-performing school leaders are available to provide advice to those that need it most, whether on institutional health, training, recruitment or curriculum.

There may be lessons to learned from Germany and Taiwan, which have achieved high-performing status whilst also using inspection-led systems to identify and support low-performing schools. In the case of Germany, it is noticeable that the federal states that use inspections operate low-stakes systems. In contrast to England, inspection results are generally not shared beyond the school, but used by schools to improve their performance (Dedering, 2018).

The emphasis of inspection in Germany is on school quality process criteria rather than outcomes, with the result that there is a relatively weak relationship between inspection results and the social context of schools. Schools identified as in need of improvement are often located in socially privileged areas and/or perform well in terms of outcomes. This stands in marked contrast to the English approach where the focus is on pupil outcomes and schools located within socio-economically challenging areas are disproportionately represented among the schools deemed to be failing. It is not straightforward to decide on the competing merits of these two approaches. On the one hand, it could be argued that a pupil outcome focus can fail to recognise the multiple challenges in some schools and the wider positive impact that schools can have even if results are below expected standards, with selective schools and those in wealthier areas having a perceived in-built advantage. On the other hand, to concentrate on inputs (process), and ignore the outcomes of this in terms of pupil attainment, could be argued to be running the risk of forgetting the aim of school improvement. In addition, test results are seen as the most objective measure of a school's success.

The three countries considered in this review that use school inspections vary in terms of the degree to which they participate in the subsequent improvement journey of low-performing schools. In Germany, there is variation at state level with the inspectorate in Lower Saxony, for example, providing extensive resources and guidance, whereas in Saxony and Berlin school support is provided by separate agencies. In Taiwan, school inspectors from the local Bureau of Education help primary and lower-secondary schools in need of improvement to formulate plans for improvement, whereas inspectors are not involved in the support arranged by the national Ministry of Education for low-performing schools at upper secondary level. In Estonia, which is one of a growing number of countries that has moved from a regular cycle of inspections to a more risk-based and targeted approach, there appears to be little or no involvement of inspectors in the provision of support at any level. It is difficult to identify potential lessons for England due to a lack of research on the impact of different levels of involvement by school inspectors in the school improvement process. Nonetheless, there is increasing recognition internationally that inspection feedback alone does not necessarily lead to school improvement actions and that at least some degree of external follow-up is needed (Gray, 2014).

More generally, regardless of whether their school improvement systems are based on inspections or self-evaluation, the countries considered in this review place a strong emphasis on school-to-school collaboration and peer-to-peer support. While the mechanisms through which this is organised vary, all the systems are designed to facilitate engagement between low-performing schools and teachers, school leaders and schools who have experience of addressing similar challenges. One important observation that can be derived from the review is that school improvement systems, and the responsibilities of different stakeholders within them, are clearly delineated in each of the five countries. This is pertinent because it has recently been suggested that in England there is a need for greater coherence and alignment between different school improvement initiatives and different stakeholders within England's diverse school improvement system (Gilbert, 2017, Cruddas, 2018).

According to Mourshed et al.'s (2010) study of school improvement systems, high performing education systems are characterised by principals and teachers having considerable degrees of autonomy over teaching and learning. This is consistent with the expansion of academies and multi-academy trusts (MATs) in England, which is intended to drive school improvement by providing schools with greater autonomy. Interestingly, the present review indicates that teachers in different high performing countries do not necessarily regard increased autonomy as intrinsically better. In Estonia and Germany, teachers characteristically prefer more precise structures, while in Finland they prefer greater degrees of flexibility. This suggests research in this area might be helpful in England in order to establish appropriate levels and areas of autonomy in the English system.

The school improvement activities instigated by the countries in this review are, for the most part, not time-limited but intended to provide sustainable improvements. Thus, the majority of improvements relate to building the technical skills of teachers and, linked to this, providing increased autonomy for schools to adapt and deliver the curriculum to reflect the needs of the pupils in the school. This has led to new competency-based development frameworks for teachers in Estonia and Finland; a modular programme for mathematics and science teachers in Germany; the creation of the Academy of Singapore Teachers; and a programme just beginning in Taiwan that encourages experienced teachers to develop school learning communities.

The way in which countries in this review organise the professional development of teaching staff varies from tightly-controlled processes in Singapore to purely local arrangements in Germany. Although Dreer et al. (2017) notes that the evidence of a link between the professional development of teachers and a sustained change of practice that could lead to improved pupil outcomes is weak, nonetheless Estonia and Finland are both instigating more central control of this in response to concerns about variability in teacher quality. The results of these changes may be of interest to England once details of their implementation and impact become available.

In considering the lessons for school improvement in England, it is important to bear in mind the limitations of the extant literature. The extent to which particular aspects of the education systems in the countries considered contribute to their high-performing status is often a greater focus for the literature than the impact of school improvement measures within those countries. This is often a result of researchers' interest in what their own countries can learn from these high-performing countries. Conversely, researchers also identify contextual socio-economic and cultural factors as contributing to success, questioning the transferability of improvement activities to other systems (Courtney, 2018; Davoli and Entorf, 2018; Dimmock and Tan, 2016). Lastly, countries where high performance has been a feature for some time often have broadly stable school systems, with improvements instigated and measured at school level and which are not necessarily reported in the anglophone literature, making it difficult to determine the contribution initiatives make to the improved or sustained position of the country as a high-performing one.

References

- Andere, E. (2015). Are teachers crucial for academic achievement? Finland educational success in a comparative perspective. *Education Policy Analysis Archives*, 23(39).
- Brill, F., Grayson, H. and Kuhn, L. (2018). What Impact Does Accountability Have On Curriculum, Standards and Engagement In Education? A Literature Review. Slough: NFER.
- Burg, C. (2018). Finnish Education in the 21st Century: Paradoxes and Visions. *i.e.: inquiry in education*.10(1): Article 8.
- Butrymowicz, S. (2016). Everyone aspires to be Finland, but this country beats them in two out of three subjects. The Hechinger Report.
- Center for Economic Studies (2015). Policies and approaches to school evaluation in Europe, 2015.
- Centre on International Education Benchmarking (2017). Preparing to lead: Singapore.
- Centre on International Education Benchmarking (n.d.(a)). Estonia. National Centre on Education and The Economy Website.
- Centre on International Education Benchmarking (n.d.(b)). Finland. Estonia. National Centre on Education and The Economy Website.
- Centre on International Education Benchmarking (n.d.(c)). Germany. Estonia. National Centre on Education and The Economy Website.
- Centre on International Education Benchmarking (n.d.(e)). Singapore. Estonia. National Centre on Education and The Economy Website.
- Centre on International Education Benchmarking (n.d.(f)). Taiwan. Estonia. National Centre on Education and The Economy Website.
- Center on International Education Benchmarking, 2018a. Estonia: Teacher and Principal Quality. National Center on Education and the Economy.
- Center on International Education Benchmarking, 2018b. Finland: Teacher and Principal Quality. National Center on Education and the Economy.
- Chan, L.S., Chua, V., Foo, S.H., Pang, E., Poon, C.L. and Saharudin, S. (2016). Singapore. *PIRLS 2016 Encyclopedia*. Boston: International Association for the Evaluation of Educational Achievement.

Chen, H-L. S., and Yu, P. (2016). Closing achievement gaps and beyond: teachers' reactions to the remedial education policy in Taiwan. *Asia-Pacific Education Review*, 17: 609–624.

Chew, L.C. (2016). Teacher training and continuing professional development: the Singapore model. In *Proceeding of International Conference on Teacher Training and Education*, 1(1).

Chua, P. (2014). Centralized-decentralization emerging in Singapore. *International Education News*.

Cruddas, L. (2018). Where Next for the Self-Improving School System? Getting System Governance Right. FASNA.

Courtney, S. J. (2018). Teachers' and School Leaders' Career Pathways: A Review of International approaches in five case studies. University of Manchester.

Davoli, M. and Entorf, H. (2018). The PISA shock, socioeconomic inequality, and school reforms in Germany. IZA Policy Paper No. 140. IZA Institute of Labour Economics.

Dedering, K. (2018). Consultancy in 'failing schools': Emerging issues. *Improving Schools*, 21(2): 141–157.

Dedering, K. (2015). The same procedure as every time? School inspections and school development in Germany. *Improving Schools*, 18(2): 171–184.

Dedering, K. and Muller, S. (2011). School improvement through inspections? first empirical insights from Germany. *Journal Educational Change*, 12: 301–322.

Dedering, K., Goecke, M. and Rauh, M. (2015). Professional background and working practices of consultants in school development – Initial empirical findings from Germany. *Journal of Educational Change*, 16(1): 27–52.

Dedering, K. (2018). Consultancy in 'failing schools': emerging issues. *Improving Schools*, 21(2): 141–157.

Demski, D. and Racherbäumer, K. (2017). What data do practitioners use and why? Evidence from Germany comparing schools in different contexts. *Nordic Journal of Studies in Educational Policy*, 3(1): 82-94.

Demski, D. and Racherbäumer, K. (2015). Principals' evidence-based practice – findings from German schools. *International Journal of Educational Management*, 29(6): 735-748.

Deng, Z. and Gopinathan, S. (2016). PISA and high-performing education systems: explaining Singapore's education success. *Comparative Education*, 52(4): 449-472.

Dimmock, C. (2011). Formulating a research agenda in school leadership and organisational change for school improvement in Singapore. *School Leadership & Management*, 31(4): 321-338.

Dimmock, C. and Tan, C. Y. (2016). Explaining the success of the world's leading education systems: the case of Singapore. *British Journal of Educational Studies*, 64(2): 161-184.

Dreer, B., Dietrich, J. and Kracke, B. (2017). From in-service teacher development to school improvement: factors of learning transfer in teacher education. *Teacher Development*, 21(2): 208-224.

Erss, M. (2015). The politics of teacher autonomy in Estonia, Germany, and Finland. Pp.29-42 in Leite, C., Mouraz, A. and Fernandes, P. (Eds.) *Curriculum Studies: Policies, Perspectives and Practices*. ECCS 2015 – II European Conference on Curriculum Studies Faculty of Psychology and Education Sciences, University of Porto, Porto, Portugal Friday 16th October – Saturday 17th October 2015.

Erss, M. (2018). Complete freedom to choose within limits' – teachers' views of curricular autonomy, agency and control in Estonia, Finland and Germany. *The Curriculum Journal*, 29(2): 238-256.

Directorate-General for Education and Culture (2015). Comparative Study on Quality Assurance in EU School Education Systems: Policies, Procedures and Practices (Final Report).

ET2020 Working Group Schools (2018). Networks for Learning and Development Across School Education: Guiding Principles for Policy Development on the Use of Networks in School Education Systems. Brussels: European Commission.

European Commission (2015). Germany: Schools have reduced educational inequality. European web site on integration.

Eurydice (2018). Estonia: Continuing Professional Development for Teachers Working in Early Childhood and School Education.

Finnish Ministry of Education and Culture (2017). A new Teacher Education Development Programme launched: teachers' competence must be developed methodically throughout their careers.

Gaertner, G., Wurster, S. and Anand Pant, H. (2014). The effect of school inspections on school improvement. *School Effectiveness and School Improvement*, 25(4): 489-508.

Gilbert, C. (2017). Optimism of the Will: The Development of Local Area-based Education Partnerships. London: London Centre for Leadership in Learning.

- Gomendio, M. (2017). Empowering and Enabling Teachers to Improve Equity and Outcomes for All. *International Summit on the Teaching Profession*. Paris: OECD Publishing.
- Gray, A. (2014). Supporting School Improvement: The Role of Inspectorates Across Europe: A report from the Standing International Conference of Inspectorates (SICI). Brussel: Standing International Conference of Inspectorates.
- Halinen, I. (2018). The new educational curriculum in Finland. Pp. 75-89 in Matthes, M., Pulkkinen, L., Clouder, C. and Heys, B., *Improving the Quality of Childhood in Europe · Volume 7*. Brussels, Belgium: Alliance for Childhood European Network Foundation.
- Hartong, S. (2012). Overcoming resistance to change: PISA, school reform in Germany and the example of Lower Saxony. *Journal of Education Policy*, 27(6): 747-760.
- Hatch, T. (2017). 10 surprises in the high-performing Estonian education system. *International Education News*.
- Hargreaves, R. and Harris, A. (2015). High performance leadership in unusually challenging educational circumstances. *Eesti Haridusteaduste Ajakiri*, 3(1): 28–49.
- Helm, J. (2016). Finland's schools were once the envy of the world. Now, they're slipping. *Washington Post*.
- Khavenson, T. & Carnoy, M. (2016). The unintended and intended academic consequences of educational reforms: the cases of Post-Soviet Estonia, Latvia and Russia, *Oxford Review of Education*, 42:2, 178-199.
- Kitsing, M. (2011). PISA 2009 – Lessons for Estonia. Estonian Ministry of Education and Research, External Evaluation Department.
- Klein, E.D. (2013). Statewide Exit Exams, Governance, and School Development: An International Comparison. Münster: Waxmann.
- Klein, E.D. (2017). Autonomy and accountability in schools serving disadvantaged communities. *Journal of Educational Administration*, 55(5): 589-604.
- Kukemelk, H. (2015). Estonian school system strategic leadership: effects on school performance. *Journal of Educational, Cultural and Psychological Studies*, 11: 57-69.
- Lees, M. (2016). Estonian Education System 1990-2016: Reforms and their Impact. Estonian Ministry of Education and Research.

- Lin, H. (2014). Experimental Instrumentality: Networked efforts towards school transformation. *Center for Research on Activity, Development and Learning: Working papers 2/2014*. Unigrafia, Helsinki: University of Helsinki.
- Lin, Y-J. (2016). Exploring regional development in the school actualization program. *Taiwan Education Review Monthly*, 5(2): 45-52.
- Lin, Y-L. (2014). The implementation of school improvement policy in Taiwan: a case study. *Journal of Studies in Education*, 4(4): 144-152.
- Lin, T.-B., Wang, L.-Y., Li, J.-Y., & Chang, C. (2014). Pursuing quality education: the lessons from the education reform in Taiwan. *The Asia-Pacific Education Researcher*, 23(4): 813–822.
- Mahfooz, S.B. and Hovde, K. (2010). Supervision of primary and secondary education: a five-country comparison (English). Europe and Central Asia Knowledge Brief, 33. Washington, DC: World Bank.
- Ministry of Education and Research in Estonia (2016). The Inspectorate of Education of Estonia. Tartu: Ministry of Education and Research.
- Ministry of Education and Research in Estonia (2018). Summary of the Ministry of Education and Research's Annual Report for 2017. Tartu: Ministry of Education and Research.
- Magaziner, J. (2016). Education in Taiwan. *World Education News and Reviews*. World Education Services.
- Mourshed, M., Chijioke, C. and Barber, M. (2010). How the world's most improved school systems keep getting better. London: McKinsey and Company.
- Ng, P.T. (2010). The evolution and nature of school accountability in the Singapore education system. *Educational Assessment, Evaluation and Accountability*, 22(4): 275–292.
- Ng, P.T. (2015). What is quality education? How can it be achieved? The perspectives of school middle leaders in Singapore. *Educational Assessment, Evaluation and Accountability*, 27:307–322.
- OECD (2011). PISA IN FOCUS 2011/9 (October)
- OECD (2013) Education Policy Outlook: Finland. Paris: OECD Publishing.
- OECD (2016). School Organisation and Operating Schools in Estonia. Paris: OECD Publishing.

- OECD (2018). *Education at a Glance 2018: Estonia Country Note*. Paris: OECD Publishing.
- Pöder, K. and Lauri, T. (2014). When public acts like private: the failure of Estonia's school choice mechanism. *European Educational Research Journal*, 13(2): 220-234.
- Ramsteck, C., Muslic, B., Graf, T., Maier, U. and Kuper, H. (2015). Data-based school improvement: The role of principals and school supervisory authorities within the context of low-stakes mandatory proficiency testing in four German states. *International Journal of Educational Management*, 29(6): 766-789.
- Riina, V. (2019). *Innovating Professional Development in Compulsory Education: An analysis of practices aimed at improving teaching and learning*. Luxembourg: Publications Office of the European Union.
- Rothman, B. (2018.) *Inspection Systems: How Top performing Nations Hold Schools Accountable*. Washington: National Centre for Education and the Economy.
- Rubin, C. (2015). *The Global Search for Education: How to Improve – From Finland*. Blo, Education World. <https://www.educationworld.com/blog/global-search-education-how-improve-%E2%80%93-finland>
- Salzer, C. and Prenzel, M. (2014). Looking back at five rounds of PISA: Impacts on teaching and learning in Germany. Pp. 53-72 in Štraus, M. (Ed.), *Evidence from the PISA Study on Educational Quality in Slovenia and Other Countries*. Letnik XXV, številka 5-6.
- Santiago, P. et al. (2016), *OECD Reviews of School Resources: Estonia*. OECD Reviews of School Resources. Paris: OECD Publishing.
- Sahlberg, P. (2016). The global educational reform movement and its impact on schooling. Pp.128-144 in Mundy, K., Green, A., Lingard, B. and Verger, A. (eds.), *The Handbook of Global Education Policy*. Chichester, West Sussex: John Wiley & Sons Ltd.
- Schleicher, A. (2011). *Building a High-Quality Teaching Profession: Lessons from around the World*. Paris: OECD Publishing.
- Scott, D.M., Smith, C.W., Chu, M-W and Friesen, S. (2018). Examining the efficacy of inquiry-based approaches to education. *Alberta Journal of Educational Research*, 64(1): 35-54.
- Selders, O. and Bohm-Kasper, O. (2013). Do different types of school inspection in Germany have an impact on school improvement? *ISI-TL symposium, Theme A: Different Approaches to Inspection*.

Shin, J. (2018). Educational system of Taiwan. *IEM Spotlight Newsletter*, 16 (Fall Issue, November 2018).

Singaporean Ministry of Education (2018). The Education Endowment and Savings Schemes: Annual Report for Financial Year 2017/2018.

Smith, R., Aston, H., Simms, D. and Easton, C. (2012). Enabling School-driven System Leadership: Rapid Review. Slough: National Foundation for Educational Research.

Straits Times (2018). <https://www.straitstimes.com/singapore/schools-to-cut-mid-year-exams-for-some-levels-primary-1-and-2-pupils-will-not-be-graded-or>

Sung, Y.-T., Tseng, F.-L., Kuo, N.-P., Chang, T.-Y. and Chiou, J.-M. (2014). Evaluating the effects of programs for reducing achievement gaps: a case study in Taiwan. *Asia-Pacific Education Review*, 15:99–113.

Strauss, V. (2014). Five U.S. innovations that helped Finland's schools improve but that American reformers now ignore. *Washington Post*.

Teacher Magazine (October, 2018). School success in Estonia.

Thiel, C., Schweizer, S. and Bellmann, J. (2017). Rethinking side effects of accountability in education: insights from a multiple methods study in four German school systems. *Education Policy Analysis Archives*, 25(93).

Vukovic, R. (October, 2018). Q&A: School success in Estonia. *Teacher Magazine*.

Vainikainen, M-P. and Koivisto, M. (2018). Raising the Achievement of all Learners in Inclusive Education - Country Report: Finland. *European Agency for Special Needs and Inclusive Education*.

Wise, A., 2016. Behind Singapore's PISA rankings success - and why other countries may not want to join the race. *The Conversation*.

Yang, Q., 2018. Singapore's Educator Career Ladder: A First-Person Perspective. Washington: *National Center on Education and the Economy*.

Appendix: Methodology

Literature searches

Evidence was gathered through searches of the following sources:

- Online academic bibliographic databases (such as ERIC, Web of Knowledge, Education Research Abstracts Online, British Education Index, BERA Abstracts and JSTOR) and Open access databases (such as Google Scholar and the Directory of Open Access Journals).
- International academic journals that publish articles on school improvement.
- Websites of research and policy centres/organisations, such as Eurydice, the European Commission, OECD, the World Bank, UNESCO.
- Websites of regional agencies, ministries/government agencies with responsibility for education and relevant national associations.
- Statistics on school performance published by OECD and other international/national statistics agencies.

We also examined the reference sections of studies to identify other pertinent articles and reports.

The searches, which were undertaken in February and March 2019 were limited to studies published in the English language. Admissible literature included relevant reports, journal articles, books, book chapters, conference proceedings and statistics and primary data from authoritative sources (including 'grey').

The following search terms (and variants thereof) were combined with "school improvement", the names of the countries included in the review and/or different subject areas and different levels of school education:

- Policies
- Goals
- Priorities
- Strategies
- Interventions
- Systems

- Leadership
- Governance
- Timeframe
- Challenges
- Finance
- Funding
- Costs
- Management
- Impact
- Effectiveness
- Sustainability
- Quality
- Evaluation

Study selection

Once studies had been identified, they were assessed for eligibility against the following inclusion criteria (using a three-stage approach to reviewing the title, abstract and full text):

- Includes reference to education systems, pupil achievement and/or school improvement in high performing countries.
- Published in English since 2010
- Considers issues identified by the research questions.

As a result of the searches, 91 sources were included in the review.

Record of searches

Full text manuscripts were retrieved for those that met the inclusion criteria. Details of articles not meeting the inclusion criteria were set aside and saved, but not deleted. For excluded studies, the practical reasons for their non-consideration were noted. This

permitted backtracking and re-evaluation of the inclusion criteria and protocol during the review.

On-going records were maintained, not only on the reference information of each publication but the date of retrieval and keywords that led to retrieval.

Synthesis and analysis

The findings from the individual studies were summarised, synthesised and critically evaluated under key headings agreed with the DfE. This involved:

- Mapping the relations between studies in terms of the impact of school-to-school collaboration and the conditions for effective collaboration.
- Assessing the breadth, depth and robustness of the evidence by considering the appropriateness of research designs and methodology and critiques by other researchers and authors.
- Exploring the potential implications of the findings for school improvement in England.
- Identifying gaps in the literature and areas where further research was required.



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