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Policy review on designing, planning and implementation****8th Informal Working Group (IWG) Meeting
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This draft paper was written by Tina Isaacs, UCL Institute of Education, UK. This paper is to describe This paper describe the analysis on the country responses to the Policy Questionnaire on Curriculum Redesign on “designing/planning for effective curriculum implementation”. It describes the issues and underlying reasons/causes associated with this issue and strategies that countries have used to overcome or minimize these issues.

This is still a “**working document**”

For ACTION: participants are invited to **COMMENT** before 5 November 2018.

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Abstract

This report examines issues concerning the gap between curriculum development/implementation processes and outcomes (and the renewal of curriculum in schools in general), as reported in the responses of various countries to the OECD Policy Questionnaire on Curriculum Redesign in 2016-2018.

The aim is to find curriculum innovations and educational strategies that countries have used or plan to use in confronting these issues. Differences in strategic approaches of countries are examined. A wide variety of issues were discussed, of which three groupings were particularly important: issues emerging as a result of the structure of the education system; issues related to preparedness; and issues related to achieving “buy-in”. Strategies for dealing with these issues fell, for the most part, into three categories: preparation of supporting materials, training and consultation, though more unique issues occasionally inspired more unique strategies. The discussion at the end of the report discusses the main results of the analysis.

Introduction

This analysis report examines issues concerning the inevitable gap between curriculum development/implementation processes and outcomes (and the renewal of curriculum in schools in general), as reported in the responses of various countries and jurisdictions (hereafter jurisdictions) to the OECD Policy Questionnaire on Curriculum Redesign in 2016-2018. The aim is to find curriculum innovations and educational strategies that countries have used or plan to use in confronting these issues.

The OECD report *The Future We Want, The Working Group of the Education 2030* identified five common challenges to successful curriculum redesign, among which it includes the fact that “[t]he gap between the intent of the curriculum and learning outcome is generally too wide”, suggesting that “[c]areful planning and alignment is critically important for effective implementation of reforms.”

The OECD policy questionnaire on Curriculum Redesign (PQC) asked respondents to report back on the issues that they had encountered relating to this gap, the underlying reasons for these issues and strategies that had been employed to confront them. Of these issues, three particular categories stood out – issues emerging as a result of the structure of the education system, issues related to preparedness and issues related to achieving “buy-in”. A number of other issues were also discussed. Three suggested types of response emerged – preparation of supporting materials, training and consultation – to which most answers broadly conformed, raising questions over the degree to which answers responded to questionnaire prompts. Responses were generally less detailed and precise than would have been desired, leading to difficulty in establishing any clear conclusions.

However, the responses do give some indication about problematic ways in which the gap between curriculum development/implementation processes and outcomes manifest and some indication of how particular jurisdictions dealt with particular problems.

Methodology

This report is based on the analysis of the reports of 31 countries, states or territories participating in the OECD Education 2030 (35 questionnaires were returned, 30 had answered the question, one later answered 2.4.5 specifically). Later in this text, all respondents are labelled “jurisdictions”. It is important to notice that experts were not all official representatives of their countries. The reports took shape when jurisdictions or experts responded to the OECD Policy Questionnaire on Curriculum Redesign during 2016-2018.

The countries and jurisdictions examined in this analysis are:

Argentina, Australia, Brazil, British Columbia, Chile, China, Costa Rica, Czech Republic, Denmark, Estonia, Finland, Hong Kong, Hungary, India, Ireland, Japan, Kazakhstan, Korea, Mexico, The Netherlands, Norway, Ontario, Poland, Portugal, Québec, Russia, Singapore, South Africa, Sweden, United States, and Wales.

The questionnaire asked four questions regarding the inevitable gap between curriculum development/implementation processes and outcomes:

- a) What are the issues at stake associated with this challenge in your country?
- b) What are the underlying reasons or causes for these issues?
- c) What strategies and/or options have you used to overcome or minimise these issues?
- d) What strategies and/or options have you found to be particularly effective in relation to addressing these issues?

Due to the close explanatory connection between the four questions asked (identify issue – identify cause of issue – identify strategy for dealing with issue – report on strategy) this report is structured around issues encountered, discussing the strategies employed within the same section. There is a further negative reason for this structure: due to the fact that the questionnaires asked each of these questions separately but most jurisdictions mentioned multiple issues, the connection between issue and strategy in the answer set is already questionable. Organising this report taking one question at a time would risk exacerbating this disconnect between issue and strategy further.

Four countries returned questionnaires but did not fill out question 2.4.5, which asks directly about this issue (New Zealand, Northern Ireland, Scotland and Turkey). Rather than attempt to adduce information from their answers to other questions, these jurisdictions were excluded from the sample. This was due to two insurmountable methodological issues:

1. Elsewhere in the questionnaire a number of implementation strategies are detailed. It is tempting to infer the issues that these strategies are designed to address from the nature of the strategies. However, there are two things prevent this:

- The strategies are often closely related to the core elements of implementation itself, not about the gaps between strategy and implementation, or how the countries dealt with the gap.
 - Due to the ideological nature of curriculum design, development and implementation it is not clear whether implementation strategies found in earlier answers in the questionnaire are responses to actual or potential issues or the product of idea-driven design.
2. While the implementation strategies outlined by the four jurisdictions are sometimes similar to those found in other jurisdictions (i.e. those that did answer question 2.4.5), it is methodologically unsound to then assume (or infer) that one jurisdiction's method of dealing with gaps is present in another, without concrete evidence to support the assumption.

Where question 2.4.5. was completed, there were a number of issues related to the integrity of the data set that limits its usefulness for analytic purposes. These include:

A) The close correlation of responses to the suggestions made in the question – almost every strategy mentioned was preparation of supporting materials, training and consultation. While it is possible that these were the only strategies employed, it is also possible that respondents' answers were led by the question.

B) The quality of answers was a problem. Answers varied wildly in their length and level of detail, meaning that the design of coherent categories of complaint was difficult. With regards to qualitative information, the relative incoherence and incomparability of answers meant that the report had to make numerous assumptions about intended meaning. As such, it is an idealisation and open to criticism on that count.

C) There is a deep ambiguity in the notion of 'issue' used by the question that was not recognised by respondents: that is, whether these were potential issues to be guarded against or problems actually encountered. While the backward-looking phrasing of the question would imply the latter, responses often discussed the former. Often the issues that concerned particular jurisdictions had to be adduced from the measures that they took. This is an inherently problematic way of establishing the issues that they experienced – adduction is inference to the best explanation but the best explanation is not always the factually correct one.

Having discussed each salient issue (some have been removed due to being issues that only affect one jurisdiction with no generalisable conclusion) the report concludes by discussing the answers given to the four questions above. The conclusion also includes a cautionary note about the value of these conclusions.

Issues Encountered and Strategies Employed

Issues caused by formal structure of the education system

The structure of the education system varied enormously between jurisdictions and affected the gap between curriculum development/implementation processes and outcomes in a number of different ways.

Disparities in implementation between sub-national/territorial jurisdictions

Summary

High-Centralisation Systems:

1. Challenge: Division of responsibility between central government and local bodies

- **British Columbia** reported that the central government is responsible for “*high level education policies*” and funding while locally elected boards of education are responsible for hiring and supervising educators and quality assurance. It was not clear on the challenge that this caused.

Strategies:

- **British Columbia** encourages practitioner networks to facilitate communication and support, which it found especially effective. The Ministry of Education also provided non-instructional time and funding to aid understanding and implementation of the new curriculum.

2. Challenge: Differences in preparedness between local bodies

- **Australia** reported that regional bodies, which are responsible for curriculum reform implementation, had achieved different levels of preparedness due to differences in the degree to which the new curriculum represented a change from the old one and the level of resources available.

Strategies:

- **Australia** declined to discuss strategies to deal with this challenge, stating “*It is the nature of the federation of States and territories.*”

3. Challenge: Differences in teaching provision

- **British Columbia** reported that different regions opted to use different teaching materials and approaches.

Strategies:

- **British Columbia** encourages practitioner networks to facilitate communication and support, which it found especially effective. The Ministry of Education also provided non-instructional time and funding to aid understanding and implementation of the new curriculum.

4. Challenge: Diversity in population

- **Australia** highlighted the diversity and dispersed nature of its population as the underlying reason for challenges but declined to comment further.
- **Ontario** reported that the size and diversity of the population forced it to adopt a “train the trainer model”.

Strategies:

- **Australia** declined to discuss strategies to deal with this challenge, stating “*It is the nature of the federation of States and territories.*”
- **Ontario** provided web-based support material and worked with NGOs. It highlighted the support material, especially material teachers could use on their own time, as effective.

5. Challenge: Centralised design unfit for purpose

- **Chile** reported that the “top-down” nature of curriculum design led to a standardised approach that did not take account of subject differences.

Strategies:

- **Chile** adopted a needs-based approach to curriculum reform that was more sensitive to differences, as well as providing advice and training to those involved in reform. It is not clear how effective these strategies were.

Low-Centralisation Systems

1. Challenge: Diversity in curricula

- **The United States of America** reported that curriculum design was done at a state level but was not clear on the challenge that this caused.
- **Brazil** reported that curricula were designed by local municipalities, leading to a great deal of diversity.

Strategies:

- The United States of America refused to discuss strategies employed.
- Brazil provided technical and financial support to programmes designed to help teachers align their provisions with the central government’s instructions, as well as providing support materials. The effects of these strategies are yet to be seen.

Two types of system were discussed: high-centralisation systems and low-centralisation systems. In high-centralisation systems, responsibility for curriculum design, though not implementation, was placed with the central government. In low-centralisation systems this responsibility was devolved to the local level in conformity to centrally set standards. These two categories are ends of a spectrum, with particular education systems showing great diversity in the degree of centralisation practiced when it comes to curricular design. As such, categorisation of particular education systems into one or the other represents an idealisation for the sake of analysis.

High-Centralisation Systems: Often the responsibility for the design of curricula was centralised while the implementation was the responsibility of local bodies, leading to a number of issues (Australia, Ontario, British Columbia). It was reported that systems with centralised curriculum development permit disparities in the interpretation of the

curriculum as it is taught in the classroom and in the practical implementation of that interpretation. There are several disparities that can lead to differences in the effectiveness of implementation of curriculum reform:

- Readiness of “*systems, schools and teachers*” to implement curriculum reform
- The degree of difference between the current curriculum provision and the reformed curriculum
- Available resources
- “*Existing curriculum development cycles and processes.*”

The list and the quotations are from Australia but not untypical of other territories. Ontario pointed out that the responsibility for implementation lay with the district school boards and while the ministry does produce implementation resources it also uses a “train the trainer” model due to size and population of the province and limited resources, leaving to the district school boards to follow up on this training.

Chile reported that the ‘top-down’ nature of curriculum design lead to a standardised approach that did not take account of subject differences.

These issues were attributed to structural features of the education systems in question, for example:

- Hierarchical structure of the education system whereby high level policy decisions, often including those regarding curricula, are made by the national or regional governments and local bodies are responsible for delivery of education provision. The exact division of responsibilities varies significantly between jurisdictions (Australia, British Columbia, and Ontario).
- Circumstantial factors: diversity among the population (Australia), size of territory and population (Ontario), limited resources

Jurisdictions engaged in various strategies to combat these issues:

- Developing support materials: Ontario, for example, concentrated on developing support material for practitioners, including “*a variety of supports – web material [and] [v]irtual sessions that educators can used [sic] on their own time*”
- Empowering local stakeholders: British Columbia reported success in its efforts to “*empower networks of educators to take leadership within their communities*”, shifting the burden of practitioner support from the central government to “*professional specialist associations (e.g., [sic] specialist associations in Science, Mathematics, etc)*”. Ontario also reported that it was working with NGOs to support implementation.

- Chile adopted a needs based approach to curriculum reform that was more sensitive to differences, as well as providing advice and training to those involved in reform. It is not clear how effective these strategies were.
- Some jurisdictions, e.g. Australia, refused to discuss how this affected implementation, suggesting that such a separation is the natural outcome of a federal system.

Low-Centralisation Systems: Some jurisdictions employed systems wherein the central government had a limited role in curriculum design and implementation, with the bulk of this work done at a local level (Brazil, Chile, and The United States of America). This led to enormous variation between curricula. Brazil offers a somewhat extreme example of this when it reported that

“Brazil has over 5 thousand municipalities and each one of them could have their own curriculum aligned with BNCC, plus the 27 curricula from state systems and the federal district. Even though aligned, the country would have over 5.000 curricula in this scenario, 5.000 ways to provide teacher professional development and so on.”

Strategies for dealing with this issue included:

- Training programmes: Brazil provides technical and financial support to programmes working to align teacher training with the curriculum.
- Empowering local stakeholders: Brazil stressed the need to establish support networks for practitioners with union and governmental involvement, as well as encourage NGO engagement in the development of material designed to help practitioners conform to the national curriculum. Brazil especially stressed the success of this network building, saying

“One of the most successful strategies has been to empower networks of educators to take leadership within their communities. For example, rather than teachers looking to the Ministry of Education for advice, we have encouraged teachers to connect with fellow teachers in their professional specialist associations (e.g.,[sic] specialist associations in Science, Mathematics, etc) for advice or information.”

Some jurisdictions, e.g. The United States of America, refused to discuss how this affected implementation, suggesting that such a separation is the natural outcome of a federal system.

Changes at level of curriculum design not reaching classrooms

Summary

Challenge: Failure in transmission of curricular reform from central government to local bodies

- **Chile** reported that its main challenge was for “*senses of change to actually reach the classroom*”, suggesting that this was mostly the result of out-dated pedagogical beliefs.
- **Mexico** reported that information often got “*stuck or distorted*” as it was transmitted from the central government to the classroom.

Strategies:

- **Chile** used “*dissemination days*” and materials specially designed to support curriculum implementation. It found the dissemination days especially effective.
- **Mexico** stressed the importance of appropriately designed supporting materials, teacher training and “*participation from the different authority levels*”. It is unclear how successful these strategies were.

Special effort is necessary to align the intended curriculum, the implemented curriculum and the attained curriculum (Persson, 2016). Curriculum design may not reach the classroom because teachers are less aware of it than they might be because of inadequate initial teacher training, lack of professional development, insufficient curricular material, etc (see below) (Avalos, 2011) (Darling-Hammond, 2009) (Fullan, 2016). In order for classroom practice to become more reform oriented teachers’ already held beliefs about teaching and learning and their content knowledge must be reinforced (Haney, et al., 2002) (Leithwood, et al., 2002) (Roehrig & Kruse, 2005).

Chile, which is a low-centralisation system, reported that the divide between centralised curriculum design and local implementation means that reform does not reach the classroom. It suggests that this creates a pedagogical culture wherein,

“the relationship between design and development is still conceived vertically, understanding that design is something done by “experts”, disconnected from the true needs of schools, the teacher being only an ‘implementer’ of what is prescribed Centralized form.”

This problem of “buy-in” is discussed in 3.3., but it is worth noting that the root of this issue is structural. In response, Chile has adopted a policy of “*dissemination days and reflection on curricular change at the national level; and design of resources to support the curriculum implementation.*”

Mexico also reported as an issue ensuring that curriculum reform reached the classroom in the context of its discussion of inadequate teacher training (see 3.2.3).

Issues caused by gap between curriculum reforms

Some jurisdictions reported that the time between different curricular reforms raised issues, either because the gap was too long or because it was too short.

Issues caused by periodic curriculum reform**Summary****1. Challenge: Lack of continuity between reforms**

- **Denmark** alluded to a lack of continuity between reforms, which often involved significant changes.
- **Hungary** reported that it had undergone “*several diversified curriculum development processes*”, leading to a system that was inadequately consolidated.

Strategies:

- **Denmark’s** ministerial involvement in implementation was increased. The effect of this is not yet known.
- **Hungary** stressed the importance of wide-ranging preparatory consultations, the gradual introduction of new curriculum developments supported by teacher training

and the development of supporting materials. It was suggested that the “*complex application*” of these strategies was effective.

2. Challenge: Lack of information regarding curricular development

- **Hungary** reported a “lack of continuous, preplanned, systemic analysis and evidence-based collection of information on curricular development.”

Strategies:

- It is not clear what **Hungary** did to address this issue.

3. Challenge: Periodic reform undermining implementation

- **Korea** reported that periodic wholesale reform creates doubts about “*legitimacy and necessity*” of reforms.

Strategies:

- **Korea** has stopped periodic curriculum reform and begun continuous curriculum reform. It is not clear how effective this has been.

4. Challenge: Periodic curriculum reform is inefficient

- **Korea** reported that periodic curriculum reform is inefficient in that old reforms are often not in place before new reforms arise, required too great a degree of uniformity and did not provide adequate teacher training.

Strategies:

- **Korea** has stopped periodic curriculum reform and begun continuous curriculum reform. It is not clear how effective this has been. It has offered further teacher training provision, practitioner support materials, and learning resources and has undergone a publicity campaign for the new curriculum. It is not clear how effective this has been.

Some jurisdictions reported issues caused by the frequency of periodic curriculum reforms. In some cases (e.g. Denmark) there had been a high number of reforms in a relatively short space of time whereas in others (e.g. Korea until 2005) there were scheduled periodic reforms. The nature of the issues reported varied enormously. Among issues cited were:

- Lack of continuity between reforms (Denmark, Hungary)
- “*The lack of continuous, preplanned, systemic analysis and evidence-based collection of information on curricular development.*” (Hungary)
- Lack of channels of communication between those who train teachers (both subject specific and general methodology) and curriculum designers (Hungary)
- Periodic wholesale reform creates doubts about “*legitimacy and necessity*” of reforms. “*Although parts of the curriculum do not need revisions, overall revisions create, in a sense, cynical attitudes about revisions, and make it difficult for gradual, continuous revisions.*” (Korea)

- Decreased curriculum efficiency due to:
 - Failure to address issues with previous curriculum prior to replacement (Korea)
 - “[T]he General Guideline oriented revisions are were [sic] carried out in uniformity, without taking account of components with regard to the recipients of curriculum” (Korea)
 - “Many of professional development sessions have been inefficient in that they have been focused on information regarding new curriculum without heightening teachers’ understanding of the curriculum.” (Korea)

In order to address these issues, several different strategies have been employed. Korea, for example, changed its revision framework to a “constant revision method...that occurs whenever the national or social needs arise” in 2005. Hungary has employed a widespread consultation process, employing experts and looking to other jurisdictions for examples of good practice, while also providing training and supporting materials to practitioners. Denmark has increased ministerial involvement.

Inertia caused by lack of previous reforms/reform culture

Summary

Challenge: Long gap between curriculum reforms

- **Hong Kong** reported that there was a long gap between successive curriculum reforms, leading to practitioners being unready for change.

Strategies:

- **Hong Kong** underwent a process of wide-spread consultation, suggesting that this strategy was “important to win society buy-in... [and] engage all key stakeholders and the public”. It provided professional development programmes to familiarise practitioners with curriculum reform, describing this as “[a]nother most important strategy”.

Hong Kong reported that the curricula had not been changed for many years prior to recent reforms, leading to inertia. Although Hong Kong was the only jurisdiction to report this as an issue, its suggestion that this is a “natural” consequence of having large gaps between instances of curriculum reform is correct and generalisable, and as such merits inclusion. The strategy adopted was one of consultation and professional development.

Accountability system issues

Summary

Challenge: The obligation to meet the requirements of accountability regimes undermined curriculum reform

- **Chile** reported that the requirements of standardised testing negatively affected the curriculum.
- **China** reported that concentration on test scores and graduation rates undermined the possibility of real curriculum change.
- **Hungary** highlighted PISA as a source of both “success-orientated constraint” and a distraction.

Strategies:

- **Chile, China and Hungary** all alluded to improved practitioner training but it was not clear that this was designed as a remedy to this challenge or how it would help. No clear strategies for dealing with this challenge emerged.

The wrong drivers – accountability and fragmented strategies – can undermine change (Fullan, 2016). The underlying reason for this is that when curriculum development takes place in environments that are highly regulated, have strict accountability regimes and have high-stakes assessments, teachers are tempted to privilege accountability issues over curriculum reform needs, reverting to old practices, such as concentrating on test scores (Avalos, 2011).

Some jurisdictions raised issues to do with conflicts between curriculum reform and the accountability systems in place. They found that a focus on standardised test results and graduation rates undermined efforts to reform curricula. Chile argued that teachers adapt the curriculum to suit the requirements of standardised testing, while the necessity of standardised testing negatively affects the curriculum, leading to “distortion of the meaning of curriculum”. China cited similar concerns about its inability to provide real curricular reform in an accountability system based solely on test scores and graduation rates. Hungary specifically singled out PISA, saying that expectations surrounding it “create a mandatory, success-oriented constraint, and the related disputes are often ideologically loaded and accompanied by strong emotions, which is unfavourable when it comes to focusing on professional content.” While all of the jurisdictions in question alluded to better training, it is not clear whether this was intended as a strategy to deal with this issue specifically or other issues that they had encountered, nor is it clear how better training would necessarily remedy a systematic issue such as this. No obvious strategy designed specifically to deal with this issue emerged from the questionnaires.

Lack of quality monitoring of implementation**Summary****Challenge: Lack of quality monitoring of implementation**

- **Korea** suggested that its quality monitoring mechanisms were “*inefficient*”.
- **Ireland** noted the poor quality of its support materials and practitioner training were in part due to a lack of quality monitoring and one remedy for this was improved quality monitoring, which implies that their previous quality monitoring was inadequate.

Strategies:

- **Korea** suggested that its professional development sessions were intended to “*strengthen evaluations about competencies*”.
- **Ireland** suggested that a quality assurance system, designed both to operate at the curriculum design phase and beyond, was effective.

Some jurisdictions reported that they did not have adequate quality monitoring in place to confirm whether curriculum reform was adequately implemented. For example, India reported that “[c]urrently, schools do not have a ‘structured mechanism in place’ to systematically and honestly review and evaluate their performance.”

In this case the lack of quality monitoring was the result of a generally dysfunctional education system but other jurisdictions also reported that inadequate quality

monitoring was an issue. Korea did not offer a strategy specifically related to this issue but did suggest that its professional development sessions were intended to “*strengthen evaluations about competencies*”, which presumably involves some degree of increased practitioner monitoring. Ireland has set up “[a] *quality assurance system, involving the Inspectorate of the Department of Education and Skills to ensure that all support materials and CPD sessions in revised curriculums are in line with curriculum principles, content and skills.*”

Readiness Issues

Many countries discussed issues surrounding readiness to implement new curricula. This lack of preparedness manifested in several different. Unsurprisingly, the greater the scale of reform, the greater the spectre of unpreparedness. At the extreme, Hong Kong reported that at the implementation of the New Academic Structure “[s]chools and teachers were all new to the structure, the curriculum framework, the student programme, as well as most of the subjects. In addition, almost all educational professionals were trained under the old British system and lack understanding of the New Academic Structure.”

Lack of appropriate supporting materials

Summary

1. Challenge: Lack of adequate support material for learners

- **Ireland** reported having inadequate support materials for learners due to a culture of teaching from textbooks that do not reflect the content of the curriculum.
- **Korea** highlighted a lack of “*quality teaching and learning resources*”.
- **Mexico** reported that textbooks did not reflect the curriculum in the first few years of implementation but that this gradually changed.

Strategies:

- **Ireland** has implemented a quality assurance system designed to ensure that all materials are appropriate. It stressed the effectiveness of this strategy.
- **Korea** developed “*easy and fun*” textbooks and textbooks that supported independent learning. No opinion was offered as to the effectiveness of this strategy.
- **Mexico’s** strategy was unclear, beyond alluding to “*the design of educational materials in correspondence with curricular proposals*”.

2. Challenge: Lack of adequate teacher training materials

- **Argentina** alluded to a lack of adequate support materials, suggesting that this was due to understaffing and underfunding of curriculum development agencies.
- **Finland** did not discuss the challenges it faced but did report that it published supporting materials for teachers for the new curriculum, which could imply either that it faced a challenge related to this or that it saw this as a natural part of curriculum reform.
- **Korea** highlighted the need for supporting resources for practitioners and “*professional development and information sessions about available resources*”.
- **Norway** highlighted the possibility of a lack of common understanding of the “*main principles of renewal*”.

- One challenge for **Singapore** was ensuring that support materials were closely aligned to the new curriculum and suitable for teaching.

Strategies:

- **Argentina** suggested that it was producing “*new resources and materials with clear and concise teaching recommendations, guidelines and examples*”. No information was offered as to the efficacy of this strategy.
- **Finland** published support materials for teachers for the new curriculum.
- **Korea** intends to disseminate teaching and learning resources. As this has not yet happened it did not report on the efficacy of the strategy.
- **Norway** stressed the importance of providing information, support and guidance material to accompany the renewal process. As this process is still underway, it did not offer a view on the efficacy of this strategy.
- **Singapore** involved stakeholders in the design of supporting materials, either in development or in the pilot phase, in order to improve the materials and familiarise practitioners with them. It was not clear how effective this was.

3. Challenge: Lack of adequate IT competence/access

- **Argentina** suggested that a lack of internet access limited access to support materials.
- **Russia** reported that teachers failed to employ technology adequately in teaching.

Strategies:

- **Argentina** did not report any strategy for engaging with this issue.
- **Russia** adopted a strategy of retraining practitioners, creating new technology-focused modules and implementing new forms of technology-based learning. It is not clear how effective these strategies have been.

One of the implementation support approaches that jurisdictions use is the provision of textbooks, guidelines and other support materials that complement and reflect the changes to curriculum. Researchers stress the importance of high quality curricular statements, syllabuses, and textbook guidelines as core policy documents that authorities should use for both internal and external stakeholders (Benavot, 2011) (Davis & Krajcik, 2005) (Fullan, 2007) (Leithwood, et al., 2002) (Persson, 2016). However, the separation of textbook developers from classroom, resistance to change, time constraints, and lack of resources can get in the way of good resource development (O'Donnell, 2008) (Persson, 2016).

Jurisdictions reported a number of issues related to a lack of appropriate supporting materials for practitioners. These included:

- Deficit of adequate textbooks and other study aids for learners (Ireland, Korea, Mexico, and Russia). For Ireland this was especially related to the Irish language issue. Ireland also reported that a perceived lack of adequate support materials affected teacher enthusiasm.
- Deficit of adequate training materials for teachers (Finland, Korea, Norway)
- Access to internet/failure to use IT (Argentina, Russia)

They attributed these deficits to various factors, including:

- “Understaffing / underfunding of provincial and national curriculum development agencies, planning departments” (Argentina)
- Difficulty of producing material that is simultaneously
 1. “closely aligned to the syllabi outcomes as well as support the teaching and learning of the subject in the classroom”
 2. “able to cater to differing learning needs of the students” (Singapore)
- Lack of teacher engagement with technology (Russia)

Most jurisdictions dealt with this issue by producing purpose-designed supporting material to aid curriculum reform, both for practitioners and learners. Finland, for example, has published material, much of it subject specific, designed to support the implementation of its new curriculum, which is available online, as well as books addressing the large pedagogical issues (although Finland did not raise this as an issue *per se*, it gave ample documentation of the design and employment of new supporting material, which indicates that it was an area of concern). Korea stressed that it had produced material designed to “*enhance classroom instruction*” and well as “*easy and fun textbooks, and textbooks that make it feasible for students’ self-directed study.*”

Singapore adopted a strategy of consultation in the development of resources, stating,

“Involving stakeholders in the development of resources (e.g. textbooks, teaching and learning guides, lesson plans, lesson ideas, digital resources and other learning materials) either as resource development committee members or in the piloting phase allows for the improvement and final version of the resources. In particular, the piloting of materials also serves the function of familiarising teachers with the revised curriculum and hence allowing them to better get used to the curriculum.”

To deal with issues surrounding technology and technological readiness, Russia has concentrated on “[d]esign and implementation of new programmes for 21st century skill formation, literacy programmes, new study modules in existing study programmes, and new state-of-the-art “Technologies” course.”

Argentina did not offer any strategies to deal with understaffing and underfunding.

Inadequate initial teacher training

Summary

1. Challenge: Inadequate Teacher Training Institutions

- **Argentina** reported that its teacher training system was unfit for purpose, citing the fact that there were more than 1000 institutions that taught to outdated curricula with no quality monitoring.
- **Mexico** reported that the curricula at its Initial Teacher Training Schools was not in line with curriculum proposals.
- **Chile** reported that “*both Initial Teacher Education and teacher improvement programs could be collaborating to reproduce a traditional logic of curricular*

management, pointing to management practices and curricular reflection, over a reduced implementation”, which undermines curriculum reform.

Strategies:

- **Argentina** asserted that “[a] comprehensive plan to improve initial teacher training is underway” but gave no further detail.
- The details of **Mexico**’s strategy were unclear.
- It is not clear what strategy **Chile** has adopted to counter this problem in the context of initial teacher training.

2. Challenge: Low standard of practitioners

- **India** reported that teachers within the system were insufficiently competent due to years of a lack of standards in hiring.
- **Russia** reported that the majority of its practitioners are insufficiently competent and that pedagogical technique is often unchanged from the Soviet era.
- **South Africa** reported that “*skills to implement differentiation and [manage] diversity*” are inadequately imbedded in both initial teacher training and continuous professional development, leading to teachers who are not equipped to “*support learners who have fallen behind*”.

Strategies:

- **India** has recently raised the required level of formal qualification for teachers. It is hoped that this will ensure better teachers in the future, though it is recognised that the system will have to depend on its current, inadequate cohort for the time being.
- Throughout 2014-15, **Russia** underwent a modernisation of its pedagogical education programmes designed to improve the competence of new teachers. The success of this reform was not reported. It has also implemented teacher retraining schemes, which it reports to be effective.
- **South Africa** has instituted a programme to develop practitioner skills in these areas but it is still underway so its efficacy is unclear.

Investing in teachers through pre-service education and through continuous professional development is universally acknowledged as a positive step. Jurisdictions that are routinely at top of international rankings such as Finland, Hong Kong, Singapore, South Korea and Japan, invest in the initial preparation of their teachers and support them throughout their careers (Darling-Hammond, 2009). Pre-service training systems have to be revised so that professionals new to the classroom can adjust themselves to new policies, curriculum frameworks, learning outcomes and curriculum (Brain, et al., 2006) (Persson, 2016).

Several jurisdictions reported that the initial teacher training offered was not fit for purpose and caused issues in the implementation of curricular reform. Often they suggested that the teachers who emerged from this preparation were not suitably trained. Issues included:

- Inadequate teacher training institutions (Argentina, Mexico):
 - “more than 1000 training institutes with no quality assurance mechanisms [and] outdated curricula” (Argentina).
 - “[T]he curriculum of the Initial Teacher Training Schools for is not in line with the curricular proposal” (Mexico)
 - South Africa worried that “skills to implement differentiation and management of diversity” have not been embedded in either initial teacher training or CPD programmes.

- Low standard to practitioner produced (India, Mexico, Russia):
 - “For the last 3-4 decades, Government schools have employed teachers with low academic achievement, and inadequate pre-service training” (India)
 - “[T]he majority of Russian pedagogues only possess adequate competencies for a transfer of subject knowledge” and that “[a]pproaches to organising the learning process, methods of instruction and student assessment in Russian schools remain largely unchanged from the Soviet times.” (Russia)
- Third party interference (Argentina):
 - “Strong unions eager to intervene in policymaking at central and provincial level as a means to ensure teacher stability and labor rights, but less interested in contributing to achieving quality education. Unions tend to resist change.” (Argentina)

Although a general theme of inadequate teacher training infrastructure and slowness to change existing practice emerged, reasons for this varied: Russia and India report having chronically dysfunctional education systems, with inadequate teacher training being one facet of this. Argentina attributes its issues to “[u]nderstaffing / underfunding of provincial and national curriculum development agencies, planning departments” as well as a lack of oversight, outdated curricula and union interference. Chile worries that its training institutions (both initial and continuous) might be “*collaborating to reproduce a traditional logic of curricular management, pointing to management practices and curricular reflection, over a reduced implementation.*”

The strategy adopted by most jurisdictions was a concerted effort to improve initial teacher training. For example,

- Mexico proposed altering the provision of the Initial Teacher Training Schools to bring them in line with the curriculum.
- “[N]ew teacher training programmes were developed that were based on the new standards for general education and a draft proposal for professional teacher training” (Russia). In Russia’s case, this focused especially on updating practitioners’ technological competence and integrating technology into pedagogy, as well as training teachers in new pedagogical methods.
- “The DBE has initiated a programme together with DHET to ensure that both ITE and CPTD are enhanced by introducing competencies of teachers to be inclusive teachers. The programme encompasses Initial Teacher Training Courses, embedded courses, establishment of professional learning communities, induction programmes and development of professional standards for teachers” (South Africa).

Other strategies included corrective measures for teachers already in the classroom, for example:

- “Re-training of all pre-school, school and extra-curricular pedagogues in the areas of new literacy and 21st century skill formation” (Russia). It reports that this has been effective.

Inadequate continuing professional development for current practitioners

Summary

Challenge: Inadequate continuing professional development for current practitioners

- **Argentina** reported that continuing professional development for current practitioners was both insufficiently practical and did not provide enough support. It attributed this to understaffing/underfunding of curriculum development agencies and labour union interference.
- **Chile** reported that *“both Initial Teacher Education and teacher improvement programs could be collaborating to reproduce a traditional logic of curricular management, pointing to management practices and curricular reflection, over a reduced implementation”*, which undermines curriculum reform.
- **Ireland** reported a lack of *“high quality”* continuous professional development, due in part to a *“[l]ack of capacity of school leadership”*.
- **Korea** highlighted a lack of *“quality teaching and learning resources and programs”* and stressed the need for *“professional development and information sessions about available resources”*. Those professional development sessions that were run concentrated too much about conveying information and did not focus enough on enhancing teacher understanding. They were also about changes to general guidelines and therefore lacked subject specific information.
- **Mexico** reported that *“training to teachers diminished in recent years”* but did not give details. It also reported that a top-down, *“pyramidal”* method was used to train teachers and disseminate information, which often broke down.
- **Poland** noted that school heads were responsible for continuous teacher development but did not make it clear why this was a challenge beyond saying that *“[s]chool environment [sic] is always skeptical about changes introduced to the education system”*.
- **Russia** reported a lack of adequate continuous professional development provision, exacerbating the problem of insufficiently competent practitioners.
- **South Africa** reported that *“skills to implement differentiation and [manage] diversity”* are inadequately imbedded in both initial teacher training and continuous professional development, leading to teachers who are not equipped to *“support learners who have fallen behind”*.

Strategies:

- **Argentina** reports that it has *“reoriented the structure and content”* of its continual professional development provision but did not offer much detail or an assessment of the efficacy of this strategy.
- **Chile’s** Ministry of Education has *“designed strategies for disseminating curricular change in schools”* and *“carried out an improvement course aimed at teachers on curriculum updating”*. It reports that its *“dissemination days”* have been especially effective.
- **Ireland** provided *“high quality”* continuous professional development, monitored by a new quality assurance system. It reports that this has been effective.
- **Japan** did not specify the challenges that it met in continuous professional development but it recounted its model of top-down training at length, which could imply either that it was responding to a challenge in this area in that it saw this as a natural part of curriculum reform.

- **Korea** has implemented professional development sessions to help teachers implement the new curriculum. Korea did not report on the effectiveness of this.
- **Mexico's** strategy was not clear.
- **Poland** reported that “[t]eachers...receive support in the form of model teaching programs and digital teaching aids”. It suggested that this was effective.
- **Russia** underwent a “[r]e-training of all pre-school, school and extra-curricular pedagogues in the areas of new literacy and 21st century skill formation”, which it reports to have been effective.
- **Singapore** stated worries about practitioner competence to carry out curriculum reform and one of the strategies discussed at length and deemed “essential” was improved continuous teacher development which could imply either that it was responding to a challenge in this area or that it saw this as a natural part of curriculum reform.
- **South Africa** has instituted a programme to develop practitioner skills in these areas but it is still underway so its efficacy is unclear.

Across the OECD the proportion of professional development varies – in some jurisdictions as many as 60% of teachers attend content-oriented professional development, while in others it is as few as 25% (OECD, 2013). Professional development is one of the OECD’s three pillars of teacher professionalism, the other two being teachers’ professional autonomy and teachers’ participation in peer networks (OECD, 2016). Importantly, professional development can reinforce curricular changes. “Professional development for teachers has been shown to be successful in changing the way teachers learn, work and feel about their job, including their self-efficacy and job satisfaction” (OECD, 2016, p. 198).

Professional development is crucial because, done well, it can influence teacher beliefs and practice, especially if it focuses on content knowledge, coherence with learning activities and teachers’ own goals (Darling-Hammond, 2009) (Frank, et al., 2011) (Kisa & Correnti, 2015) (Lauer, et al., 2014). While professional development might improve teachers’ attitudes, knowledge and skills, “it does not always lead to durable or even immediate changes to their instructional practice” (Allen & Penuel, 2015, p. 137). Professional development that is sustained over time has a stronger impact on teaching practice and is more consistent with reform efforts than that which is of a shorter duration. Particular types of professional development are more successful than others, including study groups, structured collaborations, coaching and mentoring, and “immersion in enquiry” where teachers carry out the kinds of learning that they will be using with students (Boyle, et al., 2004, pp. 48-49).

A significant number of jurisdictions reported issues in providing adequate continuing professional development for existing practitioners as it relates to curriculum reform. Often, there was little detail offered as to the nature of these issues and in cases where detail was sufficient this was because the jurisdiction in question was responding to unique issues. The general theme was that the training provided was not fit for purpose. Among issues discussed were:

- “Provincial professional development programs that address theoretical frameworks without providing useful tools for content delivery.” (Argentina)
- Russia detailed a number of areas where training was inadequate: “talent student education, education of under-performing students, students with physical disabilities and health problems, students whose native language is not Russian, as

well as in the area of modern classroom technologies and 21st century skill formation.”

- South Africa worried that “skills to implement differentiation and management of diversity” have not been embedded in either initial teacher training or CPD programmes.

Reasons for this varied. Some were particular to that jurisdiction, for example Argentina attributed the inadequacy of both initial teacher training and continuous professional development to strong teacher unions while Chile worries that its training institutions (both initial and continuous) might be “*collaborating to reproduce a traditional logic of curricular management, pointing to management practices and curricular reflection, over a reduced implementation*”. More indicative, perhaps, is that Argentina and Russia also suggested that underfunding and understaffing were causes. Most frequently, however, issues were attributed to poor implementation by schools and relevant educational bodies. For example,

- “Lack of capacity of school leadership in some instances to manage curricular change and to ensure adequate in-school learning for staff” (Ireland)
- “Many of [sic] professional development sessions have been inefficient in that they have been focused on information regarding new curriculum without heightening teachers’ understanding of the curriculum.” (Korea)
- “Most professional development sessions have been dealing with the changes in general guidelines of the national curriculum, not in subject curricular.” (Korea)
- “[T]he scheme to train and inform teachers was by having them get information in a pyramidal way as from the central government to the teachers in their classrooms. This implied that along the way, many times, information got stuck or distorted.”(Mexico)

A number of strategies were used to deal with inadequate continuous professional development as it related to curriculum reform:

- Training for teachers, principals and other relevant parties (China, Chile, Ireland, Argentina, Japan, Korea, Mexico, and Poland). In most cases these strategies were inadequately described to determine how exactly the specific issue at hand was addressed by new forms of training but some suggestions did emerge:
 - Continuous Training: China and Mexico recommend continuous training.
 - Early implementation: “*In order to familiarise school stakeholders with the new elements, and start them planning for implementation, professional development programmes had been provided by the Government three years before the implementation for all secondary schools at all levels of school leaders, middle managers and front line teachers*” (Hong Kong). Singapore suggests a similar ‘early implementation’ plan and stresses the need for it to be well-funded and resource-rich.
 - Classroom-orientated training: Reorientation of on-the-job teacher development programmes to address the practical issues of teaching, rather than

- taking a theoretical approach, offering “*practical tools and enhance[ing] skills to improve teachers’ planning, teaching and assessment performance in the classroom*” (Argentina)
- Adoption of a downward transmission model: “*All Shido-shuji deployed at prefectural education board attend the seminars held by MEXT and they are responsible to disseminate what they learn from MEXT back in their own prefecture. Shido-shuji, deployed at municipal education board, attend the seminars held by prefectural education board and they are responsible to disseminate what they learn from prefectural Shido-shuji back in their own municipality*”. This was coupled with local bodies taking responsibility for deepening their own understanding, often hosting their own seminars and symposiums. (Japan)
 - Implementation of quality assurance schemes, e.g. school inspectorates, to ensure that “all support materials and CPD sessions in revised curriculums are in line with curriculum principles, principles, content and skills” (Ireland)
 - Wide-ranging consultation prior to and after design of curriculum reform (Japan, Poland, Singapore). “This enables the curriculum planners to understand the ground concerns and areas of improvement necessary for the next iteration, and to gather feedback to refine the proposals for the eventual revised curriculum” (Singapore). Japan and Singapore engaged in consultation with teachers, while Poland engaged in a more wide-ranging public consultation.
 - “To provide quality and adequate professional development for our teachers, a close partnership would have to be forged between the Ministry, our universities and research institutes where the academic and pedagogical expertise resides. Where necessary, links to industries would also be established for purpose of teacher training” (Singapore). They also suggest closer monitoring of implementation.
 - Chile has embraced various strategies to change the culture of pedagogy: “dissemination days and reflection on curricular change at the national level; And design of resources to support the curriculum implementation” and “the Center for Improvement, Experimentation and Pedagogical Research (CPEIP) has carried out an improvement course aimed at teachers on curriculum updating.” Chile reports that these endeavours have been successful.

Few jurisdictions reported back on the effectiveness of these strategies, though both Chile and Ireland suggested that they had had a positive effect.

Resistance from practitioners

Summary

Challenge: Practitioners unwilling or unable to implement curriculum reform

- **India** reported that many practitioners were insufficiently competent to support curriculum change, citing the historical low level of qualifications needed to become a teacher as the main reason.

- **Ireland** reported a fear and resistance to change among teachers, as well as a lack of capacity among school leaders to manage change.
- **Korea** highlighted the difficulty in engaging teachers and practitioners and getting them motivated.
- **Poland** reported both that there was a certain amount of scepticism about curriculum reform and that teachers were concerned about whether they were appropriately qualified.
- **Russia** reported that the majority of its practitioners were insufficiently competent to support curriculum reform. Comments to the effect that the pedagogical technique of many remains substantially unchanged since the Soviet era also implies a degree of unwillingness to change.
- **Singapore** reported both worries about the qualifications of some of its practitioners and worries about their understanding of curriculum change.

Strategies:

- **India** has recently raised the standards required for prospective teachers and is currently waiting for this change to filter through its cohort.
- **Ireland** has implemented a programme of “*high quality*” continuous professional development for teachers and school principals. It did not report on the efficacy of this strategy.
- **Korea** has undertaken a programme of professional development for teachers and practitioners. It did not report on the effectiveness of this strategy.
- **Poland** engaged in a programme of widespread consultation and disseminated information about curriculum change to the public and to practitioners. It reports that these strategies were effective and particularly stressed the efficacy of “*the consultation process and the development of teaching content in consultation with the teaching community*”
- Throughout 2014-15, **Russia** underwent a modernisation of its pedagogical education programmes designed to improve the competence of new teachers. The success of this reform was not reported. It has also implemented teacher retraining schemes, which it reports to be effective.
- **Singapore** has employed widespread consultation with teachers in the process of curriculum development to ensure that the teachers are more familiar with curricular reform, coupled with an active communication strategy, to ensure that teachers are able to deliver curricular reform.

Teachers are central figures in curricular reform whose beliefs should not be overlooked especially if the changes are fundamental and require radical changes in teachers’ belief systems (Haney, et al., 2002) (Roehrig & Kruse, 2005). Teachers who do not share reform-based beliefs can hold back implementation and implement little classroom change (Richards, et al., 2010). Teachers do not always do what they are told to do or act in ways that reinforce policy objectives. This is because they often lack capacity – knowledge, skills and resources – that might be necessary (Wang & Cheng, 2008). Teachers must thoroughly understand the principles and practices of any proposed changes as well as how to apply them in classroom settings. “The success of curriculum reform and its implementation depends on whether teachers willingly participate in and are valued and acknowledged in the process. Teachers’ understanding of any curriculum innovation is also indispensable in contributing to or impeding long-term success” (Wang, 2008, p. 10).

Some jurisdictions reported that practitioners were often either unwilling or unable to implement curriculum reform.

Several jurisdictions (India, Russia, Korea, Poland, and Singapore) reported that significant numbers of practitioners within the system were insufficiently competent or took themselves to be insufficiently competent to put curricular changes into practice. Reasons for this included the lack of appropriately able teachers and a lack of adequate training (see also 3.2.2. and 3.2.3.).

For example, Russia worried that *“the majority of Russian pedagogues only possess adequate competencies for a transfer of subject knowledge and that [a]pproaches to organising the learning process, methods of instruction and student assessment in Russian schools remain largely unchanged from the Soviet times.”*

Similarly, Singapore reported that *“[d]iffering levels of teacher competencies in the subject matter and pedagogical content knowledge in interpreting the syllabuses, planning and carrying out effective lessons and assessing students’ learning that are aligned with the curriculum’s goals.”*

Ireland reported unwillingness among practitioners to implement curricular reforms, observing *“[f]ear of change and resistance to change in education; lack of willingness to change, teacher-led conservative teaching approaches”*. Ireland also reported that a perceived lack of adequate support materials affected teacher enthusiasm.

Poland reported that *“[t]he change in the core curriculum raises uncertainty among teachers about whether they have the appropriate qualifications. New requirements force them to abandon their routine and develop a new teaching model, supplement or refresh the message”*

Approaches to countering these issues vary from jurisdiction to jurisdiction. India, whose problems were more rooted in political concerns than other education systems, proposed several deep changes to educational infrastructure that are relevant only to its particular case. It has also raised the standard of entry for new teachers, though this will only improve the standard to new teachers, not address those who are currently found wanting. Singapore has employed widespread consultation with teachers in the process of curriculum development to ensure that the teachers are more familiar with curricular reform, coupled with an active communication strategy, to ensure that teachers are able to deliver curricular reform. Along with this it is developing supporting materials for practitioners and offering teacher training prior to implementation. Russia, Korea, Ireland and Poland employed similar strategies of communication, training and developing support materials. In addition, Ireland found that having a quality assurance system was an effective way *“to ensure that all support materials and CPD sessions in revised curriculums are in line with curriculum principles, principles, content and skills.”*

Insufficient time between design and implementation

Summary

Challenge: Insufficient time between design of new curriculum and implementation

- **Estonia** reported that there was insufficient time between adopting and implementing the new curriculum, attributing this to the need for separated upper secondary school and basic school.
- **Hong Kong** did not explicitly mention concerns about lead time but did cite inertia caused by the fact that there had been no curriculum reform for many years.

- **Korea** reported that under its old system of periodic curriculum reform there was often not enough time between reforms for the old reforms to be implemented before the new ones were created.
- **Singapore** cited the lack of lead time for teachers to acquaint themselves with the new curriculum as an issue.

Strategies:

- **Estonia** implemented a strategy of teacher training, which it reported was effective.
- **Hong Kong** employed a number of practitioner training programmes, which it reported to be effective.
- **Korea** has replaced its system of periodic curriculum reform with a constant revision process.
- **Norway** did not explicitly mention concerns about lead time but explicitly mentioned strategies that involved ensuring that they were ample, which could imply either that it was responding to a challenge in this area of that it saw this as a natural part of curriculum reform.
- **Singapore** employed a strategy of widespread consultation and teacher training, suggesting that the consultation was especially important.

Effective implementation takes time, which due to political, social and economic reasons, many jurisdictions cannot afford. For example, some jurisdictions try to complete curriculum change within one election cycle (Fullan, 2016; Fullan, 2007; Hall, 2013).

Some jurisdictions (Estonia, Korea, and Singapore) reported that there was insufficient time between the design of the new curriculum and its practical implementation. Several jurisdictions cited structural reasons for this, e.g. Korea reported that this problem was due in a large part to a culture of wholesale curriculum reforms implemented regularly over short time periods and Estonia cited a lack of separation between the curricula of secondary upper school and basic school. Some jurisdictions, such as Norway and Hong Kong, did not explicitly mention concerns about lead time but explicitly mentioned strategies that involved ensuring that they were ample, e.g. Norway's practice of having "[o]ne year of preparation after the completion of the curriculum reform process before the renewed curricula are applied by schools." This implies that they have concerns about inadequate lead time. In all cases, the solutions proposed recommended various ways of improving teacher training, communication between practitioners and authorities and ensuring that adequate lead time is scheduled. Though more detailed than most answers, Singapore's approach can be seen as typical of both the strategies mentioned and their motivation.

"Professional development for subject teachers would take place one to two years before the year of implementation, and this would continue into subsequent years. The large deployment of resources (e.g. time, money, training personnel) is deemed essential to enabling subject teachers to carry out the revised curriculum well, according to its aims and with fidelity. The early start to professional development facilitates gradual deepening of teachers' understanding of the curriculum shifts..."

"Fostering open and regular two-way communication and involvement with our internal stakeholders (teachers and relevant departments within the ministry) through the various platforms described above is particularly effective and essential."

Lack of guidance from the top

Summary

Challenge: Lack of guidance from the top

- **India** reported that there was no “*continuing operational guidance*” or guidance on curriculum reform implementation from the central government on curriculum reform.
- **Mexico** reported a lack of clear strategy for effective implementation and a lack of institutional support.

Strategies:

- **India** has implemented a number of reforms to its education infrastructure, including better oversight mechanisms.
- **Mexico’s** strategy was to increase the involvement of institutional stakeholders but the details were unclear.
- While **Singapore** did not explicitly criticise the guidance from the top, its suggested strategies surrounding the notion of “*communication*”, e.g. briefings and printed material, suggested that there were challenges related to this.

Communication between policy-makers and stakeholders must be two way and take stakeholders’ ideas seriously (Levin, 2009). Wedell and Grassick state that the underlying issues is that most countries impose change from the top down with those responsible for implementation locally rarely informed or consulted about changes or involved in implementation planning (Wedell & Grassick, 2018). This can result in planning taking place without sufficient consideration of on-the-ground realities leading to confusion among teachers about what exactly they are supposed to do.

Several jurisdictions mentioned that there had been inadequate guidance from the relevant authorities on how the curriculum was to be understood and implemented. Even when curriculum reform was developed, these jurisdictions reported issues surrounding the communication of these developments to practitioners, as well as a lack of practical advice for implementing them. India, for example, reported that

“The earlier policies had laid out clear objectives and goals; however, many of these have not been realized fully or even partially. This has largely been due to absence of a clear workable roadmap and continuing operational guidance being put in place.”

Similarly, Mexico reported a lack of a “*clear strategy for the effective implementation of the curricular proposal*” and that many of the institutions and individuals involved in the development stage were absent thereafter.

Though Singapore did not explicitly criticise the guidance from the top, its suggested strategies surrounding the notion of ‘communication’ were revealing:

“Communicating the revised curriculum through a variety of platforms such as subject briefings, written memos, and print policy documents serves to

(a) inform and increase the visibility of the revised curriculum;

(ii) reinforce key intent and features of the revised curriculum, and

(iii) provide opportunities for stakeholders to raise questions for clarification and also share their concerns regarding implementation which can inform the measures that can be adopted and targeted to support the schools in implementing the curriculum.

These could include sharper anticipation of manpower and infrastructural needs required to implement the curriculum. These needs could then be addressed by communicating early to relevant departments in charge to ramp up the needed manpower and resources to support the implementation of the curriculum.”

Other strategies mentioned by jurisdictions experiencing problems regarding a lack of guidance include general and wide-reaching improvements to educational infrastructure (India) and improved teacher training (Mexico).

Difficulty in achieving “buy-in” for reform

Summary

1. Challenge: Difficulty achieving buy-in from practitioners

- **Argentina** reported difficulty in achieving buy-in but it was unclear whether it was talking about practitioners or the public.
- **Chile** reported that the “top-down” nature of policy development was inappropriate but widely supported by practitioners, leading to a lack of enthusiasm for reforms.
- **China** reported that those engaged with curriculum reform were mostly “*outstanding principals and teachers*”. It also reported that regional differences exacerbated this effect.
- **Ireland** had difficulties getting conservative teachers to engage with curriculum reform.
- **Korea** reported that it is “[d]ifficult to draw teachers’ and practitioners’ motivation and attention”.
- **Norway** worried about a situation wherein “*there is no common understanding of the main principles of the renewal and no consensus concerning what the key priorities in each subject are*”.

Strategies:

- **Argentina** undertook a strategy of teacher training and developing supporting materials.
- **Chile** undertook a strategy of teacher training and design of support materials. It reports that its efforts at teacher training have been especially effective.
- **China** pursued a strategy of teacher training to encourage practitioners to engage with reforms. It did not report on the efficacy of this strategy. To combat the regional problem, China did research to understand differences and engaged with principals and teachers to achieve their buy in. It also established an “*experimental area for curriculum implementation*”, which it reports was effective.
- **Ireland** suggested that engaging teachers indirectly by consultations with learners was effective. It also pursued a strategy of teacher training and implemented better quality assurance mechanisms. It reported that the latter were successful.
- **Korea** undertook a strategy of teacher training and information dissemination about curriculum reforms. It did not report how effective these strategies were.
- **The Netherlands** stressed the importance of teacher involvement, which could imply either that it was responding to a challenge in this area or that it saw this as a natural part of curriculum reform.

- **Norway** engaged in a strategy of engagement with a variety of stakeholders, publication of supporting material and ensuring sufficient lead time for reforms. It reports that it is too early to judge the effectiveness of these strategies.

2. Challenge: Difficulty achieving buy-in from the public

- **Argentina** reported difficulty in achieving buy-in but it was unclear whether it was talking about practitioners or the public.

Strategies

- If **Argentina's** buy-in problem was related to the public, it is unclear what strategy it undertook.
- **Hong Kong** did not specify the exact issues it had with public buy-in but discussed public consultation, briefings and publication of supporting materials as strategies for achieving it. It suggested that consultations were the most important of these.

Successful change comes about through the efforts of large numbers of stakeholders who work towards the same goal in a way that provokes enthusiasm among all those who must “buy-in”. A critical mass of people who are skilled in and committed to the change must be generated and the system has to support continually all those working within it (Fullan, 2016). Fullan characterises this as concentrating on capacity building with a focus on results through positive action. “It all amounts to focus, persistence, implementation, monitoring, corrective action, and humility in the face of change” (Fullan, 2007, p. 121). Fullan argues that if teachers do not agree with the goals of the proposed changes, or if they lack the skills to implement the change, then change will not be implemented successfully, or sometimes at all. If curriculum change is to be successful and expected learning outcomes to be achieved, it must be accompanied by teacher development that is enshrined in a jurisdiction’s curriculum policy (Persson, 2016).

Successful implementation of curricular change takes into account teachers’ concerns. Decisions about content and methods should, where possible, be made at the local level rather than being prescribed from above, bearing in mind that these local decisions must reflect the overall system’s curricular purposes and learning outcomes (Priestley, 2016). Shared decision making is promoted as a way of enhancing implementation – empowered community members can effectively solve local problems and in exercising some control they can match programme needs to local needs, preferences and culture (Durlak & DuPree, 2008).

One of the most common issues reported in the questionnaire was the difficulty in achieving “buy-in” from stakeholders, including teachers, school administrators, parents, learners, education professionals, local officials and other interested parties. This failure to engage with the project of curriculum reform was variously attributed to:

- “*top-down approach to policy development*” (Argentina, Chile) Chile suggested that this was exacerbated by support among teachers for this approach.
- Barriers created by stakeholders
 - From practitioners: Ireland reported issues stemming from “[f]ear of change and resistance to change in education; lack of willingness to change, teacher-led conservative teaching approaches.” China reported that those who get involved in curriculum reform tend to be the “outstanding principals and

teachers”, which implies that there is a lack of “buy-in” on the part of those who do not match this description. Korea reported that it is “[d]ifficult to draw teachers’ and practitioners’ motivation and attention”.

- From trainers of practitioners: “both Initial Teacher Education and teacher improvement programs could be collaborating to reproduce a traditional logic of curricular management, pointing to management practices and curricular reflection, over a reduced implementation.” (Chile)
- From unions: “Strong unions eager to intervene in policymaking at central and provincial level as a means to ensure teacher stability and labor rights, but less interested in contributing to achieving quality education. Unions tend to resist change.” (Argentina)
- Issues arising from the diversity of the jurisdiction. Argentina articulated this well by describing itself as a “[b]ig and diverse country, with different traditions, cultures and socioeconomic development levels. It hard to open consultation at a country level and build consensus”. China shared this concern about the difficulty in building consensus. Norway had a similar worry about a lack of consensus concerning key priorities for each subject and principles of renewal but seemed primarily concerned about diversity of stakeholders, rather than diversity in the country.
- Periodic, one-time overall revisions create doubts as to the “necessity and legitimacy” of revisions. “Although parts of the curriculum do not need revisions, overall revisions create, in a sense, cynical attitudes about revisions, and make it difficult for gradual, continuous revisions.” (Korea) (see 3.4.1.)

Strategies for dealing with this lack of “buy-in” included:

- Consultation: Several jurisdictions suggested that “buy-in” could be achieved by engaging in wide-spread consultation of various groups (practitioners, learners, society), though the groups mentioned varied between jurisdictions. The Netherlands, for example, stressed teacher involvement as particularly important, stating.

“Teachers should be given a very prominent role within the design process, because it is the teacher who gives form and substance to the curriculum. Inspiring, expert teachers encourage their students to learn”

The Netherlands also suggested that the curriculum should be reviewed periodically “preferably involving a similar process of consultation and dialogue extending throughout the education chain”, meaning that this consultation will be ongoing.

Hong Kong and Finland engaged in public consultations, with Finland stating that “[o]penness and participation ensures quality of the core curricula and increases commitment to them.”

Ireland suggested that “seeking the voices of learners” specifically was a good way of achieving teacher “buy-in”.

To combat the regional problem, China did research to understand differences and engaged with principals and teachers to achieve their buy in. It also established an “experimental area for curriculum implementation”, which it reports was effective.

- Adequate advice and training on new curriculum: Several jurisdictions suggested that enhanced support and training for curriculum reform aimed at practitioners helped achieve their “buy-in”. The nature of this training varied depending on the specific issues faced, with China, for example, suggesting training specifically catering to particular regions to deal with regional variation and Chile engaging in a number of strategies designed to “*disseminate curriculum change*”, of which “*The Dissemination Days of curricular change, the resources designed to support implementation, and updates courses have been considered valuable in order to internalize the meanings of change.*”
- Communicating with parents and learners about curriculum: Several jurisdictions reported that informing the public about changes to the curriculum, especially “*required changes of emphases and pedagogical approaches and how that might impact on learners*” (Ireland) was important to achieving “buy-in”.

While few jurisdictions reported explicitly on the results of these strategies, Hong Kong suggested that their consultations had been effective at achieving “buy-in” and Chile reported that some explanatory resources for optimal curriculum management (for example the explanatory booklets) have contributed to concrete and valuable examples for teachers and schools.

Time-lag gap

Summary

Challenge: Curriculum change taking too long, lagging behind industry, regulatory, and accreditation shifts. Though strictly irrelevant to the question, some responses can be understood as relevant to implementation.

- **Kazakhstan** reported that the time-lag gap was exacerbated by implementation problems of the type discussed earlier in this report, including a lack of preparedness.
- **Czech Republic, Mexico and Portugal**’s answers to the question were not directly relevant to the gap between curriculum development/implementation processes and outcomes.

Strategies:

- **Kazakhstan** pursued a strategy of improved practitioner training and improved supporting materials. No information was offered as to the efficacy of these strategies.

Jurisdictions affected: Czech Republic, Mexico, and Portugal

Despite there being a survey question specifically on this issue (2.4.1.), some jurisdictions understood the ‘gap’ specified by question 2.4.5. in part or in whole as the ‘time-lag gap’, i.e. an effect whereby ‘the usual or “standard” curriculum renewal approach to embed new knowledge and skills within the curriculum may take too long, lagging behind industry,

regulatory, and accreditation shifts’ (Desha, et al., 2009, p. 184). As a result, their responses did not constitute direct answers to the question. They did, however, detail some responses that might be considered relevant to issues in implementation. Kazakhstan, for example, noted ways in which the time-lag gap was exacerbated by implementation problems of the type discussed earlier in this report, for example preparedness issues, leading to delays in implementation and an increase in the time-lag gap. In its own words,

“[S]ome of Kazakhstan’s previous decisions about the scale plans were postponed due to several factors, among which were relatively small experience and capacity of institutions in curriculum development, implementation, monitoring and evaluation, frequent changes in policy-making and lack of understanding of society in terms of changes suggested”

Proposed responses to the time-lag gap reported here can be divided into two groups: those that recommended improvements to current practice (e.g. Kazakhstan recommended improved practitioner training and ensuring that “*grade 1 classrooms are equipped in a sufficient manner*”; Mexico stressed the need for a clear implementation strategy and effective ways of transmitting knowledge of curriculum reform from the central government to the classroom) and those that recommend changing the model for training to a “*permanent process of progression and innovation of curriculum*” (Czech Republic). The Czech Republic’s suggested model, for example, included four stages:

1. **identification** of society needs,
2. **transformation** of identifiable needs into pedagogy categories,
3. **construction** of innovated curriculums and their implementation
4. **monitoring and evaluation** (check the concordance between innovation effect and original society needs).

Portugal’s response to the time-gap lag was to implement a greater degree of curriculum flexibility at the school level (25%) to allow schools to adjust the curriculum to the times.

Conclusions

In the OECD report *The Future We Want, The Working Group of the Education 2030* has identified five common challenges to successful curriculum redesign, among which it includes the fact that “[t]he gap between the intent of the curriculum and learning outcome is generally too wide”, suggesting that “[c]areful planning and alignment is critically important for effective implementation of reforms.” In order to understand the nature of this gap and how it could be lessened, the OECD policy questionnaire on Curriculum Redesign (PQC) asked respondents to detail the issues they had encountered relating to this gap and the strategies that they employed in order to address it.

Responses were extremely variable in length, detail and quality, meaning that it was difficult to extract any robust information in a methodologically acceptable way. However, from the responses three particularly notable categories of issue arose: issues related to the structure of the education system, issues related to preparedness and issues related to achieving “buy-in”. Some jurisdictions discussed the time-lag gap, though this was irrelevant to the question.

Despite the diversity of problems encountered, three suggested types of response emerged – preparation of supporting materials, training and consultation. Most jurisdictions employed some combination of these strategies to address the vast majority of issues. It is worth noting that these types of strategies were all detailed as examples in the question itself.

Due to the paucity and quality of data and the highly interpretive construction of this report (see Methodology) it is not possible to draw any informative conclusions with confidence. While the general strategies employed seem apt, it is not obvious that they go very far beyond the prompts in the question or how they differ from activities implicit in implementation itself. In addition, the success of these strategies was not widely reported nor *why* these strategies were successful.

1. References

- Allen, C. D. & Penuel, W., 2015. Studying teachers' sensemaking to investigate teachers' responses to professional development focused on new standards. *Journal of Teacher Education*, 66(2), pp. 136-149.
- Avalos, B., 2011. Teacher professional development in teaching and teacher education over ten years. *Teaching and teacher education*, 27(1), pp. 10-20.
- Benavot, A., 2011. Improving the provision of quality education: Perspectives from textbook research. *Journal of International Cooperation in Education*, 14(2), pp. 1-16.
- Boyle, B., While, D. & Boyle, T., 2004. A longitudinal study of teacher change: What makes professional development effective. *Curriculum Journal*, 15(1), pp. 45-68.
- Brain, K., Reid, I. & Boyes, L., 2006. Teachers as mediators between educational policy and practice. *Educational Studies*, 32(4), pp. 411-423.
- Darling-Hammond, L., 2009. Teaching and the change wars: the professional hypothesis. . Dans: A. Hargreaves & M. Fullan, éd. *Change Wars*. Bloomington: Solution Tree., pp. 45-68.
- Davis, E. A. & Krajcik, J. S., 2005. Designing educative curriculum materials to promote teacher learning. *Educational researcher*, 34(3), pp. 3-14.
- Desha, C., Hargroves, K. & Smith, M., 2009. Addressing the Time Lag Dilemma in Curriculum Renewal Towards Engineering Education for Sustainable Development. *International Journal of Sustainability in Higher Education*, 10(2).
- Durlak, J. & DuPree, E., 2008. Implementation matters: A review of the research on the influences of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*, 41(3-4), pp. 327-350.
- Frank, K. et al., 2011. Focus, fiddle, and friends: Experiences that transform knowledge for the implementation of innovations. *Sociology of Education*, 84(2), pp. 137-156.
- Fullan, M., 2007. *The new meaning of educational change (fourth edition)*. New York: Routledge.
- Fullan, M., 2016. *The new meaning of educational change (fifth edition)*, .: 5th éd. London: Routledge.
- Hall, G., 2013. Evaluating change processes: Assessing extent of implementation (constructs, methods, and implications). *Journal of Educational Administration*, 51(3), pp. 264-289.
- Haney, J. J., Lumpe, A., Czerniak, C. & Egan, V., 2002. From beliefs to actions: The beliefs and actions of teachers implementing change.. *Journal of Science Teacher Education*, 13(3), pp. 171-187.
- Kisa, Z. & Correnti, R., 2015. Examining implementation fidelity in America's choice schools: A longitudinal analysis of changes in professional development associated with changes in teacher practice.. *Educational Evaluation and Policy Analysis*, 37(4), 37(4), pp. 437-457.
- Lauer, P. A., Christopher, D., Firpo-Triplet, R. & Buchting, F., 2014. The impact of short-term professional development on participant outcomes: a review of the literature. *Professional development in education*, 40(2), pp. 207-227.
- Leithwood, K., Jantzi, D. & Mascal, B., 2002. A framework for research on large-scale reform. *Journal of Educational Change*, 3(1), pp. 7-33.
- Levin, B., 2009. Reform without much rancor.. Dans: A. Hargreaves & M. Fullan, éd. *Change wars*. Bloomington: Solution Tree, pp. 259-273.
- O'Donnell, C., 2008. Defining, conceptualizing, and measuring fidelity of implementation and its relationship to outcomes in K-12 curriculum intervention research.. *Review of Education Research*, 78(1), pp. 33-84.
- OECD, 2013. *PISA 2012 Results: What Makes Schools Successful? Resources, Policies and Practices (Volume IV)*, Paris: OECD Publishing. <http://dx.doi.org/10.1787/9789264201156-en>.
- OECD, 2016. *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, Paris: OECD Publishing, <https://doi.org/10.1787/9789264267510-en>.

- Persson, A., 2016. Curriculum and expected learning outcomes in , . Dans: C. Honeyman, éd. *Textbooks and teachers' guides. 25 Ways to Improve Learning*. s.l.:International Institute for Educational Planning. learningportal.iiep.unesco.org.
- Priestley, M., 2016. *A perspective on learning outcomes for curriculum and assessment*. . Dublin: National Council for Curriculum and Assessment.
- Richards, J. C., Gallo, P. & Renandya, W., 2010. Exploring teachers' beliefs and the processes of change. *PAC Journal*, 1(1), pp. 41-58.
- Roehrig, G. H. & Kruse, R., 2005. The role of teachers' beliefs and knowledge in the adoption of a reform-based curriculum. *School Science and Mathematics*, 105(8), pp. 412-422.
- Wang, H., 2008. Language policy implementation: A look at teachers' perceptions.. *Asian EFL Journal*, 30(1), pp. 1-25.
- Wang, H. & Cheng, L., 2008. The impact of curriculum innovation on the cultures of teaching. *The Chinese English Foreign Language Journal*, 1(1), pp. 5-30.
- Wedell, M. & Grassick, L., 2018. Living with Curriculum Change: An Overview. Dans: *International Perspectives on Teachers Living with Curriculum Change*. London: Palgrave Macmillan, pp. 1-13.