Teaching for the Future

EFFECTIVE CLASSROOM PRACTICES TO TRANSFORM EDUCATION

OECD

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OECD
BETTER POLICIES FOR BETTER LIVES

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Foreword

Teaching now is more dynamic, challenging and demanding than ever before. Teachers are expected to continuously innovate, adapt, and develop their teaching practices to equip all students with the skills and knowledge they will need to succeed in life and work. Classrooms are increasingly diverse and effective teaching demands that teachers individualise the learning experience to accommodate the needs of all. At the same time, teachers are expected to collaborate with parents and communities to support the academic, social and emotional development of students. Moreover, technological changes and the increased availability of digital resources are opening new avenues for both teaching and learning.

These changes and expectations are transforming the landscape and nature of teaching, and teachers need to be supported in this process of change. The Qudwa ("role model" in Arabic) Global Teachers' Forum, started in 2016 by His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the United Arab Emirates Armed Forces, sets out to do this. The Forum is a unique platform for teachers to think about ways to improve their practice, to ask questions to experts and colleagues, and to share their experiences. This not only helps teachers improve their teaching today, but it also helps them better prepare for tomorrow's teaching challenges.

The 2017 edition of the Qudwa Global Teachers' Forum brought together more than 800 educators from over 80 countries. The OECD partnered with the Crown Prince Court to shape the vision for the Forum and develop a programme of interactive "Teacher Talk" sessions. These "Teacher Talk" sessions, moderated by the OECD, were 45-minute panel discussions on some of the most pressing issues that teachers face today. The panel for each session included experts in the field, practitioners and other key stakeholders, and included questions from the educators gathered at the Forum. As background for each session, the OECD prepared a *session note* detailing insights from literature and data from OECD studies.

This report pulls together the *session notes* that were prepared prior to the Forum and the "Teacher Talk" panel discussions, to provide actionable agendas that pinpoint the most critical issues for teachers and provide guidelines for how to foster change.

The report draws on analyses of the OECD Teacher and Learning International Survey (TALIS) and the OECD Programme for International Student Assessment (PISA) studies, and was drafted by the OECD Directorate for Education and Skills. The editorial oversight was led by Sakshi Mishra and Pablo Fraser. The session notes were drafted by Francesco Avvisati, Francesca Borgonovi, Tracey Burns, North Cooc, Milos Kankaras, Noémie LeDonné, Alejandro Paniagua, Mario Piacentini, Marie Sigrant, Dirk van Damme, Hannah von Ahlefeld and Samantha Zeluck. Additional input was provided by moderators Alfonso Echazarra, Elizabeth Fordham, Tarek Mostafa, Kristina Sonmark and Karine Tremblay. Amy Sulkis Below edited the publication and Henri Pearson co-ordinated its production. The team also received guidance from the Crown Prince Court and Pink Tank. Andreas Schleicher, Yuri Belfali, Paulo Santiago and Cassandra Davis provided comments on the report.

Editorial

Anyone flying into Abu Dhabi or Dubai is amazed at how the United Arab Emirates (UAE) has been able to transform its natural resources into spectacular buildings and a bustling economy. But more recently, the country is discovering that far greater wealth than all the oil and gas together lies hidden among its people. If the country would live up to its ambition to be among the world's 20 leading school systems, as measured by the Programme for International Student Assessment (PISA), that could add over USD 5.6 trillion to the economy over the lifetime of today's primary school students, or the equivalent of nine times the size of the UAE's economy (OECD, 2015). That is because people with a solid foundation of knowledge, with creative, problem-solving and collaborative skills, and with character qualities such as mindfulness, curiosity, courage and resilience, make much greater contributions to economic and social progress.

The trouble is that the UAE has been slow to invest in the people who can tap into and develop that new wealth: highly effective and creative teachers. That might be about to change. On 7-8 October 2017, His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme Commander of the UAE Armed Forces, invited over 800 teachers from around the world to the Qudwa Global Teachers' Forum (Qudwa Forum or Forum, hereon) to reimagine the profession. Building upon the success of a national dialogue for teachers the year before, it was the first such international event where the talk was not just about teachers, but for and led by them. In what was dubbed the "Ask' track of the Forum, teachers explored the future of teaching and the design of innovative learning environments. The "Advance" track featured amazing role models for tomorrow's teachers. And in the "Share" track, teachers exchanged views on innovative practices. What the Forum provided was a space where teachers talked about how they can prepare today's students for *their* future, rather than for *our* past.

For a start, teachers drew up a job description for the profession far bolder than what governments typically come up with. Of course, teachers need to have a deep understanding of what they teach and whom they teach, because what teachers know and care about makes such a difference to student learning. But the Qudwa Forum also expects teachers to be passionate, compassionate and thoughtful; to encourage students' engagement and responsibility; to respond effectively to students of different needs, backgrounds and languages; to provide continual assessments of students and meaningful feedback; to promote collaborative learning, tolerance and social cohesion; and to ensure that students feel valued and included. And it expects teachers themselves to collaborate and work in teams, and with other schools and the wider community, to advance their profession.

Most of the teachers at the Qudwa Forum acknowledged there was even more involved in excellent teaching than this. Successful people generally had a teacher who was a mentor and took a real interest in their life and aspirations, who helped them understand who they were, and revealed their passions and how to build on their strengths. These were teachers who instilled a love of learning and taught them how to develop effective learning strategies, and who helped them discover where they can make a difference for social progress.

Put all of this together and it seems teachers would have every reason to ask for much better pay to meet these expectations. But I heard no one at the Forum saying they need more money before they can make a start. That is quite remarkable, because that is usually the killer argument with which we pass responsibility on to someone else. Instead, the event offered many promising answers for how teachers can take on their transformational role.

Teachers' commitment to helping all learners

What impressed me most was the participants' deep commitment to equity, to do whatever it takes to leverage the talent of every learner. That came across in many ways. First, in the belief that every student can learn, and the importance of embracing diversity in learning with differentiated approaches to teaching. This means building instruction from students' passions and capacities, helping students personalise their learning and assessments in ways that foster engagement and talents, and encouraging students to be ingenious. As Aggeliki Pappa, Chief Executive Officer and founder of the non-governmental organisation (NGO) 'I Love Dyslexia' put it: "We need to break down the belief that some students cannot learn or are disabled. Students are just differently abled."

It also came through in the way in which so many of these teachers are addressing social disadvantage, even in the most difficult circumstances. Children from privileged backgrounds will always find open doors in life, but those from disadvantaged backgrounds have only one card to play, and that is to meet a teacher like those at the Qudwa Forum and get a good education. If they miss that boat, often there will be no second chance for them. And how we treat the most vulnerable students reflects who we are. I remember Manil Maharjan, a teacher from Nepal, saying, "When students can see a positive future, that is when they can concentrate on their present." Or Jacque Kahura, from Kenya, who noted, "If we understand these students and their life and their background, then we can fill the multiple roles they need." At the global level too, the world is no longer divided between countries that are rich and well-educated and those that are poor and badly educated. Countries can choose to develop a superior education system, and if they succeed it will yield huge rewards.

Teachers' commitment to equity also came through in how participants at the Qudwa Forum embraced learning-science and pedagogical innovation. This includes how teachers and schools can better recognise that students learn differently, and give students more ownership over the time, place, path and pace of learning. As Niall McGonigle, from the UAE, put it: "No matter what you are teaching, there is always a way to involve children in the process." Parveen Jaleel, another teacher from the UAE, added: "Just put the child in the centre and ignore everything else."

I was also impressed by teachers' commitment to their profession beyond the role they play in the classroom. These teachers saw themselves as learners with a growth mindset, and as contributing collaboratively to system leadership. As Richard Spencer, a teacher from the United Kingdom, noted: "Great teachers are great learners and students need to see their teachers learning." The heart of this is working with a high degree of professional autonomy and in a collaborative culture. As Souad Belcaid, from Morocco, said: "Do not be afraid of feedback"; and Eldijana Bjelcic, from the United States, added pointedly: "All feedback requires trust between providers and recipients."

We heard how teacher development must be viewed in terms of lifelong learning, with initial teacher education conceived as providing the foundation for ongoing learning, rather than producing ready-made professionals. And teachers explained how many of them are already engaged in research as an integral part of what it means to be a professional teacher.

Responding to a rapidly changing world

The sessions in the "Share" track also showcased many examples of how digital technology can leverage great teaching, even if it will never make up for poor teaching. What if we could get teachers around the globe working on curated crowd-sourcing of the best educational practices, making the Qudwa Forum a permanent platform? Technology could help create a giant open-source community of teachers and unlock the creative skills and initiative of all teachers, simply by tapping into the desire of the full community to contribute, collaborate and be recognised for it. I remember Paul Solarz, a primary school teacher from the United States, saying: "I have been teaching for 19 years. I was one of the most reluctant technology users. But now my students are my partners in bringing technology into the classroom."

But the heart of this is not technology; it is ownership. As His Highness Sheikh Abdullah bin Zayed Al Nahyan, Minister of Foreign Affairs and International Cooperation of the UAE, mentioned at the opening of the Forum, while learning will become more digital, teaching remains a deeply human activity, based on trust and passion. As I could see at the Forum, productive learning takes place when teachers feel a sense of ownership over their classrooms and when students feel a sense of ownership over their learning. So, the answer is to strengthen trust, transparency, professional autonomy and the collaborative culture of the profession, all at the same time.

But the most central reason why teachers' ownership of the profession is a must-have rather than an optional extra, lies in the pace of change in school systems. Even the most effective attempts to push a government-established curriculum into classroom practice will drag out over a decade, because it just takes so much time to communicate the goals and methods through the different layers of the system, and to build them into traditional methods of teacher education. In this age of accelerations, such a slow process is no longer good enough, and inevitably leads to a widening gap between what students need to learn and what teachers teach.

The only way to shorten that pipeline is for teachers themselves to be involved in the design of curricula and pedagogies, to enact and enable 21st century learning. As many teachers said, subject-matter knowledge will be less and less the core and more and

more the context of good teaching. Education in the 21st century is about helping students develop a reliable compass and the navigation tools to find their own way through our increasingly complex, uncertain, ambiguous and volatile world. While governments can establish directions and curricular goals for the instructional system, teachers need to be more involved in decision making.

In the past, the policy focus was on providing education; tomorrow it needs to be on outcomes, shifting from looking upwards in the bureaucracy towards looking outwards to the next teacher, the next school and the next education system. In the past, administrations emphasised school management; tomorrow the focus needs to be on instructional leadership, with leaders supporting, evaluating and developing high-quality teachers, and designing innovative learning environments. As Armand Doucet, a teacher from Canada, said: "We need administrators who are leaders and who understand that teachers need to do innovative things to get through to students." At dinner with a group of teachers from the Varkey Foundation Global Teacher Prize community, we talked about how assessments and accountability need to evolve, too, as school systems advance, and as rules become guidelines for good practice, and ultimately, as good practice becomes culture.

The Qudwa Forum showed how effective learning environments constantly create synergies and find new ways to enhance professional, social and cultural capital with others. They do this with families and communities, with higher education, with other schools and learning environments, and with businesses. Participants heard how building trust between teachers and parents requires regular and open communication. It also means creating places where parents, students and teachers do not just talk, but do things together. This might be something as simple as having breakfast together, which happens in *Fidaq Zaatar's classroom* in West Bank and Gaza strip, or more structured activities, like the innovative Maker Space in Bulgaria, where schools and communities work to design solutions to local challenges. As Anika Mir, a teacher from the UAE, put it: "Parents can be our assets and our allies as teachers"; and Stephen Ritz, a teacher from the United States, said: "We need to push the walls of the classroom out and bring the community in."

I was also struck by how deeply participants engaged in imagining the role of teachers for tomorrow. The past was constructed on divisions, with teachers and content divided by subjects and students separated by expectations of their future career prospects. The Qudwa Forum showed how the future needs to be integrated, with an emphasis on merging subjects and combining students. It also needs to be connected, so that learning is open to the rich resources in the community. Those participants who joined Ger Graus, Director of Education for Kidzania, in his "Meet the Mentor" session, saw how we can raise and widen horizons if we can better integrate the world of schooling with real life. And Soonufat Supramaniam, a teacher from Malaysia, showed participants how much can be achieved by inviting people from different professions to come to schools and discuss their careers.

The past was hierarchical; the future is collaborative, recognising both teachers and students as resources and co-creators. In the past, schools were technological islands, with technology often limited to supporting existing practices, and students always outpacing schools in their adoption of technology. Now schools need to harness the potential of technologies to liberate learning from past conventions and connect learners in new and powerful ways, with new sources of knowledge and with one another.

Tomorrow begins now

All this will have profound implications for the work organisations of schools. The past was about prescription; the future is about an informed profession, where professional and collaborative working norms replace the industrial work organisation, with its administrative control and accountability. Professionalism means emphasising the internal motivation of members and their ownership of professional practice. That demands public confidence in professionals and the profession, professional preparation and learning, and acceptance of professional responsibility in the name of the profession. With all of that, tomorrow's teachers will enjoy deep professional knowledge, a high degree of professional autonomy and a collaborative culture.

The challenge is that such transformation cannot be mandated by government, which would lead to mere surface compliance, nor can it be built solely from the ground up. Education needs to become better at identifying and championing key agents of change, and better at finding more effective approaches for scaling up and spreading innovation. This is also about finding better ways to recognise, reward and celebrate success, to do whatever is possible to make it easier for innovators to take risks and encourage the emergence of new ideas. Education needs less virtual reform and more *real change*.

None of this is easy; none of it will be done overnight. And the status quo will always have many protectors. But that's no reason to give up on education as the most powerful tool for building a fairer, more humane and more inclusive world.

Knowledge and skills have become the global currency of 21st century economies. But there is no central bank that prints this currency; we cannot inherit this currency, and we cannot produce it through speculation. We can only develop it through sustained effort and investment by people and for people. And no school system can achieve that without attracting, developing and sustaining great teaching talent.

Last, but not least, everyone took the theme of the event, "Teaching for Tomorrow", literally. What made the Qudwa Forum special for me was that it was not about the day after tomorrow, the next year or the next life, but about what everyone can introduce into their daily work tomorrow – literally.

The UAE should be credited for offering such an amazing platform to work together on this globally. As Sean Bellamy, a teacher from the United Kingdom, said: "If the education system is ailing, then Qudwa Forum has gathered the cure here under one roof." And perhaps that outward-looking perspective will turn out to become the key differentiator for seeing progress in education. The division may be between those schools and education systems that feel threatened by alternative ways of thinking, and those that are open to the world and ready to learn from the world's best experiences.

Andreas Schleicher

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Special Advisor on Education Policy to the Secretary-General

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Introduction

A Changing Landscape for Teaching

It is no exaggeration to use the word "revolution" when talking about how our lives have changed over the past few decades – and so has the set of skills we need to participate fully in and benefit from our globalised, hyper-connected, and increasingly knowledge-based economies and societies. Because our environments are faster-paced and more unpredictable than ever before, there is increasing pressure for governments to provide the right skills to all citizens, through high-quality education systems, and to do so in effective and equitable ways.

Teachers are a crucial part of this process of building more successful education systems, as evidence has shown that beyond the influence of parents and other factors outside the school, teachers provide the most important influence on student learning. But it is important to recognise that the work of teachers is radically different today than it was just a few years ago. Teachers worldwide are facing new demands and challenges, forcing a re-evaluation of their role and an assessment of how the teaching profession can rise to the next level to meet these challenges.

Indeed, the working landscape of teachers is changing as they face increasingly diverse classrooms. Growing participation rates in education worldwide translate into much more diverse student populations in terms of socio-economic backgrounds, availability of parental support for homework, and ability levels within classrooms. At the same time, globalisation and decreasing transport costs, among other factors, have boosted migration flows across countries and continents, bringing greater ethnic, linguistic and cultural diversity to schools. Education systems have also become more inclusive in recent years, and increasingly integrate students with special needs into mainstream schools and classrooms. These new realities are causing a shift in the role of teachers, from providers of uniform instruction and rote memorisation of knowledge to facilitators of active learning for diverse student audiences.

Meanwhile, rising inequality between and within countries, even in times of greater affluence, have brought issues of equity and social mobility to the forefront. Evidence shows that the most successful education systems are those that cater to the needs of all students, irrespective of personal circumstances or characteristics. Making globalisation work for all requires a new emphasis on social cohesion and education. As a result, the pressure is mounting on teachers to both cater and respond to the needs of diverse learners, and to provide more inclusive, targeted and individualised instruction to enable all learners to thrive, regardless of individual physical, educational or socio-economic disadvantage.

Technological and societal changes also bring about a new emphasis on students' well-being and the importance of forging partnerships with families. Improving individual well-being through the lifespan has become a key public policy goal throughout the OECD and beyond, as the modern world has created new stresses. Education is increasingly seen as having the responsibility to foster students' well-being, in addition to its traditional focus on cognitive outcomes. This requires schools and teachers to work more closely with parents to support students' academic and social progress more effectively. Indeed, as much as technology is transforming our lives for the better, it has also given rise to previously unknown risks and dangers such as hacking, cyber-bullying and identity theft, to name just a few emerging trends. As teenagers and children are frequent users of online services and social networks, schools and teachers are increasingly faced with the challenges of educating and guiding students through both the advantages and disadvantages of the virtual world, without always having the necessary skills to do so themselves.

Technological progress also provides educators with a much wider array of tools for instruction than in the past, but also challenges teachers to themselves learn how to best use technology to foster educational outcomes. The OECD Teaching and Learning International Survey (TALIS) revealed in 2014 that information and communication technology (ICT) skills for teaching were the second highest reported professional development need of teachers, with close to one in five teachers reporting a high level of need. And the pace of technological advancement seems to be constantly accelerating, thereby amplifying the challenge for the teaching profession to keep up with these changes, and maintain up-to-date skills for using technology in the classroom.

The nature of teaching itself is being challenged by rapid changes around the world. The advancement of technology, the transition towards more globalised and knowledge-based economies, the increase of migration and refugee flows, rising inequalities, and a surge in populism and radicalism, have produced profound changes in the labour market, democratic institutions and the very fabric of societies. In this context, educational systems have an imperative to provide the next generation with the skills and tools needed to navigate uncertainty and constant change. As such, there is increasing recognition that the outcomes of education need to extend beyond the traditional development of content knowledge and cognitive skills to also encompass new dimensions such as strategies for autonomous, lifelong learning, and character qualities that foster resilience, openness to other perspectives and an appreciation of the importance of inclusive, sustainable social progress. For teachers, this shift requires adapting their teaching strategies to meet the new demands of the 21st century.

The Qudwa Global Teachers' Forum

These changes in the landscape and nature of teaching are paramount, and can be somewhat destabilising and daunting for individual teachers and for the profession of teaching as a whole. This is the backdrop for the creation of the Qudwa Global Teachers' Forum (Qudwa Forum, or Forum hereon), started in 2016 by His Highness Sheikh Mohamed bin Zayed Al Nahyan, Crown Prince of Abu Dhabi and Deputy Supreme

Commander of the United Arab Emirates (UAE) Armed Forces, with the twin goals of empowering teachers to think creatively and helping them teach for tomorrow.

The 2017 edition of the Qudwa Forum was comprised of more than 800 educators from over 80 countries worldwide. Participants were specially selected for the impact they have had on their students, schools and communities, and included the participation of teachers and alumni from the Teach for All[1] and Varkey Foundation Global Teacher Prize[2] networks. They join a global community of role models who, as leaders, have the capacity to influence the mindsets of others to achieve the Qudwa Forum's aim of improving the future of education.

The OECD contributed to the Qudwa Forum by developing a programme of interactive "Teacher Talk" sessions to discuss some of the key emerging trends and challenges that will impact tomorrow's teaching, with experts in the field, practitioners and other key stakeholders. The Qudwa Forum aspires to spread the word more broadly as well, and to carry the voices of this group of role models out to the worldwide teaching community. This is the backdrop for this practitioner- and action-focused report, which compiles the essence of the Qudwa Forum 2017 "Teacher Talk" sessions.

Chapter 1 explores how school systems can respond to every child, and help them achieve their potential regardless of personal or social disadvantages. The chapter discusses the role of teachers in ensuring excellence and equity in education and includes strategies that can be adopted to better integrate all students in classrooms and schools.

Chapter 2 discusses how schools and families can work together to help ensure the social and emotional well-being of children. It explores how parents and teachers can better communicate and collaborate to maximise student learning and well-being. It also examines how bullying can impact learning and identifies ways in which students, teachers and parents can work together to address it.

Chapter 3 examines the shifts in teaching strategies to equip students with the right mix of skills, knowledge, attitudes and competencies required to succeed in the workforce. The chapter discusses what quality teaching means in the 21st century and examines the benefits and challenges of incorporating active learning strategies in classrooms.

Chapter 4 examines the various ways in which technology is changing the learning environment. It explores how teachers can use technology to support their teaching. Building on this, the chapter turns to look at social media and gamified teaching approaches that are particularly useful in increasing student engagement.

Finally, Chapter 5 discusses how best to foster innovation in teaching and learning to respond to the needs of 21st century learners. It explores issues around adopting and implementing innovative pedagogical approaches. To this end, the chapter also discusses the role of feedback in supporting teachers, and helping them innovate and develop as educators.

Each chapter focuses on two or three specific topics under the chapter's broader theme. The presentation of each topic begins with an overview from research, including empirical evidence from OECD studies, followed by a summary of the corresponding Qudwa Global Teachers Forum "Teacher Talk" discussion, highlighting lessons learned and key action points.

For policy makers, teacher educators, practitioners and others interested in education, we hope that this publication is an inspiring resource that informs many thoughtful discussions about the future of teaching. We invite all readers to ask themselves: "What does all of this mean for my daily work?"

Notes

1. Teach For All is a global network of 46 independent, locally led and funded partner organisations whose shared mission is to expand educational opportunity by increasing and accelerating the impact of social enterprises that are cultivating the leadership necessary for change.

2. The Varkey Foundation Global Teacher Prize is an award of USD 1 million, presented annually to an exceptional teacher who has made an outstanding contribution to their profession. The Global Teacher Prize is awarded by the Varkey Foundation under the patronage of His Highness Sheikh Mohammed bin Rashid Al Maktoum, UAE Vice President and Prime Minister and Ruler of Dubai.

CHAPTER 1

How can we make sure that schools respond to every child?

Teachers and school systems need to ensure that all students are able to achieve their potential regardless of any existing personal or social disadvantages. This chapter focuses on issues of balancing equity and inclusiveness in education systems to optimise learning for all students. First, the chapter explores the ways school systems can respond to students with special needs and includes strategies that teachers can adopt to make learning more meaningful for all. Second, the chapter makes a case for ensuring equity in education and presents methods and practices that help achieve integration of disadvantaged students in classrooms and schools.

Note regarding data on Israel

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> **We need a "global style" of teaching, meaning a style that stimulates the whole brain.**
> **Aggeliki Pappa, Founder "I love Dyslexia"**

Introduction

Education systems that help all students succeed are both inclusive and equitable. They ensure that every student has an equal opportunity to learn. Increasing enrolment, globalisation and migration flows have made classrooms much more diverse. System-level policies are essential for mitigating disadvantage and putting in place measures to support students who face greater challenges. Teachers are key to achieving this dual goal of excellence in education and equity. They need to be better prepared to face the demands of today's classroom. In this context, it is important for education systems to recognise and plan for this at the policy level.

Topic 1: Making schools more inclusive: Teaching students with special needs

Why is this topic important?

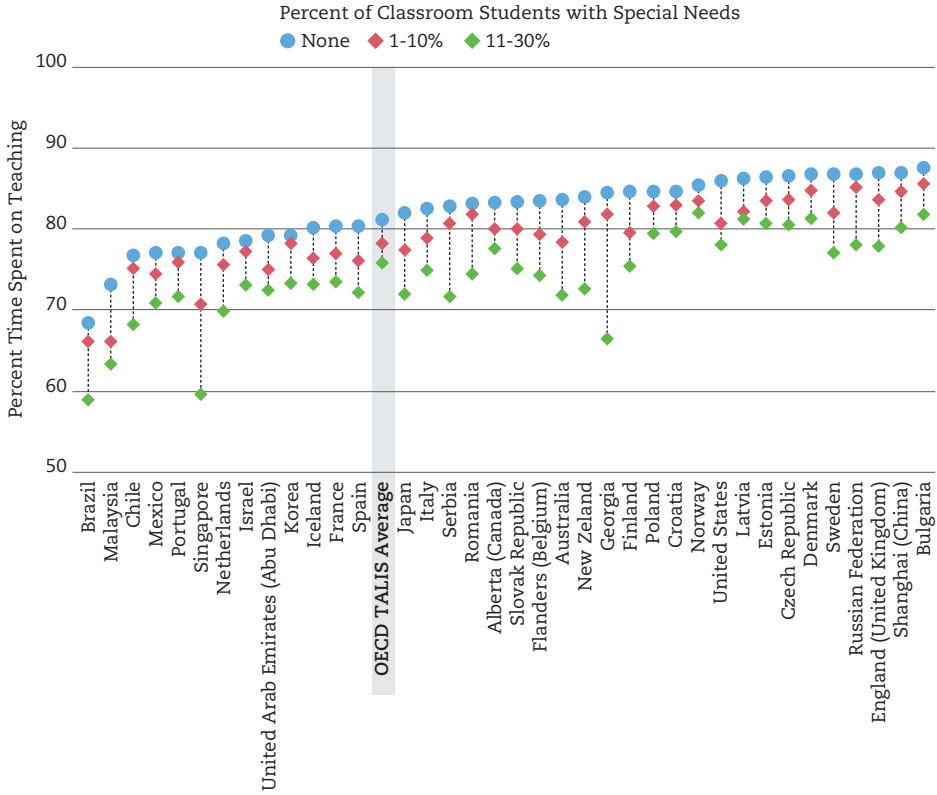
The number of children with special needs, defined in terms of learning challenges related to physical, cognitive, and emotional impairments, ranges from 93 to 150 million worldwide (UNICEF, 2013). As schools in many countries move towards integrating students with special needs into mainstream classrooms, one crucial issue teachers face is how to provide quality instruction to a more diverse group of learners, including some with significant challenges, in the same amount of time. Managing and using classroom time effectively and, if needed, providing access to extra support, becomes critical for ensuring that all students have an equal opportunity to learn. What are the challenges currently facing teachers in educating students with special needs? What can teachers do to foster more support for those with special learning needs in the future? How can schools support teachers in their quest to do so?

What is the evidence?

The motivation for inclusive education is typically framed from the perspective of students with special needs, often in terms of equal educational rights, and the academic and social benefits of inclusion. However, for many teachers, successfully creating and managing an inclusive environment that welcomes all students and meets individual learning needs, impacts how classroom time is used. More specifically, in classrooms with more students with special needs, teachers tend to report spending less time teaching. The disparities in the amount of time spent teaching in classrooms with students with special needs compared to those without, is a consistent and concerning trend (see Figure 1.1) that impacts both student populations, and requires instructional strategies that can, at the same time, be both universal and student-specific.

Another challenge for teachers working in inclusive classrooms is the need for additional professional development. Indeed, the OECD Teaching and Learning International Survey (TALIS) (OECD, 2013a) showed that 23% of teachers across all sampled countries reported a high level of need for professional development geared towards teaching students with special needs, the highest of all professional development need areas (OECD, 2014). School principals also reported that the lack of teachers with special needs training was one of the top three barriers to instructional quality for these students. The good news is that TALIS indicates that teachers who work in inclusive classrooms report fewer problems with student behaviour and disruption than teachers in classrooms without students with special needs. Thus, a priority for schools should be providing more professional development while supporting inclusive classroom instruction.

Figure 1.1 **Disparities in Teaching Time Across Countries**



Note: Students with special needs are defined by TALIS as those students for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged

The data from the United States should be interpreted carefully. This is because the United States did not meet the international standards for participation rates.

Source: OECD (2013a), *Teaching and Learning International Survey (TALIS): 2013 complete database*, *http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20*.

StatLink http://dx.doi.org/10.1787/888933691002

> **When you're confused and you don't know what to do, ask your student. You'd be surprised by the insights they have.**
> **Aggeliki Pappa, Founder "I love Dyslexia"**

The underlying principles of Universal Design for Learning

Universal design for learning (UDL) is one framework that addresses the disconnect between a demographically changing student population with diverse learning needs, and a "one-size-fits-all" curriculum (Edyburn, 2005). Rather than view some students as deficient or learning-challenged, UDL encourages teachers to question whether the curriculum itself is in some ways deficient or too narrow. The flexibility of UDL can benefit all students, even if designed with certain populations in mind. It is important to note that UDL is not a set of pre-packaged activities. Rather, as seen below, it comprises a set of three underlying principles with the goal of motivating student learning and maximising options for students to demonstrate that learning (Gordon, Meyer and Rose, 2016).

- **Principle 1: Multiple means of representation**

  Learners, including students both with and without special needs, differ in the ways they perceive and comprehend information (National Center on Universal Design for Learning, 2012). Some may process information more effectively through visual, digital, or auditory means, rather than printed text. Not only do learners have different preferences in this regard, but using a range of ways to convey information can also help students make connections between concepts.

- **Principle 2: Multiple means of expression**

  Students need different modes to process information and to express what they know. Although students with language impairment and cognitive disabilities need different means to express themselves, all students can benefit from more options for expression beyond formal testing. The degree of engagement is also a part of processing and expressing one's learning, especially for young children.

- **Principle 3: Multiple means of engagement**

  Teachers can motivate students to learn using activities that tap into background knowledge, culture, or personal relevance, and involve either individual or group work.

In designing instruction with these principles, teachers can use class time effectively and efficiently to ensure all students are engaged and ready to learn.

Students with greater learning needs

Even when teachers embrace a UDL approach to teaching and planning, students with special needs may still require more support and time to keep pace with others. There are many ways in which UDL can be combined with more individualised

> **Professional training is essential for teachers teaching students with special needs.**
> **Armine Gevorgyan, Teacher, Armenia**

approaches. In the United States, for example, the individualised education plan (IEP) goals of students with special needs, which are jointly developed by parents and school officials, should form the basis of a teacher's tailored daily instruction, whenever possible. Teachers can also consider using continuous progress monitoring via both formal and informal assessments (Bryant, Bryant and Smith, 2016). To assist students with special needs and their peers at the same time, teachers may group by level during part of the class, to provide more attention to some students, or use heterogeneous groups for students to practice collaborative learning. Peer-assisted learning can also be particularly effective for students with special needs (Sáenz, Fuchs and Fuchs, 2005).

As we look to the future, we can take additional steps to meet the requirements of students with special needs. While many school systems have already expanded classroom inclusion, pushing for an even greater level of inclusiveness worldwide is still warranted. Another priority should be continuing to work to provide the appropriate educational services and specific learning accommodations that each student needs. Allowing for extended time, providing scaffolding, and other such traditional accommodations are important. But, the expanded and effective use of assistive and adaptive technology can also help meet students' specific needs in tomorrow's classrooms.

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, three experienced educators were invited to discuss how schools and education systems could better teach students with special education needs (SEN). The panel included Armine Gevorgyan, a French language teacher from a high school in Armenia; Yasser Anass Sadek Ahmed, a teacher in the United Arab Emirates, and the coordinator for SEN students in his school; and Aggeliki Pappa, the founder of "I Love Dyslexia", a non-governmental organisation (NGO) that assists students with SEN in Greece.

Lesson 1: Schools should be as inclusive as possible

The panellists agreed that there should be inclusiveness at every level, when it comes to teaching students with special needs. Teachers, parents and schools should accept and treat a SEN child as someone who is differently abled, rather than someone who is disabled. One main challenge is to shift commonly held perceptions of and prejudices towards SEN students. This means that schools, teachers, and parents should engage and reflect on how to best proceed. The panellists noted that a practice like tracking, in which students are selected or grouped in classes according to ability levels, would be counter-intuitive, and would undermine efforts to integrate SEN students into the mainstream. Box 1.1 describes the methodology Ms Pappa's organisation employs in its work with SEN students.

> **Having students with special needs in a class is not an impediment to learning. The message that is sent to all students is to learn to embrace differences.**
>
> **Yasser Anass Sadek Ahmed, Teacher, UAE**

Box 1.1 Classroom approaches for working with SEN students: The "I love dyslexia" programme

The NGO "I love dyslexia" applies a comprehensive, research-based curriculum that uses multi-sensory techniques together with project-based and differentiated instruction to work with SEN students. It also employs new technologies, neuroscientific research, mindfulness and self-awareness sessions, and a variety of workshops.

Courses are designed to meet the needs of individual students and are based on five steps:

1. Meeting with parents to understand the profile of the student.
2. Evaluating the student's special education needs and understanding their learning style, capabilities and interests.
3. Implementing a collaborative programme between the parents and the SEN teacher, ensuring that all adopt similar approaches to facilitate the student's learning.
4. Integrating the student in classrooms and workshops, while following the student's specific personalised programme.
5. Continuously updating, with guidance for all stakeholders.

The "I love dyslexia" approach uses a combination of appropriate pedagogies, specialised software, and augmented reality tools supported by interactive technology to support teaching. The learning programme is renewed, updated, and amended as necessary, to meet the needs of each student, individually.

Lesson 2: Prepare teachers to recognise and cater to special needs

One of the biggest challenges when integrating SEN students into mainstream education is helping teachers adapt their teaching methods to meet the needs of students. According to Yasser Ahmed, the first step towards inclusion is identifying the SEN students within the school, and briefing their teachers about their needs. Integrating SEN students requires rearranging school resources, including human resources, to meet this objective. In addition, teachers should receive adequate training so that they feel empowered to handle all classroom situations. Training opportunities could cover issues from managing classroom time and managing student heterogeneity, to adapting the curriculum for SEN students and communicating with parents.

> **Instead of thinking how can I accommodate my special students differently, we should think about pedagogical methodologies that include all students similarly.**
>
> **Yasser Anass Sadek Ahmed, Teacher, UAE**

Transform abstract concepts into concrete explanations.
Aggeliki Pappa, Founder "I love Dyslexia"

Box 1.2 **Encouraging participation of SEN students**

Armine Gevorgyan shared some insights from her experience teaching students with special needs and behavioural problems in Armenia. For Ms Gevorgyan, it is vital that all students in the classroom feel included. This means every student in the classroom should have an equal opportunity to participate in discussions and to be heard. Ms Gevorgyan ensures that all students understand the lessons and refrains from penalising those that fall behind. Instead, she devotes additional time to understanding the problems that negatively impact the performance of some students.

According to Ms Gevorgyan, the best solution to the complex challenges that come with dealing with SEN students, particularly those with behavioural problems, often lies in simply listening to them, rather than blaming or isolating them. It is also helpful to talk with fellow teachers and other students to tackle the specific issues of students with behavioural problems. Other strategies Ms Gevorgyan adopts include interacting with students with behavioural issues to understand their interests, and encouraging them to participate in the activities they like. However, these strategies need to be balanced, as paying too much attention to one student, or to a group of students, may single them out and make them targets for bullying. It is therefore important to adopt an inclusive and holistic approach for all students, instead of limiting one's methods to students with special education needs. If the teacher values every student in the classroom, then the students are more likely to respect each other.

Key action points

The panellists identified three key action points that could improve the learning experience for students with special needs.

1. **School leadership should create a culture of inclusion of students with SEN:** School leadership can play an important role in developing an ethos of embracing diversity and in making sure that all are involved in the learning process. All stakeholders, including school leaders, teachers, communities, parents, and students, should be aware of the need to be inclusive towards every individual.
2. **Empower teachers:** Teachers should be empowered by schools and by national policies. They should be provided with material resources, training opportunities, and, most importantly, with a degree of autonomy in developing curricula and pedagogies for their SEN students.
3. **Establish a comprehensive programme for students with special needs:** Support is needed, as teachers cannot achieve the objective of inclusion on their own. Programmes should be created and norms set for how to integrate SEN students, and how to support teachers in doing so. This process should not be ad-hoc but should follow a well-defined structure.

> **My students need to learn both hard and soft skills. Content, yes. But also how to interact socially, and talking about needs.**
> **Jacque Kahura, Teacher, Kenya**

Topic 2: Making schools more equitable: Teaching disadvantaged students

Why is this topic important?

Socio-economic disparities in academic achievement have attracted the attention of researchers and policy makers since the 1960s (e.g., Coleman et al., 1966; Peaker, 1971; Jencks, 1972; and comprehensive reviews, such as Buchmann, 2002; and Sirin, 2005). Students from disadvantaged groups, including those whose parents have little education, those who live in poverty or have few resources, those whose native language is different from the language of instruction, and those who have recently migrated, tend to perform lower on standardised tests than non-disadvantaged students (OECD, 2016a, 2015). Education can be an engine of social inclusion and can help reduce broader social inequalities if and only if all students, regardless of their various disadvantages, are equipped with equivalent opportunities to realise their full potential.

Data from the OECD Programme for International Student Assessment (PISA) indicate that this is possible. The overall quality of student learning outcomes does not have to be compromised by the integration of language minority and immigrant students. Some education systems organise resources in ways that produce high levels of skills for all, including for those students who come from disadvantaged households (OECD, 2016a, 2015). What challenges do teachers face when teaching students from socio-economically disadvantaged households? Do those challenges differ from those they face in engaging students from language minorities or those who have recently migrated? How can schools and education systems support teachers in their efforts to foster equity?

What is the evidence?

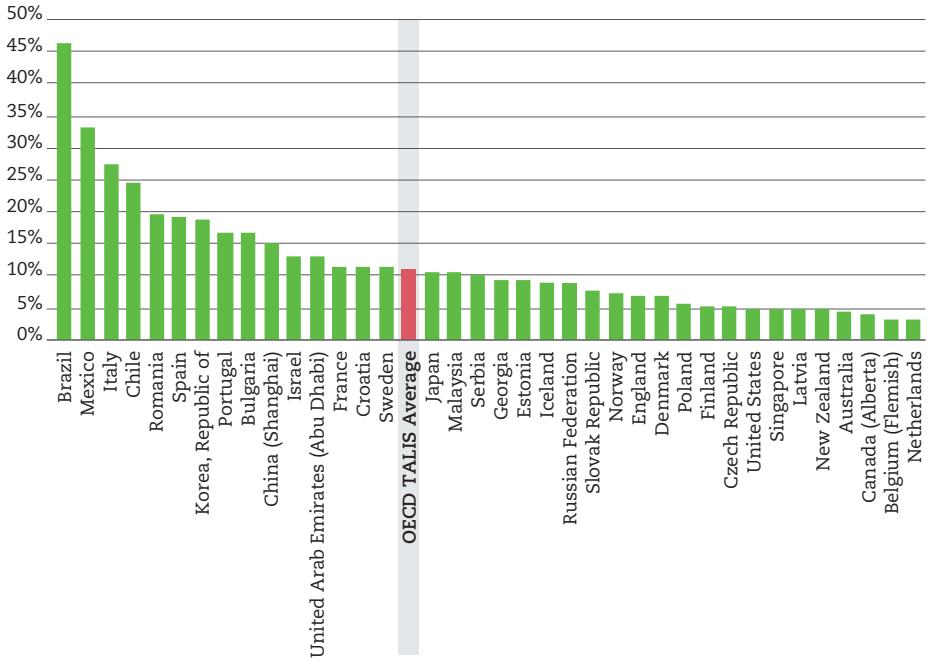
Countries differ greatly in the extent to which socio-economic conditions, language fluency, and migration status help explain and contribute to the level of students' academic performance. Nevertheless, the capacity of different education systems to equip students from different backgrounds with essential skills and positive attitudes towards learning, is a central and long-standing focus of global education monitoring initiatives. There are big differences among countries in whether disadvantaged students succeed in overcoming initial disadvantage, as well as in the extent to which teachers feel they have the skills and the support that they need to deal appropriately with the challenges that teaching disadvantaged groups can entail (OECD, 2016a, 2015).

In teaching students from diverse backgrounds, especially when it comes to non-native language speakers, teachers often feel the need for additional systemic support.

> **Teacher support and home environment support could be the most effective ways to help students succeed.**
> **Dr. Taoufik Boulhrir, Teacher, UAE**

As Figure 1.2 shows, on average, around 1 in 10 teachers participating in TALIS reports the need for additional professional development when teaching in multicultural settings. In some countries, the reported need is significantly higher than the average. For example, in Brazil, Italy and Mexico, over 25% of teachers feel they need more assistance in understanding the ways to address and support their students' needs in multicultural classrooms.

Figure 1.2 **Teachers' needs for professional development in a multicultural setting**



Note: The data from the United States should be interpreted carefully. This is because the United States did not meet the international standards for participation rates.

Source: OECD (2013a), *Teaching and Learning International Survey (TALIS): 2013 complete database*, *http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20*.

StatLink http://dx.doi.org/10.1787/888933691021

Challenges to overcome

Disparities in the learning outcomes of students not only reflect differences in the level of educational resources they receive, but also differences in the out-of-school experiences they have, the support they receive at home, and the attitudes and

expectations both they and their parents have (Downey and Condron, 2016; Downey, von Hippel and Broh, 2004).

Another challenge that teachers of disadvantaged students have is covering all the intended curriculum, especially when their students have language difficulties, possess low abilities to start with, or do not necessarily value themselves as learners. Many countries offer high-quality early childhood education to help ensure that disadvantaged children start school at less of a disadvantage. Yet, many disadvantaged students do not have access to such programmes, or they are of poor quality and do not address the overlapping barriers to learning (OECD, 2017).

Positive expectations and solutions

When students perform below the standards for their grade level because of socio-economic or language factors, and not because of specific learning difficulties, evidence shows that teachers and schools should not lower their expectations for these students. Instead, they should help them catch up by working with them individually, or by offering remedial classes. Language instruction and support should be offered when language is the primary barrier (See Box 1.3 below for examples), and migrant students should be placed in mainstream classes as soon as possible. In some countries where socio-economic conditions seem to have the lowest impact on performance, schools and teachers hold high expectations for all students. And in education systems that have closed the performance gap between disadvantaged groups and more advantaged students the most (such as Germany), targeted language support and additional remedial classes were provided to help level the playing field (OECD, 2016a, 2015, 2013b).

In the case of poorly performing disadvantaged students, there is tension between ensuring that they are adequately challenged through exposure to materials that match their current skill levels, and having them follow the same pace as other students. However, it is particularly important to avoid sorting disadvantaged students into different (less academic) education tracks or classes, or to have these struggling students repeat grades, with the intention of giving them more time to master their coursework and catch up with their peers. These practices run the risk of trapping disadvantaged students in a cycle of poor performance and disadvantage and, even more importantly, of creating a culture that justifies (at its best) and promotes (at its worst) low ambition, low expectations and low levels of effort among disadvantaged groups. Indeed, PISA data show that principals in schools with higher percentages of socio-economically disadvantaged students are more likely to report that student learning is hindered by teachers' low expectations of students (OECD, 2013b), that parents hold less ambitious expectations for their children's futures, and that the disadvantaged students hold similarly low expectations of themselves.

It is important to enhance the capacities of teachers to ensure that they are aligned with current trends.

Jacque Kahura, Teacher, Kenya

Box 1.3 **Using technology to help non-native language speakers**

The targeted use of technology has proven to be quite effective for supporting non-native language acquisition. While technology cannot replace real classroom instruction, it can be used to complement and supplement the work of trained teachers and professionals working with non-native language learners. Using mobile technology to access information and communicate with other learners or educators, places language learning at students' fingertips. Technology can also help shift instruction away from the traditional teacher-centred model, which is sometimes ill-suited to promote language acquisition, and instead create new possibilities for collaboration, social interaction and access to multiple resources which can enhance language learning (Eamer, 2013). Three ways technology can promote language acquisition are:

Digital communities of practice

Non-native speakers engage with native speakers through online discussions. This allows non-native speakers to actively participate, sometimes even more than native speakers, and to feel a sense of legitimacy through academic socialisation. This promotes student motivation by enabling social collaboration (Kim, 2011).

Digital storytelling

Language learners use photos, videos, audio and text to produce meaningful projects in the language they are learning (Rowinsky-Geurts, 2013). Students may find this approach cognitively challenging (e.g., difficulty with vocabulary or verb conjugation) but rewarding, as they employ complex thinking and strategies to complete their creations.

Computer-assisted language learning (CALL)

Computers monitor student progress and provide targeted feedback.

CALL materials are especially useful for learning specific vocabulary, grammar or pronunciation skills (Presson, Davy and MacWhinney, 2013).

Increasing opportunities to learn in the future

PISA data also indicate that socio-economic disparities in both the content and pedagogical approaches students are exposed to in school may contribute to disparities in academic performance by social class, and migrant or language status (OECD, 2016a, 2016b). Thus, to help ensure equity in tomorrow's classrooms, it is necessary to increase disadvantaged students' opportunities to learn. This could be achieved through the development of a more focused and coherent curriculum, a thorough evaluation of the effects of policies and practices that sort students by ability, and stronger support for teachers who teach heterogeneous classes. The power of technology, as in the example

in Box 1.3 above, can also be harnessed to support and complement the work of teachers. However, as the learning benefits of digital technologies depend on both the quality of the technologies and the readiness of teachers to make the most of them, such use should be introduced only after careful piloting and proper evaluations of their impact.

Lessons from the field: What are practitioners saying?

Three educators were invited to the 2017 Qudwa Global Teachers' Forum to participate in a panel discussing ways teachers and schools can improve the learning experiences of students from disadvantaged backgrounds. The panel included Jacque Kahura, a teacher in a rural Kenyan school and founder of the LIBA Organisation, which aims to lift barriers for disadvantaged students; Manil Maharjan, a former teacher in a rural school in Nepal; and Taoufik Boulhrir, a teacher and researcher who previously taught disadvantaged students in New York, and who currently teaches in the United Arab Emirates. Despite their varying backgrounds, these educators had similar conclusions.

Lesson 1: Disadvantage is multifaceted and can be defined in many ways

The panellists agreed that schools and educational authorities should recognise the differences among students, and that disadvantage comes in different forms. It can be social, economic, linguistic, or related to learning difficulties. Regardless of the origin of disadvantage, both students and schools should be provided with appropriate support. This includes training teachers, social workers, and teaching specialists, as well as making available necessary material resources. Panellists shared their strategies to reduce the impact of disadvantage on student learning (see Boxes 1.4, 1.5 and 1.6).

Box 1.4 **Language learners in the Bronx**

Taoufik Boulhrir shared a story of two students who had immigrated to the US from the Dominican Republic. Initially, these students spoke no English and pretended to understand the lessons, fearing being kicked out of the class. Mr Boulhrir approached them, hoping to understand their situation. To improve their language skills and help them better assimilate into the school, he grouped them with students who understood Spanish and were willing to support their English learning. In addition to this, Mr Boulhrir also encouraged the use of computers and language software to help the two students better understand the lessons. This support helped the students acquire a minimum level of English competency and contributed to improving their performance across all subjects.

In this situation, Mr Boulhrir identified what the students needed, acted accordingly and solved the problem.

Technology supported my teaching and did not let my visual impairment be an impediment to teaching and learning.
Manil Maharajan, Teacher, Nepal

Lesson 2: Teachers can broaden their students' horizons

Disadvantaged students tend to have limited experiences. This may be due to living in rural or remote areas, or because of a lack of economic resources which limits their exposure to various life experiences. Under these circumstances, teachers can act as role models to empower their students by helping them develop ambitious goals. Manil Maharjan shared his experience from rural Nepal where, as a teacher, he helped redefine his students' expectations (see Box 1.5).

Box 1.5 Empowering students in rural Nepal

As a "Teach for Nepal"[1] fellow in a rural area, Manil Maharjan adopted a three-fold strategy to help raise learning expectations for his students:

1. **Being a role model himself:** To raise the aspirations and motivation level of his students, Mr Maharjan shared how he overcame challenges and pursued higher education, despite his visual impairment. He did not allow his lack of sight to impede his learning. Instead, he reached for goals like those of his physically abled peers. His success helped his students see that the possibility of overcoming disadvantage exists.
2. **Inviting professionals into his classroom:** To expose his students to various career options, and to ensure that students perceived these options as achievable, Mr Maharjan invited professionals into his classroom. These professionals explained the various career opportunities available in their fields. Mr Maharjan felt this was essential as most students in his school aspired to lower-level jobs, such as drivers or beauticians.
3. **Sharing information on scholarships:** Mr Maharjan used various social media platforms to share information about scholarships and fellowships his students could apply for. The information was shared with everyone, ensuring that each student was informed of the possibilities, and had a chance to improve their performance to benefit from these opportunities.

Lesson 3: Learning at school is impacted by factors outside of school

Experiences at home *directly* impact the ability of students to learn. The panellists agreed that young people who experience traumatic life events, such as family dissolution, or who live with parents suffering from mental health issues, or with parents who abuse alcohol or drugs, need additional support from their teachers. Teachers need to provide instruction, while keeping in mind the complex social situations and needs of their students. This poses quite a challenge, especially when schools are under-staffed and under-resourced. Jacque Kahura shared her experience of dealing with students from disadvantaged backgrounds in Kenya (see Box 1.6).

Box 1.6 **Supporting learning in a disadvantaged setting in Kenya**

Despite a lack of infrastructure, few resources, and a small support teaching staff, Jacque Kahura has created a classroom environment that fosters learning. To do this, she uses her limited resources in a rather innovative way. Despite having mud walls in her classroom, Ms Kahura added posters to them, to spread awareness about both local and global issues. That was her first step. Then, through a special initiative she started, called the *Weekend Inclusive and School Holiday (W.I.S.H)* programme, she encourages her students to undertake additional research on issues that are of interest to them. These issues go beyond the curriculum, and target the development of research and cognitive skills which, in turn, support classroom learning. Ms Kahura is thus able to encourage students to engage with issues beyond the classroom. Due to limited access to information and communication technology (ICT) and internet connectivity, Ms Kahura's students are unable to extensively research on the internet. Instead, Ms Kahura encourages them to talk to members within the community that may have knowledge on the issue. She also helps students identify other key sources of information that they can tap into for research. As part of the programme, she also organises meetings with community members, to provide platforms for students to showcase and discuss their research. This also creates space for dialogue and helps students interact with community members, which is essential for fostering a healthy environment.

Key action points

The panel identified three key action points they believe can improve the learning experiences of disadvantaged students.

1. **Support teachers by better equipping them:** Teachers, above all, need support. Specifically, they need more resources and better training opportunities. School leadership should acknowledge the challenges of teaching students in disadvantaged circumstances and create guidelines to support teaching. At a system level, it is vital to give extra incentives to teachers teaching in remote areas and challenging settings, as well as provide them with adequate training opportunities.

2. **Establish quality communication between parents, teachers and the community:** The home environment should not be neglected. Communication between teachers, parents, schools, and the wider community, is essential to make sure that students' needs are understood and dealt with appropriately.

3. **Ensure adequate financing of public schools:** The task of educating most disadvantaged students will fall to the public education system, as the cost of private schools may be prohibitive. To ensure that all students are provided with similar opportunities to succeed, governments need to make sure that public schools have both the funding and infrastructure necessary to support learning for all students.

Notes

1. Teach for Nepal is a two-year fellowship for university graduates and young professionals to develop teaching, training and leadership skills while teaching in the public schools of Nepal.

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CHAPTER 2

How can schools and families work together to support students' academic and social well-being?

Collaboration between parents, teachers and schools is critical for effective learning and for ensuring the social and emotional well-being of students. This chapter briefly explores ways to increase parent participation while providing insights into improving communication between teachers and parents, to ensure their co-operation in student development. The chapter then examines how bullying can be an impediment to the cognitive and social development of students, and identifies ways in which schools, teachers and parents can work together to address it.

Introduction

Families and communities can be a school's best allies. Together they can share information and help provide a more global picture of a student's progress. However, too often they work separately. Parents may at times either be disengaged or not know how to interact with schools. Similarly, teachers and schools need guidelines for how and when to engage with parents. By working together, parents, teachers and schools can overcome the challenges that may impede the full social and academic development of students. Doing so can not only positively affect performance in the classroom, but it can also have a far-reaching impact on each student's success in life and work.

Topic 1: Parents as partners in teaching

Why is this topic important?

Parents are often expected to be partners with teachers and principals, and to play a direct role in their children's schooling (Gunnarsson et al., 2009; Zhao and Akiba, 2009). This partnership can take many forms including talking with their child about school; supervising their child's progress, including helping with homework; participating in decisions about school activities; exchanging information with teachers; and volunteering for school activities (OECD, 2016). Most parents interviewed through the OECD Programme for International Student Assessment (PISA) reported attending scheduled meetings at school (OECD, 2017). But less than half of parents reported exchanging ideas on their child's development with teachers, and only a small minority of parents volunteered to support school activities. How important is it to have parents as active partners in the educational process? What can be done to encourage more parental participation and involvement?

What is the evidence?

There are many reasons for developing school and family partnerships. If parents and teachers establish relationships based on trust, schools can rely on parents as valuable partners in education. Getting involved at school also allows parents to obtain first-hand information about the school's learning environment, it teaches them how to navigate the education system, it demonstrates to their child that education is important, and it allows for more parental understanding of their child's behaviour (Grolnick and Slowiaczek, 1994; Lareau, 1996; Muller and Kerbow, 1993).

Socio-economically advantaged communities tend to have more positive family involvement in school than disadvantaged ones. But evidence shows that efforts to build positive school and family partnerships can bolster school performance in economically

As a teacher, I understand that I can also change parental expectations. I can breakdown gender stereotypes and help my children achieve what they want to.
Yordan Hodzhev, Teacher, Bulgaria

distressed communities (Avvisati et al., 2014; Domina, 2005). Partnerships can also improve parenting skills, help parents feel connected, and assist disadvantaged families with health, nutrition and other services.

Studies have also found that parental involvement in a child's education has a positive influence on student outcomes (Hill and Craft, 2003; Miedel and Reynolds, 2000). Additionally, getting parents involved may be the most productive way to prevent and respond to bullying and other serious behavioural problems at school (OECD, 2017).

Six ways to promote positive parental involvement

Epstein's (2002) framework for school-family-community partnerships defines expected results, practices and challenges for six different specific types of parental involvement: parenting, communicating, volunteering, learning at home, decision-making, and collaborating with the community. This framework can help educators develop more comprehensive programmes of school and family partnerships.

Schools should establish processes that ensure parent participation practices are constantly promoted and developed. To accomplish this goal, Epstein's research shows that one important first step is to set up a partnership action team, which includes teacher, parent, administrator and student representatives. This action team can guide the development of a single, unified plan which includes all six types of involvement as described below.

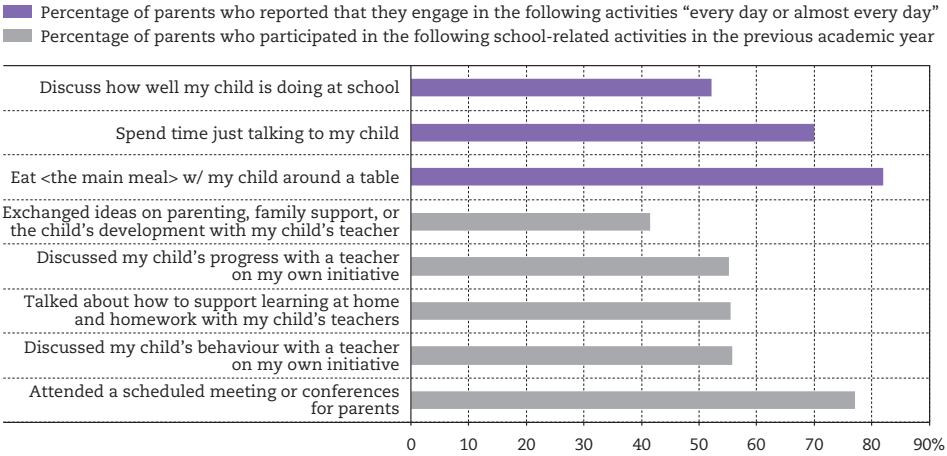
1. *Support parenting skills*

PISA data from 18 countries confirm that across wide cultural, socio-economic and individual differences, the value of supportive parents cannot be overstated. Students whose parents routinely engage in day-to-day home-based activities, such as eating a meal together or spending time "just talking" (as shown in the top portion of Figure 2.1 below) not only have higher learning outcomes as measured by PISA, but are also more satisfied with their lives (OECD, 2017).

School-based family support programmes have been particularly effective for disadvantaged students (Scott, O'Connor and Futh, 2006). Family support activities also help schools understand their students better by enabling families to share information about their children's talents, culture, background, and needs.

Figure 2.1 **Parents' activities with their child and at their child's school**

Percentage of parents who reported engaging in home-based activities routinely and who had participated in school-related activities during the previous academic year (average for 18 countries/economies)



Note: These are average values for 18 countries/economies that participated in the PISA parental questionnaire.
Source: OECD (2017), *PISA 2015 Database*, *http://www.oecd.org/pisa/data/2015database/*.
StatLink http://dx.doi.org/10.1787/888933472181

2. *Set up comprehensive and inclusive communication plans*

Parental involvement is enhanced through effective communication (Epstein et al., 2002). Communication plans should include a large variety of interactions including regular face-to-face meetings with parents; notices, memos, phone calls and e-mails; clear information on school policies, programmes and reforms; and information about specific awareness campaigns (e.g., the value of regular attendance, or safe and acceptable internet use).

Simply explaining to parents how to get more involved can go a long way in promoting positive participation. In a controlled experiment in disadvantaged French schools, parents of middle-school children were invited to participate in meetings about how to get more involved in their child's education (Avvisati et al., 2014). Participation increased parents' school and home-based involvement and, in turn, reduced the incidence of truancy and necessary student discipline.

PISA data show that language barriers can hinder the participation of parents from immigrant or minority groups (OECD, 2017). In areas with large immigrant populations, schools may need to partner with immigration and social service agencies to provide interpreters and information packages in multiple languages. To communicate effectively with all families, including those that are harder to reach, schools should find ways to be more welcoming of parents from culturally, linguistically, and socio-economically diverse backgrounds. New technologies can also offer effective solutions to communicate with parents.

Balanced communication is key- one that respects personal and professional boundaries.
Anika Mir, Teacher, UAE

I have to foster aspiration and goals in my children. But I need to do it together with parents.
Anika Mir, Teacher, UAE

An experiment in Chile offered each participating parent the chance to receive high frequency information via SMS messages regarding the attendance, behaviour and mathematics test scores of their children. After four months, the students involved had significantly higher math grades, improved attendance, a lower prevalence of bad behaviours, and were less likely to fail the grade at the end of the year (Berlinski et al., 2016).

3. *Encourage in-school volunteering*

Volunteering is a way for families to get involved and support the school community. Such programmes can free up resources, broaden students' experiences and learning opportunities, and enrich the lives of volunteers. Available evidence suggests that when adult volunteers are present, and students see adults taking school and education seriously, while respecting learning, positive attitudes toward school are promoted (Henderson and Mapp, 2002). Schools can collect information about parental availability through regular surveys and organise volunteering programmes around flexible schedules to send a clear message that all are welcome.

4. *Involve families in homework and learning activities*

Many parents, particularly in disadvantaged contexts, feel they are not capable of supporting their children with schoolwork. Helping families understand, monitor, and interact with students on homework can be an important extension of classroom instruction. Homework assignments can include interactive activities that engage families in positive conversations about schoolwork. Schools can help parents understand how to support their child's interests and skills. For example, PISA results show that, through active engagement, parents can foster their child's enjoyment of reading (Borgonovi and Montt, 2012).

5. *Include families in decision-making*

School councils, committees and parent organisations are important institutions to ensure that parents' voices are heard on important school decisions. Giving parents a voice in school decisions can increase their engagement and foster a feeling of belonging to the school community. Besides setting up effective representative bodies, schools can include families in decision-making by regularly asking them to give feedback on a variety of policy issues.

6. *Collaborate with the community*

Strong partnerships with parents place schools at the centre of communities, making them hubs around which the community gathers its resources. These resources and services can help schools implement larger initiatives, such as after school programmes, or smaller projects, such as creating a new playground. Schools can help families take advantage of the cultural resources and social support services available in their communities by distributing information and partnering with agencies and organisations.

As we move into the future, finding additional ways to actively involve parents is a goal that can truly help students succeed, both in school and in the wider social context.

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, a panel of three teachers, working in varied contexts, discussed ways to more actively involve parents in their child's education. The panel included Anika Mir, the head of mathematics at a private British primary school in Dubai; Yordan Hodzhev, a former science teacher with experience working in disadvantaged rural schools in Bulgaria; and Fidaq Zaatar, a teacher at a primary school for girls in the West Bank and Gaza Strip. Despite their distinct experiences, they each have remarkably similar conclusions about the keys to effectively engage parents in both student learning and school life.

Lesson 1: Trust between parents, teachers and students is essential

Building trust is the first step to successfully engaging parents. Parents need to trust the competence of the teacher and understand that the teacher is working with their child's best interest in mind. Similarly, teachers need to trust that parents are helping their child develop and are reinforcing at home what they are learning in the classroom. For this mutual trust to develop, regular and open communication is key. Discussions of each child's learning needs and objectives need to be clear, to ensure that parents and teachers are working together towards the same goals and are creating safe spaces in which any difficulties or concerns can be addressed.

One effective way to do this is to set up programmes which allow parents, students and teachers to not only talk, but to also participate in activities together. All panellists recognised the importance of providing ways for parents to engage in school life, as an aid to shaping a more supportive learning environment, and fostering the conditions that enable student success. Fidaq Zaatar has done this by setting up a breakfast club for students and parents (see Box 2.1).

Box 2.1 Addressing malnutrition in the West Bank and Gaza Strip with a "Breakfast Club"

Fidaq Zaatar created "My breakfast is my health" in her 1st grade class. She wanted to combat the pervasive issue of malnutrition in her community by encouraging her students to eat and appreciate breakfast. Ms Zaatar understood that the key to the programme's success would be a high degree of parental involvement. However, low educational attainment among the parents had contributed to limited engagement with both the school and the children's development. To tackle these issues, Ms Zaatar first reached out to each parent, explained the importance of breakfast and sought their buy-in for her plans to introduce a "Breakfast Club". This was an effective way of bringing parents into school life and succeeded in:

- Informing parents and making them aware of how they can successfully contribute to their child's school life, regardless of their level of educational attainment.

…

Box 2.1 **Addressing malnutrition in the West Bank and Gaza Strip with a "Breakfast Club"** (continued)

- Helping parents better understand the value of nutrition, thereby educating them on how to better ensure their child's well-being.

After meeting with the majority of parents, she was able to gain consensus for implementation. A key concern for Ms Zaatar was that she wanted to instil the habit of eating breakfast without forcing her students to eat. To do so, she blocked out a bit of time during morning classes, had her students sit in groups and, to create a lively atmosphere, she played music or told them stories while they ate. By doing so, her students began to *look forward* to this time of day and, little by little, they all started bringing breakfast. They then began requesting that their parents prepare their breakfasts. And, parents began obliging their requests.

Lesson 2: Technology can support *better* communication

Teachers and parents are increasingly using digital technology to communicate. Through social media, email and apps, teachers and parents can stay connected and share feedback on student progress throughout the year. However, it is vital to balance the flow of information with the teaching and learning goals of the classroom. It is also important to understand that parents may have particular preferences for how they wish to receive information. This means that teachers need support in managing parental expectations.

Creating clear guidelines and rules regarding what information will be provided and when, is one way to avoid overburdening teachers, or bombarding parents with information. Teachers are more likely to engage through digital channels if they receive clear guidelines and training on how to do so in ways that do not take away from teaching time. Governments have a role to play in defining guidelines for effective communication, but schools need to make sure policies are adopted and used in ways that set useful boundaries for teachers and parents. Having a school policy in place helps Anika Mir (see Box 2.2) manage and deal with parents who are either entirely disengaged or overly involved.

Box 2.2 **Managing interaction with parents in Dubai**

To facilitate communication between teachers and parents, Ms Mir's school introduced a communication policy. According to the policy, parents could choose to directly contact and email teachers. Teachers are given 24 hours to acknowledge receipt of the parents' e-mails and 48 hours to respond to them fully. This gives teachers sufficient time to respond, while discouraging parents from writing a second time during the stipulated response period.

The school also requires teachers to send a weekly newsletter to parents to ensure that parents are updated on class progress. This newsletter explains the content that was covered during the past week and previews what will be covered the following week. Getting weekly updates prevents all parents from writing individually to the teacher to get updates on classwork. This policy gives Ms Mir, her colleagues, and the parents, clear guidelines which work well.

Lesson 3: Schools are not closed communities

Wider societal dynamics play out in the classroom. Teachers need be aware of this and find strategies to engage with parents and communities so that out-of-school factors do not negatively impact relations within the school. It is essential to find channels, such as school boards, associations, and extracurricular clubs, where the school and the community can connect and develop a shared understanding of goals and values. This is particularly important when students come from different ethnic or cultural backgrounds. In this context, as Yordan Hodzhev's experience in Bulgaria (see Box 2.3) reveals, teachers and schools can play a powerful role in modelling and promoting the important values of tolerance, respect and inclusion, while building enthusiasm and interest in learning.

Box 2.3 **Bringing the community together: "Maker's Space" in Bulgaria**

When Yordan Hodzhev began teaching, ethnic and community tensions outside of the classroom strongly affected students' relationships inside of the classroom. The result was an environment that was not conducive to effective learning, where students would refuse to collaborate and work together on projects. This lead Mr Hodzhev to start what he calls "Maker's Space" in two primary schools in the villages of Mirkovo and Chelopech, in Bulgaria. Maker's Space sought to bring fractured communities together to find solutions to local problems, while also addressing students' low levels of interest in science and technology. Additionally, Mr Hodzhev used the "Maker's Space" to help demystify science for girls and motivate them to pursue careers in science.

Maker's Space was designed as a workspace where parents and students could make and repair objects together. The space was equipped with tools and 3D printers, and was available for everyone's use. There was no charge for using the space or the tools. The idea behind Maker's Space was to encourage everyone to engage in a practical way with science and exploration, and to better understand how things work. An added advantage of it was that since all segments of the community needed to repair items, by providing everyone equal access to tools through this unique space, Mr Hodzhev succeeded in bringing together groups that were once hostile towards each other, in a creative and productive way. Because of this innovative space, community tensions have lessened, and parents have begun visiting the schools more often, becoming more involved in their children's education.

Key action points

The panellists identified three key action points that they feel could best support teachers and parents engaging with each other.

1. **Introduce national educational policies that support parental engagement:** National policies can provide frameworks and guidelines for effective engagement

> **All bullying is the same. It is always about not showing respect for others.**
> **Christian Williams, Teacher, Australia**

with parents. On a national level, reforming initial teacher education and professional development training to include strategies to successfully communicate and engage with parents will help better prepare teachers.

2. **Ensure that school policies encourage and promote parental participation:** Teachers should not be solely responsible for parental engagement. Schools should introduce policies that support collaboration with parents. This could take the form of boards or associations through which parents can participate in decision making, or the organising of ongoing or one-time events.
3. **Provide additional teacher support for interacting with less engaged parents:** Parents with low educational attainment or from immigrant background may struggle to follow and support their child's learning. Teachers in these settings may need to guide parents on how to engage effectively with the education of their child. In such scenarios, teachers are likely to require training and additional support, in both time and resources, to ensure that they can manage their teaching duties while also providing proper feedback to parents.

Topic 2: Tackling in-person and online bullying in tomorrow's schools

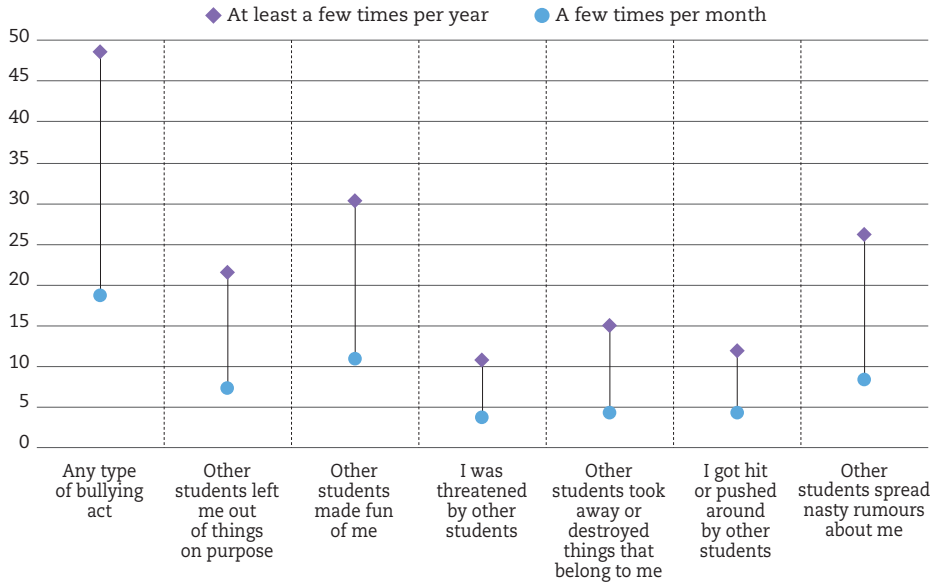
Why is this topic important?

Bullying is a systematic abuse of power, and can be identified by three key traits: repetition, intent to harm, and unequal power between the bully and the victim. It can take many forms, from physical aggression and name-calling or mocking, to social exclusion, public humiliation and shaming. Bullying happens both in real and in virtual environments (cyber-bullying), and usually together (Salmivalli, Sainio and Hodges, 2013).

Data from PISA (2017) show that bullying of students is widespread. As Figure 2.2 shows, on average, across OECD countries, around 11% of 15 year-old students report that they are frequently (at least a few times per month) made fun of, 8% report that they are frequently the object of nasty rumours, and 7% report that they are frequently left out of social activities. As for physical bullying, across OECD countries, an average of about 4% of students report that they are hit or pushed by other students at least a few times per month. Similar proportions of students report that they are threatened, or that their belongings are destroyed or stolen by other students. On average, across OECD countries, about one in five students is frequently the victim of at least one of these acts of bullying. In the United Arab Emirates, the number is more than one in four. What short- and long-term effects does bullying have on students, both academically and emotionally? What can school communities do to stem the rising tide of harm that bullying brings?

Figure 2.2 **Students' exposure to bullying**

Percentage of students who reported being bullied at least a few times per month or at least a few times per year (OECD average)



Note: These are average values for OECD countries participating in PISA.
Source: OECD (2017), *PISA 2015 Database*, *http://www.oecd.org/pisa/data/2015database/*.
StatLink http://dx.doi.org/10.1787/888933471577

What is the evidence?

The consequences of bullying

Bullying at school has long-lasting consequences for both the bully and the victim and should therefore never be considered a normal part of childhood, but a serious education and public health problem. Adolescents engaged in bullying as perpetrators, victims, or both, are more likely to skip classes, drop out of school, and perform worse academically than schoolmates who have no conflictual relationships with their peers (Konishi et al., 2010; OECD, 2017). Emotional and behavioural problems suffered by both victims and bullies may continue into adulthood, leading to long-term negative outcomes, including less participation in the labour force (Drydakis, 2014). A Norwegian study found that former school bullies were four times more likely than non-bullies to commit a relatively serious crime later in life (Olweus, 1993), while a similar UK study found that bullying at age 14 was a good predictor of later life outcomes, including self-reported violence in the teens, violent convictions before the age of 20, and drug use by the age of 30 (Ttofi, Farrington and Lösel, 2012).

All parts of the world, and society, has to deal with the problem of bullying.
Najd Benwahhood, Teacher, UAE

Bullying is purposeful, deliberate and with negative intent- and it's always one sided.
Dr. Michele Borba, educational psychologist & expert in bullying prevention

Adolescents who bully or are bullied are more likely to show symptoms of depression and anxiety, have low self-esteem, feel lonely, change their eating patterns, and lose interest in activities (Kochel, Ladd and Rudolph, 2012).

School-level factors related to bullying

Schools with a low incidence of bullying tend to have more students who are aware of school rules, believe that the rules are fair, and have positive relationships with their teachers. When students work in a structured, orderly environment, they feel more secure and engage more with school work. They are therefore less inclined to participate in high-risk behaviours. Indeed, analysis based on PISA data shows that across OECD countries, the proportion of frequently bullied students is larger in schools with a poor disciplinary climate than in schools with a good disciplinary climate (OECD, 2017).

Bullying is also less frequent in schools where students perceive their teachers as effective in communicating norms of respectful behaviour. PISA data show that students who attend schools where perceptions of teacher fairness are more pervasive are less likely to be frequently bullied than students in schools where teachers are perceived as less fair (OECD, 2017). Perceiving teachers as unfair may lead some students to believe that they have the right to bully as a way to exercise their power, or to recover from humiliation. It is therefore imperative that teachers clearly communicate to students that no form of bullying will be tolerated, and that teachers act as behavioural role models in the classroom.

Six strategies to reduce bullying

1. *Empower teachers*

While teachers are on the front lines of implementing anti-bullying strategies, many are not aware of the severity of bullying in their schools, or of the many forms bullying can take. Many teachers are also not properly prepared to intervene to prevent bullying. Targeted training for school personnel can improve their understanding, intervention skills and effectiveness in working with students to prevent bullying. Teachers and school personnel should also be trained to identify and address the various forms of cyber-bullying in addition to traditional face-to-face bullying.

2. *Empower parents*

Parents are not always aware that their child is bullying others, or that they are a victim of bullying. An open line of communication with teachers and school staff can help parents be more aware of problems and take action. Prevention programmes can also help parents provide stable emotional support for their children – including listening, and offering praise, affection, trust and respect.

> **Teachers can draw the line and make it clear that student behavior that goes beyond respect and tolerance is not accepted in the classroom.**
>
> **Christian Williams, Teacher, Australia**

3. *Empower students*

The behaviour of onlookers matters. Changing how onlookers behave can reduce the rewards gained by bullies and, consequently, their motivation to bully in the first place. Peer mediation and peer mentoring activities are among the most complex elements of anti-bullying programmes and, while more research and experimentation is needed to improve their effectiveness (Farrington and Ttofi, 2009), there have been some short-term successes (van der Ploeg, Steglich and Veenstra, 2016). While victims of bullying don't need to be made less vulnerable, they do need to feel that they are heard and helped by the adults at school.

Fighting cyber-bullying requires specific educational resources to teach students how to use the internet in a healthy, safe and responsible way. Schools should also provide access to in-school counselling for students involved in cyber-related incidents.

4. *Use multi-tiered approaches*

Prevention strategies should follow multi-tiered approaches. At the universal level, prevention programmes address such factors as social skills development and social-emotional learning or self-regulation. These approaches reduce both the chance that students would engage in bullying themselves and their risk of being bullied further. Targeted preventive interventions incorporate more intensive support and treatment activities, directed either to students who are at risk for engaging in bullying, or to students at risk of being a bully's target. Evidence shows that using both universal and targeted programmes is more effective than suspension or other exclusionary techniques which may result in increased academic and behavioural problems for bullies (Rivara and Le Menestrel, 2016).

5. *Use whole-school strategies*

Curbing bullying requires a whole-school approach where staff, students and parents work together to address the social environment and a broader culture of bullying. Whole-of-school prevention and intervention strategies make everyone responsible for supporting victims, and for communicating with bullies. Several anti-bullying programmes, such as the KiVa initiative in Finland or the School Learning Environment Plan in the Spanish province of Castilla y Leon, have effectively countered bullying through multiple interventions, which establish a common set of expectations for positive behaviour (Convivencia Escolar, 2017; KiVa Program, 2017). Schools should also develop incident response plans for staff in the event of cyber-bullying, and introduce a "digital safety" theme across school policies and practices.

6. *Monitor the incidence of both in-person and online bullying*

Collecting data on bullying via anonymous student surveys can inform the supervision and intervention process, and identify potential areas for intensive training of school staff. Data collection can also help schools keep an eye on new forms of bullying and on upward trends.

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, three panellists were invited to discuss strategies to reduce in-person and online bullying in schools. They included Najd Benwahhood, a teacher and Head of Faculty in Abu Dhabi; Christian Williams, a primary school teacher from Melbourne, Australia; and Dr Michele Borba, an educational psychologist, author and expert in bullying prevention.

Lesson 1: Bullying can have devastating consequences for both the bully and the bullied

Bullying is a purposeful, deliberate act, with negative intent that is always one-sided. Teachers and school leaders should create a learning environment that is respectful. All panel members agreed that teachers can introduce expectations for positive behaviour. Bullying should be considered a serious educational problem for the student, the school, and the entire school system. Mr Williams explained the strategies he uses to tackle bullying in Melbourne, Australia (see Box 2.4).

Box 2.4 **Prevention is key: Tackling bullying in Melbourne**

In his school, Christian Williams focuses on introducing programmes and policies that prevent bullying. His three most effective strategies are:

1. Modelling respectful relationships with all students and teachers

Students are more likely to be respectful of each other if teachers set an example of good behaviour and build positive relationships with their own peers.

2. Building an inclusive classroom culture

Teachers should strive to treat all children equally. This will help foster a culture of inclusivity in the classroom. It is also important to build meaningful relationships with students, as doing so may help address any eventual issues.

3. Introducing school-wide approaches to behaviour management

The culture of respect should not be isolated to one classroom. It is essential to integrate it into school-wide policies.

Lesson 2: Vigilance is key to identifying bullying

Dr Borba mentioned that about 85% of bullying incidents occur when adults are not present. It is therefore important to adopt the right approach to deal with bullying when it is spotted or reported. The panellists agreed that ignoring incidents of bullying is never the right approach. Likewise, severely punishing the bully, without understanding their behavioural problems, may have negative consequences and therefore may not be the best way to effectively deter bullying. Ultimately, an effective response depends on the

> **Learning can not happen if the child's psychological and safety needs are not fulfilled.**
> **Najd Benwahhood. Teacher, UAE**

professional judgement of the teacher, who needs to determine the best strategy in a given context.

Online bullying is different from other forms of bullying for several reasons. When students are online, their behaviour tends to go to an extreme. They will either be more altruistic than usual, or much meaner than they would normally be in face-to-face relationships. In addition, cyber-bullying is often even more difficult to detect than other forms of bullying, which are already rarely observed by adults.

Lesson 3: No form of bullying is acceptable

There are several forms of bullying (e.g., verbal, emotional, physical, sexually harassing bullying, and cyber-bullying), and all are unacceptable. Even minor incidents can turn into severe bullying if ignored. The panellists agreed that there is no hierarchy in types of bullying; all bullying incidents are equally intolerable. No form of bullying should be considered natural in a student's life, including verbal aggression. Therefore, intervention should occur as quickly as possible. Dr Borba shared her set of strategies to prevent bullying (see Box 2.5).

Box 2.5 Reducing bullying and its impact

Dr Michele Borba suggests equipping students with "6 R's" to prevent bullying:

1. **Rules:** Establish an anti-bullying policy and expectations for respect.
2. **Recognise:** Teach students and teachers how to identify and recognise bullying.
3. **Report:** Create specific procedures to report bullying.
4. **Respond:** Teach students and teachers how to respond to bullying.
5. **Refuse:** Teach strategies to refuse provocation and reduce victimisation.
6. **Replace:** Replace aggression with acceptable skills and beliefs.

Dr Borba emphasises that bullying is always situational and offers a set of "BUSTER Skills" that can help reduce the impact of bullying. They are:

1. **B**efriend the target.
2. **U**se distraction to disperse bystanders.
3. **S**peak up for targets and say something.
4. **T**ell an adult.
5. **E**xit the scene to reduce the audience.
6. Offer **R**emedies.

Key action points

The panellists identified four key action points that they feel could help prevent and tackle bullying in schools.

1. **Build a culture of good behaviour and positive expectations at school:** Preventing bullying is essential, and building a culture of good behaviour and positive expectations is the key to replacing bullying attitudes with appropriate behaviour.
2. **Provide all students with the tools to respond to bullying:** Teaching students about strategies to deal with online and in-person bullying is effective. School leaders and teachers should organise workshops to familiarise students with various strategies to curb bullying episodes, such as using distractions, exiting the situation, and referring to adults. About 50% of bullying could be prevented if bystanders are ready and able to intervene in a safe way.
3. **Identify students who are compassionate:** Encourage these students to befriend bullied students and ensure that they have the tools to respond effectively to cases of bullying. This may also help create a safe and emotionally supportive environment for the bully's target. Compassionate students are also more likely to intervene and report bullying and may therefore be crucial in reducing bullying.
4. **Involve parents and communicate with the child:** The parents of both the bullied student and the bully should be informed about any signs of bullying, so that they can talk with and support their child. It is critically important to open the lines of communication with and understand both the bully and the bullied.

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CHAPTER 3

How can we support teaching strategies for 21st century learners?

Today's teachers need to ensure that their students master a wide variety of knowledge and skills to be prepared for tomorrow's challenges in work and life. This chapter first explores issues around quality teaching and its impact on student learning. The chapter then focuses on recent debates over the competencies and knowledge that teachers need to teach to equip students for success in the 21st century. Lastly, the chapter examines the benefits and challenges of students being actively involved in their learning.

Note regarding data on Israel

The statistical data for Israel are supplied by and are under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem, and Israeli settlements in the West Bank under the terms of international law.

Introduction

Technological advances have increased our access to factual knowledge, placing more importance on how knowledge is interpreted and applied. For success in the 21st century, students are required to be able to navigate information, think critically, communicate effectively, and apply creativity and innovation to solve complex problems. To help make this possible, experts, policy makers and parents are now increasingly advocating that students should play a more active role in their education through a variety of alternative teaching approaches. Teachers need to adapt their methods to meet these needs, and to ensure that their students can succeed in school, work and life.

Topic 1: A profile of tomorrow's quality teaching

Why is this topic important?

Available research evidence points to teacher quality as the most important school variable in determining the success of an educational system (Hattie, 2003; OECD, 2005a). In other words, an education system is effective when its teachers use teaching practices which improve student performance and develop the full potential of every student, regardless of socio-economic background, native language or migrant status. Good teaching stimulates and guides students' development so that their achievements go beyond even their own expectations.

However, understanding what makes teaching "good" or "effective" has proven a difficult question to answer. While most people can clearly remember the joy of learning from a good teacher, and the occasional frustration brought about by exposure to poor teaching, it would be quite difficult for many to pinpoint the precise differences between what makes good teaching good, and what makes poor teaching less so. What are the indicators of good teaching? How can we further improve teacher quality as we move into the future?

What is the evidence?

Teaching quality is a difficult concept to measure. However, it can be inferred based on observable indicators, such as the demonstration of student learning gains, the implementation of quality processes, and the perception of teacher self-efficacy.

Teaching strategies and practices leading to better student outcomes

A common method of assessing teaching quality and efficient learning practices is the evaluation of student outcomes and their learning gains[1].

The OECD Teaching and Learning International Survey (TALIS) and Programme for International Student Assessment (PISA) findings consistently show that student-oriented teaching strategies which place the student at the centre of the activity and give learners a more active role in lessons than in traditional teacher-directed strategies, have particularly positive effects on student learning and motivation. Active learning practices include, but are not limited to, students working in small groups, encouraging students to evaluate their own

> **First and foremost, a teacher is a group leader.**
> **Ariel Sacks, Teacher, United States of America**

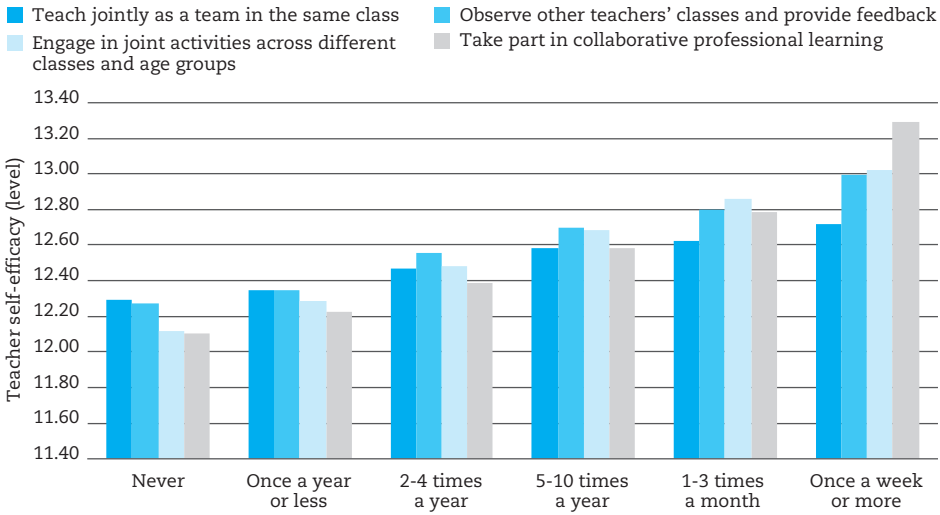
progress, assigning students longer projects (requiring more than one week to complete), and using information and communication technology (ICT) for class work.

Cognitive activation, which aims to teach pupils strategies to solve problems, such as summarising, questioning and predicting, has also been identified as an effective teaching practice. PISA data show that, across OECD countries, students who report that their teachers use cognitive activation strategies in their mathematics classes achieve higher mathematics scores (OECD, 2016a).

Quality processes in teaching

Quality processes are the specific, observable teaching practices that develop and support education quality, and that are validated through improved student performance and well-being. Professional collaboration among teachers in the school is one example of a quality process. According to PISA results (OECD, 2016b), on average across OECD countries, teachers' collaboration has proven to be positively associated with student performance in science, after accounting for the socio-economic profile of both the students and the schools. According to TALIS results (OECD, 2014a), having a collaborative culture within the school is one of the factors that shows the strongest association with teachers' self efficacy and job satisfaction. As Figure 3.1 shows, in general, the more often teachers participate in collaborative activities with their colleagues, the more self-efficacy they report. Other quality processes include teachers' active engagement with students, teachers giving meaningful feedback to students about their school work, and the cultivation of a safe, respectful and supportive environment.

Figure 3.1 **Frequency of collaboration and reported self-efficacy**



Source: OECD (2013), *TALIS 2013 complete database*, *http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20*.

StatLink http://dx.doi.org/10.1787/888933042295

> **A lot of time we are faced with students and teachers that are bored... So, all learning needs to be incredibly relevant. Students will learn when they are passionate about a problem.**
>
> **Mareike Hachemer, Teacher, Germany**

Drivers of self-efficacy and teaching quality

Bandura's (1986) social cognitive theory defines self-efficacy as an individual's beliefs about their capabilities to successfully accomplish a particular course of action. Thus, in essence, self-efficacy is teaching quality *from the teacher's point of view*. According to TALIS, self-efficacy encompasses three dimensions: quality in classroom management, in instruction, and in student engagement. As it has proven to be positively related to student achievement (Caprara et al., 2006; Muijs and Reynolds, 2002; Woolfolk Hoy and Davis, 2006), self-efficacy is a good proxy measure for teaching quality. TALIS data show, for example, that teachers who are more confident in their own abilities are more likely to engage in active-learning practices, which are known to be effective (OECD, 2014b).

Many valuable practices are found to affect self-efficacy and, therefore, teaching quality. TALIS results suggest that promoting teacher co-operation and a positive school climate, developing teacher leadership and allowing and encouraging teacher participation in on-site decision-making, are all highly beneficial to teaching quality. Participation in high-quality professional development which includes, for example, opportunities for discussion of active learning methods, increased collaboration among colleagues, and the time and resources to plan and innovate with other teachers, also has a significant influence on teaching quality. Additionally, ensuring that there are multiple avenues for teachers to receive feedback on their work, and promoting the use of comprehensive sources of information and data for teacher appraisal, are also key to supporting the continuous improvement of teachers and, ultimately, schools. As we move into the future, these practices should therefore be supported and encouraged to further nurture quality teaching.

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, a panel of three experienced teachers discussed what tomorrow's quality teaching could look like. The panellists were Mareike Hachemer, a high school teacher of German, English and Drama in Germany; Ariel Sacks, an author and English Language Arts teacher in the United States; and Emma Russo, a physics teacher from the United Kingdom. The discussion highlighted several lessons.

Lesson 1: Understand the needs of students to keep them motivated

The panellists agreed that first and foremost, the teacher is a group leader. A key component of this leadership is taking the time to know one's students. Understanding their background is crucial to facilitating learning and maintaining student motivation. This means that teachers need to reassess their traditional role as classroom manager

> **Teachers need to be supported, empowered and trusted.**
> **Emma Russo, Teacher, United Kingdom**

or controller. Students can only take ownership of their learning if the teacher provides them the space to do so. Thus, it is important to adopt pedagogical strategies that allow students to share their ideas with others, and provide space for reflection, for both the student and teacher.

Lesson 2: Ensure that lessons are practical and relevant for students

Boredom and lack of engagement are some of the main obstacles to sustaining student interest in classrooms. To capture the interest of 21st century learners, teachers increasingly need to make sure that coursework is practical and engaging. One way to do so is to discuss relevant social problems and equip students with the attributes they need to address them. The concept of *"radical relevance"* refers to the ability of instruction to enable students to identify, discuss and recognise possible solutions to social challenges that the world is facing *right now*. This strategy helps students build a strong sense of self-efficacy, as students start seeing themselves as key players in today's issues. For example, Mareike Hachemer suggested discussing the United Nations' Sustainable Development Goals (SDGs) in classrooms as a way to help engage students with important global issues (See Box 3.1).

Box 3.1 Connecting learning to the Sustainable Development Goals

Mareike Hachemer has created a seven-step plan to connect classroom learning to the SDGs. These are:

1. **Make posters available:** Inform students about what the SDGs are.
2. **Focus on SDG-related topics:** When applicable, connect the curricula with the SDGs.
3. **Encourage problem solving and meaningful actions:** Instead of *telling* students how to achieve the SDGs, *ask* students how they can contribute to their success.
4. **Dedicate a day or a week:** Show documentaries and plan projects around SDGs during that block of time.
5. **Create a climate of appreciation and growth:** Foster discussions and encourage student collaboration.
6. **Encourage student leadership:** Put students in charge of classroom and school-related projects centred around the SDGs. Encourage them to have their own ideas for projects.
7. **Make local and global connections:** Connect with experts, teachers, and students from around the world on social media, to build dialogue and share ideas.

> **We're not going to save the world with a piece of paper and a pencil. Students need to learn to collaborate and be involved in issues that concern them.**
>
> **Mareike Hachemer, Teacher, Germany**

Lesson 3: Collaborate with colleagues and with other schools to share best practices

Collaborating and sharing experiences with colleagues can help with understanding challenges, as well as best practices and solutions. Access to the knowledge of others can give teachers the time to reflect on and adjust their own practices. The panel discussed different types of professional development which strengthen collaboration. All panellists agreed that an approach where teachers and students jointly discuss the future of both their school and the education system as a whole, can be particularly effective to develop a common vision among the major stakeholders.

Collaboration between schools can also be a way to share experiences and work together to tackle important social issues. For example, Emma Russo spoke about the "Girls in Physics" initiative, which includes a network of schools and parents that work to promote girls' interest in science, and to encourage them to pursue higher education in the field by creating connections with female scientists (see Box 3.2).

Box 3.2 Girls in Physics

Emma Russo organises *"Girls in Physics"* events at her school, in which students and parents attend talks given by female scientists. The participating scientists share their experiences and professional journeys with the students. This exposure encourages and inspires girls, by giving them access to successful female role models. Due to the success of these events at her school, Ms Russo was invited by other schools to organise similar events, and she now plans to make them city-wide.

In general, school support has been vital to Ms Russo's success. Her school organises regular seminars and conferences to ensure continuous development of all teachers. The school also helps Ms Russo organise science and mathematics master classes in collaboration with other schools, allowing for the sharing of teacher expertise and resources.

Key action points

At the end of the session, the panellists identified a set of three action points which could help promote effective teaching practices.

1. **Give teachers more autonomy:** Teachers need to be supported, empowered and trusted. Teachers want their students to succeed. But at the same time, they should be trusted with the responsibility of adopting appropriate strategies. Administrators should give teachers the space and time they need for self-improvement by allowing for innovation, reflection and the adjustment of teaching techniques.

> **Providing students with a sense of belonging will go a long way to creating global citizens.**
> **Ariel Sacks, Teacher, United States of America**

2. **Identify best practices and create a network of teachers:** It would be helpful to bring together teachers that have consistently had good results and ask them to share their knowledge and expertise. These teachers could also work as mentors for other teachers and create a network of support for the acquisition of best practices.
3. **Recognise teachers as professionals:** Teaching is a complex and difficult task, but teachers are more than up to the challenge. However, teachers need their efforts to be acknowledged and properly rewarded. The under-payment of teachers is a persistent problem across educational systems. As teachers' tasks are becoming more and more demanding, teachers should be paid in a way that recognises these challenges.

Topic 2: Tomorrow's teaching: Balancing knowledge- and competency-based learning

Why is this topic important?

The body of knowledge being produced is expanding exponentially. Even the speed with which knowledge grows, is increasing. Indeed, each day new knowledge frontiers are discovered and explored. This quantitative expansion of knowledge has made it impossible for any human being to master the entire knowledge universe. Therefore, encyclopaedic mastery of knowledge no longer can or should serve as education's purpose. What students learn in school is merely an exemplary sample of knowledge, which allows them to effectively navigate in a world where most jobs and industries are knowledge-driven. Now, *what* you know is not as important as what you can *do* with your knowledge, and how effectively you can navigate the vast knowledge resources, to find what you need.

Yet, it is difficult to find a more passionate debate in the educational community than the question of whether we should educate future generations with an emphasis on transmitting knowledge, or with a focus on developing competencies. Competencies are understood as more complex models of learning, comprising knowledge, skills, attitudes and values (OECD, 2005b).

Challenges to knowledge-based learning

Education has traditionally relied primarily on the transmission of knowledge, most often disciplinary knowledge in a limited number of subject fields. Teaching and learning methods were thus oriented towards the memorisation of facts, as the elementary building blocks of knowledge.

> **We need to go all the way back to teacher training and revamp how we teach teachers about competency and skills.**
> **Armand Doucet, Teacher, Canada**

This perspective has recently come under attack from several angles. The reduction of knowledge to facts only, is increasingly seen as outdated. The argument is that it's not the facts themselves, but *understanding* them that matters. This has implications for teaching and learning strategies as instead of memorisation, more active engagement which aims for student understanding would be appropriate. The traditional idea of reducing the rich body of knowledge down to a few, established school subjects and disciplines, has also been challenged. While the organisation of knowledge into disciplinary fields and subjects dates to the late 18th century, a lot has happened in scientific research (and other fields) since then, putting this categorisation into question. Furthermore, the belief is that new subjects should enter the curriculum which integrate interdisciplinary fields or introduce new areas, such as computer science or robotics.

But the third attack on knowledge-based education is probably the most serious one, as it questions the very concept of knowledge being the goal of education itself. The argument is that individual learners and societies are not well served by simply accumulating knowledge if they are not able to *apply* that knowledge and transform it into practical skills, relevant in the workplace and society. Some critics go even further and question the future of knowledge itself, in a world characterised by an explosion of data, with unlimited access to it via the internet. They argue that since "Google knows everything", students should no longer seek to acquire knowledge, but to develop the skills to navigate it and to identify and apply search strategies and tools. They insist that schools should do more than simply transmit content knowledge; they should develop relevant skills and attitudes as well. Thus, competency-based education became the mantra. An additional driving force behind this transformation is the desire to develop so-called 21st century skills such as problem solving, communication skills, social and emotional skills, creativity and innovation.

Challenges to competency-based learning

But over the past few years, a counter-movement has increasingly attracted a lot of attention and political support, claiming that the competency-based approach is leading to a generation of culturally-illiterate youth, lacking even the most basic knowledge in essential disciplinary fields. The most vocal representative of this counter-movement is the American scholar E.D. Hirsch (2016), who argues in his book, Why Knowledge Matters, that the overreliance on skills has produced a knowledge deficit and that it is time to reinstate the value of knowledge in education. There are also some less radical approaches that are pushing to revalue the importance of knowledge as well. After all, even with navigation skills, some anchoring knowledge and signposts are still needed to find your way. Contemporary approaches seek to balance the quest for knowledge and the desire for skills in a more intelligent way.

> **Rather than training teachers through 45 minutes presentation, we dive deep into targeted issues with a flipped professional development model.**
> **Justin David Moorman, Head of Faculty, UAE**

What is the evidence?

The debate over knowledge versus competencies is based on both ideological grounds as well as on deeply rooted ideas about what education is supposed to be. So, evidence alone cannot resolve it completely. Decisions by individual teachers, and policy choices by schools and governments, will have to find a balance. Yet, evidence can help shed additional light.

Students' integration of knowledge within broader competencies

PISA results show that knowledge and skills are not opposed to one another, but that they interact in various ways. In general, when PISA tests 'science literacy', they examine the proficiency of 15-year-olds in the skills that are required to engage in reasoned discourse about science-related issues. But PISA defines competency in science as being both knowledge of and about science, and attitudes towards science. The PISA 2015 assessment framework for science thus includes knowledge, but it distinguishes between content knowledge, procedural knowledge, and an understanding of the rationale for that knowledge (referred to as epistemic knowledge). It also identifies attitudes. The interesting thing is that scientific knowledge and attitudes combine to constitute competency. In scientific inquiry, competency is defined as the ability to explain phenomena, evaluate and design questions, and interpret data and evidence. Competencies thus emerge when knowledge and attitudes *work together*.

Countries, including well-performing countries, differ in the relative strengths of their pupils' proficiency in content knowledge, procedural knowledge and epistemic knowledge (OECD, 2016c). Finland, for example, has higher scores on content knowledge than on procedural and epistemic knowledge, but it still has an excellent overall science proficiency score.

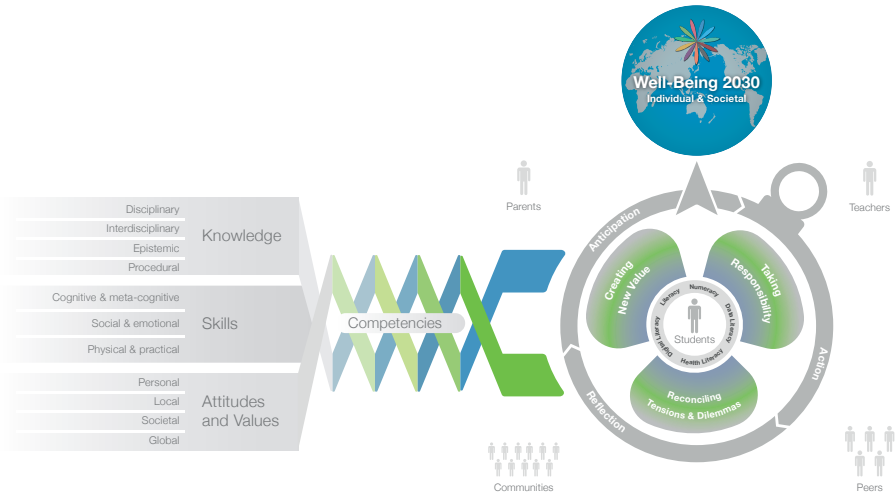
PISA 2015 also asked students about their learning strategies. The data indicate that it would be wrong to equate memorisation (typical for knowledge-oriented learning) with poor learning outcomes, and that it would likewise be incorrect to equate more competency-oriented elaboration strategies (which involve making connections between tasks, prior knowledge and real-life experience) with better learning outcomes. Indeed, results from PISA show that both memorisation and elaboration strategies can lead to better learning outcomes for students, even though the latter seems to be essential for solving more advanced tasks (Schleicher, 2016).

Looking forward, the OECD's Education 2030 project, which is working with countries to explore the competencies needed for success in the world of 2030, and is examining the curriculum changes that will be needed to make this happen, further builds on this idea that competencies are in fact an integration of knowledge, skills, and attitudes and values (see Figure 3.2). For students to demonstrate their competencies through action,

> **There is a difference between management and leadership. We need administrators who are leaders and who understand that teachers need to do innovative things to get through to students.**
>
> **Armand Doucet, Teacher, Canada**

choice, or way of behaving with respect to the demands in a particular context, they will need to be able to mobilise *all dimensions* of "knowledge", "skills", and "attitudes and values".

Figure 3.2 **Competency as the integration of knowledge, skills, and attitudes & values**



Source: OECD (2018), *The Future of Education and Skills: Education 2030*, OECD Publishing, Paris, *http://www.oecd.org/education/2030/oecd-education-2030-position-paper.pdf*.

Note: Please note this figure is a work-in-progress.

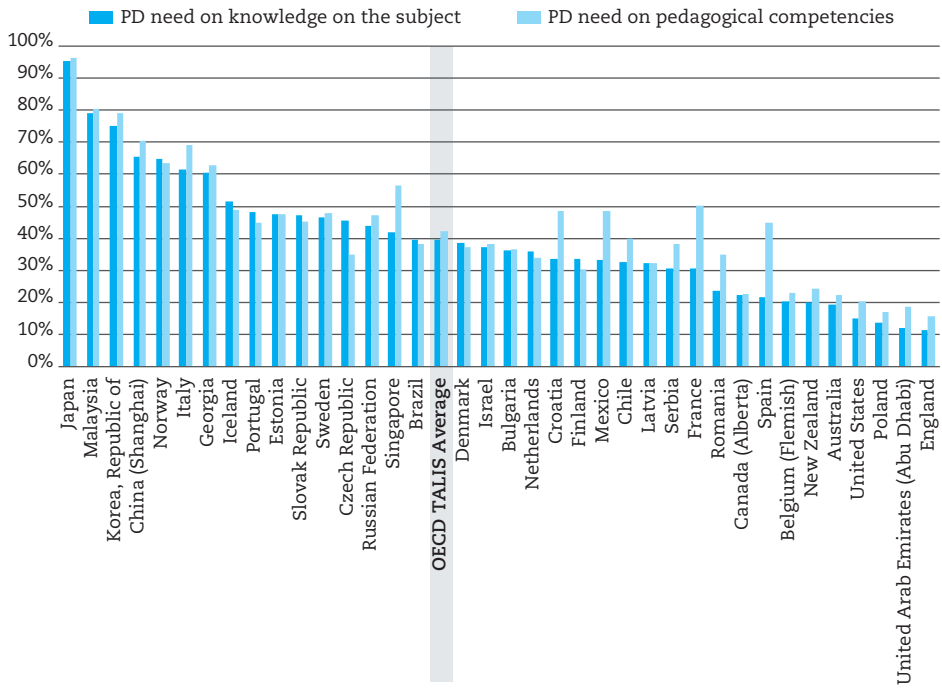
Teachers' integration of knowledge within broader competencies

The tension between knowledge and skills is also present in teachers' professional competencies. Much research has been devoted to exploring the impact of teachers and teaching on student achievement. This research shows that teacher quality is an important factor in determining gains in student achievement, even after accounting for prior student learning and family background characteristics. But research also shows that "professional competence" itself is based on the integration of knowledge (both content knowledge and pedagogical knowledge), skills, attitudes and motivation, and the ability to apply all of the above to highly complex and demanding situations. It follows from this conceptualisation of professional competence that the ability to solve work-related problems requires having not only the cognitive abilities for developing effective solutions (i.e. pedagogical knowledge), but also the right motivation and attitudes.

> **If you give teachers the ability and leeway to be professional, they will do that.**
> **Armand Doucet, Teacher, Canada**

Knowledge and skills often go hand in hand. This is illustrated by TALIS data on the self-reported need of teachers for professional development (see Figure 3.3). Teachers express a need for professional development for both content knowledge and pedagogical competencies in quite similar ways across countries. In most countries, less than 10% of teachers express a need in one but not in the other, while on average, 30% express a need for both at the same time.

Figure 3.3 **Percentage of lower secondary teachers with a moderate or high self-reported need for professional development on subject knowledge or pedagogical competencies**



Note: The data from the United States should be interpreted carefully. This is because the United States did not meet the international standards for participation rates.

Source: OECD (2013), *TALIS 2013 complete database*, *http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20*.

StatLink http://dx.doi.org/10.1787/888933691040

While many education systems seem to be currently swinging in the direction of delivering more competency-based instruction, as we move into the future, the pendulum will most likely swing back and forth between these two approaches. Perhaps education systems would do best by integrating both approaches and benefitting from the best aspects of each.

> **If you can learn to learn then you can apply that knowledge to any content area.**
> **Nik Kafka, CEO Teach a man to fish**

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, three panellists from different backgrounds discussed the delicate balance between knowledge- and competency-based learning. The panel included Nik Kafka, CEO and Founder of the educational organisation "Teach a Man to Fish"; Armand Doucet, a high school teacher from Canada; and Justin Moorman, Head of Faculty at a primary school in the United Arab Emirates. A productive and insightful debate yielded three key policy lessons.

Lesson 1: Competency-based learning is crucial in preparing students for today's workforce

The panellists agreed that mastering core content knowledge is crucial, but it is not enough. Skills, such as the ability to adapt to new environments and working flexibly, will be key in determining students' success in the real world. Students also need to learn how to transfer and apply their knowledge from one subject to another. Increasingly, individuals are being judged on what they can do with what they know, instead of on just what they know.

Lesson 2: Context matters in developing student competencies

Learning is a continuum, and in each stage of a student's learning, there needs to be a balance between their knowledge and the competencies that they acquire with that knowledge. Through their instruction, teachers should have the freedom to adapt the curriculum to student needs. Contextualising teaching to meet the needs of students is essential to foster character development and higher order competencies such as, critical thinking and problem solving.

Lesson 3: Teachers need support to effectively adopt and integrate competency-based teaching strategies

Despite the importance of delivering competency-based education, teachers are still not provided with enough guidance or support in how to do so. New and more effective ways of preparing teachers to integrate knowledge- and competency-based approaches will be essential if practice is to evolve. Justin Moorman provided an interesting example of "flipped" professional development initiatives that he promotes in his school (See Box 3.3). It is also important for administrators to support and trust teachers. School leaders should provide teachers with the autonomy they need to innovate in the classroom. They should also provide platforms for teachers to share their experiences with their colleagues.

Box 3.3 **Flipped professional development**

Applying the principle of flipped classrooms, Justin Moorman introduced the idea of "flipped" professional development (PD) for teachers. This approach allows teachers to personalise learning based on their professional development goals and places them at the centre of their own development.

Flipped PD activities are divided into three phases: Engage, Collaborate and Apply. Each set of activities occurs mostly online and each phase relies on a different platform.

In the *Engage* phase, teachers create presentations related to the content on *Nearpod*, an interactive classroom tool. Teachers can access *Nearpod* on any internet-connected device through a unique code and identifier. After delivering their presentations, teachers are provided with individualised reports and feedback that aid their professional learning. To maximise interactive learning and understanding, each presentation includes a range of tools such as videos, documents, quizzes, and short responses.

In the *Collaborate* phase, teachers share their learning. They either meet in small groups after school or they use *FlipGrid* to talk about what they learned in the previous phase. *FlipGrid* is a tool that enables the creation of a virtual peer learning communities. This reduces the time constraints, coordination and commitments that would otherwise be required. Teachers can interact with each other via videos of 90 seconds or less and respond to key questions about the PD concept of the week.

In the *Apply* phase, teachers apply their learning. Using *Calendly*, an online scheduling tool, teachers sign up for a "Show off" session, which alerts the administrative team to drop in for a demonstration lesson, an observation, or a one-on-one chat, to see the impact of the teacher's learning first-hand.

Key action points

At the conclusion of the session, the panellists were asked to select and prioritise key action points to adopt an approach that blends knowledge and competency-based teaching and learning. These are:

1. **Align the educational system around the mission and vision of balancing knowledge-based and competency-based learning frameworks:** It is crucial to link curriculum design, professional development opportunities for teachers, and classroom practices, to create an education system that balances both knowledge- and competence-based learning and teaching. Knowledge-based learning frameworks have largely determined teaching and learning practices in the classrooms. And high-level policy discussions about the design of competency-based learning frameworks do not always trickle down to the classroom. Instead of following a top-down approach, where policy makers in isolation determine the approach that fits the learning framework, governments and education systems should follow a bottom-up approach that involves teachers and schools, and builds on their insights in policy making.

2. **Re-evaluate how student and teacher performance is measured:** The measurement of the performance of both teachers and students is still used as a key indicator of the quality and progress of educational systems. However, even though the curriculum is increasingly shifting to a competency-based framework, educational systems still rely mainly on indicators that measure the acquisition of knowledge and do not test competencies. If teachers continue to be judged solely on their students' mastery of content knowledge, they won't have any incentive to modify practices or to adopt a competency-based framework.

3. **Re-examine the role of school leaders:** School leaders or principals play a vital role in guiding and supporting teachers in their acquisition of competency-based frameworks. They should give teachers the freedom and autonomy to experiment and try new initiatives in the classroom. Principals should also provide opportunities for teachers to share their experiences, voice their concerns, and take ownership of their teaching. In other words, principals should move away from their traditional roles as managers and instead become true school leaders.

Topic 3:
Active learning: The way forward?

Why is this topic important?

Active learning is defined as any teaching method that "involves students in doing things and thinking about the things they are doing" (Bonwell and Eison, 1991). In active learning, students are not just passively listening to the instructions of the teacher. Instead, they are actively or experientially involved in the learning process. Active learning is a purposeful and reflective activity that encourages students to fully understand the relevance of the learning material while simultaneously reflecting on its meaning. It is an interactive and engaging activity, in which there is constant communication between teachers and students, and real-life examples related to the content are used to construct learning tasks.

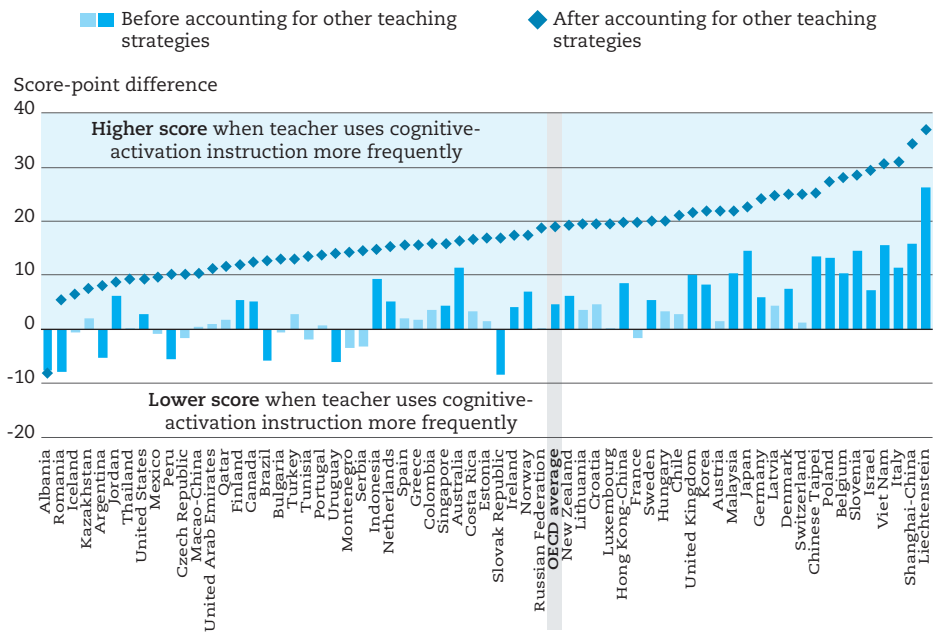
Active learning has gained popularity as a teaching method, with increasing numbers of educators and academics realising that to truly learn, students must do more than just listen; they must read, write, question, discuss, explain, brainstorm, and actively participate in the learning process (Freeman et al., 2014; Meyer and Jones, 1993). Teachers use a variety of teaching strategies when engaging students in active learning activities. Some examples of active learning techniques include whole class or small group discussions, debates, writing lesson summaries or short papers, answering questions or describing topics, roundtable discussions, problem-based learning activities and group presentations. Indeed, a range of names are used for "active learning" activities, but common to them all is that they each require more from students than just listening: the *active* participation of students is a necessary component. What are some ways to incorporate active learning into tomorrow's classrooms? How can active learning strategies propel student achievement even higher in the future?

What is the evidence?

A growing body of empirical evidence indicates that active learning practices are associated with higher academic achievement (Freeman et al., 2014; Meyer and Jones, 1993; Prince, 2004). Students who actively use higher-order thinking skills (such as analysis, synthesis, evaluation, and planning) during the learning process, consistently outperform those who do not actively do so.

The latest data from PISA shows that cognitive-activation instruction (an active learning technique) is associated with an average increase of 19 points in mathematics scores, across OECD countries, after accounting for other teaching strategies (see Figure 3.4). The index of cognitive-activation instruction measures the extent to which teachers encourage students to acquire deep knowledge through instructional practices such as giving students problems that require them to think for an extended time, presenting problems for which there is no immediately obvious way of arriving at a solution, and helping students to learn from the mistakes they have made.

Figure 3.4 **Improvements in student mathematics scores when teachers use cognitive-activation instruction more often**



Note: Statistically significant values before accounting for other teaching strategies are marked in a darker tone. All values after accounting for other teaching strategies are statistically significant. Other teaching strategies refer to the PISA indices of teacher-directed, student-oriented and formative-assessment instruction.

Source: OECD (2017), *PISA 2015 Database*, *http://www.oecd.org/pisa/data/2015database/*.

StatLink http://dx.doi.org/10.1787/888933414800

> **Letting students lead and participate in lesson will require you (teachers) to overcome your own fears. If students are active and engaged, if they have responsibility and ownership- they will rise to the occasion and behave.**
>
> **Lisa Lowenstein, Teacher, USA**

The following list of positive aspects and outcomes of active learning has been adapted from the work of Bronwell and Eisen (1991), Hoellwarth and Moelter (2011), and Svinicki (2001):

- Active learning improves the retention of new information, reinforces important insights and skills, and improves levels of understanding so that learned material can be transferred to new situations.
- Active learning creates personal connections to topics, thus increasing students' intrinsic motivation and engagement with lesson content.
- Active learning offers opportunities to practice important interpersonal skills, such as collaboration, communication and teamwork.
- Active learning builds self-esteem and personal agency through activities and interactions.
- Active learning helps develop higher order thinking skills such as analysis, evaluation, reflection and synthesis.
- Active learning accommodates a variety of learning styles and personal preferences.
- Active learning creates a sense of community in classrooms.

What are the possible barriers to success?

There are many possible obstacles that need to be considered when deciding whether to engage in active learning practices (Cherney, 2011; Eison, 2010). Firstly, there are numerous practical considerations. Teachers may lack the necessary materials, equipment and resources, or they may not have enough class time to engage in active learning practices while having to cover the planned and expected content. In some cases, class sizes may be too large for effective implementation of some active learning techniques. Educational tradition or lack of school or administrative responsiveness, may also present barriers for the integration of new pedagogies.

To effectively implement active learning in the classroom, teachers need to be knowledgeable about the requirements of different techniques. Creating a supportive, collaborative atmosphere that is conducive to open and lively, but respectful and constructive interaction is key. But, perhaps the biggest barrier of all may be the fact that introducing these techniques involves a certain degree of risk – risk that teachers will lose control, lack the necessary skills, be criticised for abandoning traditional methods, or that students will not engage or will not learn sufficiently (Bronwell and Eison, 1991). Given these possible barriers, it is important to introduce active learning strategies in a planned and positive way. Box 3.4 illustrates some of the important steps in doing so.

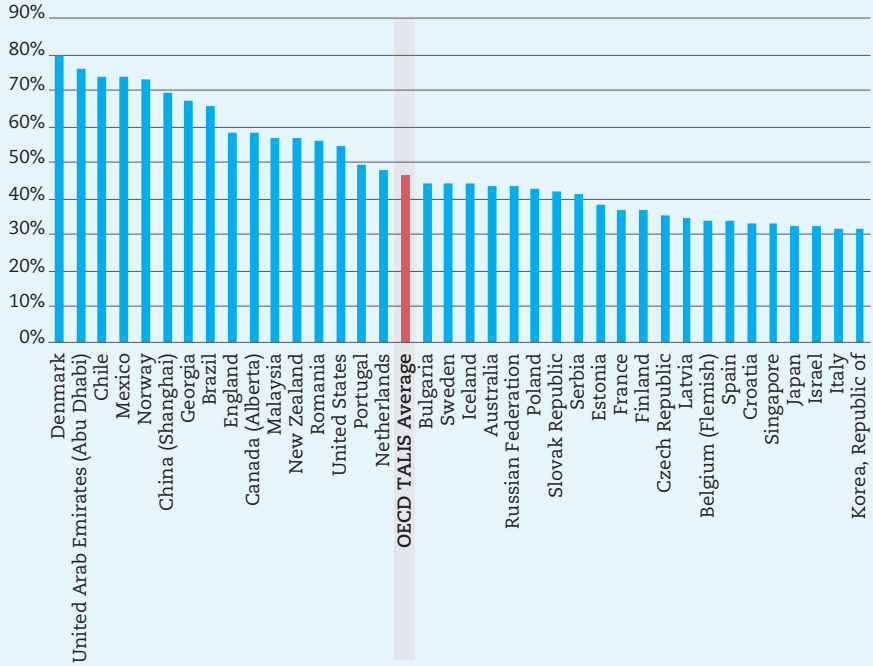
> **Student engagement and ownership prevents losing control of the classroom. The best lessons are when students are doing more than teachers.**
>
> **Lisa Lowenstein, Teacher, USA**

Instructional variety is essential for student learning.
Richard Spencer, Teacher, UK

Box 3.4 How can active learning techniques be incorporated into the classroom?

As **Figure 3.5** illustrates, one of the most common active learning activities is small-group discussions. These promote long-term retention of the material, an understanding of its application in a wider range of situations, and higher order thinking, communication, collaboration and wider social skills (Bonwell and Eison, 1991). Data presented in **Figure 3.5** show a substantive difference between countries in the frequency of use of this practice by secondary education teachers. Just over 30% of teachers frequently use small groups in Italy and Korea, while almost 80% use this practice frequently or in nearly all lessons in Abu Dhabi and Denmark.

Figure 3.5 Frequency of using small groups discussions as a teaching practice in secondary education, by country



Note: These data were reported by teachers and refer to a randomly chosen course they were teaching at the time. Countries are ranked in descending order, based on the percentage of teachers who used small groups "frequently" or "in all or nearly all lessons".

Source: OECD, *TALIS 2013 Database*, *http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20*.

StatLink http://dx.doi.org/10.1787/888933691059

...

> **Length of service doesn't make you a great teacher.**
> **Richard Spencer, Teacher, UK**

Box 3.4 **How can active learning techniques be incorporated into the classroom? (continued)**

A good way to begin is to select the active learning techniques the teacher has the most knowledge of and experience with (Bronwell and Eison, 1991). These can also be low-risk practices of shorter duration that are more structured and familiar to students, such as writing exercises or class discussions. After becoming comfortable with these, teachers can move towards more involved practices.

Giving clear instructions is critical for active learning. Goals, timeframe, roles and procedures for each task need to be clearly outlined before students engage. Addressing student feedback in a timely and confident manner, and using it as an opportunity to reflect on the learning process (Doyle, 2008) works well.

It is important to remember that just because students are "active" it does not mean that they are necessarily learning (Copeland, Scott and Houska, 2010). When engaging in active learning practices, teachers should monitor students to ensure that they are following planned procedures and that they are working in line with the goals and expected outcomes of the activity. In situations where this is not the case, teachers should be ready to intervene and adjust the activity accordingly.

What is the way forward?

Active learning strategies are not new. Active learning is an established teaching method that brings with it a wide range of important student benefits. It is a pedagogy that promotes skills that are increasingly relevant in the modern world (Cherney, 2011). Even so, the question of what needs to be done to further promote the worldwide integration of active learning techniques requires a multi-layered response.

At the wider, system level, introducing active learning pedagogies into classrooms will not happen by itself. Instead, this will require careful planning, targeted policy action and the investment of necessary resources. At the local or school level, school administrators and managers must recognise the need to provide ongoing support to teachers, especially when new pedagogies are introduced and during the evaluation of new learning outcomes.

But in the end, it is teachers who will be delivering active learning techniques and who therefore bear most of the responsibility for its pedagogical outcomes. Any reform of instructional practices must therefore involve teachers, and must genuinely support their efforts in introducing these practices into the classroom environment (Cherney, 2011). Teachers need to be ready to master new pedagogies, and to put them into practice (Eison, 2010). This may sometimes require that they leave their comfort zone. But, this can ultimately lead to more fulfilling pedagogical experiences, both for their students and for themselves.

> **Active learning brings down barriers, allows children to engage.**
> **Niall Mcgonigle, Teacher, UAE**

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, three science teachers discussed the concept of active learning and how it applies to their teaching. The panel included Niall McGonigle, a primary school teacher from Dubai, United Arab Emirates; Lisa Lowenstein, a lower secondary teacher from New York, United States and Richard Spencer, an upper secondary teacher from a rural area outside of York, United Kingdom. While each panellist approaches active learning from a different perspective, they have similar conclusions about active learning's essential role in teaching.

Lesson 1: Active learning is key for developing 21st century skills

For students to become active members of 21st century society, it is increasingly important that their education prepares them to think critically, evaluate various sources of information, make connections between different subjects, and take an active role in the learning process. This does not mean that we should simply abandon teacher-directed lessons. On the contrary, listening is a core component of active learning.

Applied effectively, active learning is a two-step process. First, students learn the content. Then, they apply it while demonstrating skills and competencies. Mr Spencer and Ms Lowenstein shared active learning techniques they use in their classrooms (see Box 3.5). The panellists agreed that instructional variety is *essential* for student learning. But even today, classroom content is still largely delivered in unimaginative ways.

Box 3.5 **Making science interactive**

To make science lessons more engaging, Richard Spencer introduces classroom activities that require the *application* of knowledge, not just the memorisation of facts. To combat passivity in learning science, Mr Spencer introduces and explains topics and then quickly moves on to activities that actively engage the students. One such activity is making students "act out". To explain protein structure theory, each student makes models of amino acids and works out how to join them as a group. This is followed by another activity where Mr Spencer puts coloured bibs on the students, representing various amino acids, and has students play out the various interactions. For example, when Mr Spencer sprays them with water, students re-enact hydrolysis by breaking apart.

Lisa Lowenstein also uses active learning strategies to facilitate learning in her classroom. To make sure students are engaged with topics of global scientific relevance, and to help them develop their soft skills, she frequently organises debates and field studies. In her *Billion Oyster Project*, Ms Lowenstein's students monitor their own oysters to study ecology and better understand climate change. She also organises debates on topics like genetic engineering, and encourages her students to compete in national competitions such as "Genes in Space", which highlights the use of mini Polymerase Chain Reaction equipment to perform scientific tests in the school environment.

> **As teachers, the best dialogue we have is those amongst ourselves, when we share techniques and strategies.**
> **Richard Spencer, Teacher, UK**

Lesson 2: The best lessons are when students are doing more than teachers

Implementing active learning requires the application of a variety of pedagogical techniques. In doing so, teachers may feel they risk losing control of the classroom situation, compared to more traditional teaching methods. Giving students more responsibility and letting them lead discussions may also require teachers to overcome their own fears. However, the panellists agreed that if students are engaged and have ownership, the chances of losing control of the classroom are low. If students are engaged, active and enjoying their learning, then they are less likely to cause chaos in the classroom.

Lesson 3: Great teachers are great learners

In the 21st century, learning will be a lifelong process. Teachers are also learners, and it is important for students to see that teachers continue to learn and grow professionally. Teachers should introduce new techniques and then tweak them based on feedback. This accrued knowledge should be shared among professionals. Identifying existing expertise within schools and across schools is an important way to provide collegial support. Whether this is done through observations, formal training sessions, or even designating some teachers as "active learning experts", providing a clear avenue for professional development is key.

Key action points

The panellists identified three key action points that could support the implementation of active learning in today's classrooms. They are:

1. **Ensure that learning reflects 21st century skills and competencies:** Provide an evidence-based framework that supports the wider implementation of teaching techniques which foster higher-order thinking, critical thinking, and collaborative skills, across subjects. A closer connection between academic research and policy and practice, could enhance the development of such a framework.
2. **Understand and promote the idea that great teachers are great learners:** To successfully equip students with the knowledge and skills they need today, teachers, too, should keep learning. Wider implementation of active learning methods will require additional types of professional development and peer learning. Only through continued learning can confidence and capacity building take shape.
3. **Allow the time and space needed for innovation:** To implement active learning techniques, teachers need additional time and space. However, the reality for most teachers globally is that time is in short supply. Managing the core tasks of teaching is indeed more than a full-time job. Mr Spencer suggests that perhaps teachers could teach for four days a week and have the fifth day to learn, grade, prepare and innovate. While creative thinking about what students could do on the fifth day would be needed, new and innovative solutions may be warranted.

Still too many students feel that school is about listening and copying.
Richard Spencer, Teacher, UK

Notes

1. Assessing teaching quality and efficient learning practices by evaluating student outcomes and their learning gains does have questionable reliability as students' learning happens both in the classroom and outside of the school. Additionally, student learning and student outcomes are affected by other non-teaching related factors (e.g., student socio-economic background), and are the result of cumulative exposure to a range of teaching approaches over the years. The empirical measurement of teaching quality in such a framework thus requires controlling for as many factors as possible, to measure the net effect of a given teaching strategy.

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CHAPTER 4

How can we effectively use technology in classrooms?

The classroom experience is rapidly changing through the integration of information and communication technology, internet connectivity and technology-based pedagogies. This chapter first explores how teachers can use technology to provide quality instruction, and provides a few insights on how teachers can better integrate technology and innovation to facilitate learning for all. The chapter then examines how teachers can engage with social media to support learning and help bolster students' ability to navigate through digital spaces. Lastly, the chapter focuses on using elements of games as a means of increasing student engagement, and identifies benefits and challenges of making games a part of the classroom experience.

Note regarding data on Israel

The statistical data for Israel are supplied by and are under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem, and Israeli settlements in the West Bank under the terms of international law.

> **These new skills (21st century skills) need to be embedded, both across the curriculum and disciplines.**
> **Jan Peter aus dem Moore, McKinsey & Company, UAE**

Introduction

Information and communication technology (ICT) is changing the way students are developing and learning. School systems are exploring effective ways to integrate ICT into the learning environment to enhance student achievement and advance the development of 21st century skills. Some systems have already invested heavily in introducing ICT into classrooms, while others have taken a more gradual approach. The availability of ICT in classrooms is only one aspect of this shift. Education systems need to re-evaluate their curricula, and teachers need to reassess their teaching styles, to ensure that ICT is used effectively to support learning and equip students with competencies that are important for the future. Connecting the way students interact with ICT inside of the school to the way they already connect with it outside of the school, could be the key to unlocking technology's true potential for learning.

Topic 1: Technology in the classroom, today and tomorrow

Why is this topic important?

Digital devices and the internet are increasingly becoming a part of the environment in which young people grow and learn. But plans to expand access to technology in individual schools, entire districts or even whole countries will effectively improve student learning only if these tools are put to good use by both teachers and students. How can evidence about how students learn be used to make smarter use of technology in tomorrow's classrooms? Can technology add meaningful new content and experiences to an already crowded curriculum? As we move into the future, how can technology help transform our use of learning strategies to engage students more effectively?

What is the evidence?

Frequently, evaluations of the implementation of ICT plans for schools show that investments in technology do result in greater use of computers, but that positive, quantifiable learning gains are more difficult to identify (Bulman and Fairlie, 2016). While both data from the OECD Programme for International Student Assessment (PISA) and research evidence concur that the positive effects of computer use are often limited to certain outcomes, such as computer skills, it's important to keep in mind that student learning, whether online or offline, is mostly determined by student engagement and effective teaching techniques (OECD, 2015a). The value of technology in the classroom is therefore contingent on how and when computers are used, and not just on whether the technological tools are available to teachers and students.

Technology is most effective when it supports effective learning strategies

Hattie and Yates (2013) explain that the successful use of computer-assisted instruction shares several characteristics with successful non-technologically based learning interventions: it extends study time and practice; it allows students to assume control over the learning situation (e.g., by individualising the pace with which new material is introduced); and it supports collaborative learning. In other words, the science of learning is the same in a technology-rich world as it is in an analogue world. Learning still demands time, and is most effective when it responds to a personal need or goal, and when it can be socially enhanced.

Some digital classroom practices that are currently in the spotlight hold great promise. Teachers who "flip" their classrooms use class time for practice, group work, and individual feedback, while asking students to watch or listen to lesson content at home. In doing so, they extend study time and individualise instruction. In flipped classrooms, technology is used as a means to reinforce effective pedagogical practice, but is not at the centre of the classroom experience (Bergmann and Sams, 2012). Technology can also bridge space constraints. Virtual science labs enable hands-on experiences that students might otherwise never have. Similarly, technology use in second-language instruction can give students access to native speakers, which may not otherwise be available. And state-of-the-art, non-linear course-ware can provide a personalised experience for learners, enriched by frequent formative feedback loops.

Equity of access is not universal

While these and other trending practices hold great promise (Adams Becker et al., 2016), the data show that computer use in schools is still not as widespread as it could be in many countries, including some high-income countries, as well as those that top international education rankings. In 2015, 55% of students in Estonia, 52% of students in Korea, 48% of students in Japan, 46% of students in Poland, and 40% of students in Beijing-Shanghai-Jiangsu-Guangdong (the People's Republic of China) reported that they used a desktop, laptop or tablet computer at school. And, in several countries, the prevalence of computer usage in schools actually decreased between 2012 and 2015.

Technology use is on the rise, but does not automatically translate into classroom innovation

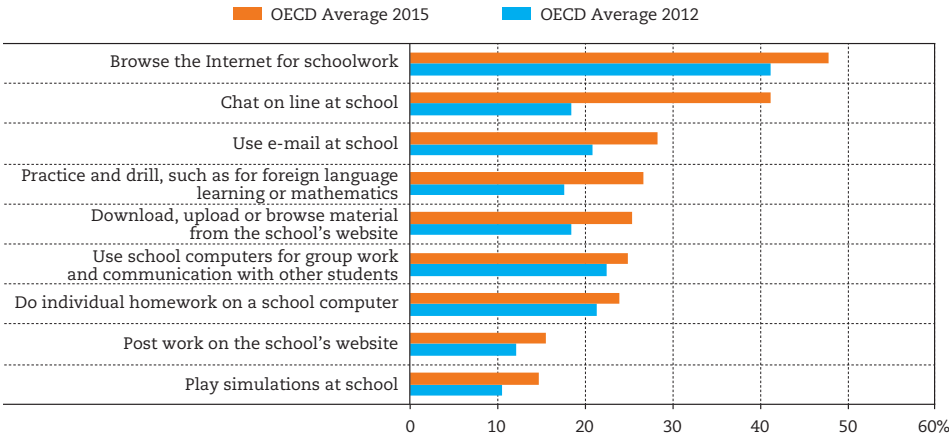
Another key challenge for the future is that, according to PISA data (see Figure 4.1), the most frequent uses of technology in the classroom today tend to emulate more traditional activities that could take place without digital devices. Browsing the internet for schoolwork (48% of students across OECD countries reported doing this at least once a week), and chatting online at school (the most rapidly growing activity, compared to 2012, with a 24 percentage point increase, on average, across OECD countries) are tasks that could otherwise be accomplished without access to technology, through more traditional research and discussion. Meanwhile, doing simulations on computers

> **Being told by administrators that it's ok to try new technologies, that you will be supported even if it doesn't go well... is invaluable.**
>
> **Paul Solarz, Teacher, USA**

at school at least once a week, a technology-specific activity, was reported by an average of just 15% of students.

Figure 4.1 **Change in use of digital devices at school between 2012 and 2015, by type of activity**

Percentage of students who engage in each activity at least once a week, results based on students' self-reports



Source: OECD (2017), *PISA 2015 Database*, *http://www.oecd.org/pisa/data/2015database/*.

StatLink http://dx.doi.org/10.1787/888933691078

PISA data further show that teachers' use of digital devices is related to the demands of the curriculum, but also to their own attitudes. In mathematics, teachers who ask students to work on real-world problems use computers most. But pedagogical knowledge and diversification of instruction also matter a lot. Teachers who are most inclined towards, and better prepared for, student-oriented practices such as group work, individualised learning, and project work, are more likely to use digital resources (OECD, 2015a). Indeed, while educators' technology use does seem to be restricted, to some extent, by the pressures of demanding curricula and high-stakes examinations, technology use appears to be primarily driven by teachers' own pedagogical preferences and knowledge (Hennessy and London, 2013).

For technology to have an even more positive impact on learning strategies in classrooms of the future, we may need to look at the ways it can enhance student motivation. At the same time, teachers need to have a sense of ownership over technology which means technology should not only support teaching but also it should help teachers build on their pedagogical expertise. While simply using a computer or a smartphone to find the answer to a factual question is unlikely to make students smarter, technology does have the capacity to amplify great teaching.

> **Mere use of technology is not innovation, more important is how teachers use it.**
> **Jan Peter aus dem Moore, McKinsey & Company, UAE**

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, three panellists were invited to discuss the potential of technology to enhance teacher effectiveness and improve student learning. The panellists were Jan Peter aus dem Moore, an Associate Partner at McKinsey & Company and expert in digital education in the United Arab Emirates; Paul Solarz, a primary school teacher from the United States; and Mona Almarzooqe, a mathematics teacher from the United Arab Emirates.

Lesson 1: Technology is changing what students should know and be able to do

The pervasiveness of technology is dramatically shifting the skills demanded by the labour market, from routine skills to performing tasks that require complex, higher-order competencies. This movement away from physical tasks towards those that require creative, strategic and analytical thinking is influencing what students need to master in school. As argued by the panellists, as robotics and artificial intelligence advance, there is also an increased likelihood that the future of work will be more about directing and managing machines so that they can carry out complex tasks, rather than performing those tasks ourselves. This means that education systems will need to adapt their curricula, pedagogies and assessment systems to ensure that students and teachers become more confident in the use of new technologies.

Lesson 2: Technology creates multiple opportunities for teachers

Technology can change the educational landscape in many ways. For instance, technology can be used to help teachers share their pedagogical knowledge and experiences with each other. It can also be used to better engage students in the learning process (see Box 4.1), to accelerate and adapt lessons to various learning styles and to widen the pedagogical options available to teachers.

Box 4.1 Genius Hour: Exploring technology in the classroom

Genius Hour, also known as *Passion Time*, is a way Paul Solarz encourages his students to go beyond the curriculum and explore research topics that may be of personal interest to them. Mr Solarz provides guidance throughout the process and organises mini-lessons that familiarise students with ways to research on the internet and document their learning. Students are also encouraged to reflect on and write about their research (both about the topic and the process itself). "Passion Time" is not a graded exercise, but students are held accountable for meeting deadlines.

...

Box 4.1 **Genius Hour: Exploring technology in the classroom** (continued)

To identify the essential question and create an effective research plan, Mr Solarz's students follow the K-W-H-L-A-Q approach:

1. What do I **know**? Students list what they already know about the topic.
2. What do I **want** to know? Students identify what more they want to know about the topic and narrow it down to a single question.
3. **How** do I find out? Students think about what resources are available to help them find the answer.
4. What have I **learned**? Students explain what they have learned from their research.
5. What **action** will I take? This ensures that students are applying what they have learned and that inquiry leads to responsible action initiated by students as a result of the learning process.
6. What new **questions** do I have? At the end of a unit, students should be able to reflect on whether they were able to successfully address the essential question.

Using this approach, students work together with Mr Solarz to first identify the essential question and then begin researching, building and creating. Students are required to produce short videos showing the final product which they upload to YouTube and create an entry on the "Passion Project" blog page about it. Additionally, students view each other's videos and provide constructive feedback.

Lesson 3: Proper training helps teachers use technology effectively

Technology will make a positive difference in education only if teachers are ready and able to use it effectively, and if schools and school systems sustain an atmosphere that promotes innovation. All panellists agreed that, in addition to having access to the required hardware and software, teachers should be properly trained in the use of ICT– for instance, through communities of practice-- and be encouraged to take risks.

Key action points

The panellists identified four key action points they feel could best support teachers in making the most of technology in their classrooms.

1. **Provide adequate training:** Technology will help transform education effectively only if teachers are ready, willing and able to use the ICT available at their school sites. It is important to understand that technology can support good teaching, but not replace it. Teachers should receive initial training, as well as continued professional development, such as seminars, workshops, and sessions with experts, to increase their ability and confidence in using ICT.

2. **Encourage teachers to take risks:** School principals and administrators play an important role in spurring innovation by teaching staff. School leaders who encourage teachers to embrace new technologies and pedagogies can make a big difference.
3. **Build a strong case for the use of ICT in schools:** Develop evidence showing the effective use of technology in the classroom and report it back to the school system and to the larger community. Establish networks with other schools and teachers to share best practices.
4. **Support the development of high-quality educational software, and ensure it reaches schools:** The potential of technology to transform the learning process by, for example, allowing for deeper and more flexible learning, largely depends on the quality of the educational software available to schools. Overloading teachers with new technologies or products may overwhelm them. Therefore, these should be introduced gradually and when appropriate.

Topic 2: Social media as a platform for tomorrow's learning

Why is this topic important?

The internet has become a significant part of our daily lives, particularly as mobile handheld devices, such as smartphones and tablets, have made it more accessible than ever (OECD, 2016). Internet users are also developing increasingly sophisticated online behaviours, prompted by rapidly diversifying social media platforms[1] that now give users access to a whole host of services, in some cases through one application alone (Sharples et al., 2016).

Given its widespread availability, social media has also begun to impact students, giving rise to new learning styles that allow young people to have more agency over their own learning (OECD, 2017). In 2015, PISA's investigation of the social media phenomenon's impact on students' lives found that across OECD countries, 88% of students agreed that "the internet is a great resource for obtaining information", while 84% affirmed that "it is very useful to have social networks on the internet" (OECD, 2017).

Student perceptions of the internet and social media as sources of information arise from the ease with which they allow information to be found and shared. Finding information no longer requires searching through books or magazines, or watching the nightly news. Although this can lead to a greater number of students being more informed about a wide range of topics (Bennett, Wells and Rank, 2009), the truth of the information found online is not always verifiable, and it can be difficult to sort fact from fiction (Krasodomski-Jones, 2016). In addition, researchers have found that the internet and social media have created spaces for intolerant groups to form and spread misinformation, and there is a tendency for social media users to create networks of like-minded individuals, leading to echo chambers that limit critical thinking and examination of evidence (Bennett, Wells, and Rank, 2009; Krasodomski-Jones, 2016).

> **Students need to not only know how to consume knowledge on social media but also how to produce it.**
> **Derek Swanson, Teacher, UAE**

Social media as a useful learning tool?

Undeniably, social media has become a key tool of the 21st century. Hence, although most students today will learn how to use it in informal settings, its place in the digital literacy curriculum cannot be denied. On the other hand, it is also important to consider whether social media can be inherently useful as a resource in schools, both in helping teachers teach more effectively and in enabling students to achieve formal educational goals. After all, education-based social networking can better position students to connect formal and informal learning and give them the opportunity to adapt social media to their lifelong learning kit. However, as Sharples et al. (2016) write about its use in the classroom, "Anyone can engage at any time, anyone can leave at any time, but skilled facilitators can keep people engaged and actively contributing." Thus, when educators use social media as a learning tool, the methods used for doing so necessarily differ from those used in traditional teaching. Even so, what impact can social media use have on learning? How can we increase the positivity of that impact as we look to the future?

What is the evidence?

Despite a wealth of literature exploring the widespread use of social media by today's students, there is a lack of evidence regarding its impact on learning. This is partially attributed to its ever-changing nature, as well as to differences in its usefulness depending on age group, gender, and other variables (Aydin, 2012). Yet, the belief that social media must be capitalised on continues to prevail, with supporters of education-based social networking citing its many compelling benefits. For example, social media can increase student engagement by integrating students' favoured learning styles into instruction, thus enabling what is referred to as the "Knowledge Building" teaching approach (see Box 4.2) (van den Broek, 2012). Additionally, social media can help create a collaborative atmosphere that boosts interactions, and which allows teachers to quickly identify students' learning needs and deliver immediate feedback (Blazer, 2012). Some studies indicate that use of smartphones and social media for educational purposes in school could increase students' academic engagement (Brooks-Young, 2010; OECD, 2015a). However, studies have yet to find concrete proof of these trends.

On the other hand, there is abundant data confirming the growing prevalence of the internet – and by extension, social media – in students' lives. From 2006 to 2015, student access to the internet at home became almost universal in PISA-participating countries and economies, with 95% of students reporting having internet connections at home in 2015 (OECD, 2017). In 2010, a survey conducted by Microsoft Corporation found that in the United States, on average, children have their first social media account by the age of 13, while a study by Fodeman and Monroe (2011) revealed increases across the board in the percentage of students in grades 4 through 8 using Facebook between 2008 and 2011 (Blazer, 2012).

Previously, we used to prevent kids from using social media, but we have realised that now we need to embrance it ourselves and teach students how to use it effectively.
Dr. Najla Al Naqbi, e-learning educator, UAE

Box 4.2 Social media for Knowledge Building

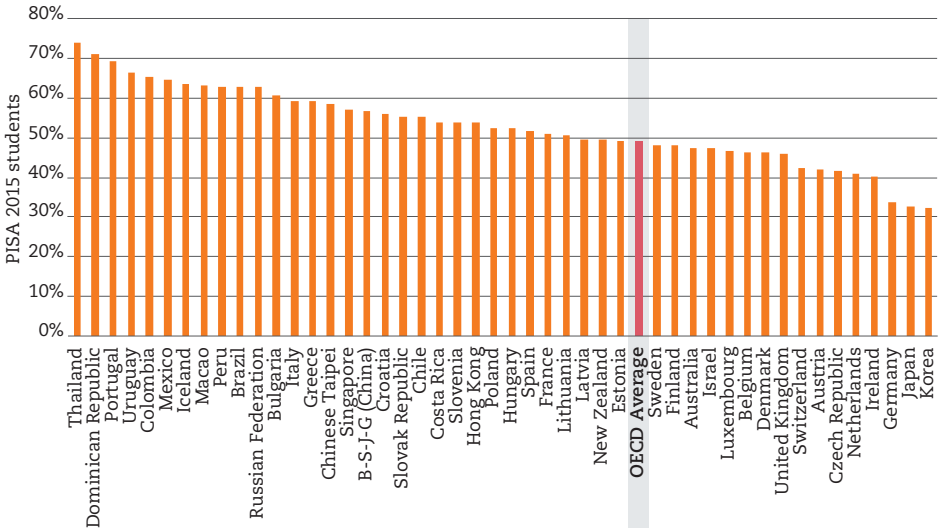
Knowledge Building refers to a constructivist teaching approach, in which education is restructured to meet the goals and processes of knowledge generation. While their specific achievements may vary, children and adults often follow similar processes for knowledge building, and learners of all ages are considered active contributors who share a collective responsibility for the expansion of knowledge (van den Broek, 2012). Students are not only learners and inquirers, but also members of a knowledge-building community that collaborates to expand the frontiers of knowledge and generate innovative ideas.

One example of Knowledge Building through social media can be found in a study by Palaigeorgiou and Grammatikopoulou (2016), which looked at innovative Greek educators who had incorporated extensive social media experience into their classrooms. The teachers employed a variety of social media tools, such as an online video blog that primary school students used to practice their English and communicate with peers within and outside of the country, and "wikis" for collaborative document writing. The study found that students were more academically engaged and confident in their creativity and self-expression, and felt empowered by their newly found role as knowledge producers, and by their ability to generate digital content (Palaigeorgiou and Grammatikopoulou, 2016). This example shows the power of social media to 1) enhance students' digital literacy, and; 2) motivate learning and collective knowledge creation.

In the most recent version of the PISA ICT student questionnaire, indicators concerning social media were added to respond to the increasing interest about its place in educational spaces. Figure 4.2 shows the degree to which students enjoy exchanging information online with their friends to solve problems.

Across the countries that took part in this questionnaire, 49% of students stated that they used the internet to find solutions to problems. Aside from Portugal (69% of students), the systems that showed the highest levels of student use were all non-OECD countries: Thailand (74%), Dominican Republic (71%), and Uruguay (66%). These data show the broad potential of incorporating student interests (i.e. solving problems through digital devices) into the classroom.

Figure 4.2 **Percentage of students who like to use digital devices to exchange solutions to problems with others on the internet**



Note: These are average values for the countries/economies that implemented the PISA ICT questionnaire.
Source: OECD (2017), *PISA 2015 Database*, *http://www.oecd.org/pisa/data/2015database/*.
StatLink http://dx.doi.org/10.1787/888933691097

Possible drawbacks of using social media as a learning tool

Yet, despite its popularity and penetration, social networking has been met with resistance in some educational spheres, due to concerns that students may be exposed to inappropriate or dangerous content, and undesirable adult interactions (Blazer, 2012). There is also a consensus that social media may pose certain risks and potential harm to students' emotional and mental health (Frith, 2017). Research has connected excessive internet use with depression, and social media use in particular has been found to have wide-ranging potential negative side effects, such as hyperactivity, aggression, antisocial behaviour, or social isolation, not to mention that students can be subjected to psychologically scarring bullying online (known as cyber-bullying) (Frith, 2017). Extreme internet use (over six hours a day) has also been shown to have a negative relationship with students' life satisfaction (OECD, 2017).

The potential of social media in tomorrow's classrooms

Social networking for educational purposes clearly has the potential to yield widespread benefits, such as fostering cooperative learning, enabling formative real-time assessment, and facilitating knowledge building and digital literacy in 21st century students (OECD, 2015a). Furthermore, given the large amount of information spread through social media today, it is important for students to be equipped with

> **Social media may get teachers out of their comfort zone. A lot of the times, students can know more than teachers (on a certain issue) because of social media.**
> **Koen Timmers, Teacher, Belgium**

the skills to think critically about such material and to be able to sift between fact and fiction (Siddique, 2017). Although some social networking sites, like Facebook, are taking steps to limit the spread of false information, unverified information is still present in all parts of the internet, and students must be prepared for this unfortunate reality. As Bennett, Wells and Rank (2009) point out, the best course of action is to reform how we educate students, so that they are more prepared for citizenship in a digital world. Including social media and digital literacy in the curriculum is a crucial part of the needed reforms.

At this point, however, many of the real effects of social media on learning remain unknown, and there are considerable risks that must be managed before we can definitively determine how social media can be used for learning. In the meantime, it is useful for educators to begin scaffolding for future adaptations of social media to teaching practices (Aydin, 2012). From helping teachers develop strategies that make use of students' networking behaviours to improve their learning and development, to training them on how best to use the technology, there is a lot that can be done while both research and awareness continue to unfold.

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, three panellists discussed the ways they use social media to improve student learning. The panel included Derek Swanson, Director of Innovation and eLearning at American Community School of Abu Dhabi; Koen Timmers, a teacher from Belgium; and Dr Najla Al Naqbi, an educational technology expert and e-learning educator in the United Arab Emirates.

Lesson 1: Social media is an opportunity to connect formal and informal learning

All panellists agreed that for the first time, most students now have unlimited access to information. It is therefore important to ensure that students can differentiate between information that matters and is true, and information which is not true. A first step for teachers is to embrace the social media platforms that students use to access information and communicate with each other. Using social media in lessons can help teachers foster a sense of community by connecting what happens in the classroom to student's wider interests. In turn, bringing topics and discussion into the classroom which students are already engaged in helps them better connect with classroom learning. Derek Swanson explained (see Box 4.3) that gaining access to a wider audience can also become a source of motivation and creativity for students.

> **You have to go where the kids are (on social media).**
> **Derek Swanson, Teacher, UAE**

Box 4.3 **Using social media to facilitate learning**

Derek Swanson uses social media to support his teaching. He shares ideas and gives and receives feedback with his students, via Facebook and Twitter. His students actively use YouTube to create and share content. They create videos about issues and topics they are interested in, which are then uploaded and shared with the school community. Mr Swanson also livestreams student performances, sporting events, school board meetings and parent events, which greatly expands the audience for each.

Mr Swanson's driving motivation for using social media to facilitate learning is to empower students to become content generators, instead of merely consumers of social media. Creating content to share with a wide audience adds authenticity to the classroom experience, and increases engagement. It also allows students to take ownership of their learning.

Lesson 2: Connect social media with pedagogies

The panellists agreed that social media can be used not only as a source for accessing information, but that it can also be a way to introduce innovation and new teaching styles. Indeed, the conscious use of social media can itself be a pedagogical tool, allowing teachers to rethink the way they design the learning environment and re-examine how ICT is used in classrooms. Social media can also enhance the content of classroom teaching. It provides a tool for incorporating digital literacy practices into lessons, as well as a means to include the experiences and voices of students, thereby helping to put learners more at the centre of learning.

Lesson 3: Build appropriate skills for social media use

Introducing social media for learning carries with it a certain level of risk. In particular, there can be an 'echo chamber effect' and a blurring of the boundaries between the private and public spheres. This may discourage some teachers from using social media. To resolve this, the panellists agreed that teachers need to focus on core competencies and values, and to build on these to teach about the use – and abuse – of social media. At the same time, they offered valuable insights, such as the specific work of eSafe, a non-governmental organisation (NGO) working for safer internet access for children, and how to connect the use of social media with 21st century skills (see Box 4.4).

Key action points

The panellists identified three key action points that could better support teachers in their efforts to use social media to further student learning.

1. **Equip teachers with tools that support digital literacy:** Teachers need to incorporate pedagogies that help students identify true information on the internet and differentiate it from false information. Training is also essential to help teachers understand the variety of uses for ICT.

2. **Establish Personal Learning Networks:** Each student learns in a different way. Personal Learning Networks can help both teachers and students find communities that suit their specific needs. Learners choose whom to interact with and how much to participate.
3. **Create systems that help knowledge building:** Teachers and students need to constantly update their knowledge. Teacher training in social media use should focus on key competencies, including how to deal with fake news, how to authenticate content, and how to deal with any cyber-bullying situations students might experience. These challenges call for a proactive rather than reactive approach.

Box 4.4 **Technology skills for the 21st century learner**

The 2016 International Society for Technology in Education (ISTE) standards for students consist of seven main skills that learners should master in the 21st century. Students should be:

1. Empowered Learners
2. Digital Citizens
3. Knowledge Constructors
4. Innovative Designers
5. Computational Thinkers
6. Creative Communicators
7. Global Collaborators

These skills highlight the need for teachers to educate students about social media platforms and how to use them effectively. Teachers can use social media to connect students with experts, share knowledge, and foster discussions about global issues.

Topic 3: Gamifying teaching: What works?

Why is this topic important?

Teachers in many countries struggle to promote student engagement and motivation, which is particularly a challenge with teenagers (OECD, 2013). Boys, especially those who attend schools in socio-economically disadvantaged neighbourhoods where educational and career aspirations are low, tend to adopt a concept of masculinity that includes a disregard for authority, academic work and formal achievement. Indeed, as Salisbury, Rees and Gorard (1999) found, boys' motivation at school dissipates as they get older and by age 11, 40% of boys belong to one of three groups: the "disaffected", the "disappointed" or the "disappeared". Finding ways to promote and sustain student motivation and engagement in school, particularly with boys, is thus increasingly becoming a priority for teachers, parents and educators.

> **It's good to respect the skills students develop in games.**
> **Jane McGonigal, Director of Game Research and Development, Institute for the Future**

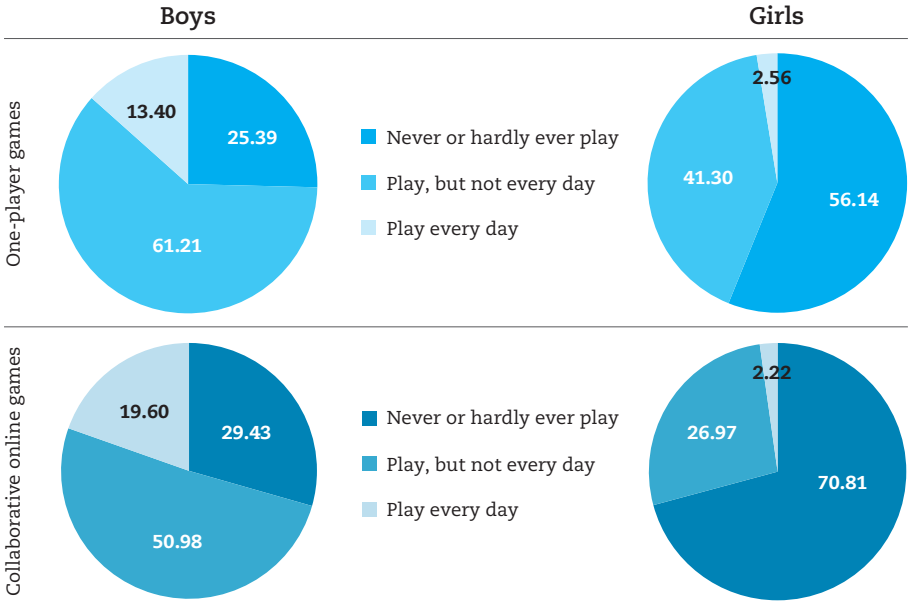
The fast-paced and highly engaging nature of teenagers' leisure activities often sharply contrasts with traditional classroom dynamics and teaching practices. This further contributes to declining levels of engagement. At the same time, teachers are seeking new ways to ensure that students have the knowledge and skills they need to succeed in the 21st century. Introducing play and games into classrooms, and revising teaching so that it includes elements of both, has the potential to improve student engagement and motivation, while helping equip students with new skills. Under what conditions do game-based teaching and learning work? What are the desired outcomes of game-based learning? Can game-based learning prepare students for tomorrow's challenges?

What is the evidence?

Evidence from PISA suggests that boys (who are consistently some of the students hardest to engage at age 15) are frequent video game players. Across OECD countries (see Figure 4.3), as many as 75% of boys play one-player games regularly and over 13% do so every day. Similarly, as many as 71% of boys in OECD countries play collaborative online games regularly, while 20% play every day. By contrast, 56% of girls report never or hardly ever playing one-player games and 71% never or hardly ever play collaborative online games (OECD, 2015b).

Figure 4.3 **How often do girls and boys play video games on the computer, outside of school?**

Percentage of students in OECD countries



Source: OECD (2015b), *The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence*, OECD Publishing, Paris.
StatLink http://dx.doi.org/10.1787/888933691154

> **Gamifying is easy for the children to understand and adapt to because they play all the time. With teachers, transition is not so easy as they have specific ways of teaching that need to be disrupted.**
>
> **Mithun Kamath, CEO, Arc Skills**

The fact that video games are a favourite leisure-time activity among teenagers worldwide causes some concern among parents and educators. The addictive nature of leisure time gaming, coupled with the potentially negative consequences playing video games can have on academic performance (Borgonovi, 2016), add to this feeling. Students who excessively play video games may pay less attention in school, be less willing to allocate time and effort to home-study, and may become less motivated in school, especially without the constant external reward mechanisms that are artificially deployed in gaming (Swing et al., 2010).

Moderation is the key

Studies suggest that while excessive gaming may lead to negative outcomes, moderate gaming may yield positive effects. In fact, many games incorporate positive learning principles that can stimulate students' cognitive functioning, psychosocial adjustment, and promote problem-solving and spatial skills (Adachi and Willoughby, 2013; Connolly et al., 2012; Spence and Feng, 2010). Rather than demonising gaming, educators are increasingly exploring how to use play and games to engage students and promote learning.

Playing games in classroom settings:

- **Serious games**

  Individuals play actual games that were specifically conceived and created for educational purposes. Engaging in such games occurs in non-recreational, educational environments (e.g., flight simulators for pilots). Game practice is, in these contexts, central to individuals' acquiring skills and competencies that otherwise would be difficult or impossible to acquire in real, learning-by-doing, practice settings.

- **Digital games or game-based learning**

  Using video- or analogue games in the classroom for educational purposes (e.g., using Sim City to understand the complexities of how cities work) (de Sousa Borges et al., 2014). Playing games can help teachers convey knowledge and competencies that had been traditionally acquired in other ways, and promotes motivation and engagement.

Using games presents challenges

The direct use of both traditional and video games is a well-established practice in education. That said, and even though several meta-analyses have described the overall positive effects of using games to promote student learning (e.g., Clark, Tanner-Smith and Killingsworth, 2016), the literature also points to challenges in scaling the use of video games for regular classroom instruction. One specific concern is whether teachers are able to fully integrate games and gamified experiences into the instructional context (Lafuente, forthcoming).

> **Parents and teachers, both, need to understand the positive benefits of games.**
> **Janet Hayward, Teacher, UK**

Ways to add features or principles of gaming into teaching:

- **Playful design**

  Adoption of basic features and principles and using game-based aesthetics and limited game-dynamics in non-game contexts (e.g., a normal maths programme that uses a well-designed, playful interface to log in, to show results, or to ask questions). Playful design is used to promote engagement and motivation.

- **Gamified teaching**

  Using (some) gaming elements in educational contexts, with the aim of adapting pedagogical elements to incorporate some of the psychological, emotional and social power of games into teaching. Gamified teaching can promote engagement, motivation and competency acquisition. For example, adopting storytelling techniques, such as immersing the learner in a story with a plot, characters and challenges that make the story flourish, can mimic one of the main sources of motivation and engagement in video games.

  According to literature reviews by Buckley and Doyle (2016), and Hamari, Koivisto and Sarsa (2014), gamified teaching is generally associated with better engagement and motivation. However, most studies cannot infer the direct effect of gamification per se, but instead suggest a positive correlation between the use of gamified teaching and motivation for the specific subjects and contexts in which gamified teaching was employed.

Pedagogical components to address

Gamifying teaching works best when it addresses several key pedagogical components that have been identified by the Institute of Play[2] including: rapid feedback, revolving around immediate and ongoing student progress information; participation, which lets everyone engage according to their skills and acknowledges failure as a part of the learning process; badges and goals, relating learning to specific skills and content; progressive challenges, which make learners feel neither too relaxed nor too anxious; and collaboration which involves a degree of competition, so that the learning environment fosters a level of co-operation and teamwork (Flatt, 2016).

Building on the work of Tulloch (2014), gamification should be understood as a way to implement innovative pedagogical approaches such as formative assessment, experiential learning, adaptive teaching, narrative pedagogies and collaborative learning, while focusing on the meaningful participation of all students. From this perspective, gamified teaching is not just an end in and of itself; but rather, it should be used to aid the implementation of active, student-centred, collaborative learning. As we move forward into tomorrow's classrooms, gamification can help increase student engagement and thus stimulate even better student outcomes.

> **Games seem to be the most powerful way to build self-efficacy.**
> **Jane Mcgonigal, Director of Game Research and Development, Institute for the Future**

Lessons from the field: What are practitioners saying?

At the 2017 Qudwa Global Teachers' Forum, three panellists were invited to discuss how using aspects of games in classroom instruction can improve student learning. The panel included Janet Hayward, a primary school teacher in the United Kingdom; Jane McGonigal, Director of Game Research and Development at the Institute for the Future, based in the United States; and Mithun Kamath, CEO of Arc Skills, an international skills training company.

Lesson 1: Gamification is more than just using games in the classroom

First and foremost, gamification fosters engagement, not learning. Through reflection and analysis, teachers can build on the engagement that gamification provides to bring out the learning. The use of games and gamification in classrooms needs to be balanced with traditional pedagogies. The added benefits of gamification come from the psychology and teaching methods that are already embedded in the games. They help channel the student's energy towards learning (see Box 4.5).

Box 4.5 **Skills 21: A programme for gamifying teaching**

Skills 21 is a programme designed to impart 21st century skills to students in grades 6 to 10. This programme combines gamification with immersion, reflection, and self-study. It is a blended programme, with both online and classroom elements, with the classroom instruction being delivered by teachers who are specially trained by the programme. Skills 21 is currently up and running in seven countries. Mithun Kamath explains that this kind of innovative programme does have specific challenges. But, there are ways to combat them.

Situations that Skills 21 teachers find challenging:

- Increased activity in the classroom, which they fear could lead to chaos
- Discussions in which teachers ask questions only, and do not share data or opinions
- Closely observing student behaviours
- Refraining from intervening or instructing
- Being passive in the class and letting students lead the learning

Ways to address these challenges:

- Only invite teachers who want to participate, regardless of their experience or the grade they teach.
- Train all teachers by first introducing what gamification is and explaining its benefits.
- Support classroom teachers through observations, demonstrations and feedback.
- Provide ongoing training and support, to share feedback and facilitate peer learning.
- Give teachers incentives to use gamification strategies by collecting evidence.

> **The first positive impact of gamification is engagement, but that needs to be followed by discussions on the content in an engaging way.**
> **Mithun Kamath, CEO, Arc Skills**

Lesson 2: Games help develop soft skills

Introducing games is an efficient way to build students' self-efficacy, increase curiosity and engagement, and expand learning through practical involvement. In addition, all games don't necessarily have to be educational. Teachers should feel confident in introducing games that support the development of soft- and meta-cognitive skills. For example, video games can provide students with opportunities to improve and succeed (see Box 4.6).

Box 4.6 Games for Change: Promoting videogames for learning

Games for Change is a non-profit organisation, founded in 2004, which creates and promotes video games that seek social change. Their idea is to put social-impact games into the hands of regular game players and create real-world impact through gaming.

Students are encouraged to explore social issues and learn 21st century STEM (science, technology, engineering and mathematics) skills through the various Games for Change Student Challenges.

Foldit, one of the games on the Games for Change platform, provide students with opportunities to crowdsource solutions to scientific problems, through gaming. For example, Foldit asks players to take on the role of a biochemist to map out how proteins might be folded in nature. In 2011, gamers playing Foldit helped unlock the structure of an AIDS-related enzyme that the scientific community had been unable to unlock for over a decade.

These kinds of games provide ways for students to address real-life issues while developing skills and competencies in an engaging way.

Lesson 3: Understanding *why* students play video games is crucial

For students who engage excessively in video games, it is important for teachers to understand what it is about the games they play that captures their imaginations so intensely. Instead of judging students because of the types of games they prefer, teachers should try to analyse the reasons for their engagement. This could provide insights into the types of pedagogies that may be more engaging and relevant to these students.

> **It's not about gamification, but about what you want it to teach them. You can include games in any subject, as long as it's built around what you want it to teach.**
> **Jane Mcgonigal, Director of Game Research and Development, Institute for the Future**

Key action points

The panellists identified three key action points that could help teachers include gamification in their teaching repertoire.

1. **Implement a three-step TEI plan (Train, Equip and Incentivise):** Teachers need extensive training on the various ways to add elements of games into instruction. These include gamification, immersion, reflection, role playing and case studies. Aside from equipping teachers with new skills, training gives teachers a sense of empowerment and can serve to renew and revitalise their interest in teaching. All teachers need to be equipped with updated devices and be connected to a larger community.
2. **Build the curriculum from the bottom-up:** National curricula are not changing at the same pace as technological progress. Teachers and schools should have more space to innovate and improve the curricula, to meet the fast-changing needs of the classroom.
3. **Modify views of gaming:** Teachers should familiarise themselves with the games their students are interested in, and think of ways to integrate their positive aspects into their lessons. It is also important to collaborate with parents, and to discuss the length of play and potential impact of games on students.

Notes

1. Social media platforms (sometimes also referred to as "Web 2.0") refer to applications for blogging, podcasting, and collaborative content (e.g., Wikipedia and WordPress), social networking (e.g., Twitter, Facebook and Whatsapp), multimedia sharing (e.g., YouTube, Snapchat and Instagram), social tagging (e.g., Pinterest), and social gaming (e.g., World of Warcraft) (Redecker, Ala-Mutka and Punie, 2010).

2. The Institute of Play is a non-profit design studio that creates learning experiences and environments based on the principles of game design. It is currently one of the pioneers of innovation and implementation in transforming education through play.

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CHAPTER 5

How can we foster innovation in teaching?

Innovation in teaching and learning is essential to respond to the needs of 21st century learners. Teachers can be drivers of innovation in classrooms if they are supported by education systems. This chapter explores issues around adopting pedagogical approaches that are effective in meeting the needs of today's diverse learners. It includes an explanation of alternative education methods that are prevalent in school systems today. The chapter then examines the role of feedback in supporting teachers, and helping them innovate and develop as educators.

Note regarding data on Israel

The statistical data for Israel are supplied by and are under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem, and Israeli settlements in the West Bank under the terms of international law.

Introduction

Traditional teaching methods have largely relied on imparting content knowledge through memorisation and providing passive roles to students in their learning. However, to create an effective and engaging learning environment that fosters 21st century skills such as critical thinking and collaborative problem solving, teachers need to blend traditional techniques with newer, more innovative approaches. Yet, teachers cannot bear the sole responsibility for this. School leaders, schools, and school systems need to help support this shift by providing genuine and constructive feedback which helps teachers implement successful strategies and become more effective educators.

Topic 1: Alternative education methods as a lever for teaching innovation

Why is this topic important?

Alternative education (AE) is commonly defined as those pedagogical approaches and learning environments that differ from mainstream education. AE methods are currently being employed in schools across developed nations and many emerging economies as a safety valve for those students who leave school early, as well as for those who have been unable to learn and thrive in the traditional education system. They provide a channel for introducing innovation into education systems that have been slow to adapt to increasing learner diversity and new societal needs (e.g. teaching 21st century skills). They also serve as a counterpoint to reforms which have focused mainly on curriculum control and high-stakes testing and assessment, and have therefore resulted in the 'thinning out' of pedagogic innovation.

AE practices are expanding. In the United States, AE institutions are present in 2,000 school districts and serve over 500,000 students (Vogell and Fresques, 2017). In the European Union, there are at least 13 countries that have developed a network of Schools for Second Chance (S2C), the French network being the most established. Although these schools are extremely different across and within countries, they do share a series of related practices that have proven successful in engaging students who possess an unsuccessful track record in mainstream education (Rennie Center for Education Research & Policy, 2014). Examples of these methods include developing a holistic approach to students' capacities and needs, focusing on meaningful experiences and interests, and specific work involving tutoring and individualisation (Lange and Sletten, 2002; European Commission, 2001). In the United Arab Emirates, for example, new programmes around creative design and innovation, and English language instruction, reflect this alternative approach. How can alternative education methods be used to encourage pedagogical innovation on a larger scale? And what supports will teachers need to adopt effective AE methods in the classrooms of tomorrow?

> **Success is when students speak confidently, when they know their strengths and weaknesses, when they take action to solve a problem.**
>
> **Stephen Ritz, Founder, Green Bronx Machine**

What is the evidence?

At its core, AE has always been a source for innovation and experimentation. Thus, it is no accident that many educational principles and pedagogical approaches that are now considered mainstream have their roots in AE (Sliwka and Yee, 2015). Traditional alternative schools, or those schools that have been explicitly committed to the principles of alternative approaches (Montessori, Waldorf and Reggio-Emilia, among others), have continued experimenting and updating their methodologies, particularly in early education. Indeed, the persistence and growing number of schools that fall under the umbrella of "free schools" (schools that use AE methods exclusively, particularly non-directive methods) in Catalonia (now at 50) and the U.S. (now at 100), for example, are evidence of the growing success of alternative educational opportunities.

Difficulty measuring AE success

But as Dahlin (2007) found when looking at the impact of Sweden's Waldorf Schools, gathering specific evidence on the success of AE can be difficult. This is due to the small number of schools developing AE approaches, their holistic, intertwined sets of principles, and the importance of family contexts (usually highly-educated parents). Aron (2006) likewise points out that there are few rigorous studies to date that examine AE student outcomes, and suggests we therefore need to rethink the types of measures which should be targeted and monitored. A particularly interesting case that mixes the goals of alternative education with those developed by S2C beyond early childhood and primary education, is the Federation of Public Innovative Schools (FESPI) in France, a network of 12 schools that have *tried* to show their successful practices through diverse case studies.

AE methods that foster innovation

Another important way in which AE methods are fostering innovation comes from networks of schools that share part, if not all, of the principles of AE without ascribing to any one movement. As discussed in the research being developed by Istance and Paniagua (forthcoming), these networks of schools are implementing practices such as gamification; blended, experiential or embodied learning; and new literacies which, in most cases, are updated implementations of long-standing teaching approaches rooted in AE. Another common approach shared by these networks is the emphasis placed on students' voices and agency, coupled with a growing awareness of the need to be acutely sensitive to their individual differences. This can be achieved through AE approaches including peer collaboration, diverse forms of blended learning, a focus on the potential of all children, and a non-restrictive interpretation of the curriculum.

As shown in Box 5.1, PBL has also gained significant attention in the last few years. As Figure 5.1 below shows, there is great variation in how frequently teachers engage in this specific AE practice. The data show that PBL is especially predominant among teachers in Mexico (57%), Abu Dhabi (53%), Chile (53%), and Australia (52%), while it is used considerably less often in Croatia (10%), The Czech Republic (12%) and South Korea (13%). Overall, 28% of teachers across OECD countries participating in the Teaching and Learning International Survey (TALIS) engage their students in projects that require more than one week to complete.

I invite people from different areas and careers to come to school and discuss their career choices– not just doctors and lawyers.
Soonufat Supramaniam, Teacher, Malaysia

Box 5.1 Project-based learning (PBL): Innovation through alternative education methods

Currently, PBL is one of the leading innovative practices being implemented in schools (and networks of schools) worldwide (see Figure 5.1, and Istance and Paniagua, forthcoming). Although there is a good deal of evidence that discusses its positive impact (e.g., Hmelo-Silver, Duncan and Chin, 2007), other research suggests that the link between PBL instruction and positive student achievement outcomes cannot be established with certainty (Kokotsaki, Menzies and Wiggins, 2016). This contradiction sheds light on the fact that research on PBL has a difficult time capturing its multiple dimensions of impact, and that certain qualitative variables are still difficult to assess using standardised tests.

In terms of pedagogical principles, PBL encapsulates many of the learning goals that have been present in most AE approaches. Examples of this include the importance of learning by doing, connecting learning with real world problems, the role of the tutor as supervisor and moderator, the central use of group work and collaboration, and emphasising the end-product of the project (Harmer, 2014).

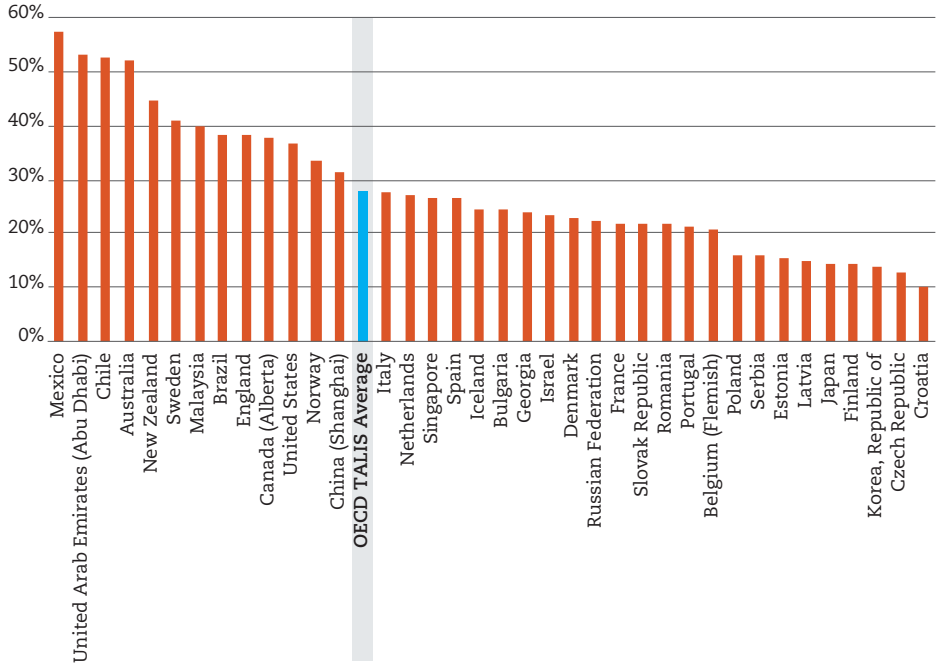
There are a myriad of other scattered practices and programmes (e.g., open-space learning, focus on play, strategic questioning, and art and creativity programmes), and new learning concepts that are rooted in the importance of non-directive teaching. They provide time for students to experiment, formulate ideas, discuss and test. These innovative techniques can be traced back to AE concepts, although they are also informed by new evidence-based research (van den Broek, 2012), and more refined developments within sociocultural and experience-based approaches, as well the use of new technologies (Istance and Paniagua, forthcoming).

According to the OECD's work on Innovative Learning Environments (OECD, 2015), six overall strategies are needed to ensure the further implementation and sustainability of innovations:

1. Creating culture change in schools;
2. Having a clear focus and prioritising targets and goals;
3. Generating knowledge about the learning that is taking place;
4. Fostering collegiality (collaboration and co-operation among teachers);
5. Using information and communication technology (ICT) and digital platforms; and,
6. Creating specific change agents and specialist institutes to support change and transformation.

We need to move from schooling 'to' children and embrace schooling 'with' children.
Stephen Ritz, Founder, Green Bronx Machine

Figure 5.1 **Proportion of teachers that engage their students in projects that require at least one week to complete**



Note: The data from the United States should be interpreted carefully. This is because the United States did not meet the international standards for participation rates.

Source: OECD (2013a), Teaching and Learning International Survey (TALIS): 2013 complete database, http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20.

StatLink http://dx.doi.org/10.1787/888933691116

The current desire to adopt an innovation agenda offers new ways to (re)connect with the ongoing and diverse experiences of AE as a platform to expand the way teaching and learning relationships, and learning environments, are imagined. Doing so can better address the innovation challenges that many schools and school systems will face as we head into the future.

Lessons from the field: What are practitioners saying?

The 2017 Qudwa Global Teachers' Forum gathered three panellists who had each successfully implemented the alternative education method of project-based learning in their respective contexts. The panel included Ibtisam Al Shemili, a teacher and mentor from the United Arab Emirates; Stephen Ritz, a teacher, author, and founder of Green Bronx Machine, from New York City, United States; and Soonufat Supramaniam, a teacher with Teach For Malaysia, serving in a rural school.

> **I wanted my students to like physics so I moved from just theoretical discussions to practical projects that link physics with reality.**
>
> **Ibtisam Al Shemeili, Teacher, UAE**

> **The biggest success is when students realise that their ideas make a positive impact.**
> **Stephen Ritz, Founder, Green Bronx Machine**

Lesson 1: AE methods are effective in making lessons both practical and relevant to current issues

Project-based learning is a useful tool to link content learning with meaningful experiences for students while, at the same time, addressing critical global challenges. When students are more actively engaged in the leaning process, it also increases their awareness of how they can make an impact both in their own community and globally. Stephan Ritz's Green Bronx Machine is a prime example of how students can get involved in addressing the dual crises of climate change and food security, while re-building their own community (see Box 5.2).

Box 5.2 Merging K-12 education with urban agriculture in the Bronx

Stephen Ritz merges K-12 education with urban agriculture, environmental sustainability, healthy eating, and 21st century workforce development through the Green Bronx Machine programme. Initially, Mr. Ritz began the programme as an after- school exercise for his students. However, based on the success in his classroom, he expanded it to the school and then the community. He incorporates gardening and planting into the curriculum as part of the programme, and helps improve the knowledge and eating habits of the students. Every planting activity has a detailed lesson plan behind it, which is carefully mapped to academic learning goals.

Through planting, Mr Ritz's students acquire a practical understanding of statistics, ratios, proportions, fractions, germination and ways to process data. His students also inform people in the community about healthy eating, and write argumentative essays about what they learn.

Lesson 2: AE methods help redefine what is success

Limited resources and strict adherence to traditional teaching practices may hinder the implementation of AE methods. But, when implemented successfully, AE techniques can help redefine what success is, and expand it beyond grades on exams. The panellists agreed that when students are passionate about societal problems or topics of interest and can link them in meaningful ways to their school subjects, more effective learning takes place. This linking enables students to believe in the impact of their ideas and in their ability to engage in civic discourse, as well as to know their strengths and weaknesses when taking action on problems.

Lesson 3: AE methods help education go beyond the walls of the school

Active community involvement is a cornerstone of AE methods. It can be an opportunity for students to identify their strengths and weaknesses, and to identify careers from

> **We need to push the walls of the classroom out and bring the community in.**
> **Stephen Ritz, Founder, Green Bronx Machine**

a wider array of choices. The panellists agreed that inviting professionals into the classroom is quite effective. Resources are often generated from interactions with community stakeholders (see Box 5.3). In engaging with the community, students learn how to express themselves, how to fund-raise, and how to align their projects with the needs of their neighbours.

Box 5.3 Expanding opportunities for students

Soonufat Supramaniam regularly organises several activities for his students, to broaden their worldview and the opportunities available to them:

- **Collaborating with other schools for performance arts:** To boost student confidence and motivate them to learn English in new ways, Mr Supramaniam has organised full-length musicals, as part of a performing arts festival. To do so, he collaborates with other schools. About 30 students participated in his last project and performed at an arts festival in the city.
- **Career awareness programmes:** Mr Supramaniam organises workshops on careers, in which students create resumes and practice interviewing. Once a month, different professionals are invited into the classroom to speak with students about their career path.
- **Student leadership projects:** To help students see themselves as change-makers, students are asked to identify a community project where they see a problem and come up with a solution. After a series of workshops and mentoring, students pitch their solutions to the school management team, to teachers and to possible funders.

Key action points

The panellists identified three key action points they felt could support the wider implementation of alternative education methods.

1. **Introduce national policies for curricula and syllabuses that recognise the need for a holistic approach to teaching 21st century skills:** Teaching related to global challenges needs to be adapted across subjects and go beyond knowledge derived from textbooks. Alternative education methods can be useful in developing these competencies.
2. **Identify crucial curricular areas where traditional teaching methods should be re-evaluated to ensure that effective learning processes take shape:** An essential source of information is also the level and extent to which AE methods are already implemented in schools, and to detect where additional support is needed to increase capacity to adopt more innovative approaches.

3. **Ensure that school policies establish and maintain strong connections with local communities:** AE methods like project-based learning do not necessarily constrain learning to within the school building. Investing in fora where schools can be informed of and adapt to the needs of industry, non-profits and other organisations within the community, is key. Providing students with platforms to interact with the community and learn about possible career paths can strengthen the impact of learning.

Topic 2: Giving teachers better feedback

Why is this topic important?

If done well, feedback – broadly defined as any communication teachers receive about their teaching, based on some form of interaction with their work (e.g. observing classrooms and the teaching of students, discussing teachers' curriculum or the results of their students), (OECD, 2014a) – can empower teachers and students alike. For new teachers, feedback (from peers, mentors and others) is especially important (Jensen et al., 2012). According to Hattie and Timperley (2007), truly effective feedback addresses three essential questions:

- Where am I going? (What are the goals? This is referred to as *feed up*.)
- How am I doing? (What progress is being made toward these goals? This is referred to as *feed back*.)
- Where to next? (What do I need to do in the future to make even better progress? This is referred to as *feed forward*.)

For teachers, feedback may not only create opportunities to reflect upon goals for teaching practices and student learning (*feed up*), and progress made in light of those goals (*feed back*), but it also supports and motivates teachers to develop and grow in their own careers (*feed forward*) (Bill & Melinda Gates Foundation, 2010; OECD, 2013b). Much of this potential for improvement depends on the extent to which feedback is purposeful (i.e. related to learning goals), regular and formative, and whether it's embedded in schools, school networks and education systems as a lever for school improvement (OECD, 2005). According to international data, many teachers today unfortunately see feedback systems as largely administrative tasks, disconnected from meaningful professional development (OECD, 2014a). How can we redesign teacher feedback mechanisms to better address teacher needs and goals? And how can we do so in a way that keeps outcomes and attitudes positive for teachers and students alike?

All feedback requires trust between provider and recepients. It's important to trust and value the thoughts of the person giving the feedback.

Souad Belcaid, Teacher, USA

> **Feedback is not criticism, it should not be a checklist. It should be a thorough explanation to teachers.**
> **Souad Belcaid, Teacher, USA**

What is the evidence?

In the 2013 edition of TALIS (OECD, 2014a), teachers were specifically asked about the feedback they receive at their school sites. Teacher feedback is common across TALIS countries, with 88% of teachers reporting receiving feedback on their teaching, though this varies from lows of 55% in Iceland and 57% in Italy, to highs of 97% in Abu Dhabi and 99% in England (OECD, 2014a).

Who is most likely to provide feedback to teachers?

According to TALIS (OECD, 2014a), feedback is most commonly provided by school principals (for 54% of teachers), members of the school management team (49%) and other teachers (42%). Feedback from external individuals and bodies (29%) and assigned mentors (19%) are the two least common sources. Moreover, many individual teachers receive feedback from multiple sources. On average, 56% of teachers report receiving feedback from one or two sources and 31% receive feedback from three or more sources. Feedback from students can also be used to improve teaching practices (see Box 5.4).

Box 5.4 **Norwegian teachers use formative student feedback**

In 2011, teacher appraisal principles and guidelines were published as part of a joint national initiative by the Norwegian Student Organisation and the Union of Education Norway, the country's largest union for teachers and school leaders. The guidelines describe how students and teachers can work together to evaluate learning objectives, working methods, learning strategies, content, and organisation of classes by using questionnaires, dialogues, journals and observations. The results provide concrete steps for follow-up and distribute responsibilities and timelines for both students and teachers.

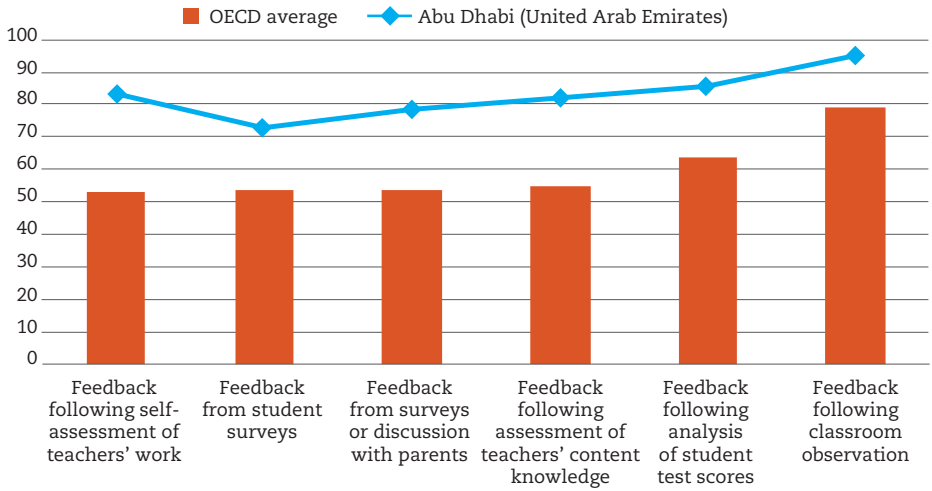
Source: Education Directorate (2011), *Undervisningsvurdering– en veileder for elever og lærere* [Educational Assessment- a guide for students and teachers], Education Directorate.

Which feedback methods are most common?

Feedback can be based on classroom observations, student surveys, assessments of teacher knowledge, analyses of student test scores, self-assessments, or discussions with parents. As Figure 5.2 illustrates, on average, 79% of teachers report receiving feedback following classroom observations, while all other methods are mentioned by over half of teachers across countries. However, there are big differences between countries. To illustrate, while feedback following classroom observations is reported by more than 95% of teachers in Abu Dhabi, England, Malaysia, Poland, Romania and Singapore, less than 50% of teachers report such feedback in Finland, Iceland, Italy and Spain.

Figure 5.2 **Methods of providing feedback to teachers**

Percentage of lower secondary education teachers who report receiving feedback via the following methods



Note: Teachers reported receiving feedback by at least one of the following: external individuals or bodies, principals, member(s) of school management teams, assigned mentors, or other teachers. Items ranked in ascending percentage order.

Source: OECD (2013a), *Teaching and Learning International Survey (TALIS): 2013 complete database*, *http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20*.

StatLink http://dx.doi.org/10.1787/888933691173

Feedback is positive for pedagogical and personal development

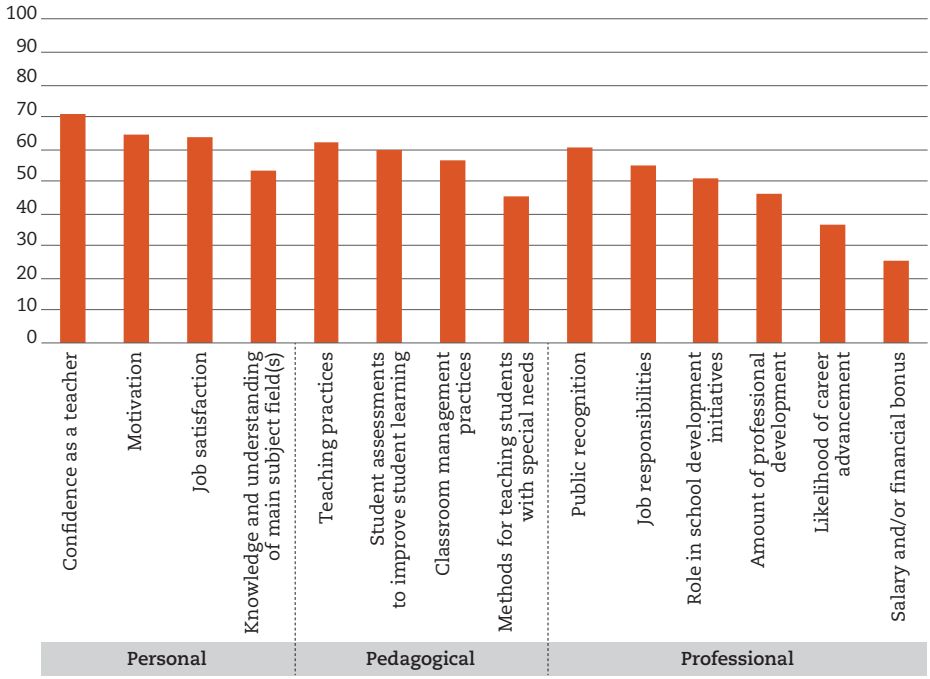
Feedback can stimulate teachers' personal attitudes and feelings about their jobs, their teaching practices, and their professional development. As Figure 5.3 shows, after feedback, positive changes occur in the pedagogical and personal development of teachers. Over 70% of teachers across TALIS countries report a moderate or large increase in their teaching confidence after receiving feedback, 62% report that the feedback they received resulted in positive changes in their teaching practices, and 59% report that it led to moderate or large positive changes in their use of student assessments to improve learning.

The need to make teacher feedback more effective and motivating

Yet, despite the positive outcomes of evaluations and feedback, many teachers still perceive that the feedback systems their schools employ do not foster the development of better teaching practices. International data show that more than half of teachers report that the appraisal and feedback systems at their schools are mostly used simply to fulfil administrative requirements. Implying that the feedback does not motivate or drive performance, less than 40% of teachers report that the best-performing teachers in their schools receive the greatest recognition. Only 27% of teachers report that teachers would be dismissed for consistently underperforming (OECD, 2014a, 2014b).

Figure 5.3 **Outcomes of teacher feedback**

Percentage of lower secondary teachers who report a "moderate" or "high" positive change in the following issues, after they received feedback on their work at their school



Items are ranked in descending order within categories, based on the percentage of teachers reporting

Source: OECD (2013a), *TALIS: 2013 complete database*, *http://stats.oecd.org/index.aspx?datasetcode=talis_2013%20*.

StatLink http://dx.doi.org/10.1787/888933691135

The future of feedback

In the face of these possible challenges to motivation, how can we keep outcomes and attitudes high as we move into the future? Using video observations and new platforms such as professional learning communities (PLCs), have the potential to help teachers get the most out of feedback.

While teachers commonly receive feedback via classroom observations (as we saw in Figure 5.2), video observations are increasingly being used to help teachers reflect upon and improve their teaching. Video observations can be conducted quickly and at any time by individual teachers, as part of a peer learning exercise, or by school leaders as part of regular teaching observations. A recent Harvard University study, "The Best Foot Forward Project" (Kane, 2015), found that video observations help teachers critique themselves, especially in terms of time management and questioning.

In today's digitally savvy world, PLCs, such as Twitter, Edmodo, LinkedIn and Facebook, allow teachers to connect with one another in informal settings, whenever and wherever they choose. Early research into PLCs highlights the potential these

communities have to help shape teaching and learning, and how they nurture the emotional, social, and cognitive aspects of teachers' professional growth (Trust, Krutka and Carpenter, 2016).

As we look to the future, new tools, techniques and perspectives may help lead the way to better feedback for all.

Lessons from the field: What are practitioners saying?

The 2017 Qudwa Global Teachers' Forum gathered a panel of three teachers with different backgrounds and experiences to discuss what good teacher feedback is and how to make it even more effective in the future. Two panellists taught in different countries – Eldijana Bjelcic, taught in Bosnia before migrating to the United States as a refugee, continued to teach in the US and is now an administrator in Colorado; Souad Belcaid, taught in the United States, Egypt and Morocco (her native country), and now teaches at a Montessori school in Massachusetts. The third panellist, Nourah Al Qubaisi, is a special education teacher in the United Arab Emirates.

Lesson 1: Feedback is far from universal and its emphasis varies across countries

There are differences across countries in both how often and how teachers receive feedback on their teaching. The panellists agreed that feedback is far from universal; in fact, one panellist, Ms Bjelcic, reports not remembering ever receiving feedback at the start of her teaching career in Bosnia (see Box 5.5).

Box 5.5 **Impact of feedback**

Eldijana Bjelcic shared her story of how receiving constructive feedback helped her teaching. Having taught in Bosnia and the United States, Ms Bjelcic explained the magnitude of the impact the approaches in these two different countries had on her individual practice. In the late 1980s and early 1990s, Bosnia had yet to incorporate observations and feedback in their teacher evaluation practices. Additionally, teaching was 100% teacher centred, very authoritarian, and everything in the classroom was created, guided and managed by teachers.

However, once in the United States, she had to alter many of these practices to adapt to their very different teaching standards. One specific challenge for her was learning how to give students a voice in their learning. However, she successfully did so because of the extraordinary feedback she received. Hearing what others saw when they observed her classroom enabled her to become a more effective teacher. As Ms Bjelcic puts it, "Feedback made me who I am today". Indeed, by the end of her second teaching year in the United States, Ms Bjelcic was a finalist for the national Sue Lehman Teacher Award.

Effective and relevant feedback helped me become the teacher I am today.
Eldijana Bjelcic, School administrator, USA

The emphasis on feedback seems to vary internationally as well, with most emphasis focusing on students' grades, and on discipline and classroom management in the United Arab Emirates, based on a poll taken during the session and on 2013 TALIS data for Abu Dhabi. Teachers across all TALIS countries (OECD, 2014a), however, report that feedback is more balanced between student grades, classroom management and teachers' knowledge of their subjects.

Lesson 2: Impactful feedback can come from different sources

There are different sources of feedback and if given effectively, all types of feedback can help improve teaching. When receiving feedback, what matters is how informative and constructive the feedback is. Ms Belcaid most values the feedback she received from a school principal (see Box 5.6), while Ms Bjelcic favours feedback received from her peers. Ms Belcaid and Ms Al Qubaisi also feel that feedback from students can be effective and meaningful, as students can give insights into which techniques or methods employed by teachers helped the students the most and which were less effective.

Box 5.6 The power of an authentic observation with specific recommendations

For Souad Belcaid, the feedback that has had the greatest impact on her teaching has been feedback received from the head of her elementary school, who was also her supervisor at the time. According to Ms Belcaid, the method of evaluation her supervisor used was particularly beneficial. Her supervisor would observe her class three times a year, and would take detailed notes. After the observation, her supervisor would go over the notes with Ms Belcaid to explain each and every observation she made and why it mattered. She would pinpoint Ms Belcaid's areas of strength and mention some areas for improvement. Such an approach was extremely helpful. However, in order for this type of detailed feedback to have real meaning, there needs to be a strong level of trust between the teacher and the evaluator. Ms Belcaid noted that while this type of formative feedback helped her become a more powerful and effective teacher, her evaluator's method was unfortunately quite rare. Once her school's administration changed, feedback was reduced to being a checklist that was used in a punitive rather than helpful way.

When providing feedback, don't ask teachers to be or do what he or she is not.
Eldijana Bjelcic, School administrator, USA

Lesson 3: Regardless of who provides the feedback, what matters is a combination of openness, trust, authenticity, specificity and regularity

On the question of what qualities are necessary to make feedback most effective, all three panellists are remarkably aligned as to what is needed:

- **Openness:** Openness to receiving feedback is key, and this requires a change of mindset to embrace an attitude of growth.
- **Trust:** For feedback to be effective, it is important to not be afraid of it. This is easier when there is a positive working relationship between providers and recipients of feedback, when the feedback is disconnected from career evaluation, and when the recipient values and trusts the thoughts and advice of the feedback provider.
- **Authenticity:** Feedback should enable teachers to grow within the boundaries of who they are, and not ask them to be a different person. The panel agreed that if teachers are not themselves in the classroom, students will know immediately.
- **Specificity:** The most useful feedback is not about ticking checklists or about being critical of teachers, but rather it should be specific, asking teachers to work on a particular aspect of their practice, with a clear explanation as to why they should do so.
- **Regularity:** The most effective feedback occurs on a regular basis. The panel agreed that it should be every two weeks, or perhaps once a month, instead of as a once-a-year performance evaluation. The panellists also feel that feedback should be an ongoing conversation that allows for the gathering of data on performance and how to improve instruction, that helps teachers grow professionally. When it is done regularly and effectively, teachers are motivated and encouraged by feedback.

Key action points

The panellists identified four key action points to help design better feedback mechanisms for the future:

1. **Work on changing mindsets and try to reduce the stress that teachers experience during observations.** Teachers need to feel that feedback is not aimed at criticism, but rather at helping them improve their work. Constructive feedback is only meaningful when it can help strengthen teachers' practices and give them the confidence they need.
2. **Foster evaluations by peers to reduce the stakes and the stress associated with teacher feedback.** As teachers share the same experiences, colleagues find their feedback valuable. Teachers observing other teachers and providing feedback to them can have a big impact on teaching.
3. **Set up mechanisms to involve students and parents in feedback processes.** For example, it can be helpful to use student surveys to identify teachers' areas of strength as well as potential areas for improvement.
4. **Encourage feedback as an ongoing, formative conversation that helps teachers grow professionally, rather than as a summative checklist.** Effective feedback has real value and is authentic. When teachers feel the provider of feedback is simply checking off an administrative box, the value of the input is diminished.

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