

4 The OECD Scenarios for the Future of Schooling

This chapter provides a set of four scenarios for the Future of Schooling. Consolidating the original 2001 OECD Schooling for Tomorrow scenarios from six to four, the scenarios consider four alternative futures for 2040:

- **Schooling extended**: an intensification of the current front-end, massive schooling model
 - **Education outsourced**: an outsourcing of schooling and resulting surge of learning markets
 - **Schools as learning hubs**: a re-purposing of schooling and transformation of schools
 - **Learn-as-you-go**: the end of school-based learning and demise of schooling.
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Introduction

In 2001, the OECD published *What Schools for the Future?* (OECD, 2001^[1]), a set of scenarios on the future of schooling and education. The report remains a thought-provoking contribution to future thinking in education and indeed, almost twenty years later, many of the key issues are still debated today.

However, much has also changed in our world since the turn of the 21st century, both within education and in the wider world. This chapter presents an updated set of scenarios, drawing on the original thinking as well as over a decade of CERI work on Trends Shaping Education.

Although tempting to imagine scenarios as possible recipes for the future from which we can choose a preferred option, it is important to recognise that scenarios are not predictions. As highlighted earlier in this volume, much of our thinking of the future is linear, and based on extending currently existing trends. But trends slow, accelerate, bend and break. Unforeseen events can disrupt even long-standing trends.

Scenarios are designed to foster reflection on the possible ways in which the future may differ from our current expectations. These reflections can then be used to gauge our preparedness for the different possible futures, if they were to happen. Imagining multiple scenarios for the future thus recognises that there is not only one pathway into the future, but many (OECD, 2001^[1]).

The original 2001 OECD scenarios presented six possible futures framed and structured along a set of themes: attitudes, expectations, and political support; goals and functions; organisation and structures; the geo-political dimension, and; the teacher force. These were in turn clustered around three axes:

- **The status quo extrapolated**
 - Scenario 1: Robust bureaucratic systems
 - Scenario 2: Extending the market model
- **Re-schooling**
 - Scenario 3: Schools as core social centres
 - Scenario 4: Schools as learning organisations
- **De-schooling**
 - Scenario 5: Learner networks and the network society
 - Scenario 6: Teacher exodus – the meltdown scenario











Looking ahead: Four OECD Scenarios for the Future of Schooling

This update presents four scenarios. They build on and reframe the ideas of re-schooling and de-schooling present in the original set – the expansion of learning markets, the growing investment and role of digital technologies in connecting people as well as its impact on the personalisation of learning.

The scenarios also connect to the ongoing discussion of how to better leverage individual motivation for learning, and recognise and take advantage of its informal and non-formal sources. Technological advances have been interwoven throughout, as have the major changes and trends in education itself (see Chapter 3).

The four OECD Scenarios for the Future of Schooling are presented in Figure 4.1. They have been constructed in a time frame of approximately 20 years, to 2040. This timeframe is chosen as it is long enough for significant change to occur beyond immediate political cycles, but not so far off as to be too remote for anyone except futurists and visionaries.

Infographic 4.1. Overview: Four OECD Scenarios for the Future of Schooling

 OECD Scenarios for the Future of Schooling	 Goals and functions	 Organisation and structures	 The teaching workforce	 Governance and geopolitics	 Challenges for public authorities
Scenario 1  Schooling extended	Schools are key actors in socialisation, care qualification, care and credentialing.	Educational monopolies retain all traditional functions of schooling systems.	Teachers in monopolies, with potential new economies of scale and division of tasks.	Strong role for traditional administration and emphasis on international collaboration.	Accommodating diversity and ensuring quality across a common system. Potential trade-off between consensus and innovation.
Scenario 2  Education outsourced	Fragmentation of demand with self-reliant “clients” looking for flexible services.	Diversification of structures: multiple organisational forms available to individuals.	Diversity of roles and status operating within and outside of schools.	Schooling systems as players in a wider (local, national, global) education market.	Supporting access and quality, fixing “market failures”. Competing with other providers and ensuring information flows.
Scenario 3  Schools as learning hubs	Flexible schooling arrangements permit greater personalisation and community involvement.	Schools as hubs function to organise multiple configurations of local-global resources.	Professional teachers as nodes of wider networks of flexible expertise.	Strong focus on local decisions. Self-organising units in diverse partnerships.	Diverse interests and power dynamics; potential conflict between local and systemic goals. Large variation in local capacity.
Scenario 4  Learn-as-you-go	Traditional goals and functions of schooling are overwritten by technology.	Dismantling of schooling as a social institution.	Open market of “prosumers” with a central role for communities of practice (local, national, global).	(Global) governance of data and digital technologies becomes key.	Potential for high interventionism (state, corporate) impacts democratic control and individual rights. Risk of high social fragmentation.

Using the scenarios

Since scenarios are “just stories”, they can be entertained and discussed more openly than actual policy choices. Working with scenarios is useful for reflecting on the scenarios themselves as well as in the intervening processes of change, both in terms of broader social developments and potential reactions to them from the education sector.

As a tool to navigate plausible futures, scenarios can be used to:

- Observe how our education systems are evolving.
- Assess potential drivers behind these developments and explore signals in the present that could make these patterns continue as they are, speed up or change course entirely.
- Situate ourselves in these futures and assess how well prepared we are for (whether for expected futures or unexpected changes shock the system – see Box 4.1).

Box 4.1. How well are education systems prepared for uncertainty?

Despite the best laid plans, the future is inherently unpredictable. This message was brought home forcefully in 2020, as countries scrambled to respond to the COVID-19 pandemic.

Two dimensions must be considered when preparing for the future: a) plausibility and b) impact. While certain developments may be more probable than others, we must also prepare for events that are unlikely but highly disruptive if they take place.

In addition to global pandemic, other shocks could include (OECD, 2019^[2]):

- natural disasters (highly plausible; impact depends on severity, duration, and experience in preparing for and mitigating the event)
- economic shock/crisis (increasingly plausible in an interconnected global world; impact depends on severity and duration of the shock)
- (cyber) war (plausibility depending on context; impact likely high depending on type of warfare)
- Internet disrupted / communications cut through severing undersea cables or targeting satellites (less plausible, but extremely high impact, particularly if it coincides (accidentally or intentionally) with one of the other shocks)
- human/machine interfaces / General Artificial Intelligence (plausibility and impact still unknown).

The rest of this chapter sets out the four scenarios in detail. Some of the questions to be considered when working with scenarios include (see Chapter 2 for more, including links to additional resources):

- What new changes or signs of change do we need to watch out for?
- What is our strategic inventory (funding something, banning something, promoting a new practice, forming a partnership, etc.)?
- How do existing practices perform in each scenario?
- What new options are there to combine existing strengths with new opportunities, or to avoid existing weaknesses combining with new threats?
- What new options for action make sense today in light of the discussion?

In this chapter, each scenario is additionally accompanied by a set of potential drivers and signals from the present, as well as more concrete questions for discussion. The questions are designed to inspire, challenge, and invite further reflection and discussion by the user.

Scenario 1: Schooling extended

Participation in formal education continues to expand. International collaboration and technological advances support more individualised learning, yet the structures and processes of schooling remain.

In this scenario, **participation in formal education during the early years of life continues to expand** for most individuals. There is widespread recognition of education as a foundation of economic competitiveness and most countries have intensified efforts to universalise access to formal learning from the first years of life and through past tertiary education. **Formal certificates continue to be the main passports to economic and social success.** At the same time, they are also increasingly insufficient and individuals accumulate alternative credentials and a broad range of volunteering and non-formal work experience – aided by public and private sponsoring in some jurisdictions – to become more attractive for the labour market.

The bureaucratic character of school systems continues. Much **attention focuses on the curriculum**, with many countries operating a common curriculum and assessment tools. Pressure towards uniformity and enforcing standards remains, although greater choice is granted to students in choosing the content of their learning as long as defined core competencies are achieved. With a strong focus on knowledge and skills, values and attitudes are more prominent (e.g. co-operation, entrepreneurship).

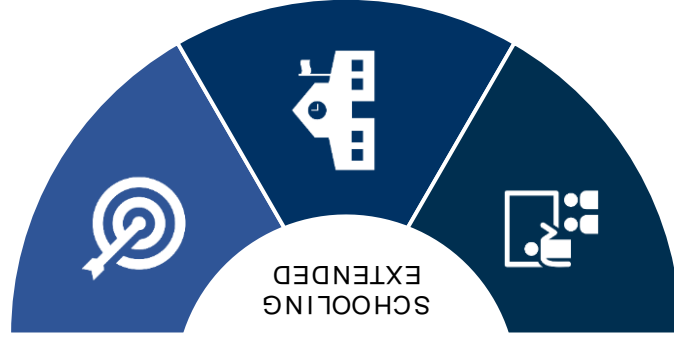
Strong international public-private collaboration powers digital learning systems, which are fed with learning resources and data mutualised across countries. Governmental education authorities remain the main locus of decision-making, but their influence has diminished as international providers gain in power. Innovations perceived as successful from the private sector percolate quickly into national systems.

In schools, **the organisation of instruction and student-teacher relations remains generally impervious to change, although there is room for innovation.** Schools continue to operate under a classroom/individual adult model but schedules are more flexible with the adoption of blended instructional methods and rigid boundaries between traditional academic subjects have softened. Continuous analysis of instructional dynamics and evaluating student effort and discipline are possible with learning analytics and facial recognition technology. Feedback to students, teachers and parents is instantaneous, reporting student progress and warnings of misbehaviour. It is no longer necessary to stop-and-test; rather, assessment and instruction take place simultaneously.

Schools and their networks can use economies of scale to more effectively plan and deploy resources by leveraging digitalisation and data information systems. More **marked division of tasks and greater diversification of professional profiles in schools** has emerged. A reduced but distinct, well-trained teaching corps remains in charge of designing learning content and activities, which may be then implemented and monitored by educational robots along with other staff employed under diverse working arrangements (voluntary/paid, part-time/full-time, face-to-face or online), or directly by educational software. New roles, such as learning data analysts, grow strongly, employed in school networks or “learning industries” elsewhere.

As digitalisation allows students to work more autonomously, school staff can focus more intensely on **supporting learners’ emotional needs and motivation for learning.** An emphasis on digital tools impacts traditional teaching, and many tasks for educators in the classroom may become restricted to “contingency management”. Adapting professional development and career structures to the new situation is critical in this scenario: professionals in schools could feel less satisfied with their job if they perceive a disconnect between their professional development and the tasks they are asked to perform.

Infographic 4.2. Scenario 1: Schooling extended



Goals and functions

Participation in formal education continues to expand. Academic certificates continue to be the main passports to economic and social success.

The curriculum rises to the fore, with countries operating a common curriculum and assessment tools.

International public-private partnership powers digital learning environments. Learning resources and data are shared across countries.

Organisation and structures

The organisation of instruction and student-teacher interactions remain mostly unchanged, although there is room for innovation.

More personalised learning alters the nature of teachers' work, with subsequent impact on teacher education and professional development.

The teacher workforce

There is marked division of tasks and greater diversification of professional profiles in school networks, which now benefit from larger economies of scale.

Governance and geopolitics

- Strong role for traditional public administrations.
- Increased emphasis on partnerships and international collaboration.

Challenges for public authorities



- Accommodating different demands and ensuring quality across the system.
- Building consensus takes time and may limit innovation.

Box 4.2. Using the scenarios: Schooling extended

Signals from the present and questions for discussion

Many current signs point towards the continuation of massive schooling systems. Some are economic and practical: schools take care of young children, allowing parents to have both work and family life. Some are cultural: In increasingly diverse societies, schools act as a social fabric, building relationships, bridging inequalities and reproducing social norms.

- The current lack of change is often attributed to conservatism and inertia in the system. But in the next 20 years, can we imagine that formal education would be considered as less important? What are the main factors behind the persistence of the massive schooling model? Who are the actors supporting it? Vested interests?
- Another signal from the present is the continuing reliance on traditional forms of educational attainment by employers (e.g. degrees, reputation of tertiary education and training institutions). Why are these traditional measures so impervious to change? Are the attitudes of employers (and students and parents) likely to alter?
- The massification and extension of schooling suggests that lifelong learning will also eventually become part of the system. What is the best way to ensure its quality, and that it can reach those who need it most? Should lifelong learning be a right?

Assuming the continuation of trends in globalisation, multilateralism and international co-operation, closer links between the public sector and private players will increasingly include international partnerships.

- School systems are traditionally based on national models and identities. As schooling becomes increasingly digitalised, could an international school system emerge? Alternatively, could students enrol in a public school system of a country different than their own?
- Should countries join efforts to develop common assessment and instruction tools? What are the pros and cons of such an idea?
- Given the speed of technological change, the most effective protection against cyber risks often comes from the private sector. Are education systems able to partner with these actors in mutually beneficial ways? Which factors could hinder or facilitate this process?

Although this scenario is an extension of the status quo, it could play out in multiple ways. One important variable is investment in education R&D, which has been steadily rising over recent years, mainly pushed by investment in China and the United States. Rapid development of virtual and augmented reality, robotics, blockchain and, increasingly, artificial intelligence, may transform many of the systemic elements that make up the “status quo” as we know it.

- If technology permits teaching to move away from facts and figures, does this mean that teachers will focus more on social and emotional skills? Building stronger relationships with families? What would this mean for teacher education and professional development?
- What would the effects of massive digitalisation of schools be in terms of deployment and distribution of human resources? Professional relationships and collaboration? What about impacts on teachers’ professional judgement and accountability?
- Should all educational data be shared with all stakeholders (e.g. students, parents, media) no matter the circumstance? What impacts would this have for student-teacher, teacher-parent and other relationships in schools?

Scenario 2: Education outsourced

Traditional schooling systems break down as society becomes more directly involved in educating its citizens. Learning takes place through more diverse, privatised and flexible arrangements, with digital technology a key driver.

In this scenario, **diverse forms of private and community-based initiatives emerge as an alternative to schooling**. Highly flexible working arrangements have allowed greater parental involvement in children's education, and public systems struggle with families' pressure towards privatisation. Choice plays a key role – of those buying educational services and of those, such as employers, giving market value to different learning routes.

Great experimentation in organisational forms takes place, including a mix of home-schooling, tutoring, online learning and community-based teaching and learning. In some countries, public and private providers compete to improve the quality of provision. In others, public provision remains purely a “remedial solution”, providing parents with free or low-cost child care service and offering children access to learning opportunities and activities to structure their day.

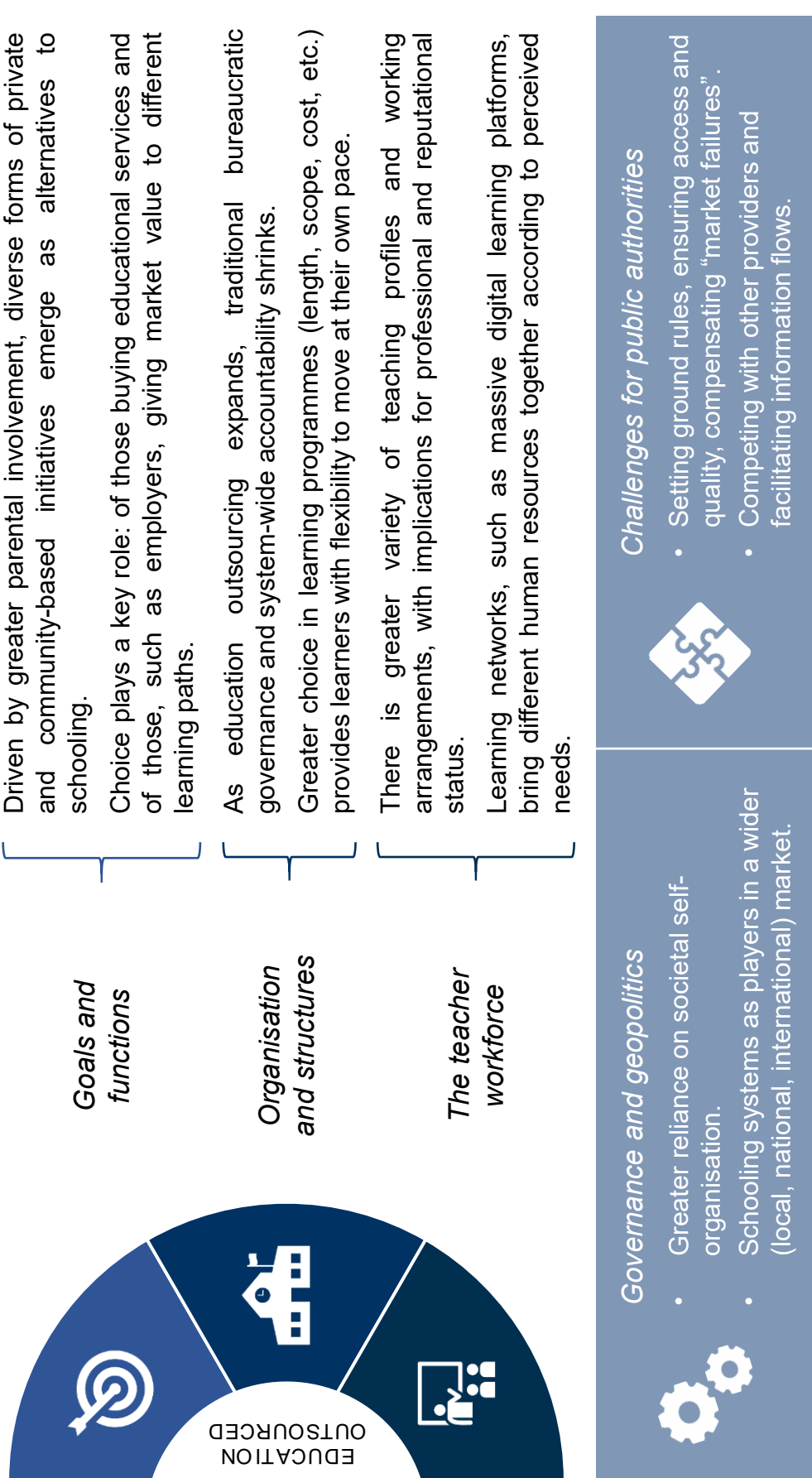
A substantial **reduction of traditional bureaucratic patterns of governance and accountability** takes place as education outsourcing deepens. Different credentials and indicators of quality emerge with the explosion of providers in the “learning market”, although private solutions are dependent on how well they meet perceived needs. In addition, governments, in the best interest of children, may retain the power to benchmark and steer market operators through baseline assessments. With greater privatisation and individualised educational paths, concerns about growing social fragmentation have become a recurrent issue in politics across countries and a revival of conscription – in this case with civic rather than military purposes – is becoming a common policy response.

Parents of younger children, rely on public care services or participate in self-organised community networks or market-based services brokered by digital platforms for their care. As learners grow older and more autonomous, and their learning involves more sophisticated tasks, **specialised learning platforms and advice services** (digital and face-to-face, public and private) play a larger role. **Employers become more involved** in the business of education, including large corporations but also small and medium sized enterprises. Traditionally lacking the financial and technical capacity to become involved, SMEs have benefited from increasing financial support derived from the additional resources available from school consolidation processes.

The abandonment of rigid structures of traditional schooling (i.e. year groupings, educational stages) provides learners with greater flexibility to move at their own pace and potentially combine formal learning with other activities. In this sense, greater choice in learning programmes (length, scope, cost, etc.) translates into **learning solutions that are more adaptive to individual needs** and, potentially, more aligned to the goal of lifelong learning. On the other hand, a larger variety of learning suppliers may not result in radically different teaching and learning experiences for learners. **Cultural aspects of traditional schooling organisation may well survive in this scenario**, such as teacher and student roles.

Learning networks bring different human resources together according to perceived needs and as a result traditional conventions, contractual arrangements, and career structures in teaching are rapidly eroded. **There is greater variety of teaching profiles, working arrangements, and professional and reputational status** in a workforce operating in public schooling (physically or digitally), as independent carers, career advisors, skills market analysts, pedagogy specialists in private platforms or others.

Infographic 4.3. Scenario 2: Education outsourced



Box 4.3. Using the scenarios: Education outsourced

Signals from the present and questions for discussion

There are numerous signals from the present that this scenario could be emerging. New forms of work due to changes in individual preferences, innovations in business models and policy choices lead to increasing experimentation in working arrangements. As digitalisation continues and societies continue to devote greater attention to well-being, we may continue to see alternative work forms and reduced schedules in the years to come (Skidelsky, 2019^[3]).

- Would on-demand schooling continue to fulfil the basic social functions that schools are supposed to deliver today? What would the effect of much more flexible schooling arrangements be on children’s socialisation?
- A world with reduced work schedules could mean more time for adults to become more involved in children’s learning. Conversely, lines between personal and professional could continue to blur, and reduce time for play and informal interaction. Does education have a role in setting boundaries for time spent studying? Can play be a required part of formal education?
- It is often said that schooling should prepare people “for life”. If individuals were to spend less time working, should formal education include instruction on leisure? Would this be restricted only to those of school age?

Similarly, increasingly educated parents are already driving more access to diverse public and private solutions for the organisation of teaching and learning. These empowered actors could take matters into their own hands and opt out of the traditional system, with potentially more communitarian approaches to parenting and new ways of ensuring care.

- Would learning “consumers” drive the development of diverse educational products and services or, instead, concentrate around a narrow set of socially agreed “good” options?
- If this scenario were to materialise, could public education provision resemble primary health care services (like visiting the General Practitioner, students go to school for “more serious” interventions)? Would expert human tutoring be a privilege restricted to a few?
- If wealthier families were to opt out of the public system, what would that mean for the resource base for financing public schools? Could advantaged actors be required to contribute directly to schools in poorer neighbourhoods, for example? What about supporting communitarian approaches (school-based or not) in less advantaged areas?

In this scenario, access to information at the touch of a screen allows for teaching and learning without the need of a traditionally qualified teacher. Freed from the classroom, learning is now embedded throughout the lifespan and throughout the day for all citizens.

- Will access to infinite information remove the need for qualified teachers? If not, what aspects of teaching would remain? Are these aspects currently valued in teacher policies?
- Would dynamic learning markets underserve the needs of certain students (e.g. the least advantaged, those without parents to advocate on their behalf)? How conducive this scenario would be in finding ways to support learning and access to work for students with special education needs? What would be the pros and cons?
- Greater choice in learning sources do not necessarily translate into access and use. Should some form of lifelong learning be compulsory, such as with mandatory civic conscription? If yes, would restricting conscription to young adults be a form of discrimination?

Scenario 3: Schools as learning hubs

Schools remain, but diversity and experimentation are the norm. Opening the “school walls” connects schools to their communities, favouring ever-changing forms of learning, civic engagement and social innovation.

In this scenario, strong **schools retain most of their functions**. They continue to look after children and hold activities that structure young people’s time, contributing to their cognitive, social, and emotional development. At the same time, **more sophisticated and diverse forms of competence recognition in the labour market** liberate education and thus schools from excessive pressures of credentialism, potentially reversing current trends towards longer individual school careers.

In this scenario, international awareness and exchange is strong, but power shifts to the decentralised elements in the system. **Local actors come up with their own initiatives to achieve the values they consider important**. Schools are defined as strong where intense connections with the community and other local services are developed. This implies that, on the one hand, **systems are no longer based on uniformity**, although strong pressures for corrective action surface where there is evidence that a particular school is under-performing. The criteria upon which schools are judged varies across communities and high-stakes decisions, such as closures, may depend on whether a degree of consensus is achieved among local stakeholders. On the other hand, regulatory and strategic frameworks (local, national, international) and targeted, pre-distributive investment and technical assistance support the action of local communities, and play a key role within communities with weaker social infrastructure.

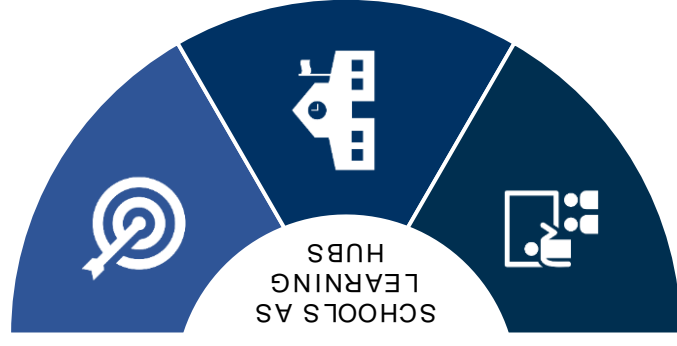
Schooling is characterised by its comprehensiveness and is grounded in cultures of experimentation and diversity. Personalised pathways are strengthened within a general framework of collaborative work, self-evaluation and peer accountability. Sorting practices such as grades and tracking have been abandoned and **permutations in the organisation of teaching and learning are flexible and constantly changing**. A wide range of sources of learning are recognised and valued and distinctions between formal and non-formal learning become blurred. Learning is ongoing; it is an all-day activity guided by education professionals, but may not always take place within the confines of classrooms and schools.

School activities are planned and designed in the context of broader education planning beyond their own walls, resulting in flexible structures (physical infrastructure, schedules) to accommodate blended learning activities supported by digital information systems. Schools are in this sense the centrepiece of wider, dynamically evolving local education ecosystems, mapping learning opportunities across an interconnected network of educational spaces. This way, **diverse individual and institutional players offer a variety of skills and expertise that can be brought in to support student learning**.

Learning builds on “teachable moments” as defined by collective and learner-specific needs and local developments instead of uniform and rigid curricula. Teachers act as engineers of ever-evolving learning activities, and trust in teacher professionalism is high. **Teachers with strong pedagogical knowledge and close connections to multiple networks** are crucial. This scenario is thus driven by a strong emphasis on teacher initial education and professional development, although these may develop in more flexible and collegiate ways than they do today.

Simultaneously, **schools are open to the participation of non-teaching professionals in teaching**. A prominent role for professionals other than teachers, community actors, parents, and others is expected, and indeed, welcomed. Strong partnerships are also welcomed as schools seek to leverage the resources of external institutions, such as museums, libraries, residential centres, technological hubs and others.

Infographic 4.4. Scenario 3: Schools as learning hubs




Goals and functions
 Schools retain most of their functions, but new forms of competence recognition systems liberate them from pressures of credentialism.
 Systems are no longer based on uniformity: Local actors develop their own initiatives to realise the values they consider important.

Organisation and structures
 Experimentation and diversity of pedagogies are the norm. Personalised pathways are strengthened within a framework of collaborative work.
 Activities are planned in the context of broader learning ecosystems, mapping opportunities across an interconnected network of educational spaces.

The teacher workforce
 Knowledgeable, networked teachers coexist with diverse individual and institutional players offering a variety of skills and expertise.
 Strong partnerships leverage the resources of external institutions, such as museums, libraries, residential centres, technological hubs and more.

Governance and geopolitics

- Strong focus on decision making at the local level.
- Self-organising units in diverse partnerships.



Challenges for public authorities

- Diverse interests and power dynamics.
Tensions between local and system-wide goals.
- Extensive inequality in local capacity.

Box 4.4. Using the scenarios: Schools as learning hubs

Signals from the present and questions for discussion

We are already seeing an erosion of formal education credentials (e.g. graduation certificates, degrees) as signals of competence. Several global corporations are already hiring individuals with relevant experience and skill sets but without advanced qualifications (Milord, 2019^[4]).

- How likely is it that formal academic credentials would disappear in your systems in the next 15-20 years? In university? Secondary school? What about primary school?
- Would outsourcing sorting and certification functions actually be a source of liberation for schools, in the sense that they no longer have to try and prepare students for the labour market? Or could it be rather a first step towards dismantling the schooling system if other sources of learning become equally (or more) “legitimate”?
- With skills being separated from traditional certification, will more flexible learning choices for students follow? Could distinctions between general and vocational tracks fade away, as students increasingly combine elements of each for their own learning path?

Increasing polarisation and fragmentation in society has prompted calls for building bridges and strengthening belonging in communities. Reinforcing links between schools and local communities is thus aimed at both enhancing learning and reinforcing social capital.

- What forms of collaboration would emerge in (local – global) learning ecosystems? In which ways would adults other than teachers participate? Would teachers be deployed to compensate in those communities where other adults were not available or willing to step in?
- What is the role of formal and informal education in reducing solitude and social isolation? Should schools more actively promote intergenerational exchange as a way to promote social cohesion? Would multi-grade classrooms (currently typical of small rural schools) become more common in a schools as learning hubs future? Could they also include older learners?
- Diverse forms of youth mentorship programmes, such as Big Brothers Big Sisters, are common across OECD countries. Could they be a model to inspire new and diverse institutionalised relationships between and within schools and communities?

Attempts to alter the dynamics and relationships in schooling have long been present. Multiple examples exist of more purpose-oriented, horizontal, collaborative and iterative ways of teaching and learning (e.g. service-learning, citizen science, and more recently Agile methodologies emerging from the ‘high tech’ sector (Loewus, 2017^[5])).

- This scenario assumes that systems have been transformed enough to let go of traditional governance mechanisms such as vertical (grade repetition) and horizontal (early tracking, ability grouping) stratification. Is this realistic in your context?
- Situated learning allows for taking advantage of teachable moments and grounding learning in the here and now. But “unsituated” learning is a very valuable learning source as well, and not only in schools (e.g. TED talks). How can one find the right balance between “instruction” and “exploration”?
- What does this scenario imply for numbers of highly educated teachers, and the kind of teacher education required? Could teachers be the game changers that drive the transformation of systems considered conservative and bureaucratic? If not, what/who else could?

Scenario 4: Learn-as-you-go

Education takes place everywhere, anytime. Distinctions between formal and informal learning are no longer valid as society turns itself entirely to the power of the machine.

This scenario builds on the rapid advancements of artificial intelligence, virtual and augmented reality and the Internet of Things. Vast connectivity powered by an extensive and rich digital infrastructure and abundance of data have completely changed our perception of education and learning. Learning opportunities are widely available for “free”, marking the **decline of established curriculum structures and dismantling of the school system**.

Digitalisation has made it possible to assess and certify knowledge, skills and attitudes in a deep and practically instantaneous manner, and **the intermediary role of trusted third parties** (e.g. educational institutions, private learning providers) **in certification is no longer necessary**. As the distinction between formal and informal learning disappears, massive public resources previously devoted to large-scale schooling infrastructure become liberated to serve other purposes or education through other means.

This scenario sketches a world where all sources of learning become “legitimate” and **people’s education advances by leveraging collective intelligence to solve real-life problems**. Lifelong AI personal assistants connect to the environment and among themselves to feed their information systems and propose personalised learning solutions, building on individuals’ curiosity and needs, helping to identify knowledge and skills gaps, encouraging creativity and self-expression and connecting learners one another in communities of common purpose. No language barriers exist in access to learning and collaboration with others; accurate translation is now automatic and in real time.

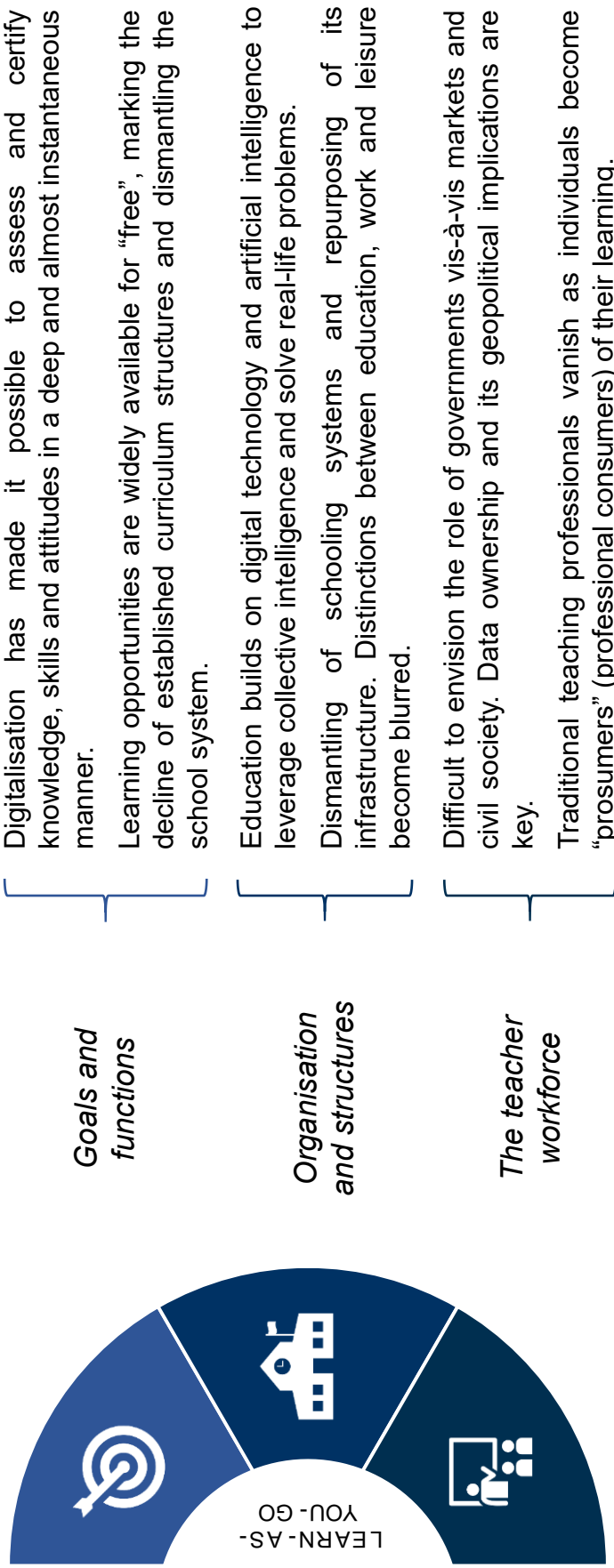
Distinctions between education, work and leisure become blurred. Enterprises make use of AI applications for their recruitment processes, and available workers also obtain information on and access opportunities as well as to continue learning as they work. Part of the old school system infrastructure may remain, although its function is much more open and flexible. There are no mandatory requirements, at least in-person and with fixed schedules. Places for learning welcome children in a drop in basis, as do open and private, digital or face-to-face learning communities.

Similar to scenario 2, alternative “childcare” arrangements may be necessary with the demise of physical schools. In this scenario, digitalisation and “smart” infrastructure favour the creation of safe and learning-rich public and private spaces. Building on surveillance systems, digitally connected, interactive infrastructure, such as intelligent playgrounds, can now look after children while proposing them with learning activities and fostering behaviours towards the satisfaction of certain goals (e.g. healthy lifestyles).

It is difficult to advance the **role of governments vis-à-vis private interests in the market and civil society**. Global digital corporations may play a key role, for instance, in powering learning systems and new human-machine interfaces, but it is also possible that these co-habit with a diversity of bottom-up, non-for-profit initiatives. Although not a given, these developments could develop within the confines of strong regulatory regimes – ensuring algorithm transparency and ethics by design, for example – or through platforms sponsored or directly run by public authorities – local, national or international. Developments around data ownership, democracy and citizen empowerment will have an important impact on these discussions (see the OECD Going Digital scenarios (OECD, 2018, p. 21^[6])).


The teaching professional has vanished in this society where rich learning opportunities are available anytime and everywhere and individuals have become prosumers (professional consumers) of their own learning. At the same time, classes, lectures and various forms of tutoring may be commonplace both offline and on, some articulated by humans, others created by the machine.

Infographic 4.5. Scenario 4: Learn-as-you-go



Governance and geopolitics

- Deinstitutionalisation of public education, dismantling of schooling.
- (Global) governance of data and digital technologies potentially key.



Challenges for public authorities

- High risk of social fragmentation.
- Potentially high interventionism (state, corporate) in all areas of life.
- Tensions around democratic control and protection of individual rights.

Box 4.5. Using the scenarios: Learn-as-you-go

Signals from the present and questions for discussion

We are currently experiencing enormous interest and investment in digitalisation and artificial intelligence. With the rise of machine learning, there is also growing curiosity to learn from the high tech sector itself (Williamson, 2016^[7]). Combined, these are strong signals from the present that Scenario 4 could come to fruition.

- With the rise of artificial intelligence, big data and sophisticated search algorithms, do learners need to learn facts anymore? What consequences would there be if they would not?
- Who is auditing the algorithms? Could we imagine a time when auditing algorithms is considered a basic civic duty, like serving as a juror for a trial, for example? Or could it already be built in to the development process, i.e. “justice by design”?
- Provided that massive student data collection could safeguard individual privacy, could student data become a new source of revenue for schooling systems, leveraging the interest of high tech venture capital in feeding the learning of their “smart” machines?

Some examples of learning and skilling outside formal education and schooling are visible today, such as coding boot camps; or children who are “unschooled” – this is, a step beyond home education in the sense that children decide what they’d like to learn and when.

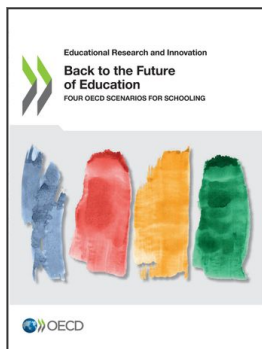
- What are some of the pros and cons of having a common curriculum? Does the absence of formal curricula expand learners’ freedom and autonomy? What about common values and social habits, common areas of knowing and understanding?
- The absence of powerful external motivators – such as mandatory schooling, school disciplinary regimes and teacher praise – may require this future to develop alternative forms of motivating learners. Could this be embedding learning by design in entertainment platforms? Linking skilling programmes to social entitlements? Something else?
- Teachers regularly express their preference for collaborative forms of professional development that build on their daily practice. Could “teacher boot camps” (where learning builds mainly on hands-on work and interactions among participants) be the future of professional development? Would these be very different from professional conventions in other professions?

A last signal from the present is increasingly embedding technologies in our lives (and our bodies). Digital personal assistants, smart toys and wearable devices have all changed the way we interact with learning and technology in our daily lives.

- If a machine is responsible for our learning, does this scenario imply a powerful version of a “hidden curriculum”? A colonisation (by the state, corporations, or other groups) of socialisation processes currently transmitted by schools but also family, community and peers, the media?
- What would more personalised learning through technology entail for student experiences? Are learning personalisation and individualisation synonyms? How do the results of technology-led personalisation compare to more traditional forms of teacher-led personalisation?
- To what extent are the “personalised” learning technologies available today truly adaptive to individual students rather than more or less responsive forms of content management? Although in theory digital technologies make an almost infinite number of choices possible (e.g. in music, films, books, etc.), in practice the algorithms behind “you might also like” steer people to a particular subset of options. Could the same happen to learning content and pedagogies?

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