Preparing students for the 4th Industrial Revolution
Implications for science education

Andreas Schleicher
Director for Education and Skills
“the ability to engage with science-related issues, and with the ideas of science, as a reflective citizen”
Trends in science performance (PISA)
Poverty is not destiny - Science performance by international deciles of the PISA index of economic, social and cultural status (ESCS)

Figure I.6.7 % of students in the bottom international deciles of ESCS

Score points

OECD median student
Students expecting a career in science

Percentage of students who expect to work in science-related professional and technical occupations when they are 30

- Science-related technicians and associate professionals
- Information and communication technology professionals
- Health professionals
- Science and engineering professionals

% of students with vague or missing expectations
Students expecting a career in science
by performance and enjoyment of learning

Figure I.3.17

- Low enjoyment of science
- High enjoyment of science

Percentage of students expecting a career in science

Score points in science
Better anticipate the evolution of the demand for 21st century skills and better integrate the world of work and learning.

Leverage the potential of all learners.

Building learning systems that...

Find more innovative solutions to what we learn, how we learn, when we learn and where we learn.

Advance from an industrial towards a professional work organisation.
The kind of things that are easy to teach are now easy to automate, digitize or outsource.
Robotics

The Auto-auto

>1m km,
one minor accident,
occasional human intervention
Augmented Reality
Education in the past
Education now
Professionalism is the level of autonomy and internal regulation exercised by members of an occupation in providing services to society.

External forces exerting pressure and influence inward on an occupation

Internal motivation and efforts of the members of the profession itself
Policy levers to teacher professionalism

Autonomy: Teachers’ decision-making power over their work (teaching content, course offerings, discipline practices)

Peer networks: Opportunities for exchange and support needed to maintain high standards of teaching (participation in induction, mentoring, networks, feedback from direct observations)

Knowledge base for teaching (initial education and incentives for professional development)
Teacher professionalism

Autonomy: Teachers’ decision-making power over their work (teaching content, course offerings, discipline practices)

Peer networks: Opportunities for exchange and support needed to maintain high standards of teaching (participation in induction, mentoring, networks, feedback from direct observations)

Knowledge base for teaching (initial education and incentives for professional development)
Technology can amplify innovative teaching

- Make it faster and more granular
- Expand access to content
- Support new pedagogies
- Collaboration for knowledge creation

- Collaborative platforms for teachers to share and enrich teaching materials
- Well beyond textbooks, in multiple formats, with little time and space constraints
Find out more about our work at www.oecd.org
- All publications
- The complete micro-level database

Email: Andreas.Schleicher@OECD.org
Twitter: SchleicherEDU

and remember:
Without data, you are just another person with an opinion