Digital Competence: Labour Market Expectation vs. School Preparation

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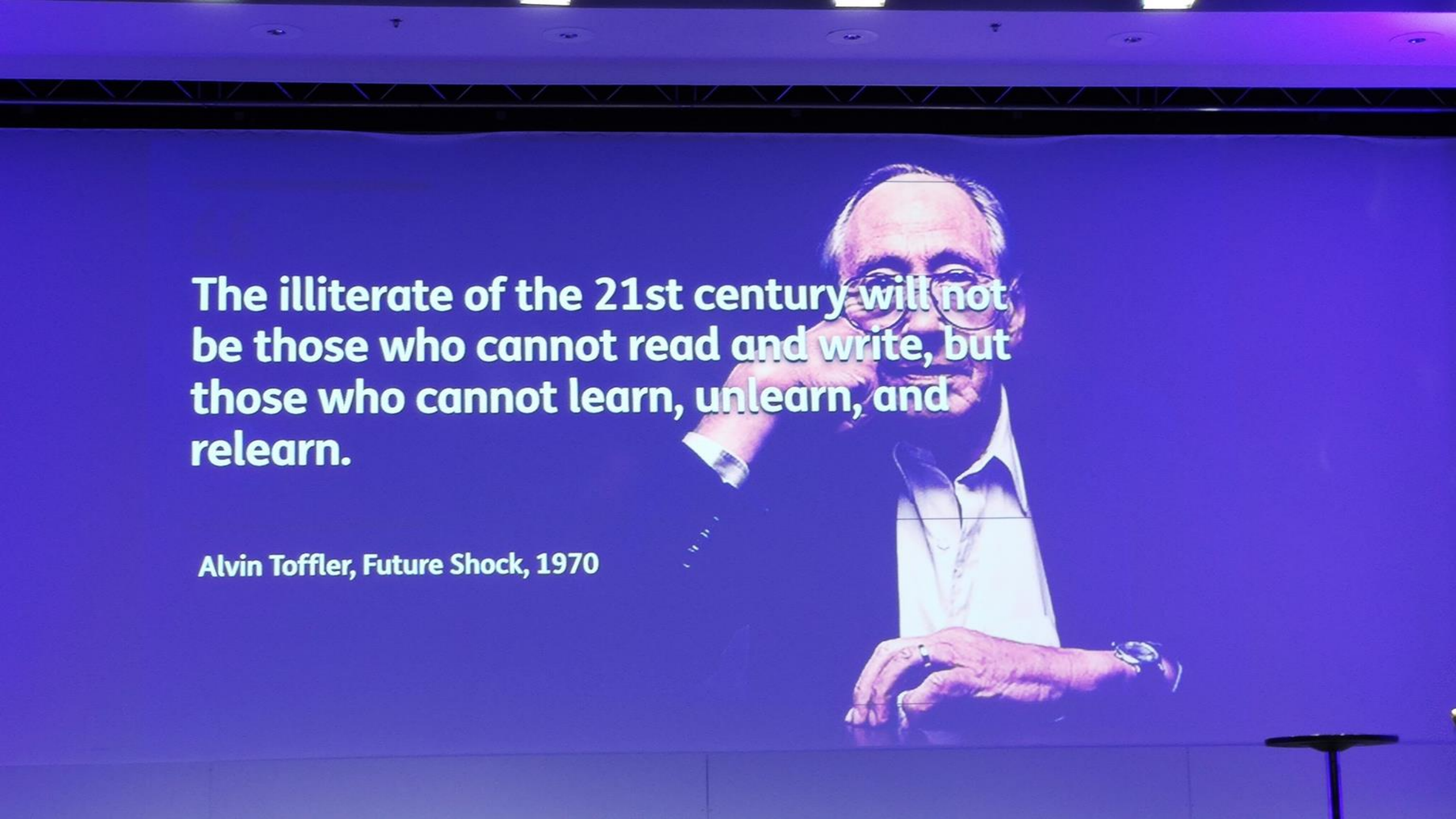

The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.
Alvin Toffler, Future Shock, 1970

World Economic Forum Predictation by 2025

50% of all employees will need reskilling

40% of workers will require reskilling of six months or less

Newly emerging skills: active learning, resilience, stress tolerance and flexibility

85 million jobs may be displaced by a shift in the division of labour between humans and machines

Greater adoption of technology

Expectation of the labour market: Top 10 job skills

Source: Future of Jobs Report 2020, World Economic Forum

Top 10 skills of 2025

WORLD ECONOMIC FORUM

Type of skill

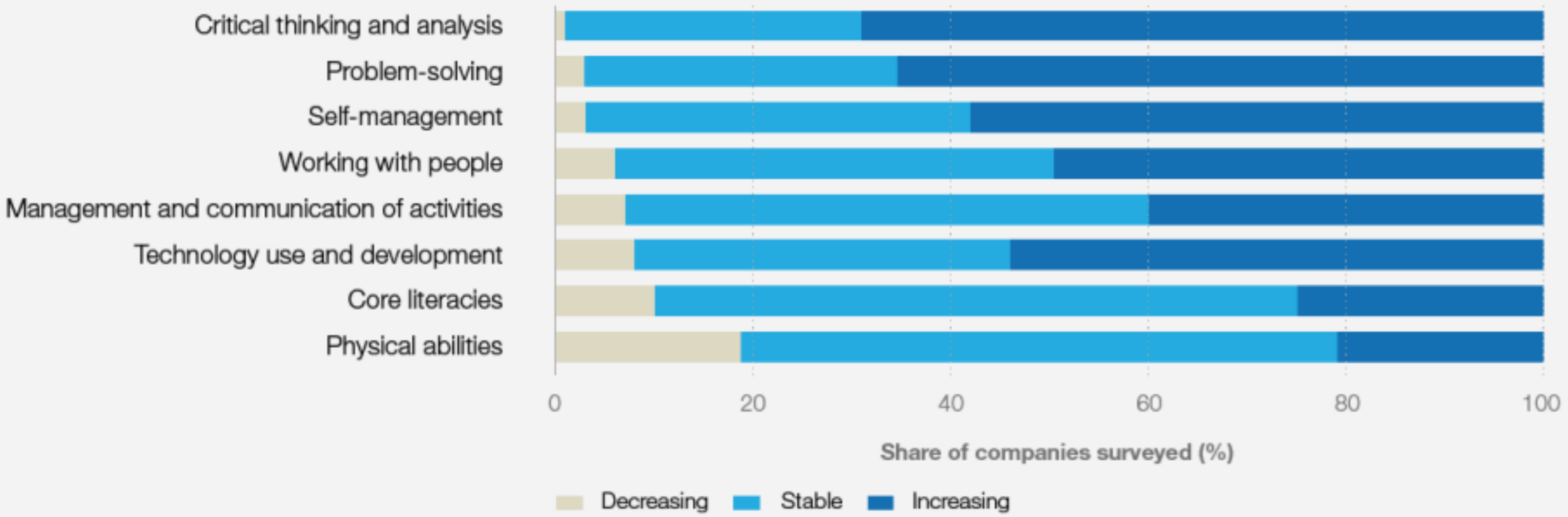
- Problem solving
- Self management
- Working with people
- Technology use and development

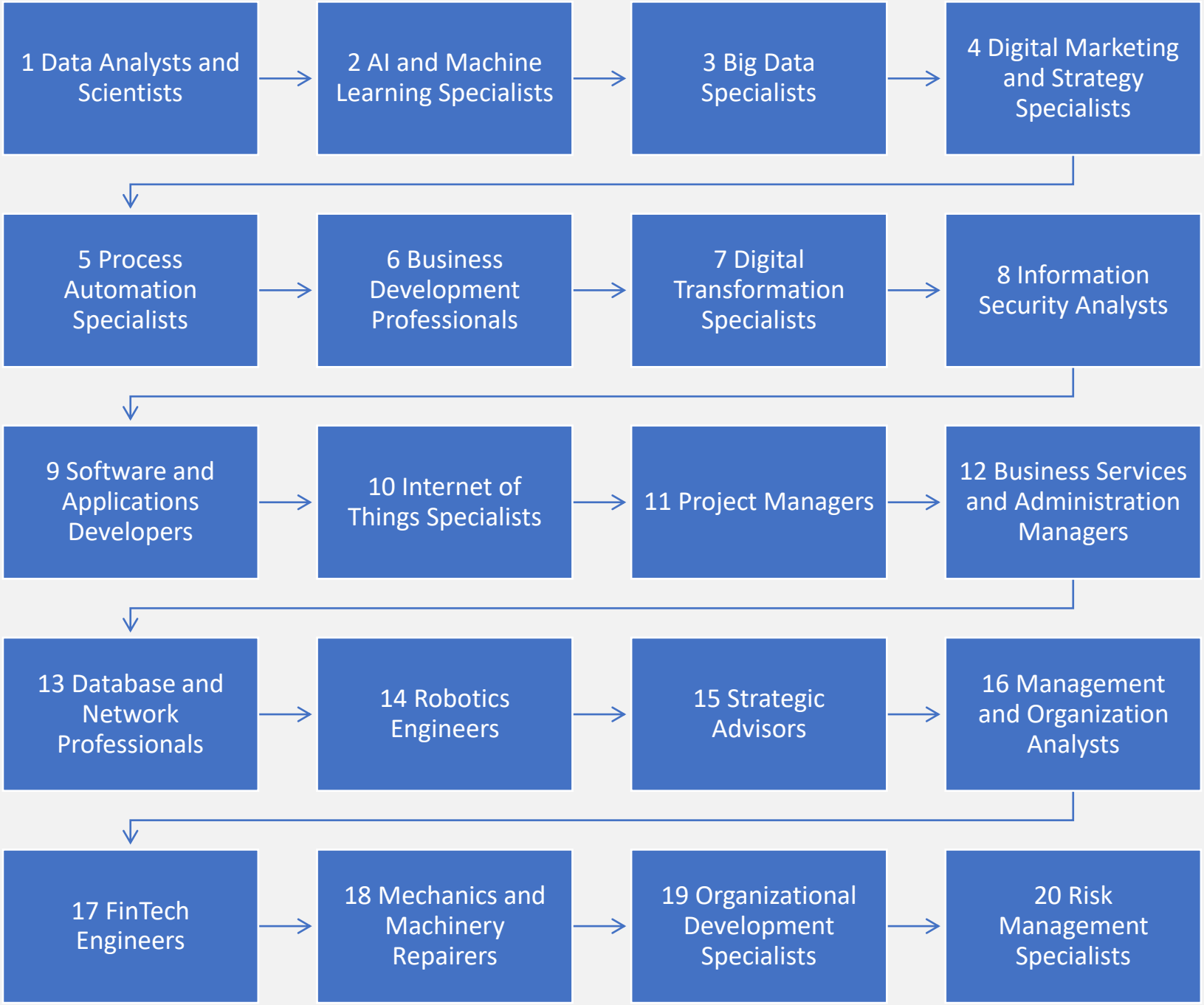
1.  Analytical thinking and innovation
2.  Active learning and learning strategies
3.  Complex problem solving
4.  Critical thinking and analysis
5.  Creativity, originality and initiative
6.  Leadership and social influence
7.  Technology use, monitoring and control
8.  Technology design and programming
9.  Resilience, stress tolerance and flexibility
10.  Reasoning, problem solving and ideation

Relative importance of different skill groups

FIGURE 27 | Perceived skills and skills groups with growing demand by 2025, by share of companies surveyed

A. Relative importance of different skill groups





Top 20 jobs in increasing demand

Support improving digital skills: Milestones

The Porto Declaration, 2021

- Accelerate green and digital transitions
- Require more investment in education, vocational training, lifelong learning, upskilling, reskilling
- Young people should become the driving force of the inclusive green and digital recovery in Europe

European Parliament

Proposal for a Decision of European Parliament and of Council, 2022

Today situation:

- 70% of businesses report a lack of staff with adequate digital skills
- Almost half of the EU population has no or very low level of digital skills

Plans by 2030:

- 80% of adults at least basic digital skills
- 20 million ICT specialists
- Promote the digital skills of older population

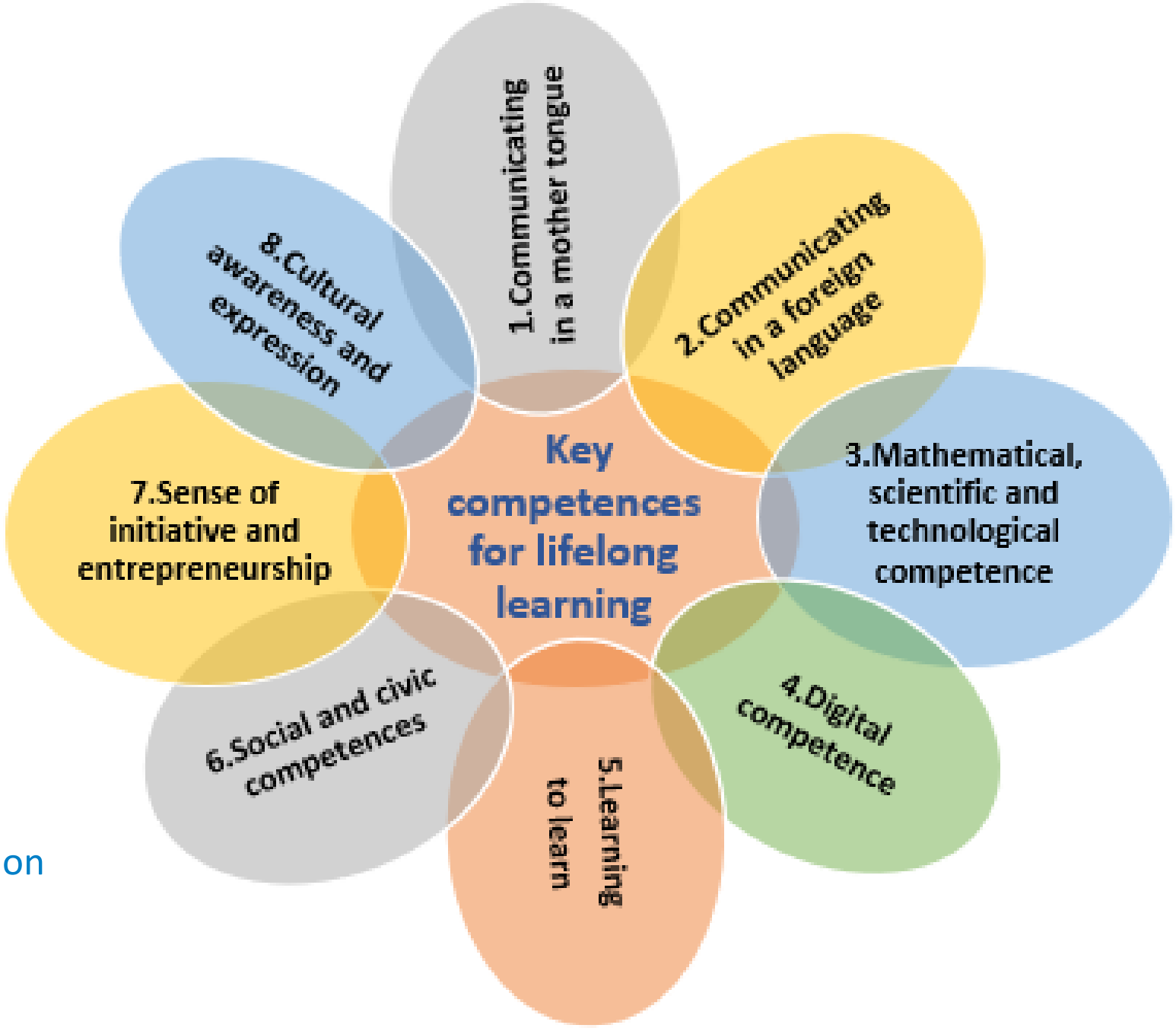
- Investment in education: wise, important thing to do
- Technological changes, green and digital transition → new jobs, new work forms
- Reskilling, upskilling: key importance
- Development and competitiveness of economy

Digital competence in education

Key competences

Digital competence:
„confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society. ”

(EU Parliament and Council Recommendation on Key Competences, 2006)



DigComp framework

Information and data literacy

1.1. Browsing, searching and filtering data, information and digital content
1.2. Evaluating data, information and digital content
1.3. Managing data, information and digital content

Communication and collaboration

2.1. Interacting through digital technologies
2.2. Sharing information and content through digital technologies
2.3. Engaging in citizenship through digital technologies
2.4. Collaborating through digital technologies
2.5. Netiquette
2.6. Managing digital identity

Digital content creation

3.1. Developing digital content
3.2. Integrating and re-elaborating digital content
3.3. Copyright and licences
3.4. Programming

Safety

4.1. Protecting devices
4.2. Protecting personal data and privacy
4.3. Protecting health and well-being
4.4. Protecting the environment

Problem solving

5.1. Solving technical problems
5.2. Identifying needs and technological responses
5.3. Creatively using digital technologies
5.4. Identifying digital competence gaps

DigCompEdu levels

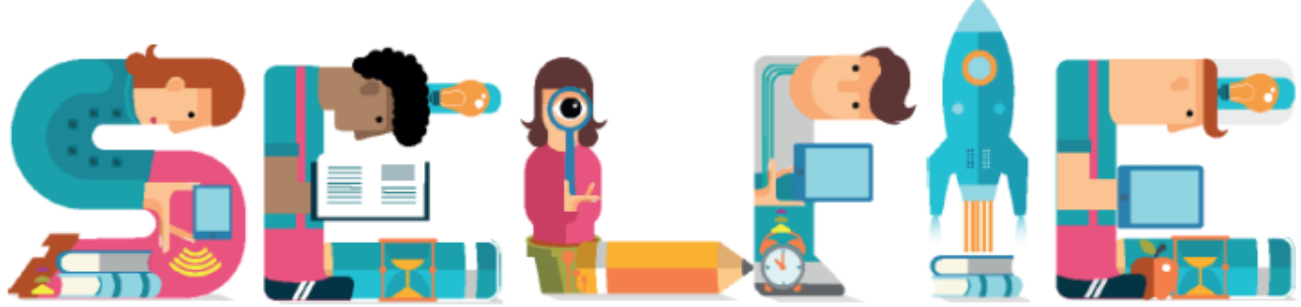
1. Awareness – Newcomer (A1)
1. Exploration – Explorer (A2)
2. Integration – Integrator (B1)
3. Expertise – Expert (B2)
4. Leadership – Leader (C1)
5. Innovation – Pioneer (C2)

DigComp in Hungarian education

Hungarian National Qualifications Framework in VET

- Elborated for each sector in VET
- Professional knowledge, skills, attitude, and autonomy/responsibility
- Elaborated: suitable digital competence level for sector in VET

- Most VET jobs: level 4 and 5
  - Level 4 – Intermediate: independently able to do tasks by their own need, solve well-defined, but non-routitine problems, understand steps towards solution.
  - Level 5 – Advanced: able to solve several different tasks and problems while with supporting others, and able to apply this knowledge.
- Still not introduced as compulsory element



- Developed by EU experts
- Complex self-reflexion and development tool
- For institutes
- Filled in by directors, teachers, students
- Suitable for defining digital stage of institutes
- Based on self-assessment (DigComp framework)
- Provide reflection

SELFIE

(Self-reflection on Effective Learning by Fostering the Use of Innovative Educational Technologies)

- Developed in Hungary
- Complex self-reflexion and development tool
- For employers and institutes
- Suitable for defining digital stage of institutes
- Based on self-assessment (DigComp framework)
- Provide reflexion and suggestions for development

Digital Business Card System – Digitális Névjegyrendszer (DNR)

Modules of DNR

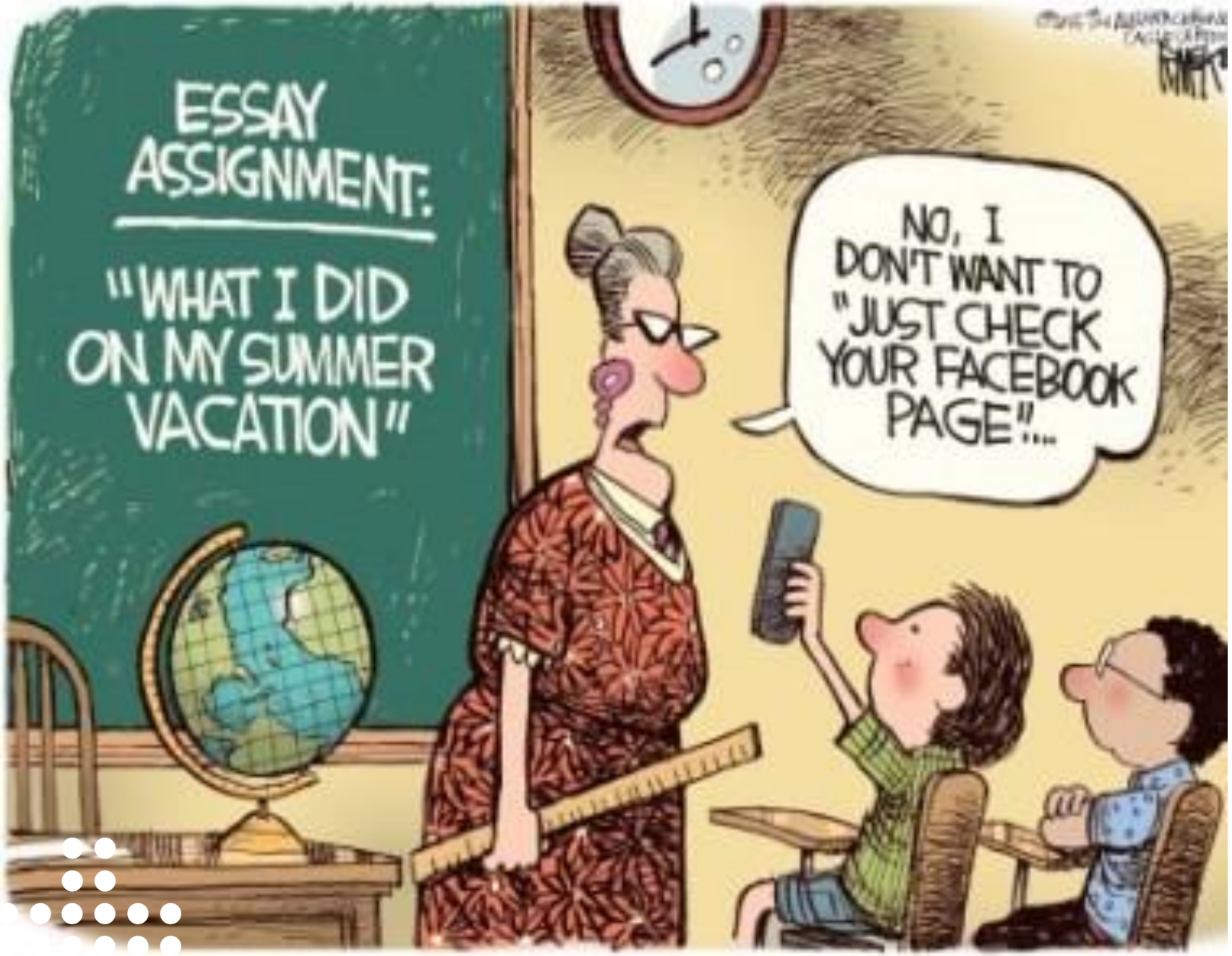
Self-assessment module

- Leadership and management
- Digital pedagogical culture
- Professional development
- School digital culture
- Infrastructure

Monitoring module: Stages – Where we are?

- Newcomer/Entrant
- Explorer
- Advanced
- Expert
- Master

Digitális Névjegy Rendszer



Generations in education

Digital natives –
Digital immigrants (?)


'WE HAVE 20TH CENTURY TEACHERS EDUCATING 21ST CENTURY STUDENTS'

Digital competence of teachers and students

- Digital immigrants – age pyramid (many +40, +50)
- New methodology – not learnt at university
- Many further education
- COVID 19 – online education → difficult to get used to
- Now: many apply digital methods

- Digital natives: born in digital age
- Perfect use of digital tools ≠ digital competence
- Live online 7/24
- Lack of digital ethics
- Overuse of social media

Features of digital generation

Sharing, searching for new paths

Replacing identity, new way of existence

Mobility, crossing borders, new ways between different worlds

Crossing communication borders, new ways in space-time dimension

Games: learning in safety of simulations

New connections to things, ideas

Brain work and Learning techniques of Gen Z and Alpha

Hours spent on Internet → changed brain activityc

Searching on Internet → brain ~ doing crossword puzzle
(Small, 2009)

Continuous mental coordination → derive attention from deep thinking

Information from working to long-term memory: little, mixed, confused
(Carr, 2014)

Working memory cannot link between old and new information
(Szőke-Milinte, 2019)

Brain work and Learning techniques of Gen Z and Alpha

Inductive discovery: learn through discovery

Fast response time

Multitasking

Perfect visual and spatial skills ← expertise with online games

Hipertext mind: ability to leap and gather information from multiple sources

Attention deployment: attention shifts rapidly

Demand for digital transformation in education

Research results before, during, and after COVID 19

Teachers' digital competence

Learnt in teacher training		Level of being prepared
Teach skills that span over curricula	46.6%	2.86
Use ICT devices	51.7%	2.98
Support students' development	59.9%	3.02

	Age	Time of teaching experience
Use ICT devices	-.163**	-.178**

- TALIS survey
- Time: spring 2019
- Population: teahers (elementary and secondary schools)
- Method: paper questionnaire
- Sample: 306 teachers from 17 schools

Teachers' digital competence

Further education need	
ICT skills	2.48 (2nd highest)

	Age	Time of teaching experience
ICT skills further education need	ns	ns

- TALIS survey
- Time: spring 2019
- Population: teahers (elementary and secondary schools)
- Method: paper questionnaire
- Sample: 306 teachers from 17 schools

Mostly agree with stereotypes	
Anywhere they go, have their smartphone with them.	4.33
They actively use more than 2 social media.	3.76
They generally do ninimum 2 things parallel on smart devices.	3.60
Mostly disagree with stereotypes	
They have already bulied others on Internet	1.67
They are not aware of the possible dangers in the online space.	1.56
Anything they do, immediately post it in social media.	1.50
They have already shared sexually provoking pictures of themselves.	1.30

Streotypes about gen Z

- Time: February-March 2020
- Population: secondary school students
- Method: digital questionnaire
- Sample: 264 students
- 5-garde Likert-scale questions

Streotypes about gen X

Partly agree with stereotypes	
They have difficulty to find something on the Internet.	2.96
They think Internet rather dangerous and less useful.	2.99
They cannot properly use smart devices.	3.00
They cannot properly use social media.	3.11

- Time: February-March 2020
- Population: secondary school students
- Method: digital questionnaire
- Sample: 264 students
- 5-garde Likert-scale questions

Online education during COVID 19

	Time spent in online space per day	
	2020	**2021**
Learning (online lessons, homework)	4 h 15 min	8 h 10 min
Entertainment (social media, digital games)	4 h 56 min	5 h 5 min
Keeping contacts (chat, email)		3 h 10 min

Time: May 2020 and May 2021

Population: secondary school students

Method: digital questionnaire

Sample:

N_{2020}=560

N_{2021}=602

Success of online distance education

5-garde Likert-scale questions

Online education during COVID 19

Variables	2020	2021
The family does not have suitable conditions to study or work from home (not enough devices, not perfect internet access).	1,50	1,86
It is technically difficult to connect online lessons.	2,00	2,61
I could better work in groups during in the online space than at school.	2,41	2,50
I cannot always find information on digital platforms suitable for learning.	2,48	2,47
Although I connected to online lessons, sometimes did something else.	2,73	3,49
I enjoy learing online.	3,06	3,15
I have better results in online tests.	3,36	3,32
I have learnt new applications during online learning.	3,42	3,35

Online education during COVID 19

Socio-demographic var.	Online learning	2020	2021
Age	Although I connected to online lessons, sometimes did something else.	.116**	.183**
Mother's qualification		.100**	
Father's qualificaiton		.115**	
Academic results	I would rather learn online in the future.	-.136**	-.187**
	I could better concentrate during online learning than in the traditional way.	-.158**	-.183**

Online teaching	Impact of online learning
Teaching methods	Physical impact
Quantity of tasks and homework	Psychic impact
Too high expectations	Cognitive impact
Teachers’ attitude	

What was the most disturbing during online education? (2021)

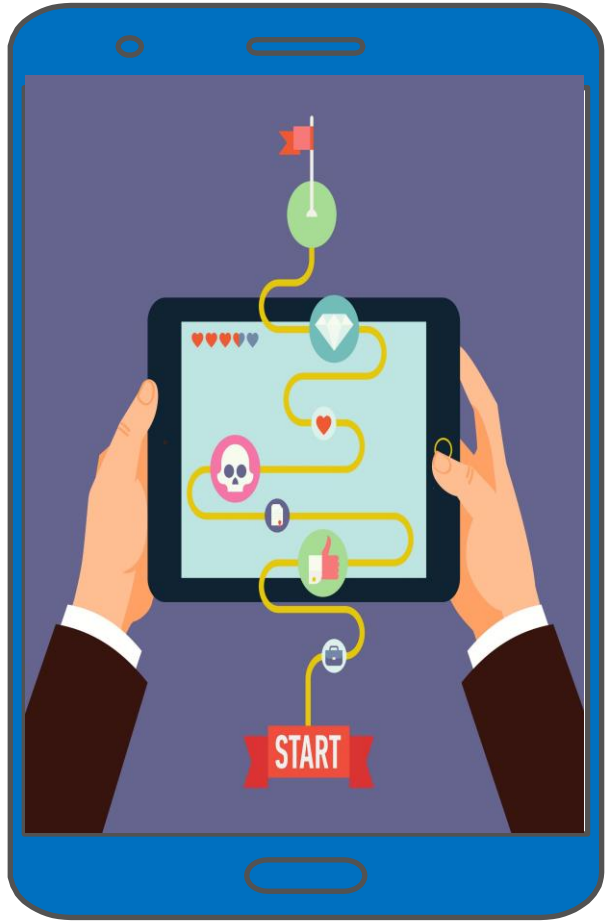
Demand for digital transformation in education

New attitude needed

Application of new methods

- Learn in groups
- Learn with digital devices – BYOD
- Include e-learning platforms, MOOC
- Gamification ~ entertainment
- Increase students' motivation
- Improve problem-solving ability
- Develop creativity

Preparation for labour market expectations



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Thank you for your attention!

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