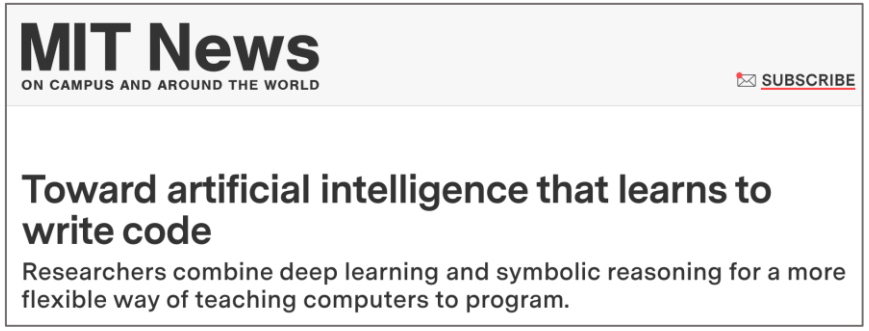
Digital Skills Assessment Framework for Life-Long Learning

Yuhyun Park PhD, DQ Institute

In collaboration with World Bank

What shall we do today to make a 5th grade girl in the Global South get a job at Silicon Valley in 10 years?



MIT News

ON CAMPUS AND AROUND THE WORLD

SUBSCRIBE

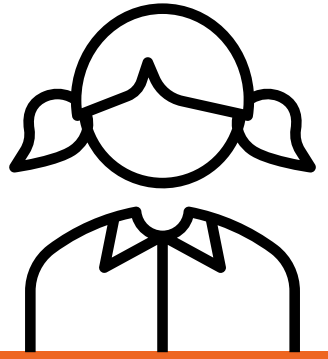
Toward artificial intelligence that learns to write code

Researchers combine deep learning and symbolic reasoning for a more flexible way of teaching computers to program.

"Every child must learn ***digital life skills*** that go beyond technical skills to achieve their security and well-being." – World Economic Forum

*"Everybody should learn to **program a computer**, because it teaches you **how to think**."*
- Steve Jobs, Apple

"***Soft skills*** like **sharing** and **negotiating** will be crucial. The modern workplace, where people move between different roles and projects, where we learn social skills such as **empathy** and **cooperation**." - David Deming, Harvard University



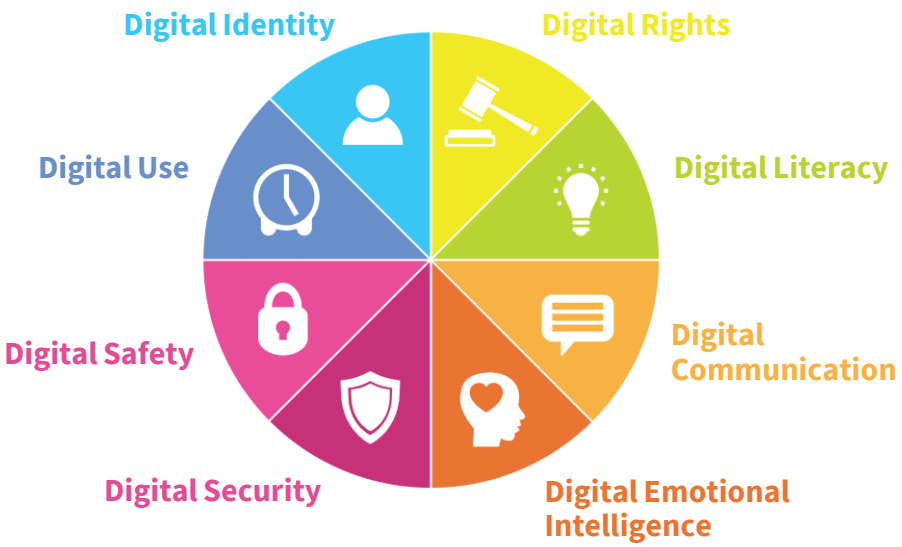
She needs *comprehensive digital skills!*

What is “Digital Skills”?

Using Global Standard on Digital Literacy, Digital Skills, and Digital Readiness (IEEE™ 3527.1)

DQ (Digital Intelligence) is “*a comprehensive set of technical, cognitive, meta-cognitive, and socio-emotional competencies that are grounded in universal moral values and that enable individuals to face the challenges and harness the opportunities of digital life.*”

8 Areas of Digital Life



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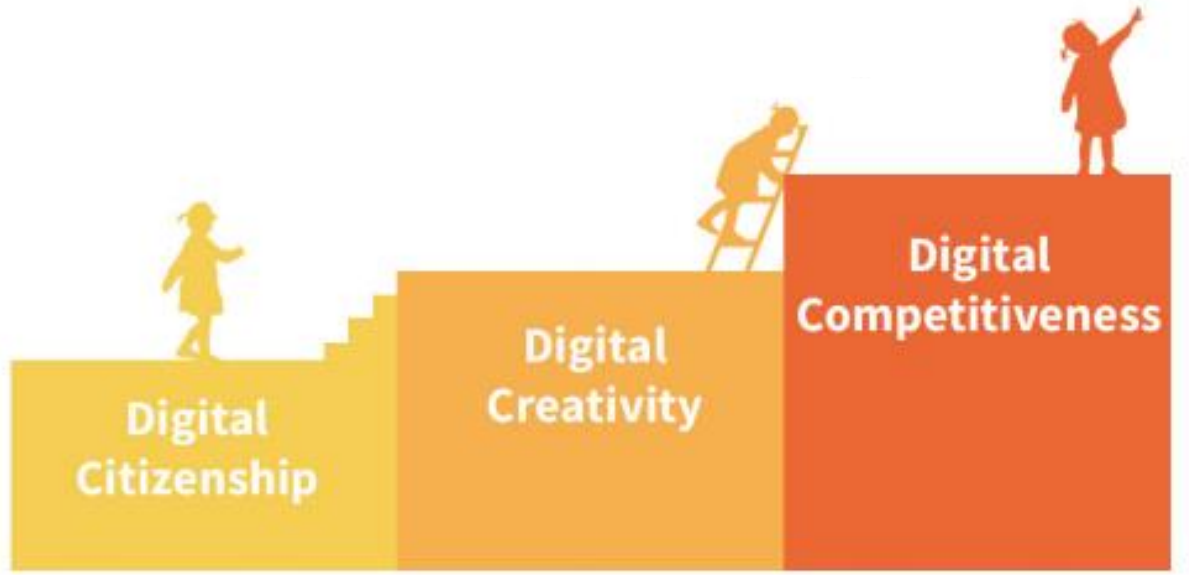
3 Levels of Maturity

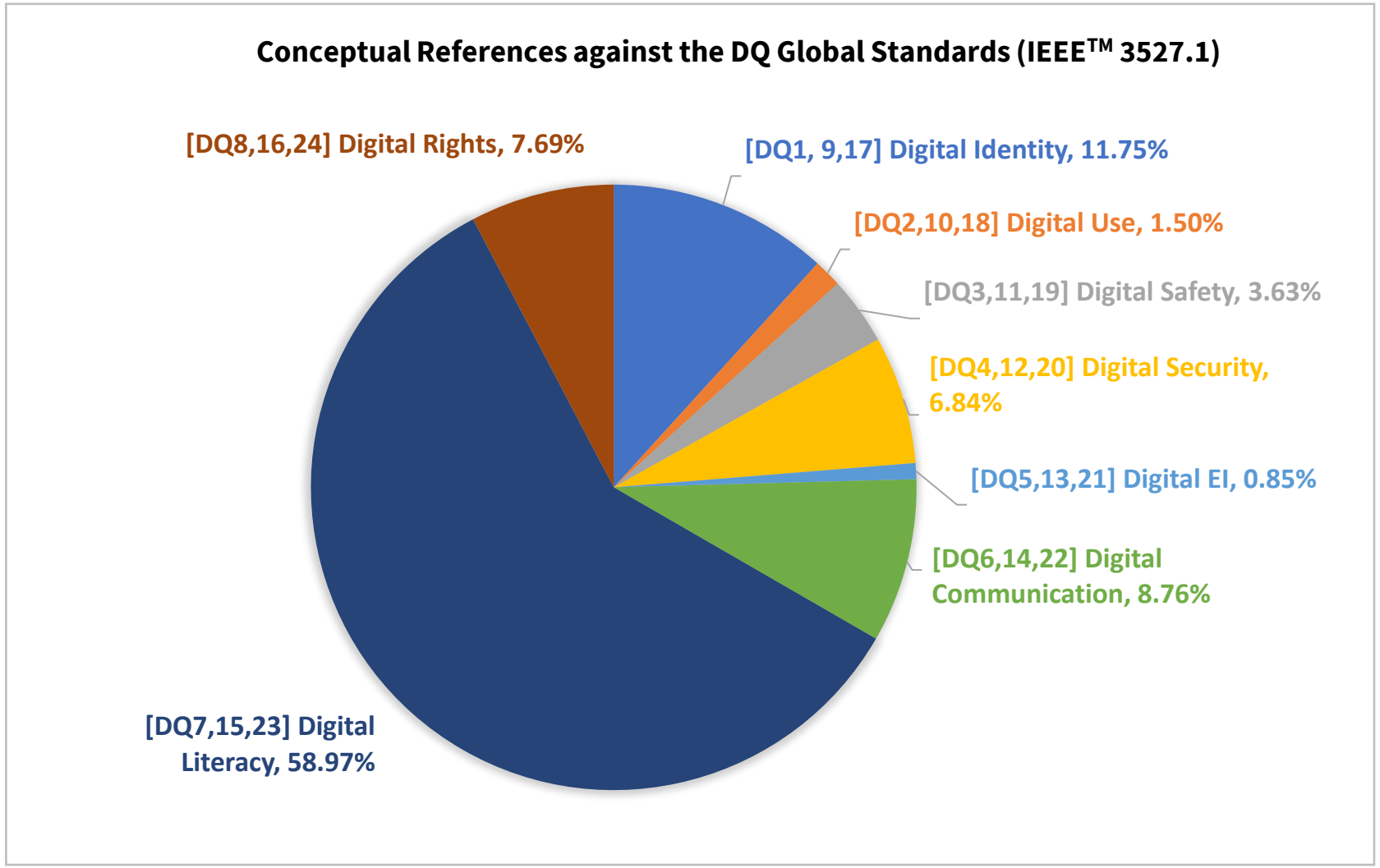


Three areas (80%) are heavily covered by the reference frameworks

1. Digital Literacy (59%)
2. Digital Identity (12%)
3. Digital Communication (9%)

Three areas (7%) are least covered by the reference frameworks

1. Digital Emotional Intelligence (1%)
2. Digital Use (2%)
3. Digital Safety (4%)



Support the National Digital Skills Roadmap Aligned with Your National Digital Agenda

Identify Gaps

Current National Framework and Education / Assessment tools Against International Frameworks Using DQ Global Standards (IEEE™ 3527.1)

Design Roadmap

National Digital Skills Roadmap Aligned with Global Standards Based on Your Digital Transformation Agenda

Monitor Progress

Digital Skills Improvement **B**ased on a common assessment tool that is aligned with **SDG4.**

Track the Improvement of Digital Skills, Well-being, and Employability

Example:
National Digital Readiness Blueprint of Singapore

#1: Expand and Enhance Digital Access for Inclusivity

#2: Infuse Digital Literacy into National Consciousness

#3: Empower Community and Businesses to Drive Widespread Adoption of Technology

#4: Promote Digital Inclusion by Design

Ministry of Education
SINGAPORE

Digital Citizenship

Digital Creativity

Digital Competitiveness

PRIMARY LEVEL

Enhancing cyber wellness education

- Greater emphasis on cyber wellness education as part of CCE 2021.

Expanding 'Code for Fun' programme

- Students will learn computational thinking and coding through visual programming-based lessons.
- From 2020, it will be offered to all primary schools as a 10-hour enrichment programme at upper primary.

SECONDARY AND JC LEVELS

Enhancing computational thinking skills

- Mathematics curriculum to help develop and deepen computational thinking skills at secondary levels.

HIGHER EDUCATION LEVEL

Enhancing baseline digital competencies, with deeper competencies for certain sectors

Source: https://www.moe.gov.sg/microsites/cos2020/refreshing-our-curriculum/strengthen-digital-literacy.html
https://www.mci.gov.sg/portfolios/digital-readiness/digital-readiness-blueprint

Identify Gaps 1: Coverage

Illustration: National Digital Skills Framework of the Country A has heavy focus on Technical Skills

Sum of Count	Digital Citizenship								Digital Creativity								Digital Competitiveness								
DQ#	1 Digital Citizen Identity	2 Balanced Use of Tech	3 Behavioural Cyber Risk Mgt	4 Personal Cyber Security Mgt	5 Digital Empathy	6 Digital Footprint Mgt	7 Media and info Literacy	8 Privacy Mgt	9 Digital Co-creator identity	10 Healthy Use of Tech	11 Content Cyber-Risk Mgt	12 Network Security Mgt	13 Self-Awareness and Mgt	14 Online Communication and Collaboration	15 Content Creation & Computational Literacy	16 Intellectual Property Rights Mgt	17 Digital Changemaker Identity	18 Civic Use of Technology	19 Commercial and Community Cyber Risk Mgt	20 Organizational Cyber Security Mgt	21 Relationship Mgt	22 Public and Mass Communication	23 Data and AI Literacy	24 Participatory Rights Mgt	
Microsoft Covid-19 Global Skills Initiative		6%	13%		3%		45%	3%						29%											100%
Computer Science Teachers Association Framework				2%			3%	4%	2%				1%	3%	44%	5%	9%			9%			17%		100%
DigComp 2.1 The Digital Competence Framework for Citizens	13%		4%	4%	2%	6%	19%	10%	4%	2%		2%		4%	13%	4%	4%	2%	2%					4%	100%
Digital Literacy Global Framework(DLGF)	12%		4%	4%	2%	6%	24%	10%	4%	2%		2%		4%	12%	4%	4%	2%	2%					4%	100%
Grow with Google: Applied Digital Skills							24%		6%					12%	6%		18%		6%			18%	6%	6%	100%
International Society for Technology in Education (ISTE): Standards for Students									6%						53%								35%	6%	100%
ITU: Digital Skills Toolkit							17%	6%							28%		6%					22%	22%		100%
K12CS	1%		2%	1%	1%	1%	1%	1%	3%			7%		9%	43%	1%	9%						19%	1%	100%
National Digital Skills Framework for Country A				5%			35%								49%	3%							7%		100%

K-12 CS Steering Committee

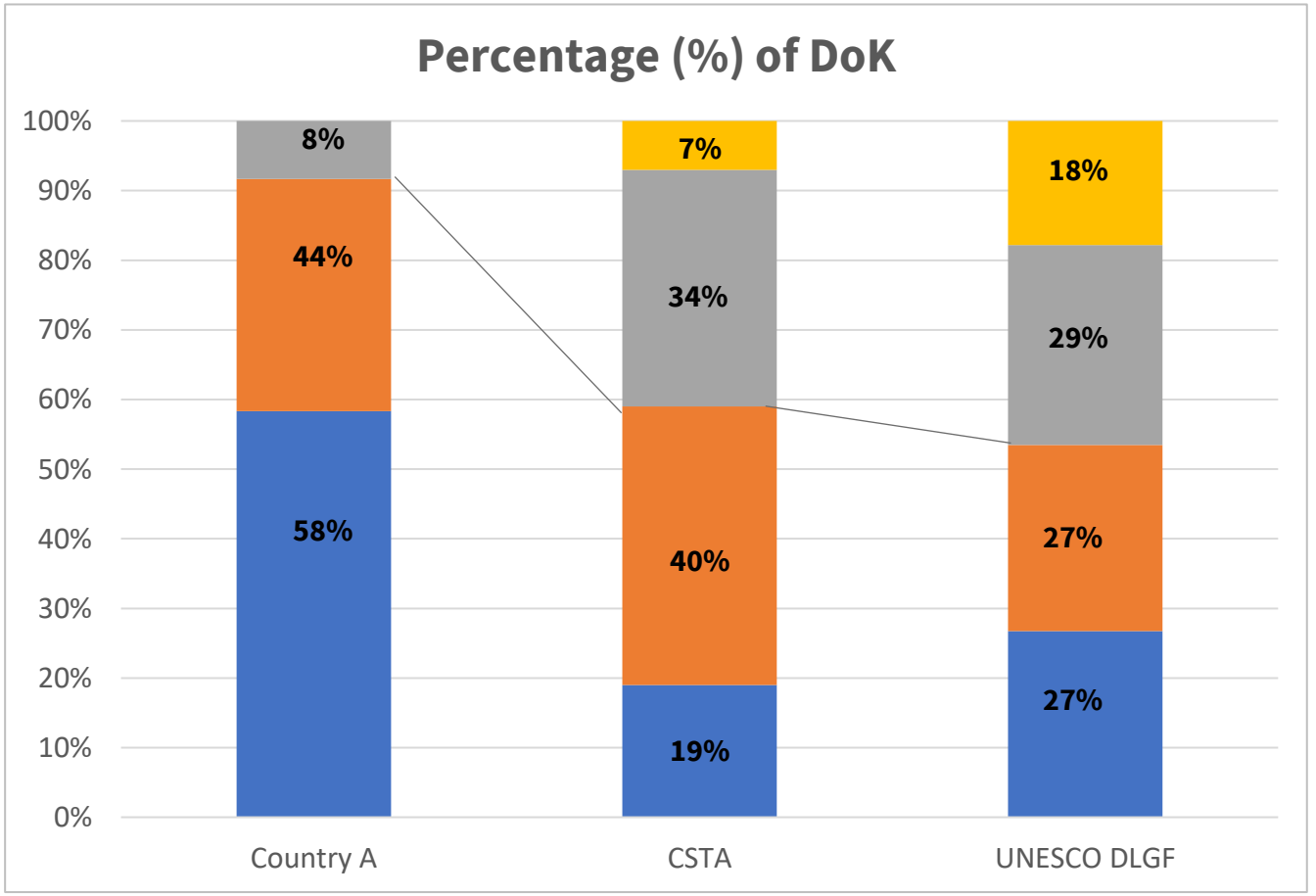
The numbers indicate the learning objectives aligned with each of the DQ24 competencies (IEEE™ 3527.1)

Identify Gaps 2: Depth of Knowledge (DoK)

Illustration: National Digital Skills Framework of the Country A Can Enhance "Thinking Skills"

4 Levels of Depth of Knowledge

- **LEVEL 4 (Extended Thinking)**
- **LEVEL 3 (Strategic Thinking)**
- **LEVEL 2 (Problem Solving)**
- **LEVEL 1 (Concept / Procedure)**



*"Everybody should learn to program a computer, because it teaches you **how to think**."*
- Steve Jobs, Apple

https://www.forbes.com/profile/steve-jobs/?sh=342678722808

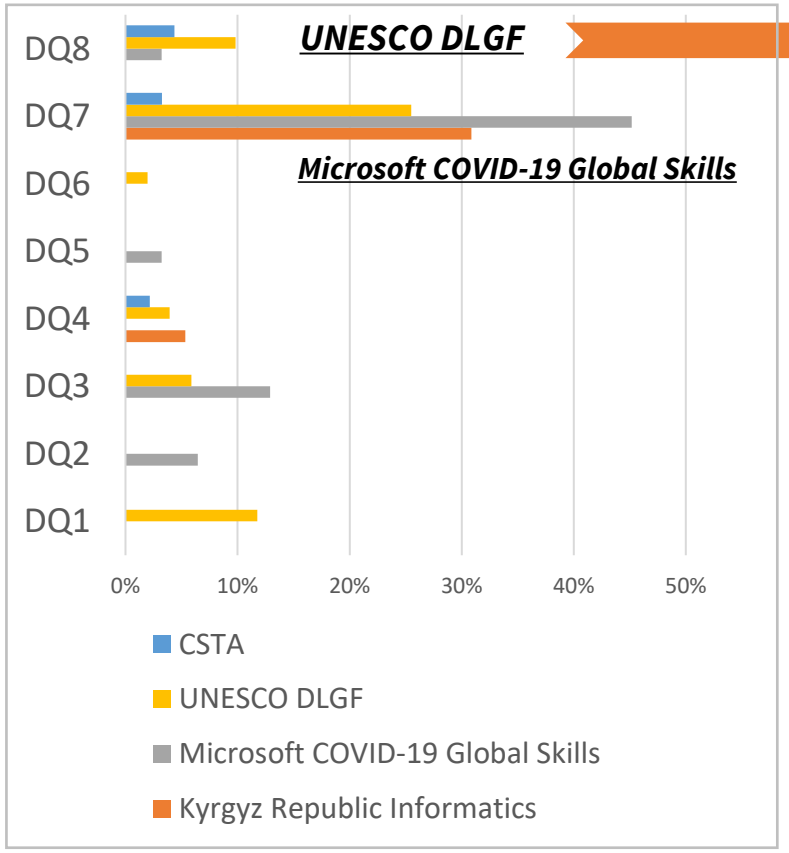
Source: Webb, N. (1999). Research monograph No. 18: Alignment of science and mathematics standards and assessments in four states. Washington, D.C.: CCSSO.
Retrieved from https://www.researchgate.net/publication/252605969_An_Analysis_of_the_Alignment_Between_Mathematics_Standards_and_Assessments_for_Three_States

Design 1: Plan for Enhancing the Digital Skills Framework

Pick and Choose the Best Frameworks or Programs to Benchmark

Demonstration: Primary School – Digital Citizenship Curriculum

1. Choose a benchmarking framework



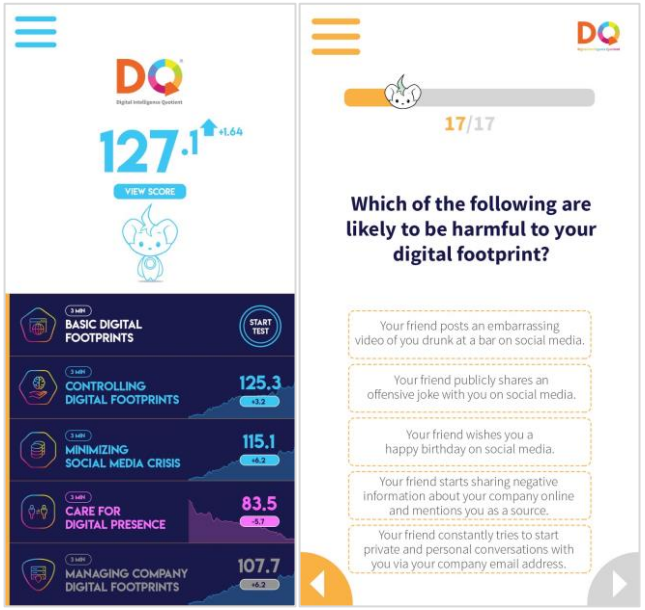
2. Benchmark how the reference framework addresses the learning objectives

DQ Microbadge	UNESCO DLGF Description	DoK
DQ8.1 Understanding Personal Information	• To understand how to use and share personally identifiable information while being able to protect oneself and others from damages • To understand that digital services use a "Privacy policy" to inform how personal data is used	• Level 1, 2 • Level 1, 2
DQ8.2 Keeping Information Private Online	• To protect personal data and privacy in digital environments. • To protect devices, content, personal data and privacy in digital environments	• Level 1, 2, 3
DQ8.3 Attitudes about Privacy Online	• To have due regard to reliability and privacy	• Level 3, 4
DQ8.4 Health Check-Protection of One's and Others Privacy Online		
DQ 8.5 Protecting company-related confidential information		
DQ 8.6 Privacy and Ethics Online	• To participate in society through the use of public and private digital services	• Level 3, 4

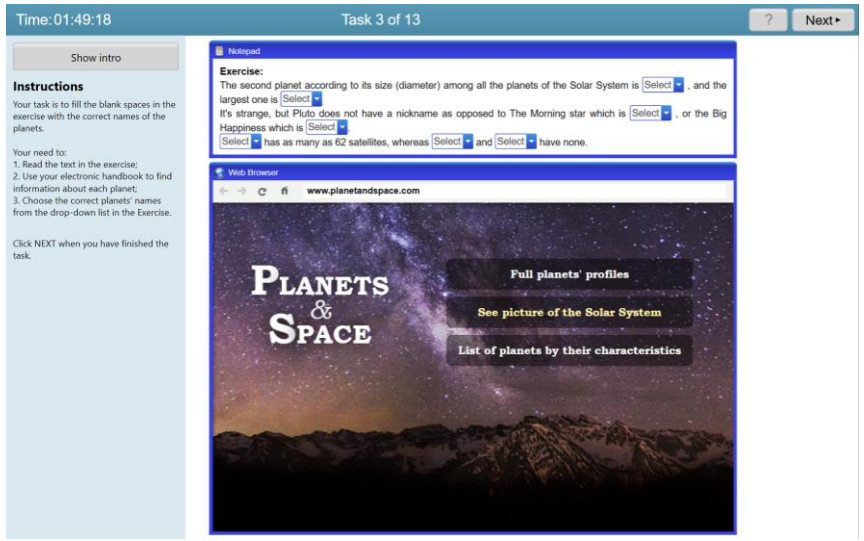
Monitor 1: Develop Customized Digital Skills Assessment Tool

By Utilizing International Tools

Demonstration Purpose Only



DQ App



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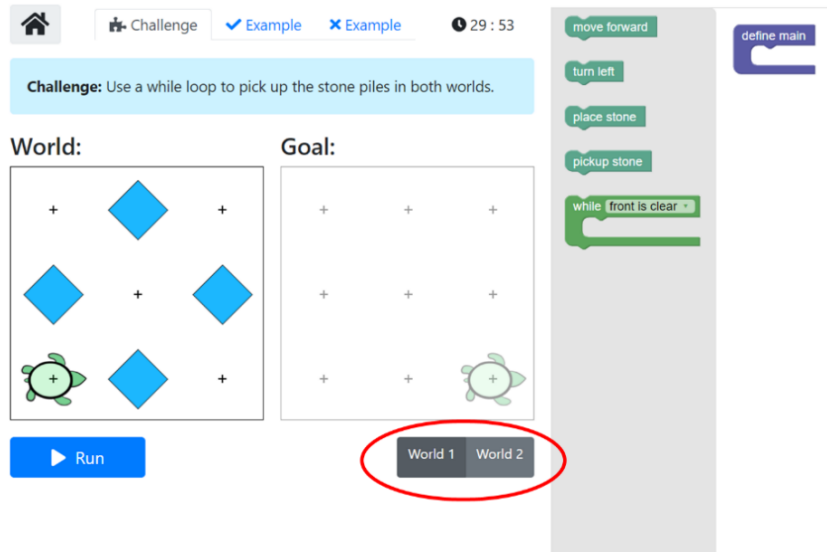
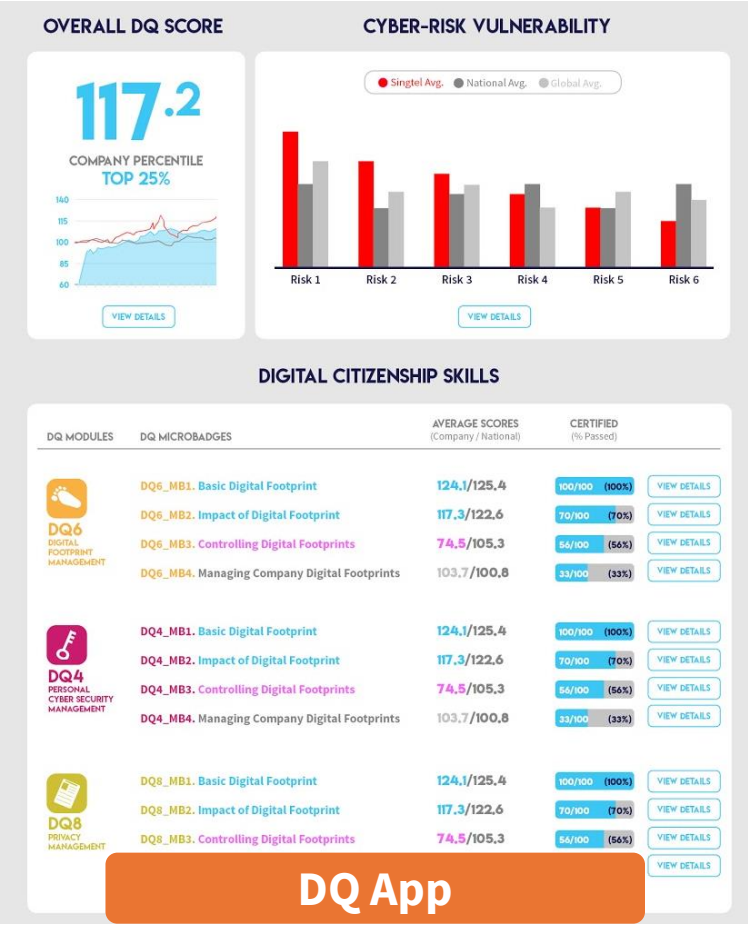


OECD Karel

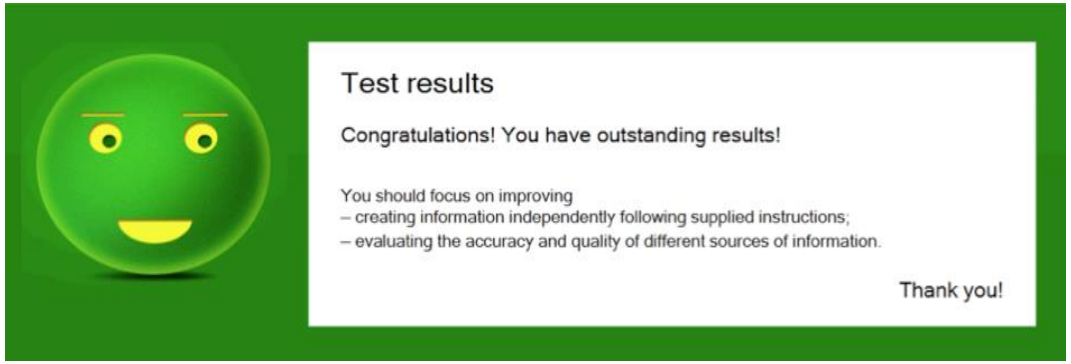
Monitor 2: Addressing Needs of Schools and Students

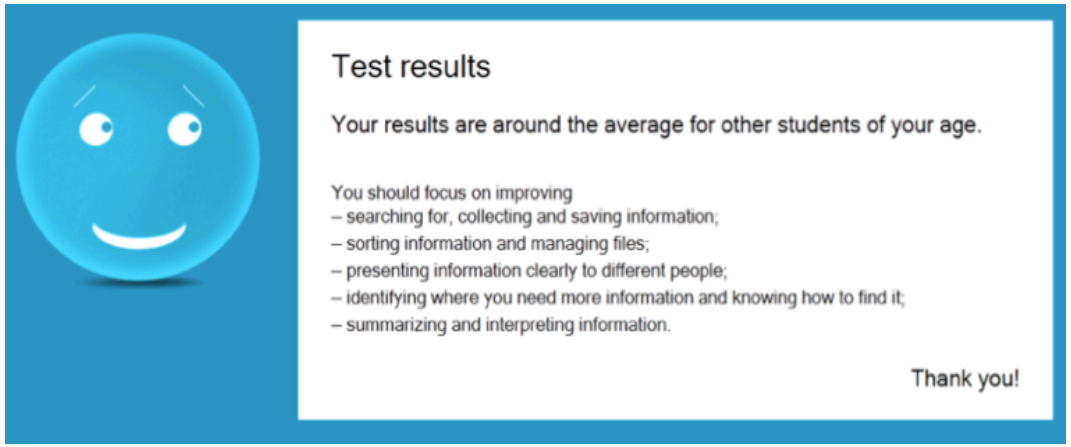
By Identifying Gaps and Recommendations for Improvement

Demonstration Purpose Only



DQ App





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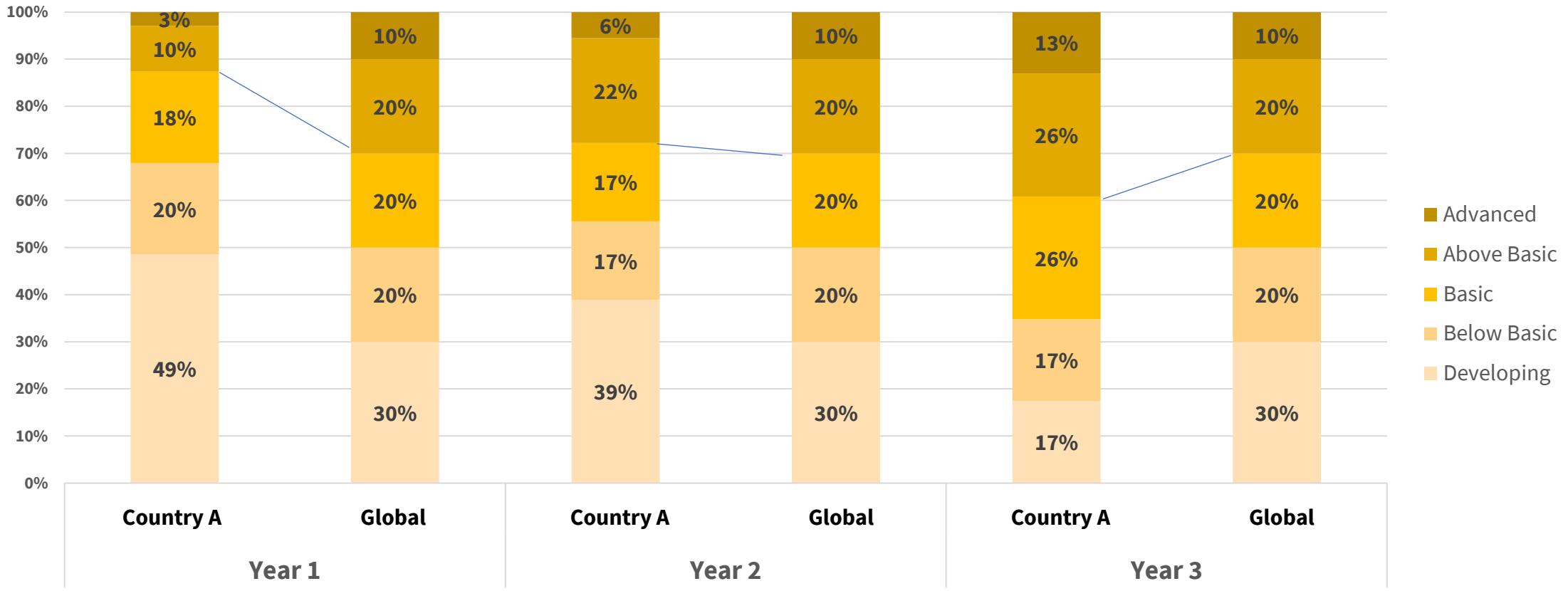
Monitor 3: Monitoring the Progress of the National Digital Skills Compared to National & Global Benchmark

Demonstration Purpose Only



Thank you

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