

Digital maturity of higher education institutions in Croatia

Findings to date from the MZO-EC-OECD joint project



Funded by the
European Union

Dr Gillian Golden
OECD Higher Education Policy Team
October 2022



Topics covered

- ❖ Digital maturity in higher education institutions, compared to schools
- ❖ A guiding framework for evaluating digital maturity – focused on leadership, infrastructure and competence
- ❖ Survey results related to each element of the framework
- ❖ Reflections from recent OECD mission to Croatia and analysis from OECD and external experts

The concept of a digitally mature education organisation

How might it differ between schools and HEIs

Digital maturity exists on a continuum; organisations with greater levels of **resources, competences and strategic leadership** necessary to plan and execute effective digital transitions can be considered to have higher levels of digital maturity.

- ❖ Unlike schools, an **observable locus of leadership for self-evaluation and improvement of digital maturity in HEIs at the organisation level may not be as apparent**. HEIs have more diverse functions and operations and staff roles.
- ❖ Unlike with E-schools, **most HEIs are not entering maturity evaluation and improvement processes as “digital beginners”**. They already have a range of networks, equipment, digital technologies, capacities and competences and specialist support staff on-site.
- ❖ Maturity somehow implies linearity – always increasing over time towards the point of full development. In reality, **there may be regression as technologies, external circumstances and organisational culture evolve**.
- ❖ External or internal assignment of “levels” of maturity is more difficult for HEIs, due to their organisational complexity. **Most approaches to maturity in HEIs rely on encouraging the use of self-evaluation** and “thinking” tools (e.g. HEInnovate, ACODE, DIGI-HE).
- ❖ A common theoretical assumption is that external evaluation is best conducted within standard quality assurance processes, not separately.

A guiding framework for evaluating and reflecting on digital maturity

What would a digitally mature HEI look like?
Coherent interconnection of Strategy, Skills and “Stuff”

The ability to coherently develop and coordinate digitalisation strategy, and mobilise resources for its implementation

Digital Leadership

Access to the connectivity, hardware and software needed for digital transformation

Digital Infrastructure

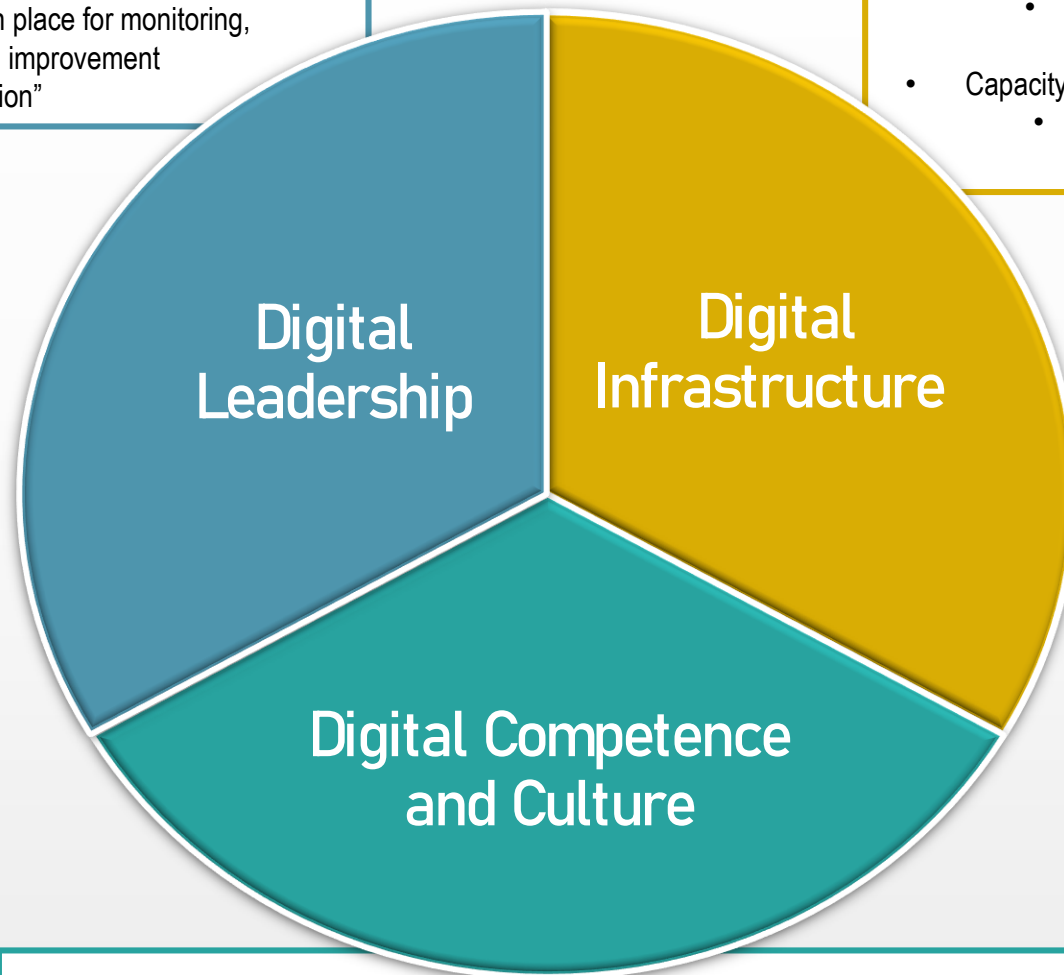
Digital Competence and Culture

Skills, mind-sets and knowledge needed to effectively engage with digital strategies and digital infrastructure

Evaluations of maturity are likely to be based on both quantitative and qualitative judgements

Potential indicators in each dimension – qualitative and quantitative

- Existence of an institution-wide strategy, aligned with institution mission and goals
- Capacity to mobilise resources for digitalisation objectives
- Mechanisms in place for monitoring, evaluation and improvement of “digital position”



- Achievement of nationally-recognised standards for connectivity
- Achievement of nationally-recognised standards for equipment
 - Documentation and categorisation of infrastructure at central level
- Capacity for technical gaps and needs analysis
 - Adequate resources for support and maintenance

- Extent of digitalised operations and services
- Adoption of “gold standard” policies and best practices across all aspects of digitalisation
 - Digital competence evaluation and development for all staff and students
 - Contribution to and use of open data and content resources

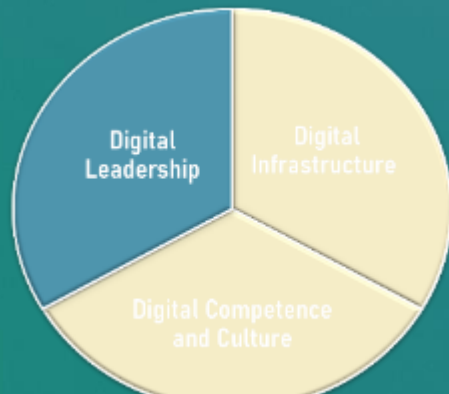
OECD-CARNET survey response rates and coverage

88 unique responses

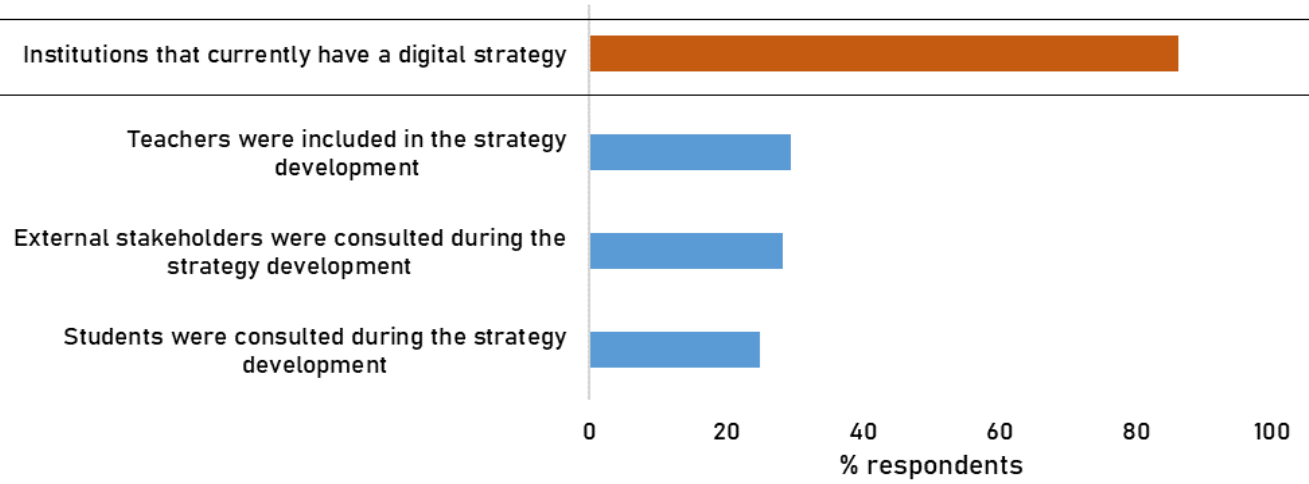
Institution type	Number of responses
University top-level (non-integrated universities)	4
Colleges	1
Faculty/Academy/Department	69
Integrated university	5
Polytechnic	9
Total	88

- Excluding university top-level responses, the responding organisations reported combined enrolments of over **120 000** (i.e. covering about 80% of total students enrolled in public institutions)

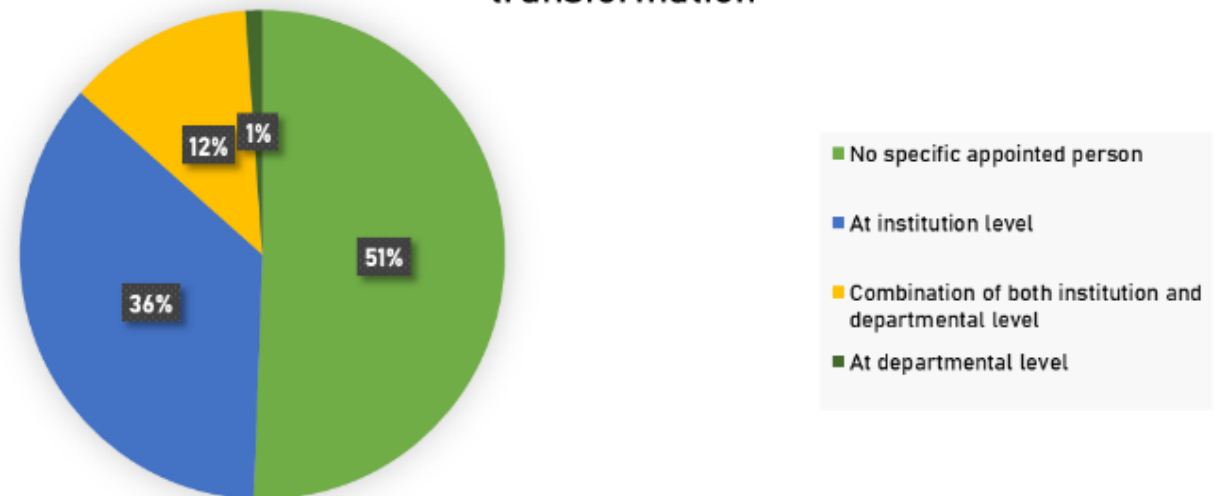
Institution-level
co-ordination on
strategy could be
improved



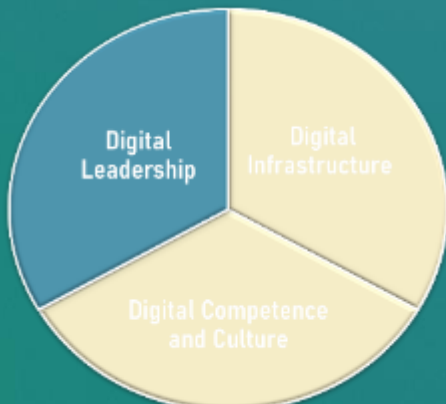
Development of institutional strategies for digitalisation



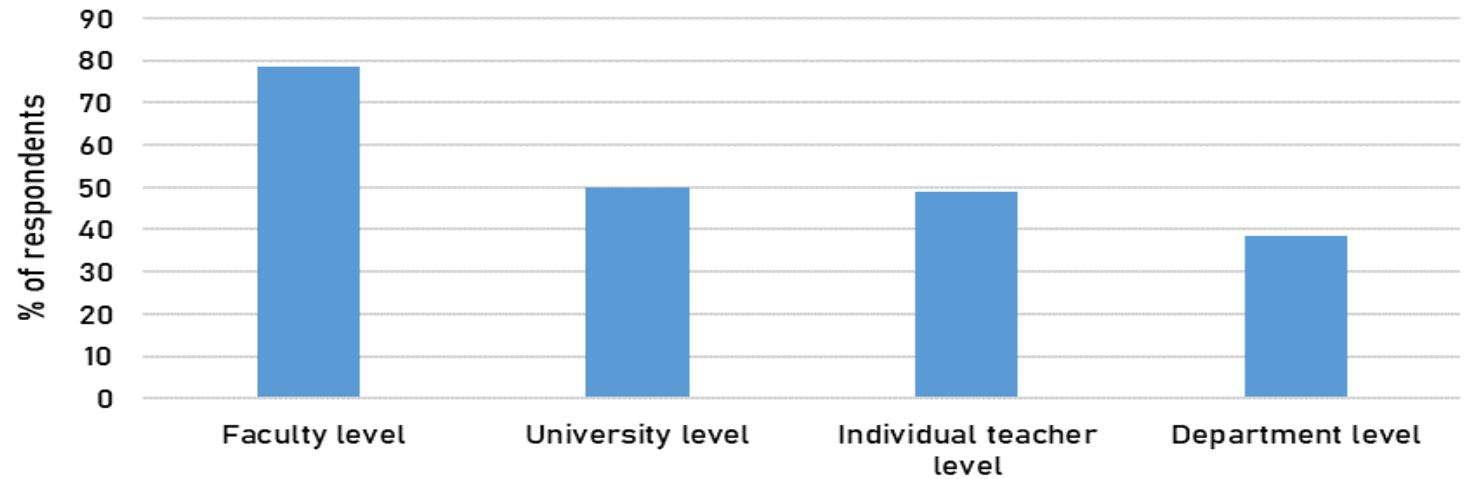
Institutional allocation of responsibility for digital transformation



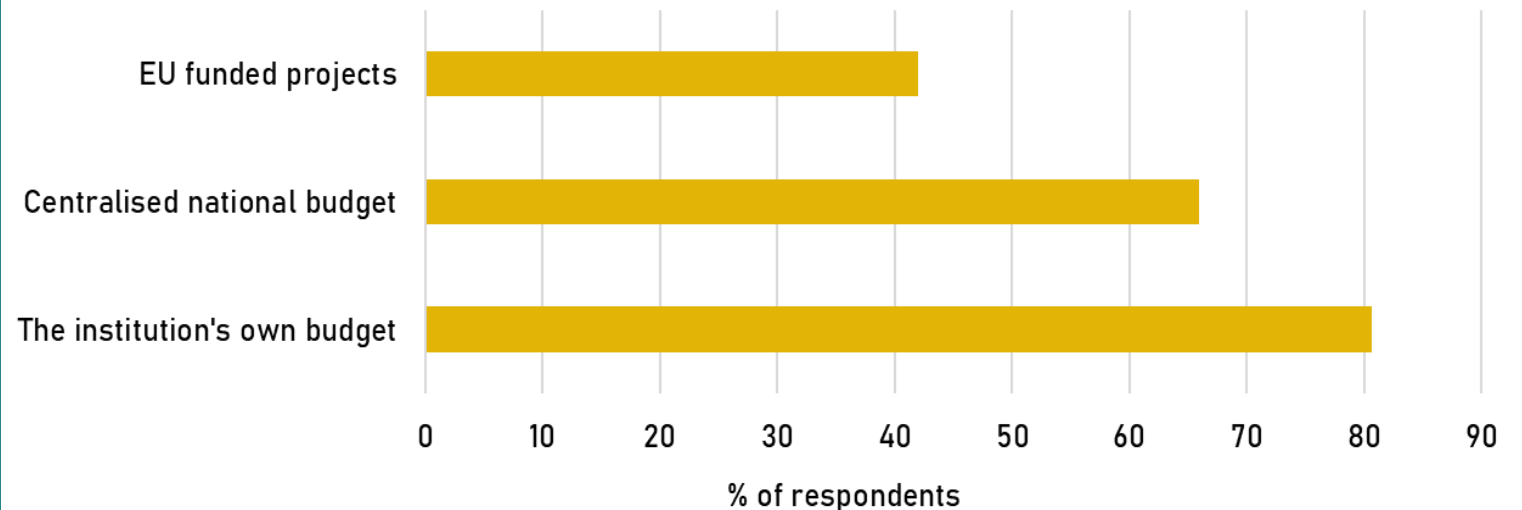
Institutions make decisions and mobilise resources in different ways



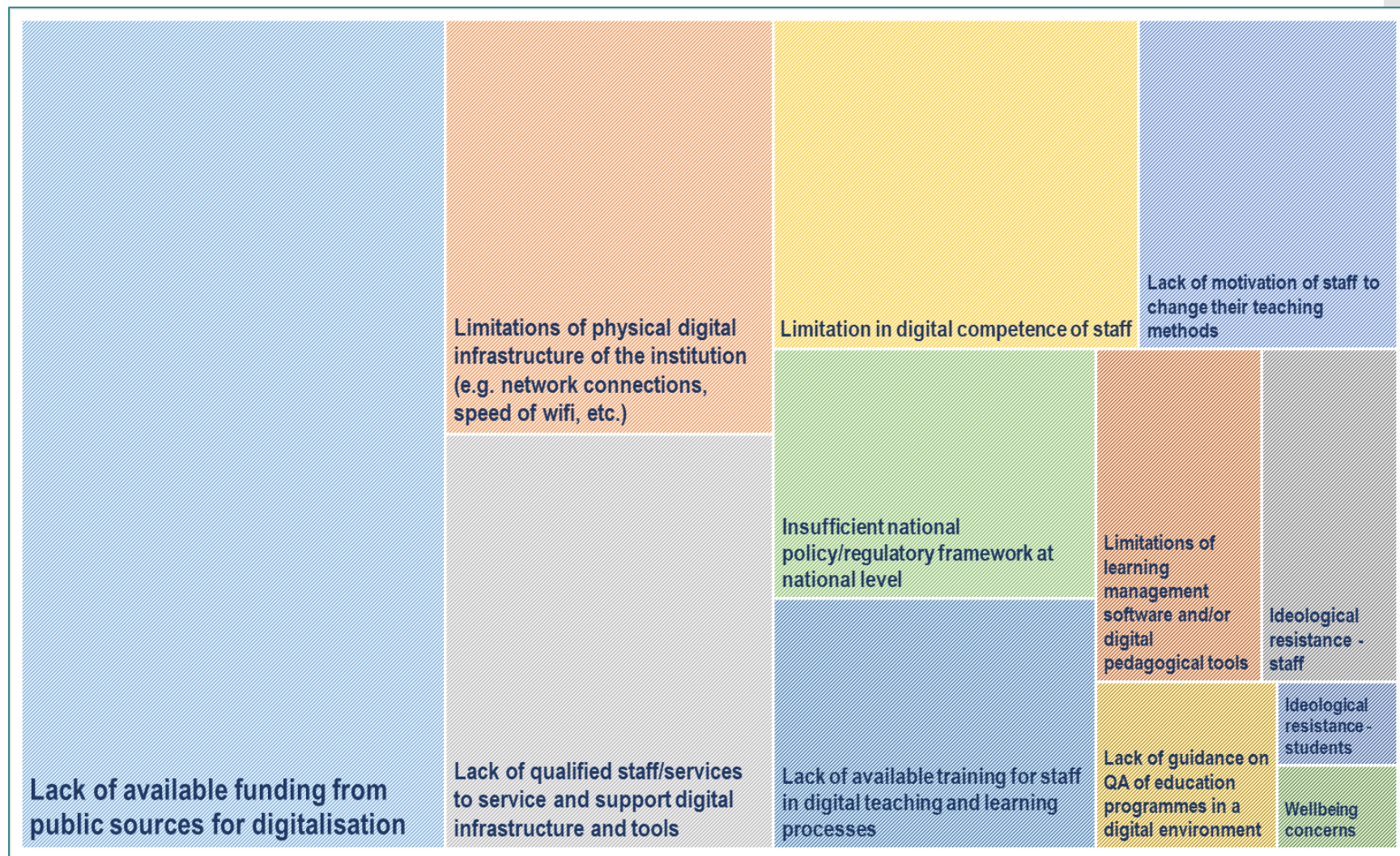
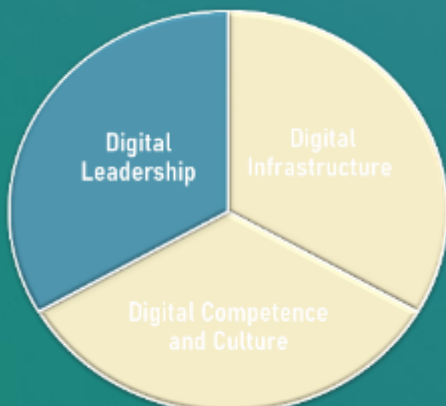
At what level are decisions made about the acquisition of digital tools and software?



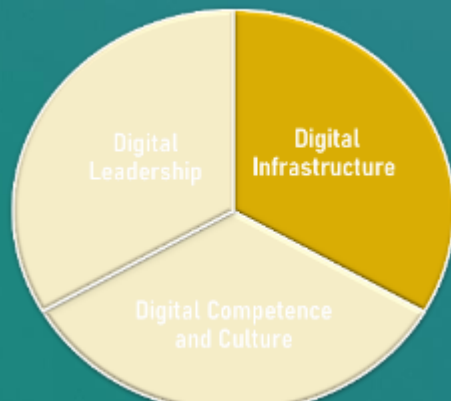
Available institutional funding sources for investments in digitalisation



What do institution leaders perceive as the main barriers to advancement of digital maturity?



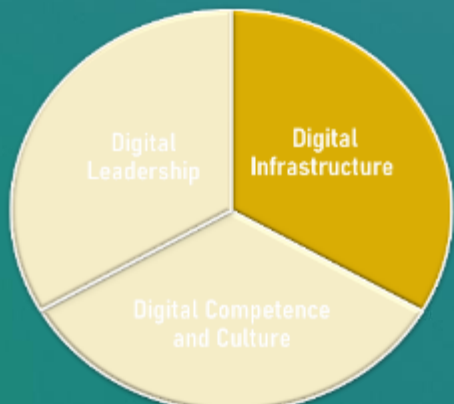
Most institutions
and faculties
have one or two
locations



Number of locations	No. respondents	% respondents
One location	46	51.7
Two locations	12	13.5
Three locations	10	11.2
Four locations	8	9.0
Five or more locations	12	14.6

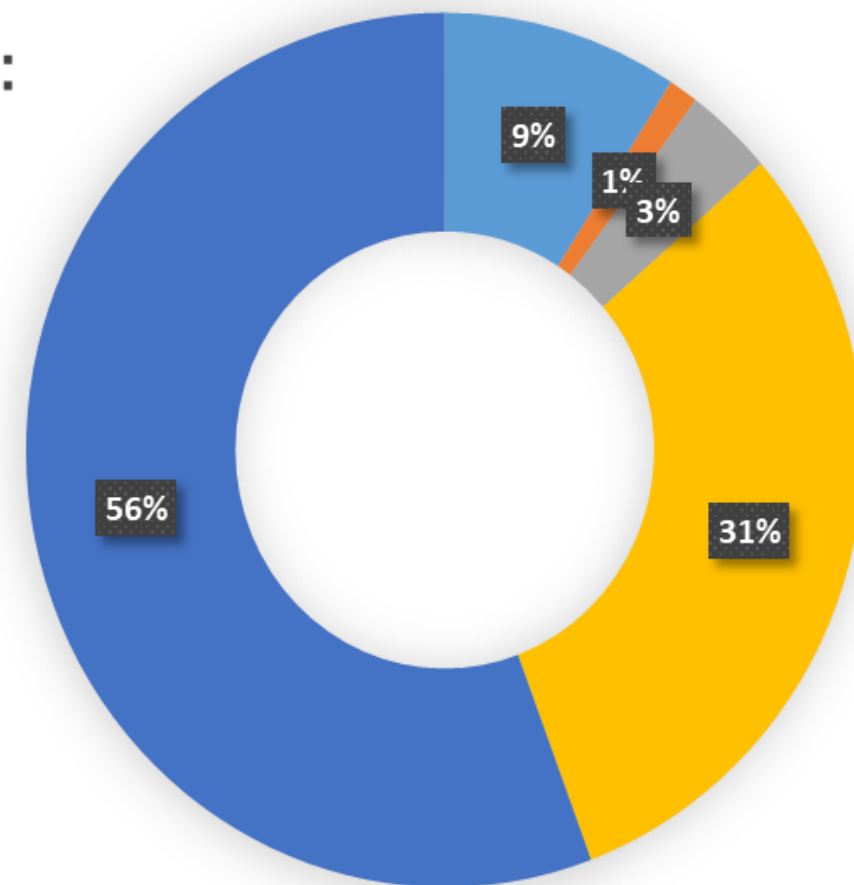
- ❖ All respondents report direct internet connection via CARNET.
- ❖ Two respondents have additional connections via commercial link

Documentation of the local area wired networks is lacking



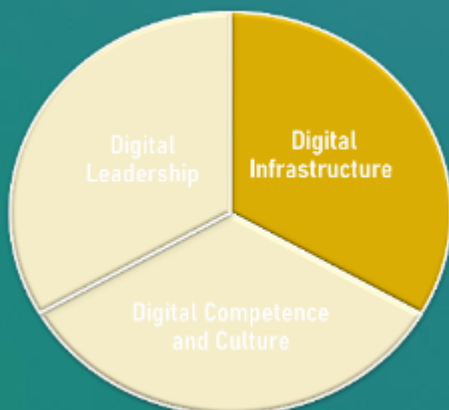
Wired local area network is:

- Partly functional
- Not functional
- Other
- Fully functional and with detailed project documentation
- Fully functional, but without project documentation

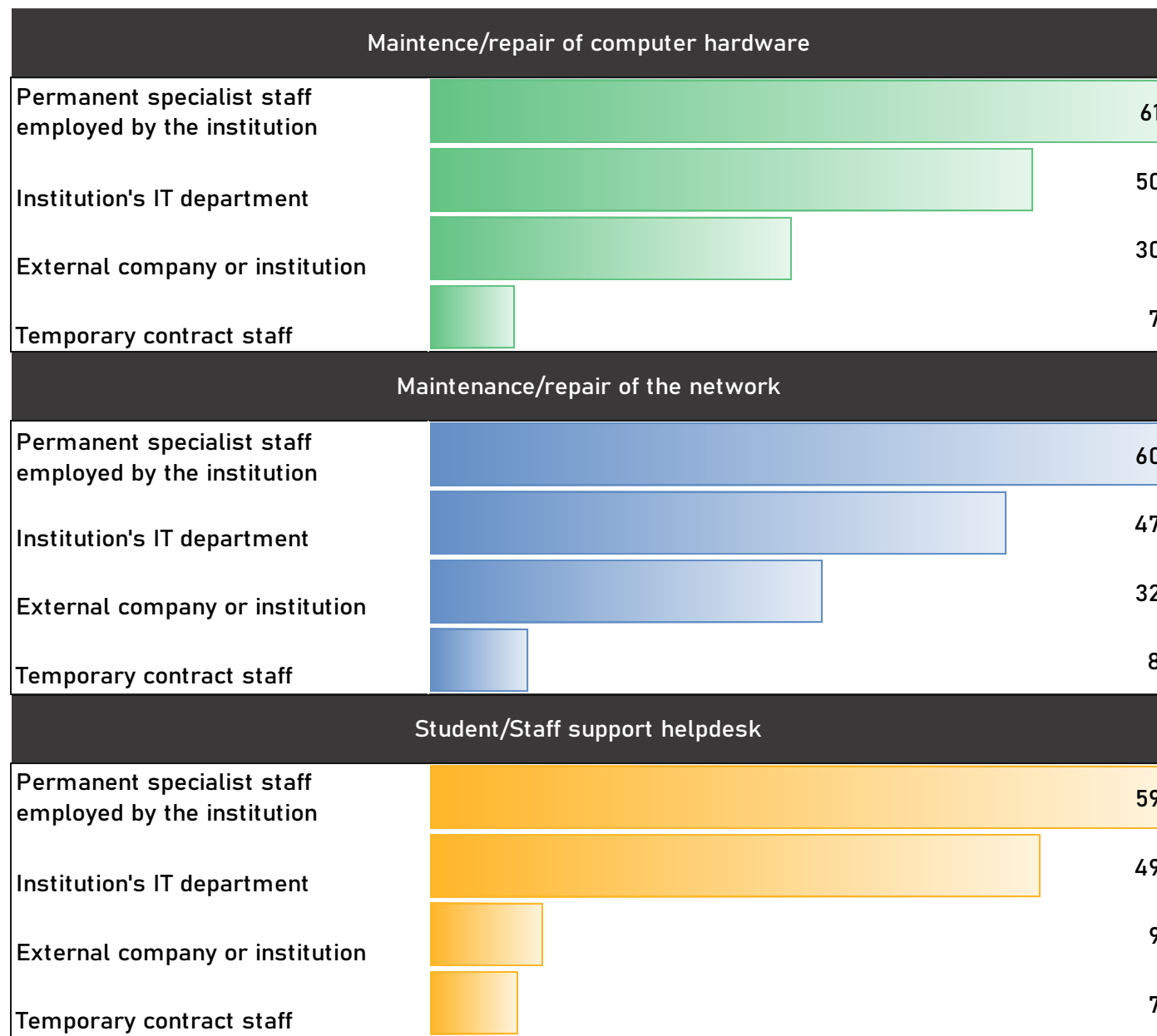


A lack of documentation may challenge plans to upgrade LANs, due to lack of knowledge about current networks and new network requirements

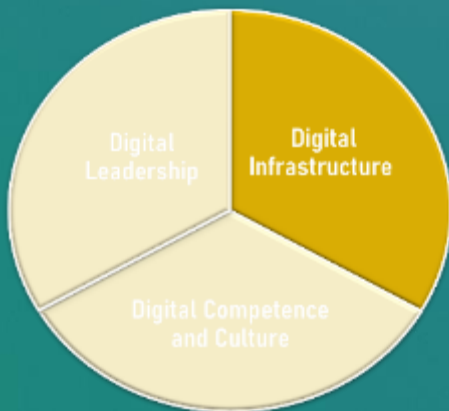
Most institutions
rely on in-house
support for their
digital
infrastructure



Responsibility for IT support tasks within institutions, by type of support



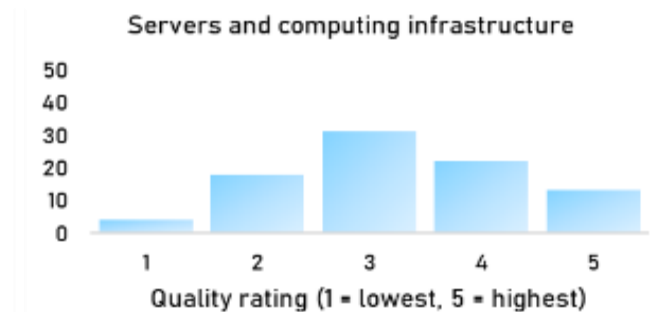
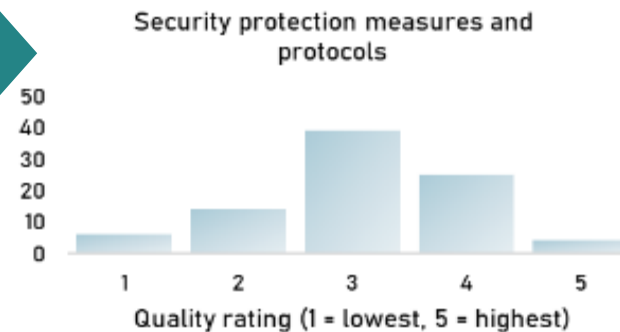
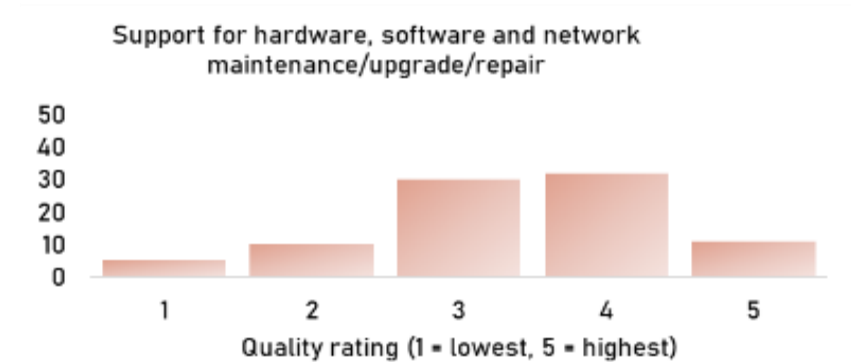
Insights into institutional perception of infrastructure quality



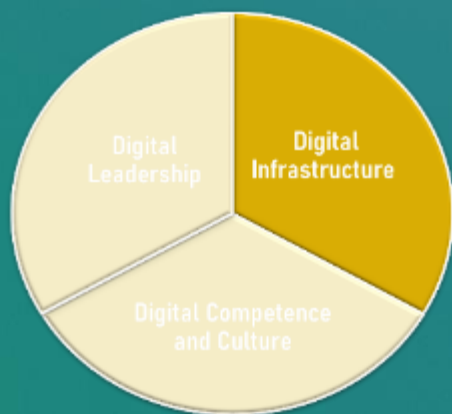
Connectivity
Institutions show the lowest satisfaction with quality of wireless LAN

Type of connectivity	Mean quality score 1-5 (5 highest)
Internet connection via CARNET	4.59
Wired LAN	4.11
Wireless LAN	3.32

Equipment
Institutions rate support above equipment or protocols



Insights into institution's perception of their infrastructure needs



Making digital tools available on campus is the main priority

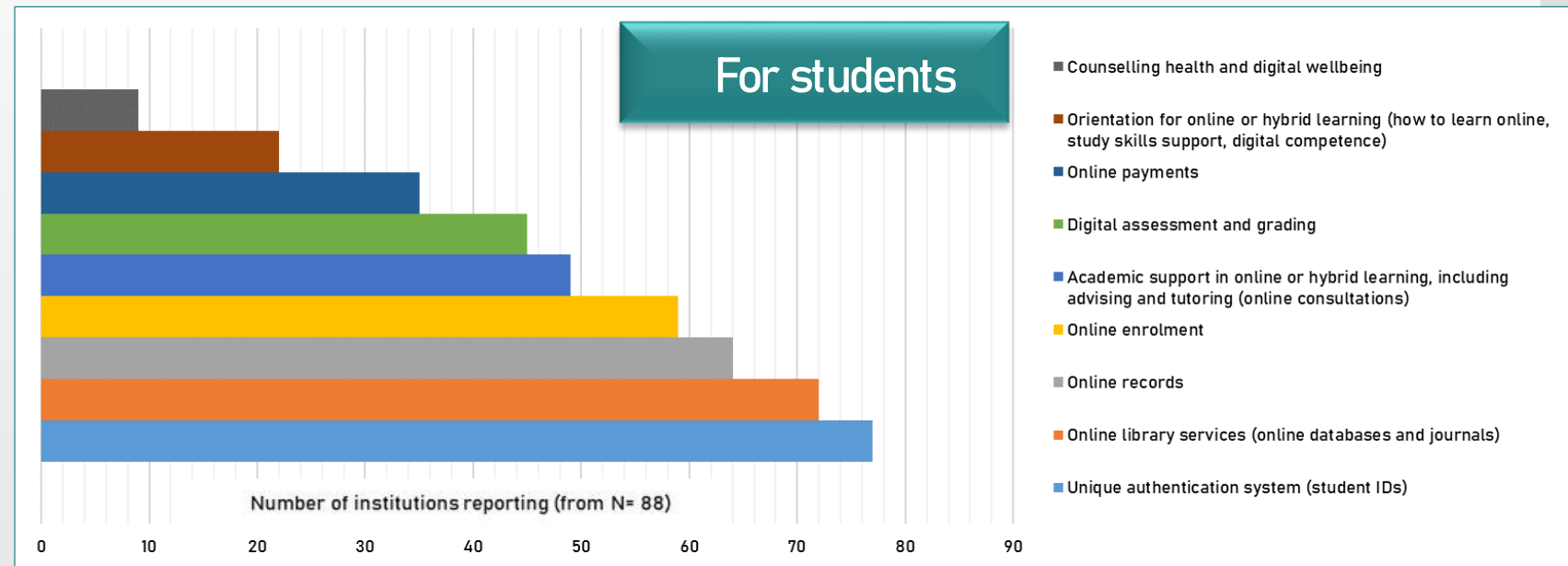
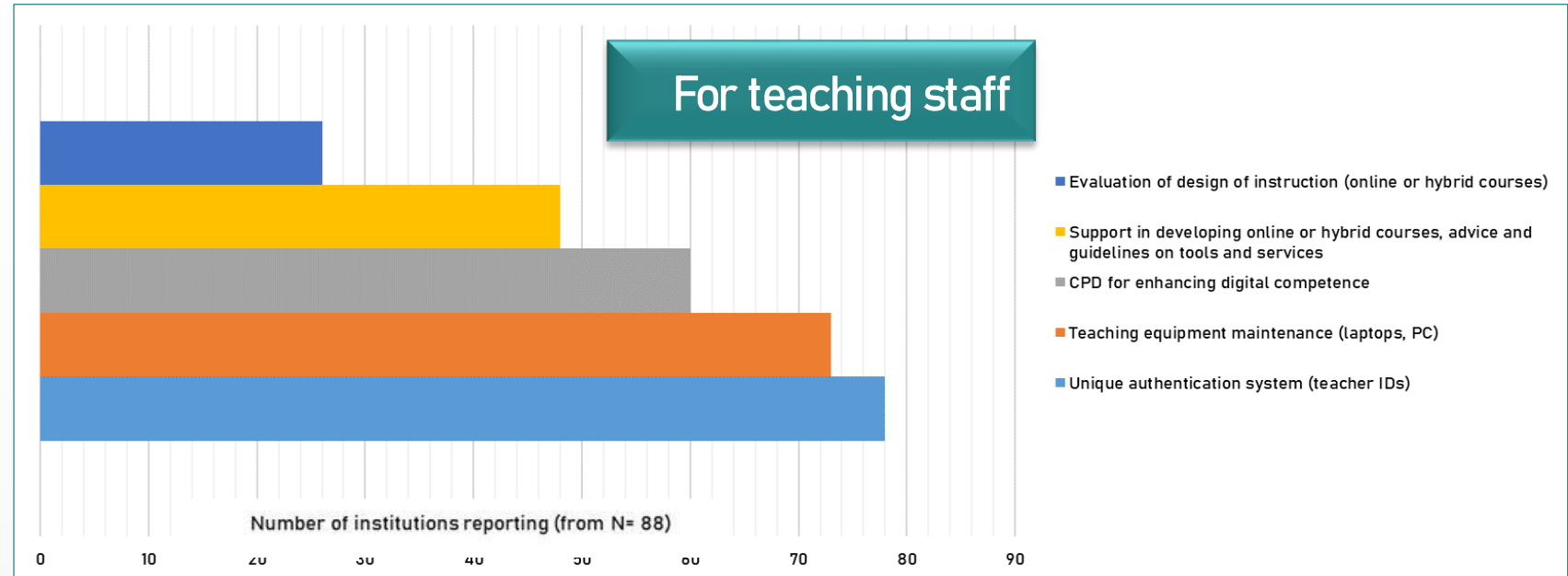
Type of facility	Mean Need Ranking (1-5)
Lecture halls (with the ability to use digital resources in lectures; consists of projectors, lecturer computer and sound system)	4.23
Small halls/classrooms for hybrid teaching and recording lectures (ability for f2f and online instruction, AV recording of a live lecture in front of live audience; consists of camera(s) and lighting, audio equipment, projector/smart screen)	4.16
E-archipelago/e-laboratories - public spaces for learning (individual computer stations, pair/group learning, project rooms, libraries for quiet learning, linkable via video conferencing)	4.10
Simple AV studio (ability to produce video lectures and educational video; consists of video; audio recording equipment, lighting, editing SW, sound insulation)	3.67
Specialized hardware for learning (robots, microcomputers, 3D printers)	3.32
Computer lending services for students and teachers (lending/leasing when needed and in emergencies)	3.10
Professional AV studio (ability to produce more complex and advanced educational video such as experiment/demo recording, talk show recording, stop animation, audio recording; consists of video & audio recording equipment, lighting, editing SW, sound insulation)	2.81

Adoption of digital technologies – teaching and learning tools

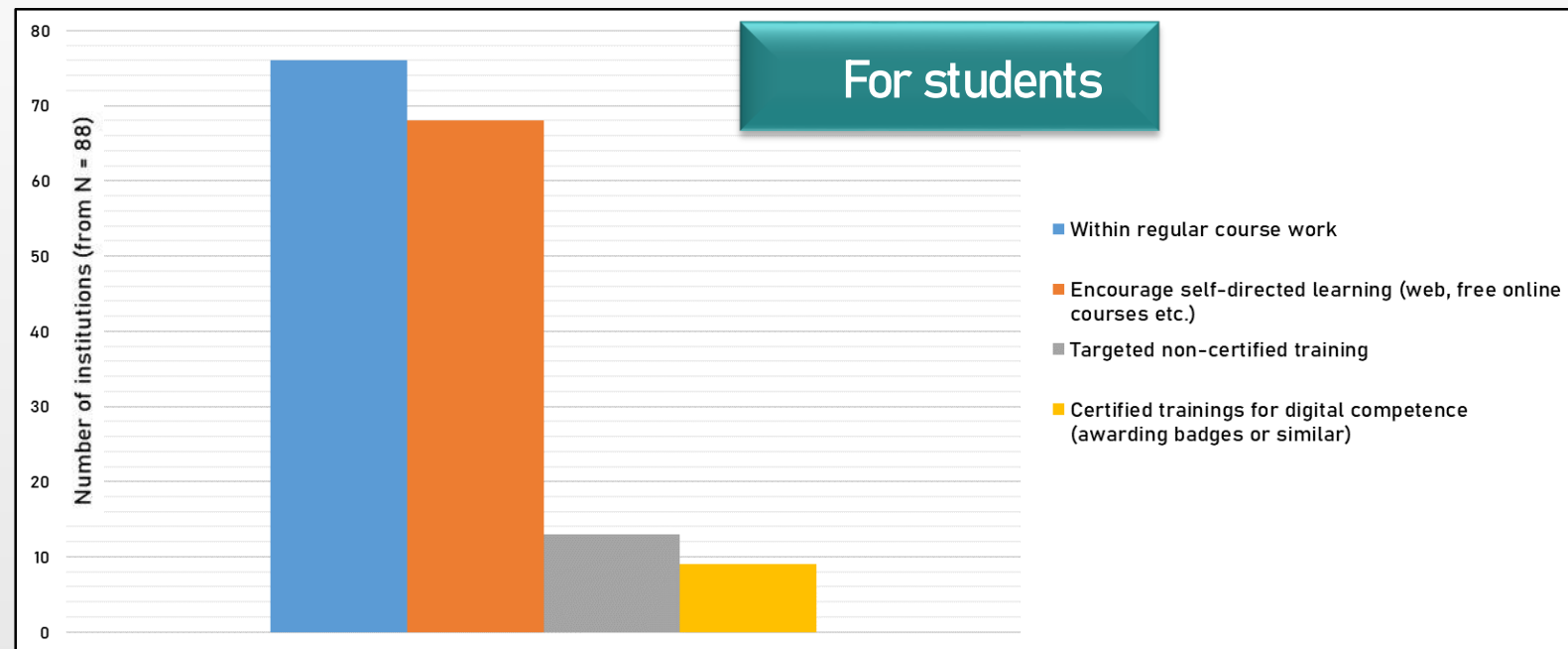
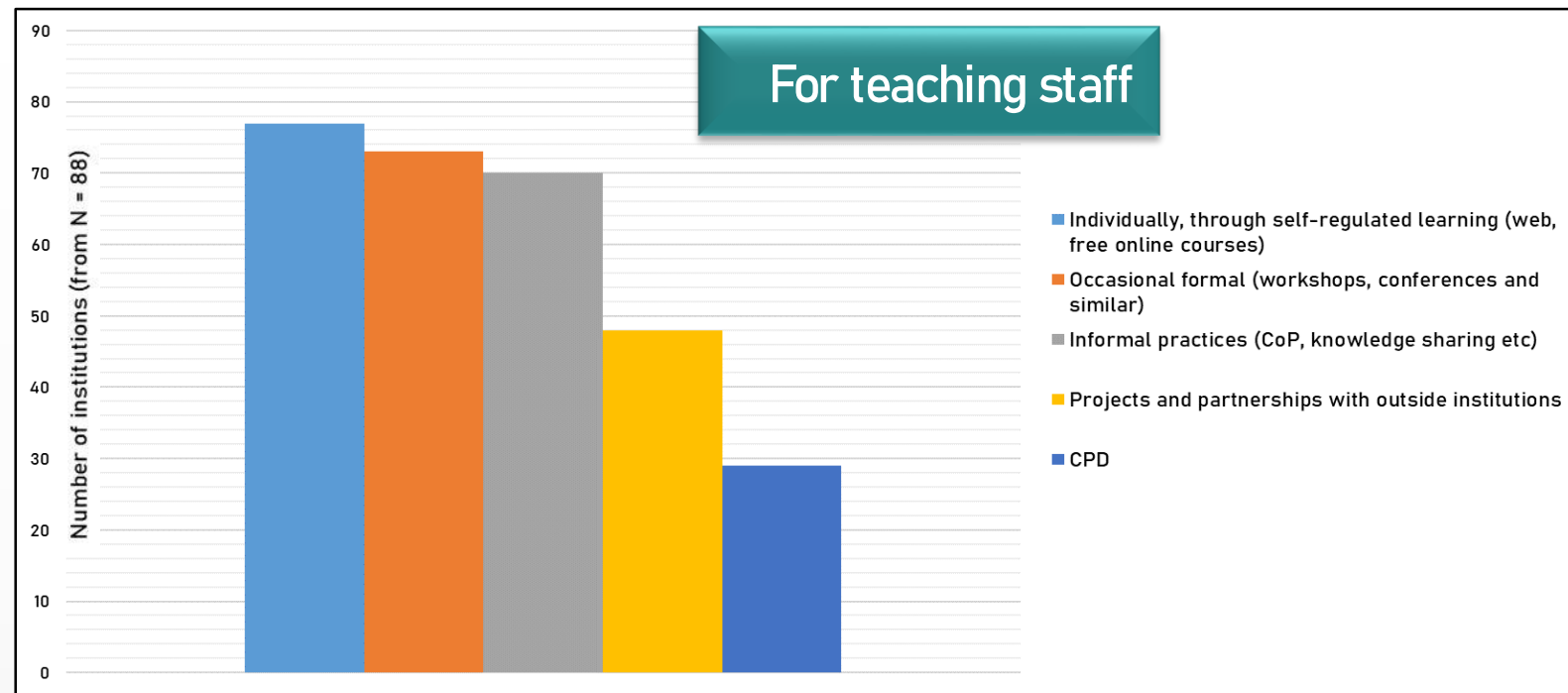


	% of respondents reporting some level of maturity	% at initial level (experiments at the level of individual teachers)	% at project level (specific activities involving a group of teachers and students)	% at service level (well planned and designed to be used by most teachers and students)
Virtual environments (Zoom, Teams, etc.)	99	9	15	75
Learning Management System (LMS, VLE, CMS) where teachers and students can communicate and share activities and resources	86	8	7	72
Assessment and grading platform or tool for submitting, assigning, and grading assignments	83	23	11	49
Discussion fora/feedback channels for students	76	18	18	40
Software collaboration (Microsoft project/office suite, Google Workspace suite, other tools)	76	18	15	43
Software for pre-recording lectures and other teaching material or recording a computer screen (screencast)	66	33	20	13
Digital tools for the design and development of programs or courses	60	32	13	16
Digital tools for new pedagogical practices (project learning, creativity, collaborative learning, etc.)	55	30	16	9
Hyflex tools/processes	41	18	13	10
Learning Analytics	40	18	10	11
Remote exam supervision/ proctoring tools/ services	34	19	6	9
Artificial Intelligence (AI) for personalized learning	20	15	3	2
Blockchain for validating credentials	10	5	3	2

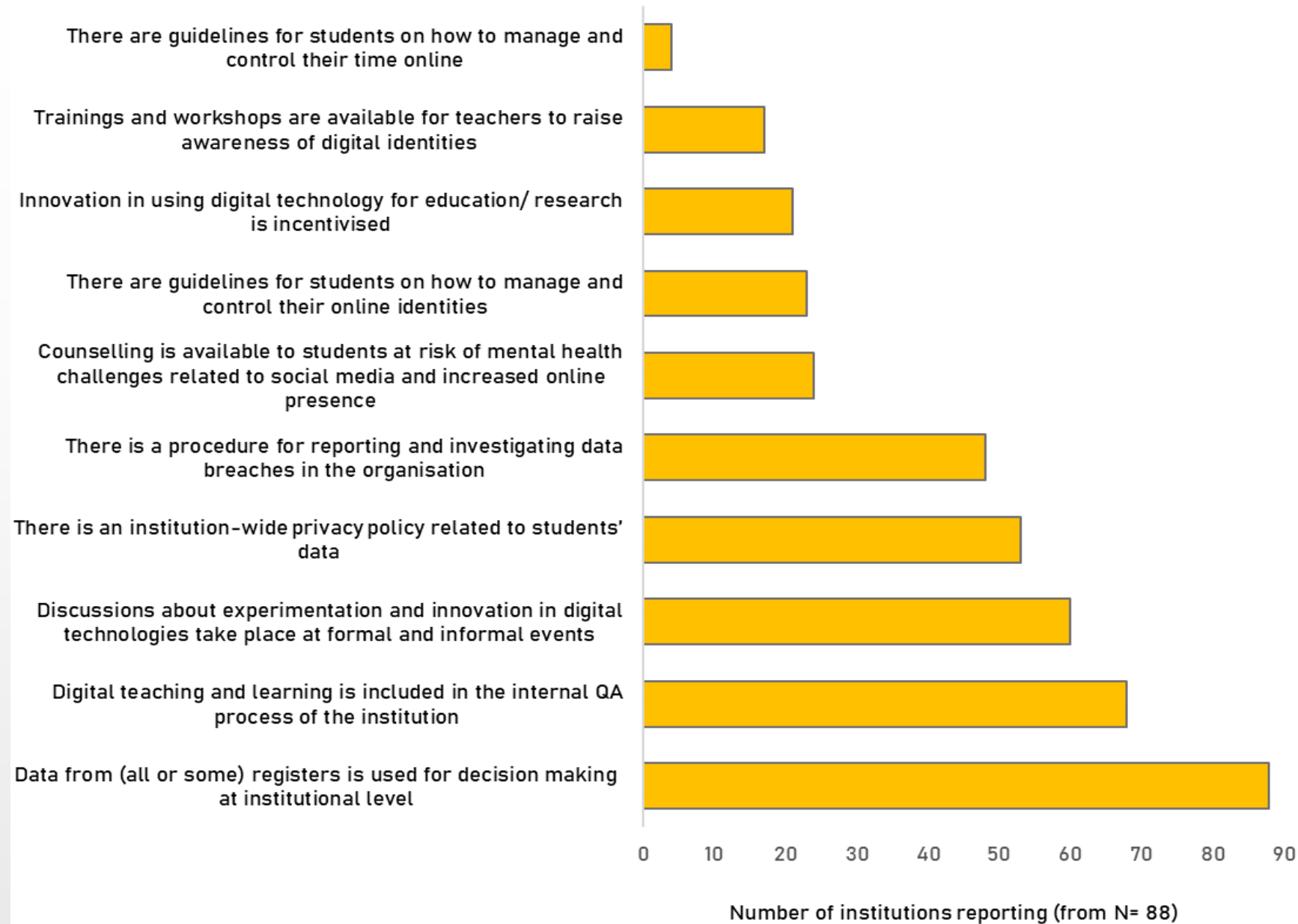
Adoption of digital technologies - supports and services



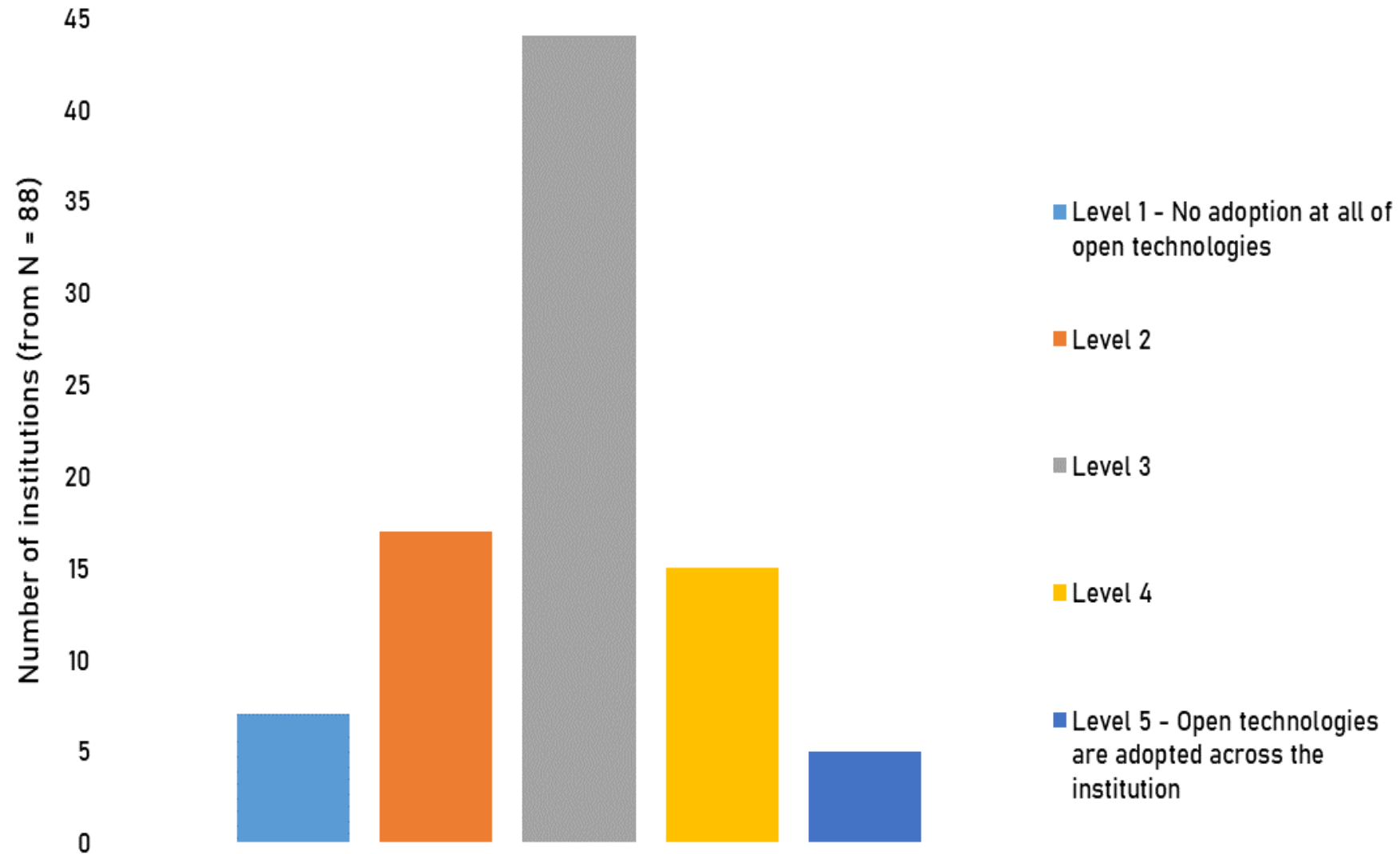
Available means of developing digital competence for teachers and students



Some building blocks for a strong digital culture?



Adoption of open technologies varies across the system





Reflections and findings from OECD analysis to date

Alignment of digital maturity evaluation, infrastructure investment and national policies is needed

Croatia's NPPR, 2021

Investment in digital infrastructure

“At least 90% of public higher institutions shall improve their digital infrastructure and equipment.....

“1 Gbit services to all major socio-economic drivers such as schools, **universities**, research centres, transport hubs, hospitals, public administrative authorities and businesses.”

Other important developments

Funding reform for current expenditure – Modernisation of higher education

“The new funding model shall be based on **transparent criteria and performance indicators linked to the institution’s development objectives.** “

Impending reorganisation – Modernisation of higher education

“Based on the model for the reorganisation of higher education institutions and scientific institutes**at least six (6) reorganisations of higher education institutions** and scientific institutes....shall be finalised.



Messages from institution leaders on digital maturity

- Most are happy with their internet connection, but many need upgrades to internal networks
- Digitalisation is about much more than online learning
- Staffing is a core challenge. *“Planes need pilots!”*
- Concerns about the quality of existing infrastructure and a perceived need for more public investment
- Need for more centralised provision of what are fast becoming fundamental elements of education provision (e-books, software licences etc.)
- Recognition of the need to improve staff competence for developing and delivering effective digitally-enhanced education material
- Current approaches to digital teaching and learning often lead to deficits in engagement and the social element of learning
- Ensuring integrity of assessments in a digital environment is a concern



Reflections for digital infrastructure investments

❑ Centralisation vs fragmentation of allocation

Not all institutions can benefit equally from improvements to all types of infrastructure (9 types identified by our international experts)

Less advanced institutions may benefit most from upgrading of basic infrastructure. More advanced institutions may seek “showcase” projects and investments.

❑ The role and responsibilities of institutions

Co-financing of institutions/other parties is not possible within this investment process - need to specify clearly what is needed from institutions, in order to benefit from investment

Ideally the investments can also spur wider transformation/learning at institution level



Reflections for digital infrastructure investments

General principles for investment based on OECD analysis

- The more empowered position of HEIs (compared to schools) needs to be taken into account.
- As much as possible, purchasing strategies should be aligned with existing governance arrangements and levels of institutional autonomy
- Basic needs might be the priority, but consider reserving some funds to promote innovative and/or promising approaches to digitalisation
- Find ways to embed a sense of co-ownership of the investments with institutions
- Investment decisions should be made according to robust centrally-defined criteria

Thank you!

gillian.golden@oecd.org



Funded by the
European Union

