"Fostering Socially Distanced and Inclusive on Campus Education in Armenian HEIs"

NATIONAL UNIVERSITY OF ARCHITECTURE AND CONSTRUCTION OF ARMENIA (NUACA)

NEEDS ANALYSIS REPORT

Results of the Surveys on Teaching Staff Digital Competence Needs Assessment and Students Digital Learning Needs Assessment

YEREVAN 2025

Content

Introduction

The rapid digital transformation in higher education—accelerated by the COVID-19 pandemic—has underlined the importance of equipping both faculty and students with robust digital competencies. In this context, NUACA conducted survey targeting teaching staff to assess digital competence needs. The overarching objective was to identify competency gaps, infrastructure requirements, and content-related shortcomings, thereby supporting evidence-based improvements in teaching, learning, and assessment (TLA) practices.

Section 1: General Information

1.1. Teachers' characteristics

According to the data presented in Image 1.1, the survey sample included a diverse group of faculty across academic ranks—professors, associate professors, and lecturers. This distribution indicates that digital competence development is a cross-generational concern rather than being limited to a specific academic rank.

Image 1.2 illustrates the age composition of the respondents, with the 36–45 age group being the most prominent. This demographic often represents mid-career professionals who balance traditional pedagogies with evolving digital demands. The presence of younger faculty also suggests a growing digital fluency that can be leveraged for peer-led development initiatives.

In terms of gender (Image 1.3), the data reflect near parity, with slight female predominance. This is important for understanding gendered dimensions in access to digital tools and training.
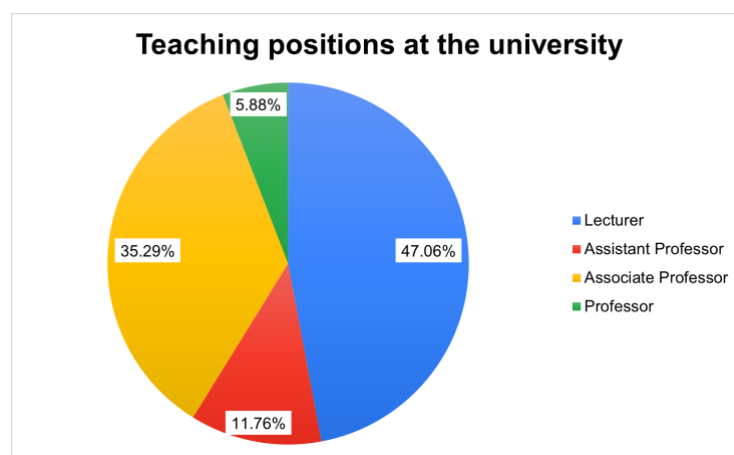
Image 1.1. Teaching positions at the university
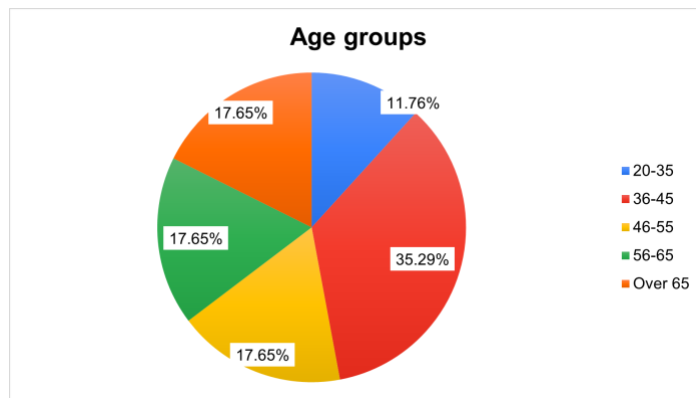
Image 1.2. Teachers age groups
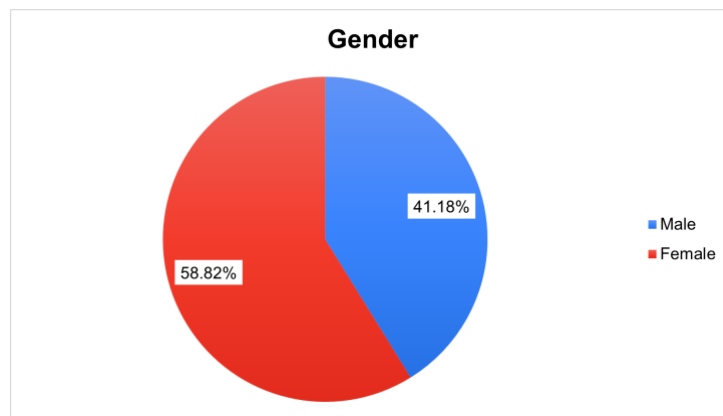
Image 1.3. Teaching staff gender

Section 2: Digital Competencies and Technologies in Teaching, Learning & Assessment (TLA)

2.1. Digital competencies and technologies currently applied

Image 2.1.1 and 2.1.3 collectively show that the most commonly applied technologies in TLA include presentation software (e.g., PowerPoint), online testing platforms, and virtual conferencing tools such as Zoom or MS Teams. This indicates that while NUACA faculty are adept at using first-generation digital tools, the integration of more complex platforms—such as adaptive learning systems or AI-driven analytics—is still limited.

The cycle diagram suggests a significant dependence on a narrow set of digital instruments, which might limit pedagogical variety and student engagement. It also signals a need to diversify toolsets to align with evolving learning styles.

Percentage (%) of teachers, in descending order, compared to students

| | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

1. Digital technologies to communicate with students regarding…
2. Digital technologies to share and exchange knowledge &…
5. Digital resources for teaching & learning in line with the learning…
8. Digital devices, resources & pedagogical methods for effective…
4. Digital resources for continuous professional development
3. Assessing and developing own digital pedagogical…
9. Digital technologies to provide individual & group counselling to…
21. Activities requiring students to use digital technologies for…
11. Digital technologies to support student self-study
6. Modifying existing digital educational resources & developing…
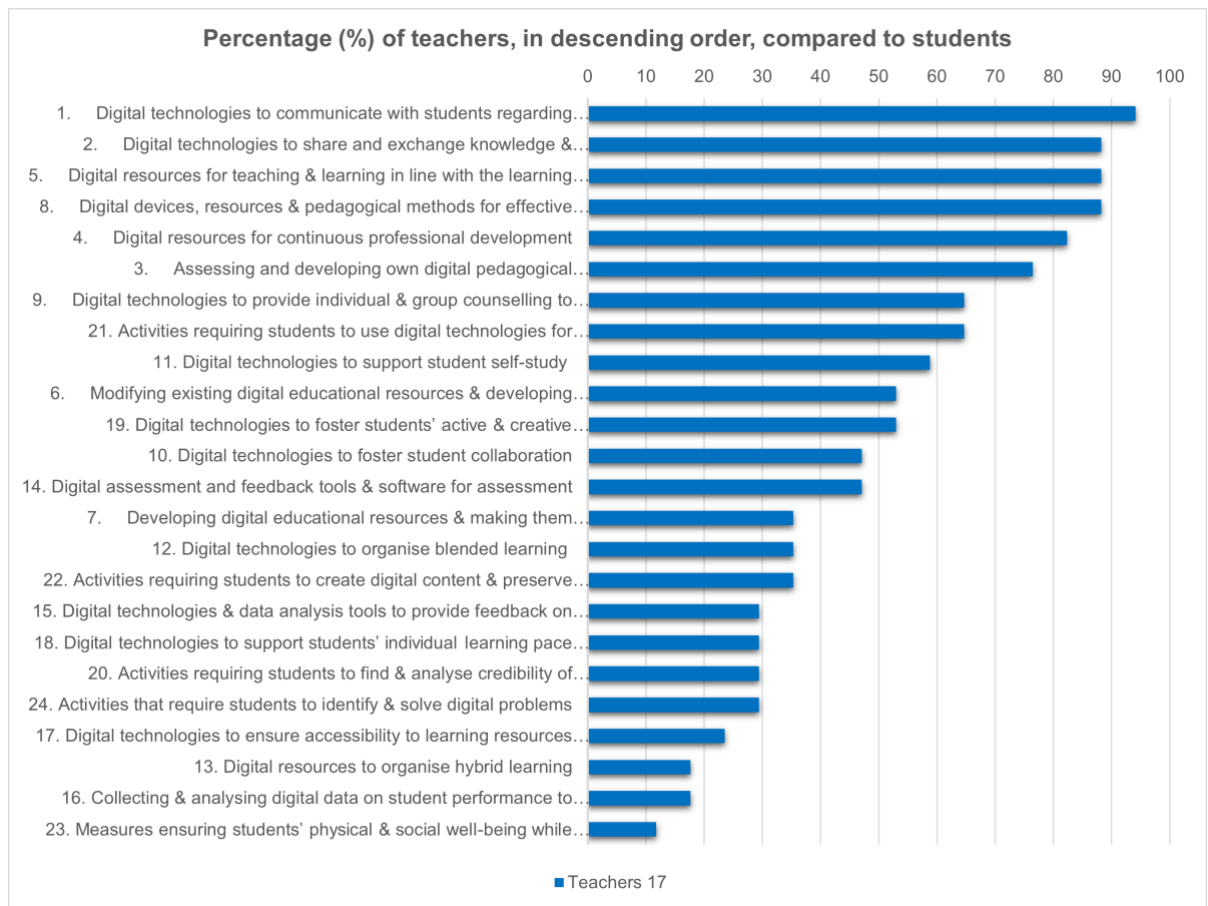19. Digital technologies to foster students' active & creative…
10. Digital technologies to foster student collaboration
14. Digital assessment and feedback tools & software for assessment
7. Developing digital educational resources & making them…
12. Digital technologies to organise blended learning
22. Activities requiring students to create digital content & preserve…
15. Digital technologies & data analysis tools to provide feedback on…
18. Digital technologies to support students' individual learning pace…
20. Activities requiring students to find & analyse credibility of…
24. Activities that require students to identify & solve digital problems
17. Digital technologies to ensure accessibility to learning resources…
13. Digital resources to organise hybrid learning
16. Collecting & analysing digital data on student performance to…
23. Measures ensuring students' physical & social well-being while…

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Image 2.1.1. Percentage (%) of teachers, in descending order

Percentage (%) of teachers, in descending order, compared to students in a cycle diagram
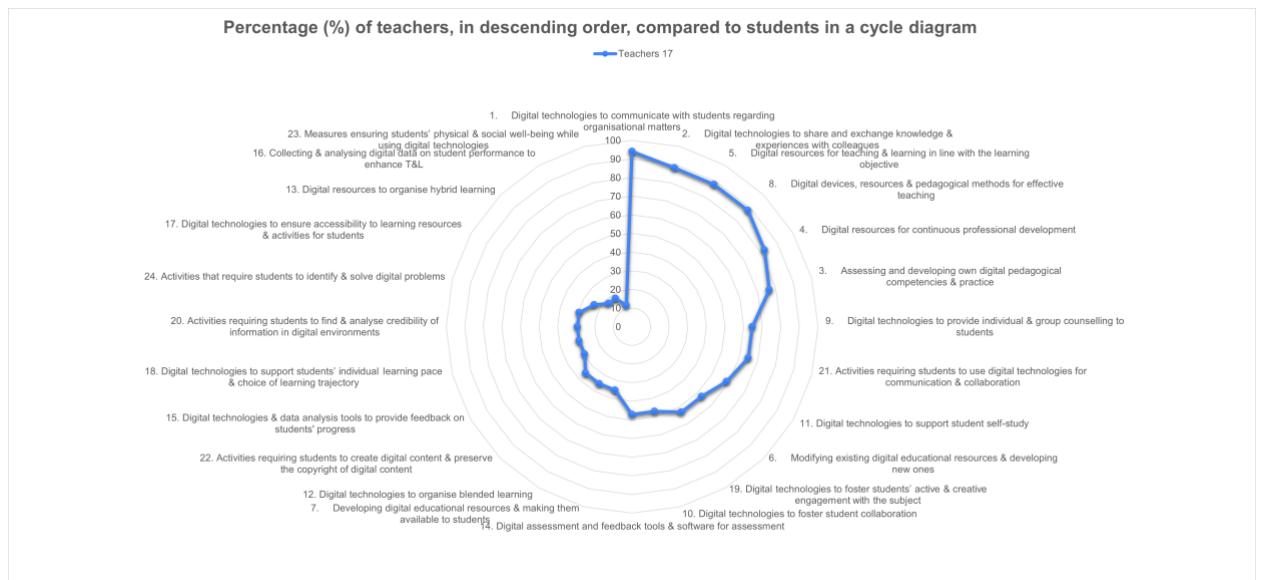
Image 2.1.3. Percentage (%) of teachers, in descending order, in a cycle diagram

2.2. Level of need for developing the digital competencies and technologies[1]

Teachers' needs, visualized in Image 2.2.1 and cycle diagram 2.2.3, reveal strong demand in several key areas:

- **Digital Content Creation:** Educators seek more training in creating multimedia learning objects, interactive simulations, and asynchronous learning modules.
- **ata Literacy and Analytics:** There is a marked interest in learning how to use student learning data to inform pedagogical decisions.
- **Digital Assessment Tools:** Many teachers express difficulty in designing fair and scalable assessments for online environments.

According to the temperature map (Fig. 2.2.2), 64.7% of responses were assessed as reliable. This moderate reliability index may reflect partial uncertainty or lack of experience in evaluating specific tools.
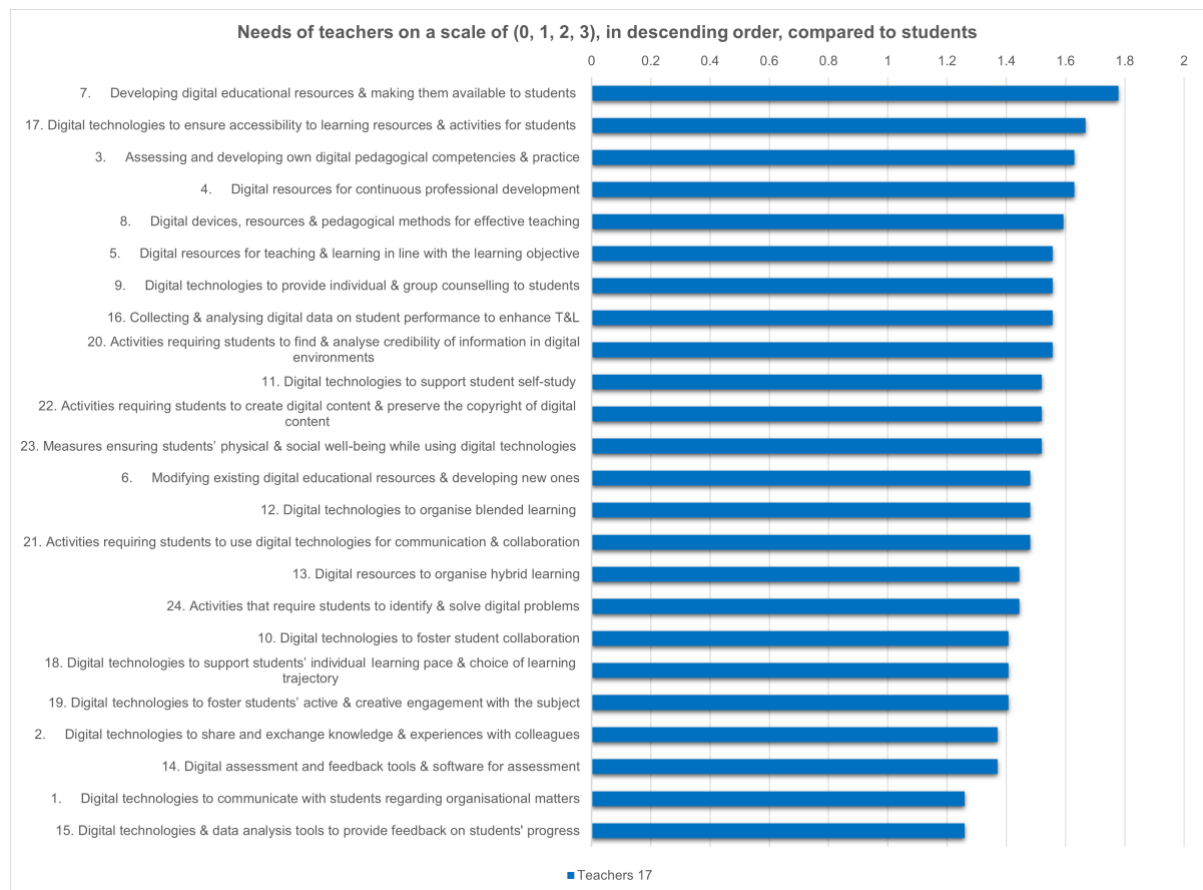

Image 2.2.1. Needs of teachers on a scale of (0, 1, 2, 3), in descending order

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[1] This indicator (weighted average rating) is calculated by multiplying the number of people who gave ratings of 0, 1, 2, and 3 by the corresponding rating, summing these products, and dividing by the total number of respondents. For example: (0 x 10 people + 1 x 20 people + 2 x 30 people + 3 x 20 people) / (10+20+30+20) people = 140 / 80 people = 1.75 (out of a maximum of 3).
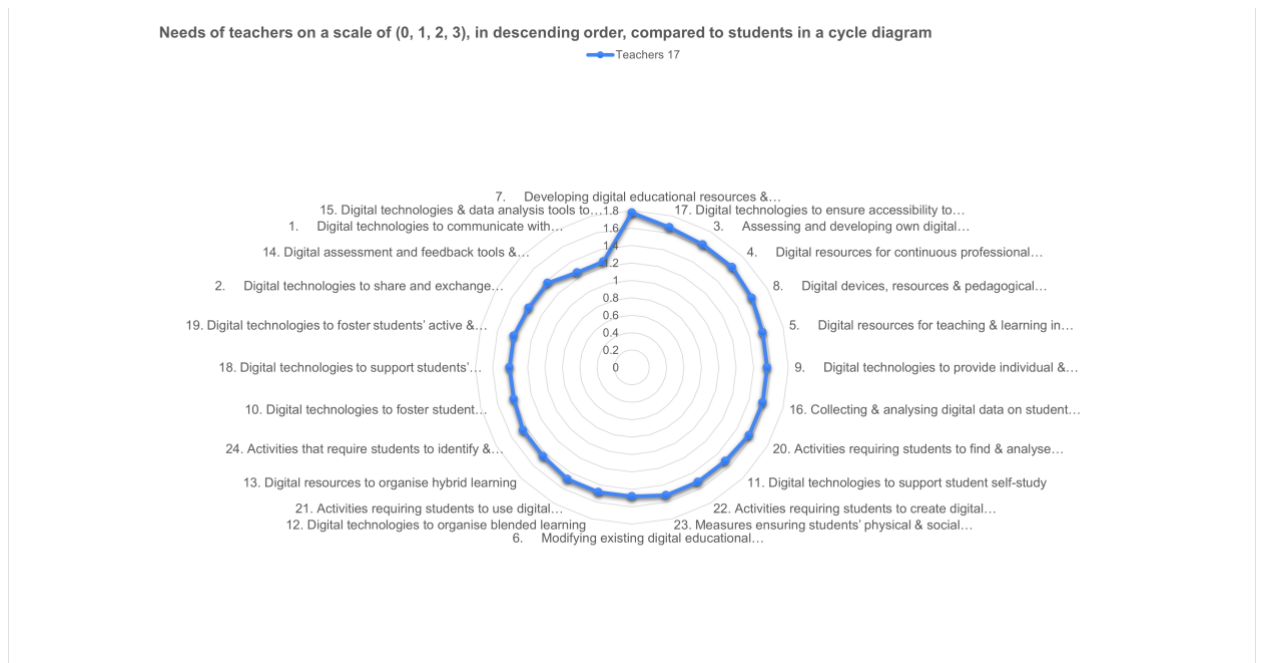
Image 2.2.3. Needs of teachers on a scale of (0, 1, 2, 3), in descending order, in a cycle diagram

Section 3: Technologies and Facilities Supporting Digital TLA

3.1. Technologies and facilities currently applied to support digital TLA

Images 3.1.1 and 3.1.3 show a baseline digital infrastructure that includes projectors, computer labs, and LMS platforms. However, advanced facilities like smartboards, digital studios, or augmented reality setups are sparsely used, likely due to budget constraints or lack of technical expertise.

The limited use of these facilities may also hinder innovation and the adoption of flipped classroom or hybrid teaching models. Faculty might benefit from demonstrations or pilot programs to explore the potential of such technologies.

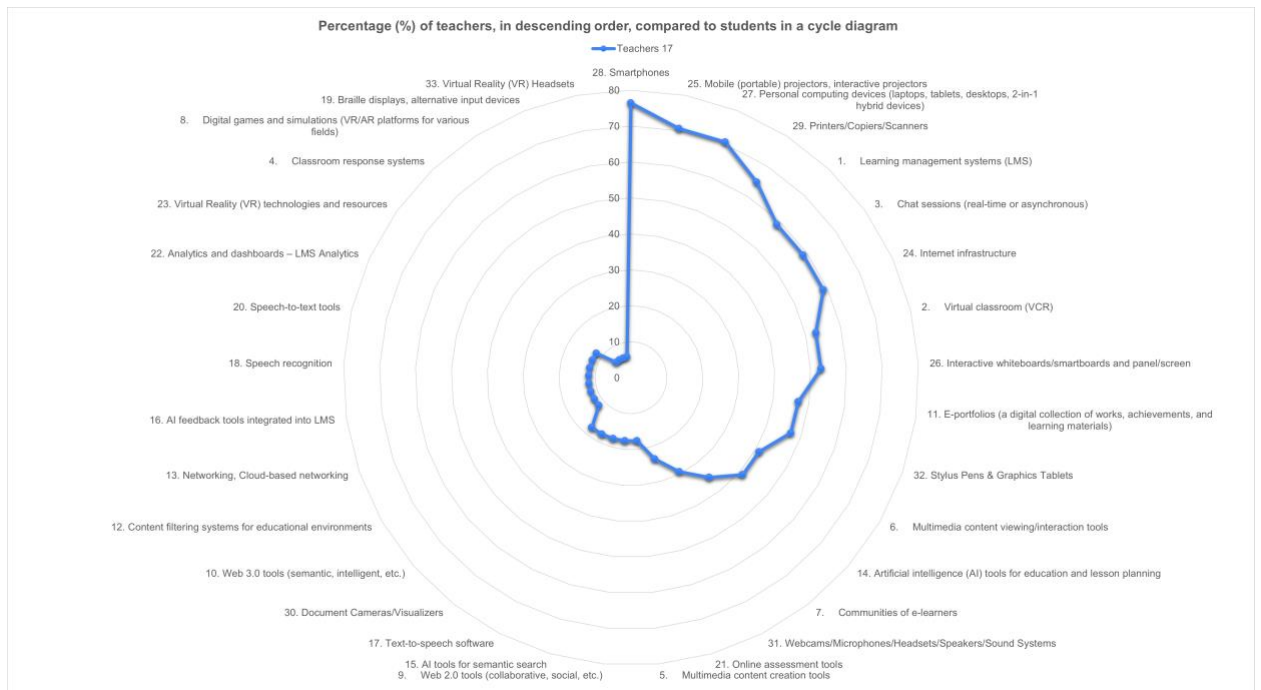Image 3.1.1. Percentage (%) of teachers, in descending order

Image 3.1.3. Percentage (%) of teachers, in descending order, in a cycle diagram

3.2. Usefulness of the technologies and facilities supporting digital TLA

From Image 3.2.1 and its cycle diagram, teachers rank LMS platforms and stable internet access as the most useful tools. The full response reliability rate (100%) underscores strong engagement with these aspects.

Fig. 3.2.2 reaffirms the need to prioritize scalable infrastructure investments over experimental tools at this stage. However, underutilized facilities like AR/VR labs still hold strategic value in disciplines like architecture and engineering.

Usefulness by teachers on a scale of (0, 1, 2, 3), in descending order, compared to students

- 27. Personal computing devices (laptops, tablets, desktops, 2-in-1 hybrid…
- 26. Interactive whiteboards/smartboards and panel/screen
- 29. Printers/Copiers/Scanners
- 24. Internet infrastructure
- 25. Mobile (portable) projectors, interactive projectors
- 1. Learning management systems (LMS)
- 11. E-portfolios (a digital collection of works, achievements, and learning…
- 32. Stylus Pens & Graphics Tablets
- 2. Virtual classroom (VCR)
- 3. Chat sessions (real-time or asynchronous)
- 28. Smartphones
- 14. Artificial intelligence (AI) tools for education and lesson planning
- 31. Webcams/Microphones/Headsets/Speakers/Sound Systems
- 30. Document Cameras/Visualizers
- 6. Multimedia content viewing/interaction tools
- 7. Communities of e-learners
- 21. Online assessment tools
- 20. Speech-to-text tools
- 13. Networking, Cloud-based networking
- 17. Text-to-speech software
- 23. Virtual Reality (VR) technologies and resources
- 8. Digital games and simulations (VR/AR platforms for various fields)
- 9. Web 2.0 tools (collaborative, social, etc.)
- 15. AI tools for semantic search
- 22. Analytics and dashboards – LMS Analytics
- 18. Speech recognition
- 4. Classroom response systems
- 10. Web 3.0 tools (semantic, intelligent, etc.)
- 16. AI feedback tools integrated into LMS
- 12. Content filtering systems for educational environments
- 19. Braille displays, alternative input devices
- 33. Virtual Reality (VR) Headsets
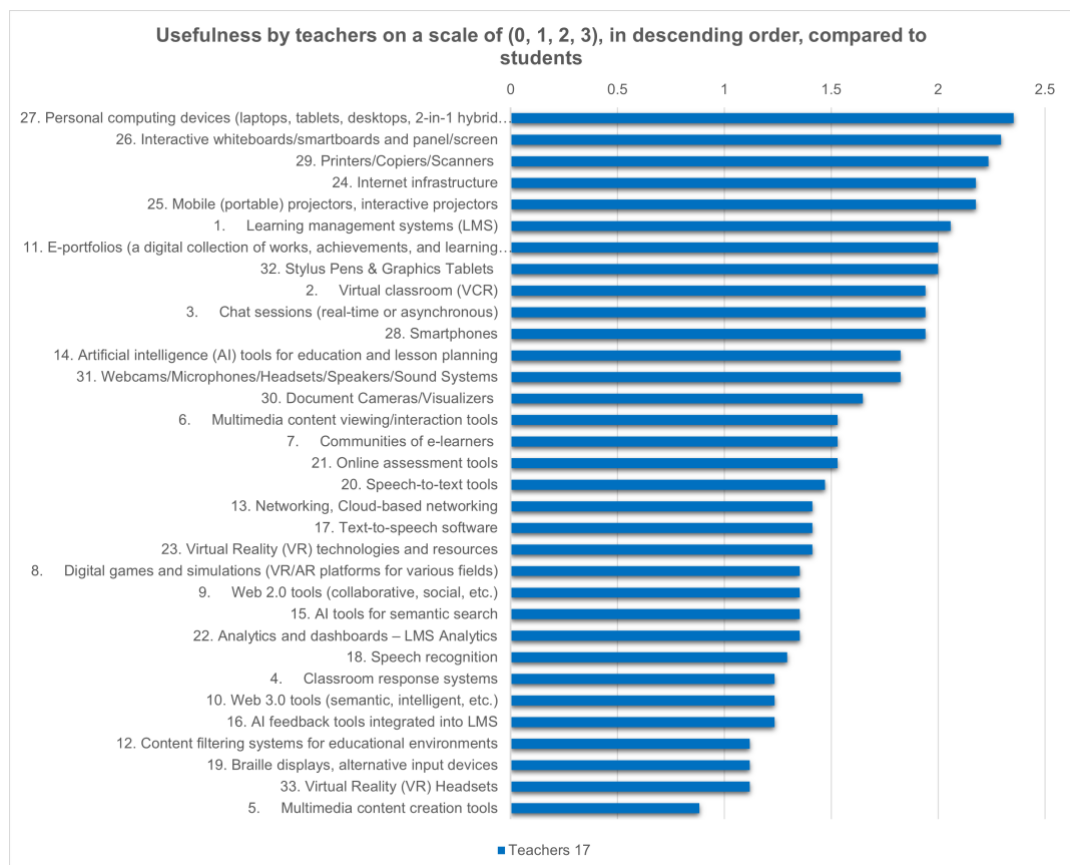- 5. Multimedia content creation tools

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Image 3.2.1. Usefulness by teachers on a scale of (0, 1, 2, 3), in descending order
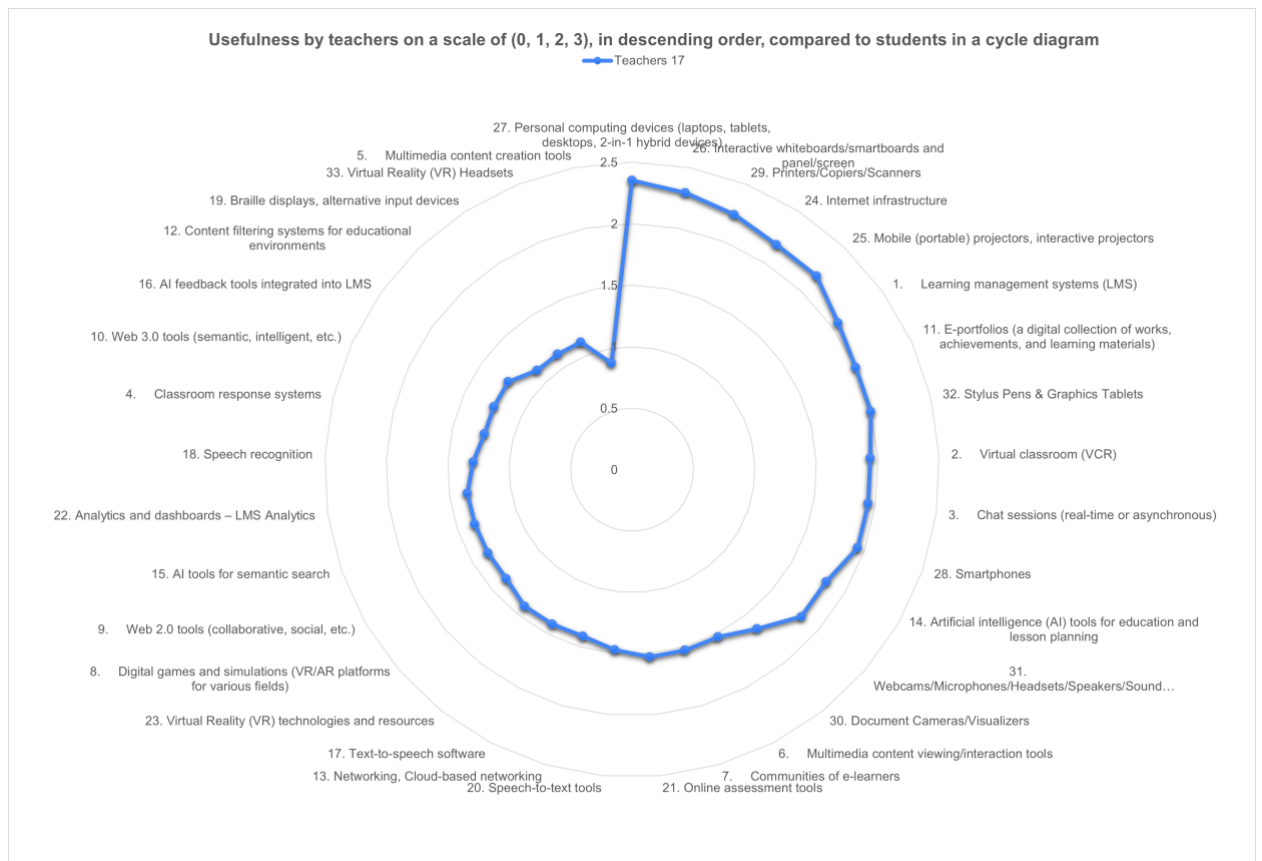
Image 3.2.3. Usefulness by teachers on a scale of (0, 1, 2, 3), in descending order, in a cycle diagram

Section 4: Teaching and Learning (Study) Materials

4.1. Study materials currently in use

Image 4.1.1 and cycle chart 4.1.3 indicate a strong preference for traditional formats such as instructor-created PDFs, presentations, and digitized textbooks. Although effective to some extent, these materials may not foster deep learning or interactive exploration.

The underutilization of open educational resources (OERs) points to a missed opportunity for cost-efficient and up-to-date material integration. Moreover, few departments appear to have institutional guidelines for digital material creation.
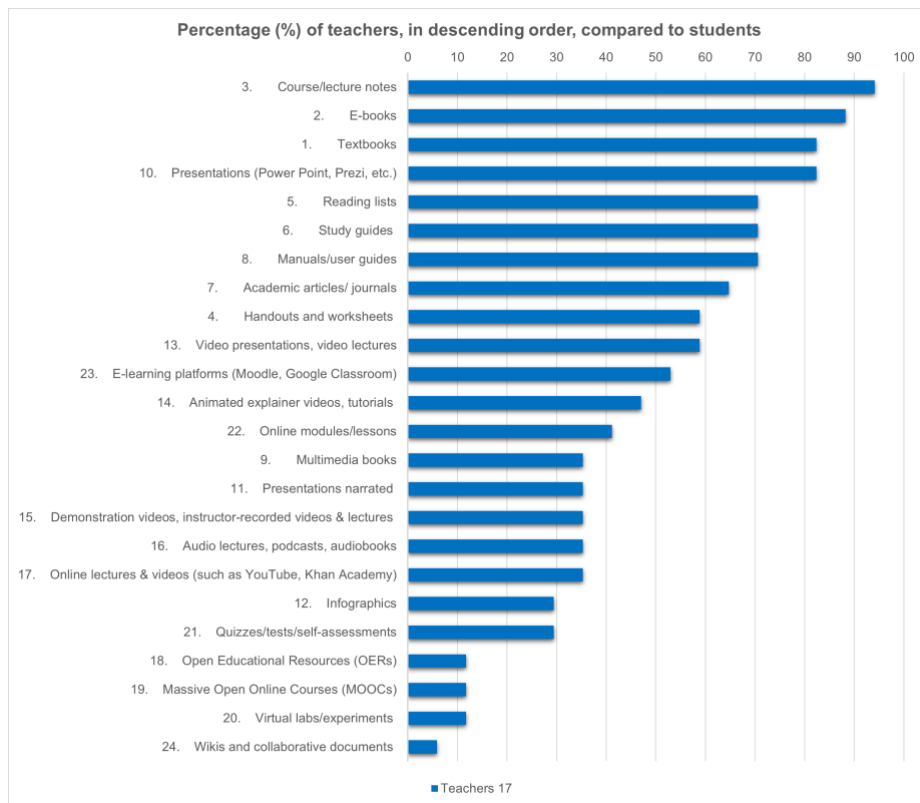
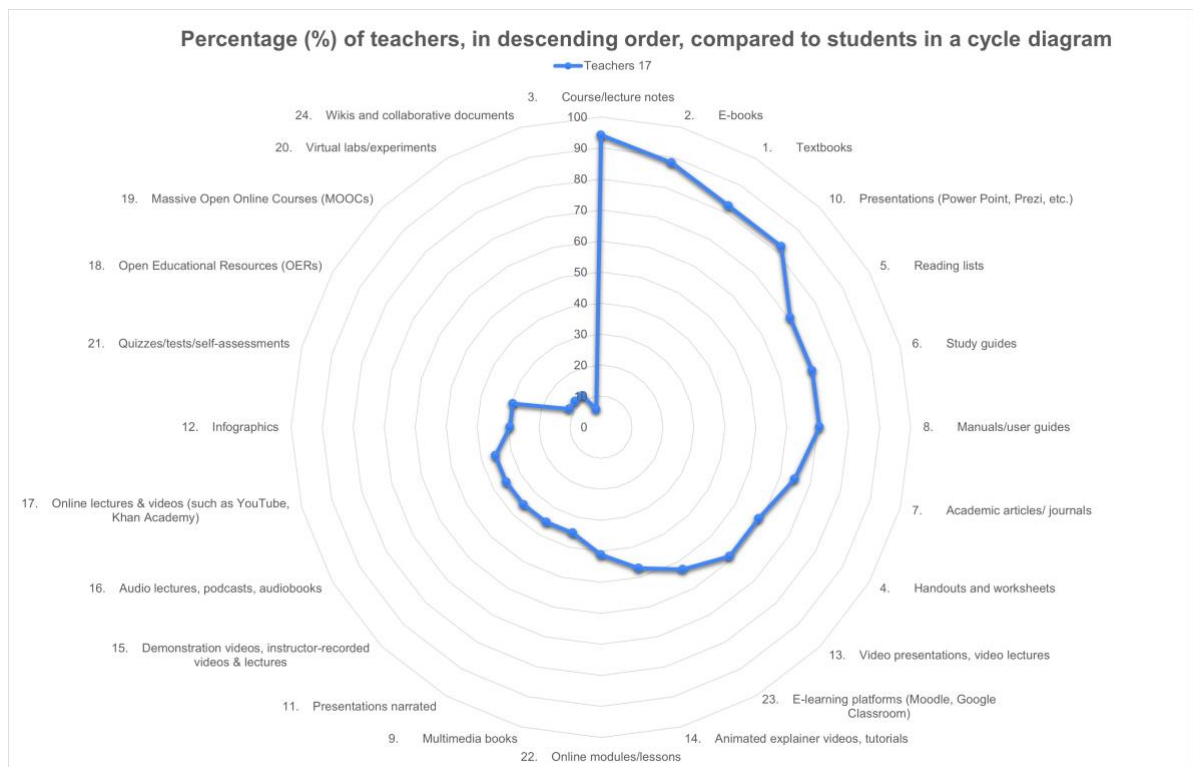Image 4.1.1. Percentage (%) of teachers, in descending order

Image 4.1.3. Percentage (%) of teachers, in descending order, in a cycle diagram

4.2. Usefulness of the study materials for TLA

According to Images 4.2.1 and 4.2.3, self-developed materials are seen as the most relevant. This shows confidence in institutional knowledge but may also suggest limited exposure to global resources.

The full reliability of responses (100%) in Fig. 4.2.2 supports this assessment, although it also implies a potential over-reliance on locally developed content, which may lack peer review or cross-institutional benchmarking.

Usefulness by teachers on a scale of (0, 1, 2, 3), in descending order, compared to students

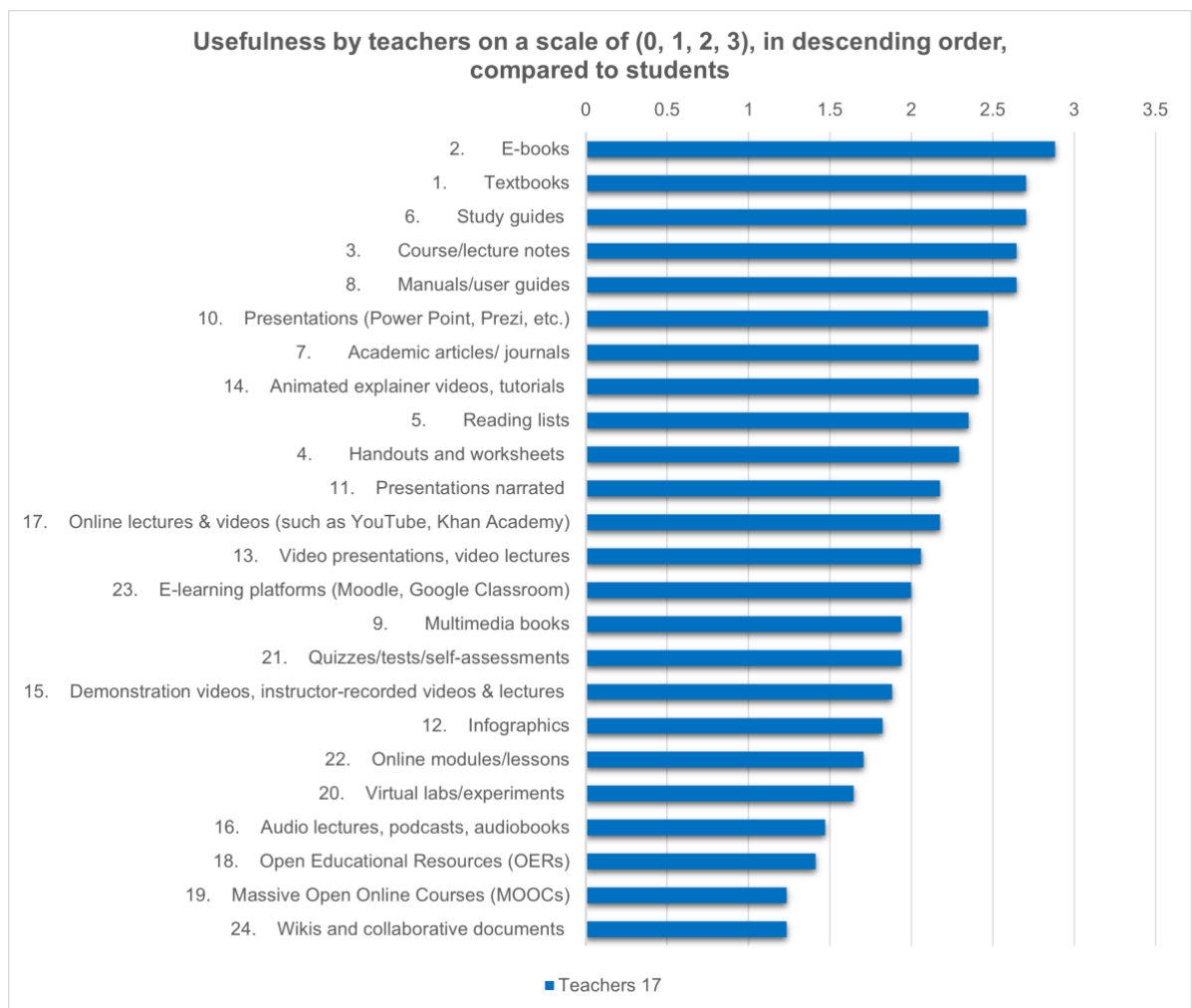|	
2. E-books	
1. Textbooks	
6. Study guides	
3. Course/lecture notes	
8. Manuals/user guides	
10. Presentations (Power Point, Prezi, etc.)	
7. Academic articles/ journals	
14. Animated explainer videos, tutorials	
5. Reading lists	
4. Handouts and worksheets	
11. Presentations narrated	
17. Online lectures & videos (such as YouTube, Khan Academy)	
13. Video presentations, video lectures	
23. E-learning platforms (Moodle, Google Classroom)	
9. Multimedia books	
21. Quizzes/tests/self-assessments	
15. Demonstration videos, instructor-recorded videos & lectures	
12. Infographics	
22. Online modules/lessons	
20. Virtual labs/experiments	
16. Audio lectures, podcasts, audiobooks	
18. Open Educational Resources (OERs)	
19. Massive Open Online Courses (MOOCs)	
24. Wikis and collaborative documents	

■ Teachers 17

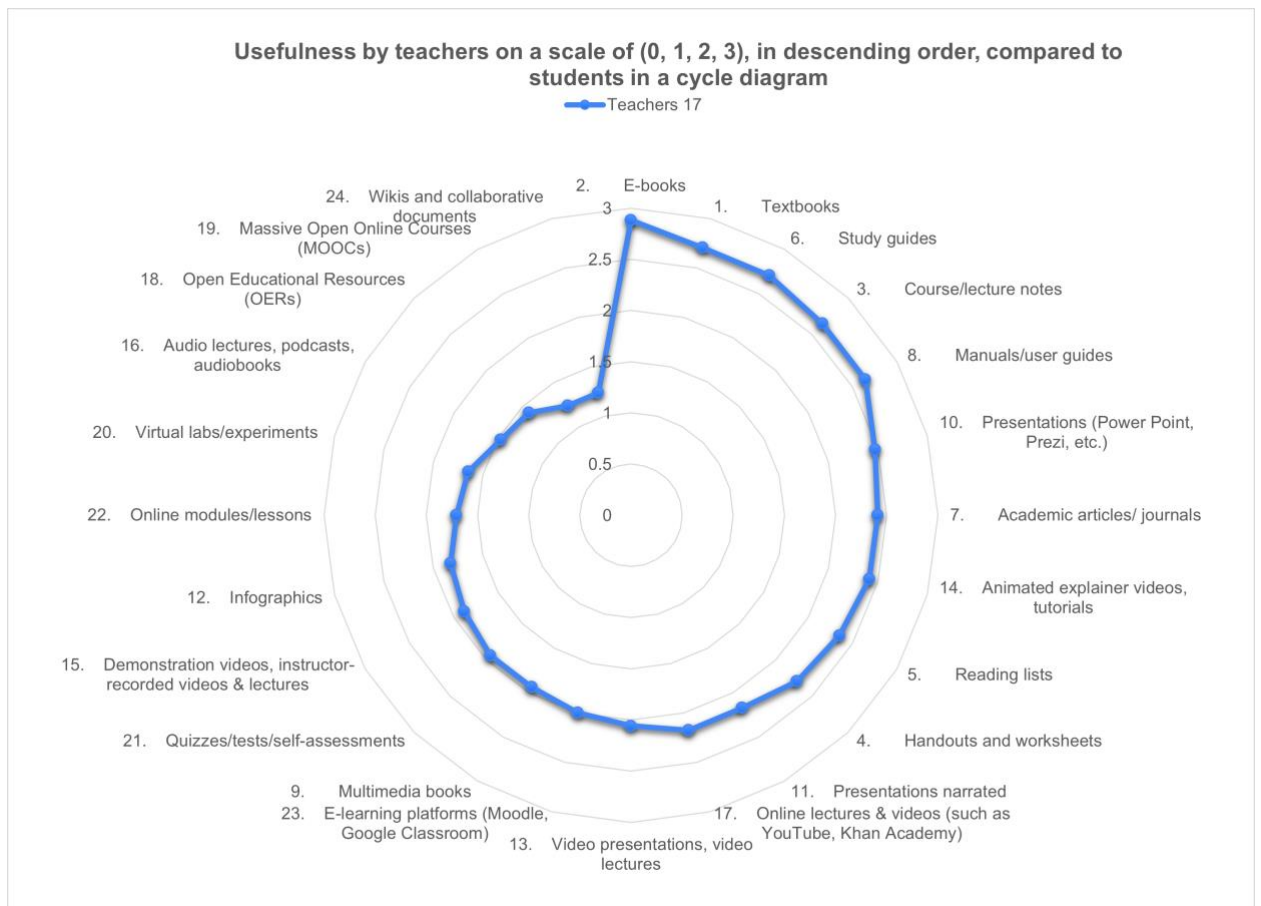Image 4.2.1. Usefulness by teachers on a scale of (0, 1, 2, 3), in descending order

Image 4.2.3. Usefulness by teachers on a scale of (0, 1, 2, 3), in descending order, in a cycle diagram

Section 5. Main Obstacles to Digital TLA

5.1. Main obstacles to digital TLA in HEIs

The analysis of Image 5.1 identifies several institutional and systemic barriers:

- **Poor infrastructure**: Many classrooms lack basic digital equipment.
- **Limited digital access**: Teachers and students both face connectivity and hardware issues.
- **Lack of training**: There is insufficient access to structured digital pedagogy programs.
- **Resistance to change**: Some faculty remain hesitant to shift from traditional methods.
- **Lack of strategy**: Absence of a clear, university-wide digital teaching strategy hinders cohesive implementation.

These findings mirror trends in other Armenian HEIs, indicating a need for nationwide systemic reform, not just localized solutions.
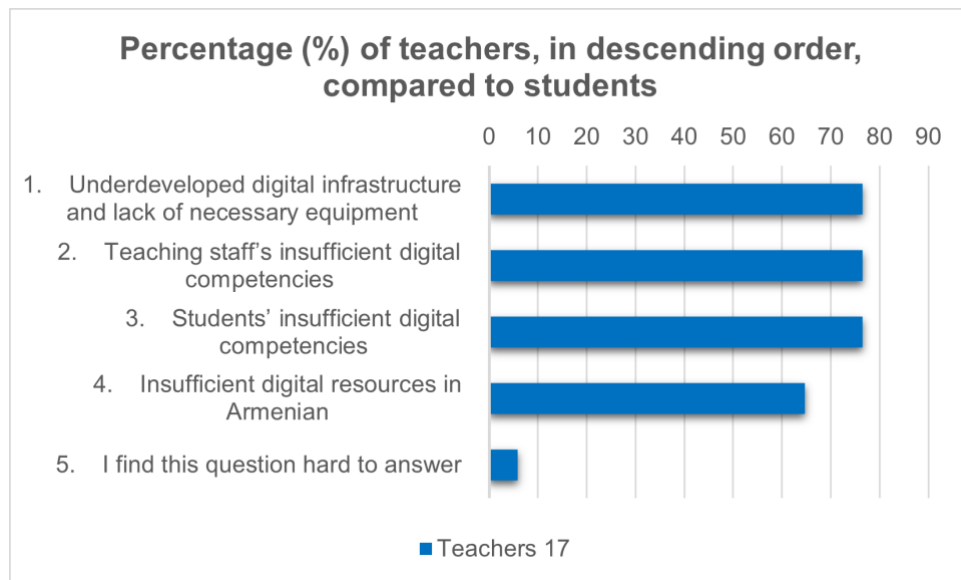
Image 5.1. Percentage (%) of teachers, in descending order

5.2. Teachers' previous participation in the training on digital TLA

Participation in training is partial. Many faculty members have not yet engaged in professional development on digital methods.
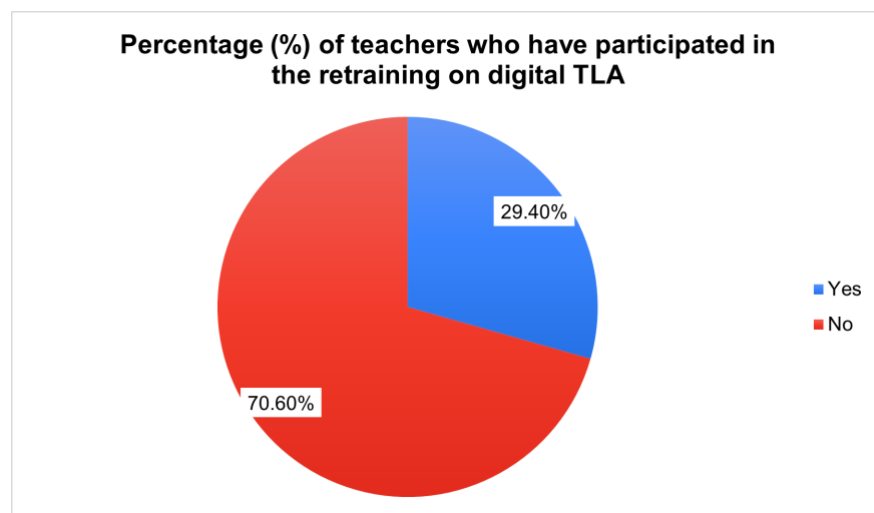

Image 5.2. Percentage (%) of teachers who have participated in the retraining on digital TLA

5.3. Main topics of the Teachers' previous training

Trainings list mentioned by teaching staff include digital tools such as Moodle, Forums&Groups, PPTs, Digital Educational games, etc.

Section 6: Additional Information Provided by Teachers and Students

6.1. Teachers' responses

Lecturers are agreeing in necessity of development of digital skills and emphasize the importance of collaboration between students and lecturers for this purpose.

Conclusions and Recommendations

- **Digital Competencies:** Develop training programs on multimedia content creation, digital assessment, and data analytics.
- **Infrastructure:** Invest in smart classrooms, internet infrastructure, and campus-wide device access.
- **Content:** Promote OER use and internal content development with institutional quality assurance.
- **Institutional Support:** Establish a Digital Pedagogy Support Unit and integrate digital innovation into faculty performance evaluations.

The teaching and student communities at NUACA have demonstrated readiness for digital transformation. To harness this potential, strategic planning, sustainable investment, and institutional support are essential. Systemic reforms at the national level are also critical to addressing shared barriers across Armenian HEIs

Appendix: Temperature Map Analysis of Response Patterns

Analysis of Teacher and Student Responses

For questions 2.2, 3.2, and 4.2, temperature maps have been generated and analyzed to reveal deeper insights into the response patterns of both teaching staff and students. This visualization approach reveals nuanced patterns that might otherwise remain hidden in conventional data analysis.

Response Reliability Assessment

The analytical methodology includes calculation of relative response reliability for each participant group. This metric accounts for response bias by adjusting for instances where respondents selected identical options across multiple items - a pattern that may indicate disengagement rather than authentic responses.

Comparative Results

The reliability findings for both respondent groups appear in Figures 2.2, 3.2, and 4.2. The table below summarizes these results, presenting the percentage of responses deemed reliable after applying the uniform-response adjustment algorithm.

These percentages reflect the proportion of responses that demonstrate meaningful engagement with the questions, after filtering out potentially automated or disengaged response patterns.

Question ID	Teaching Staff	Students
2.2	64.7 %	- %
3.2	100 %	-%
4.2	100 %	- %

**Co-funded by
the European Union**

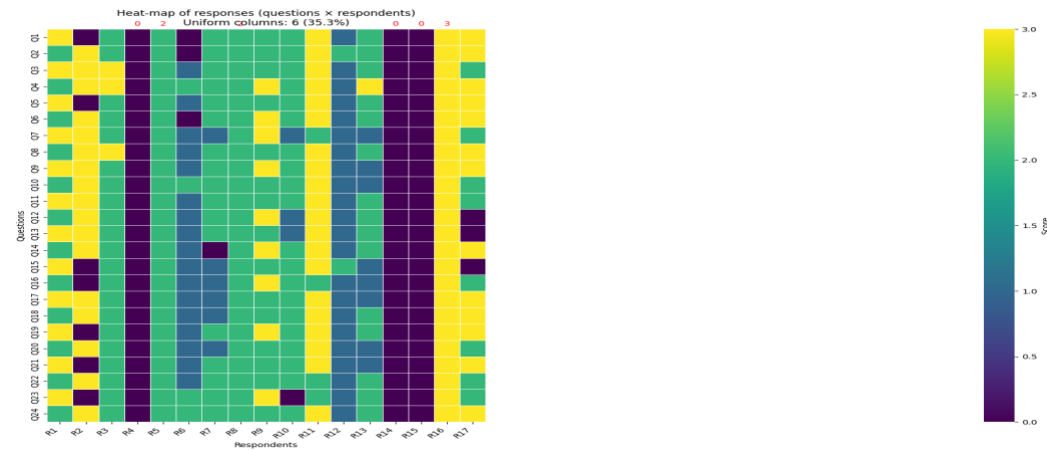## 2.2. Level of need for developing the digital competencies and technologies

Fig. 2.2.2: Teachers responses

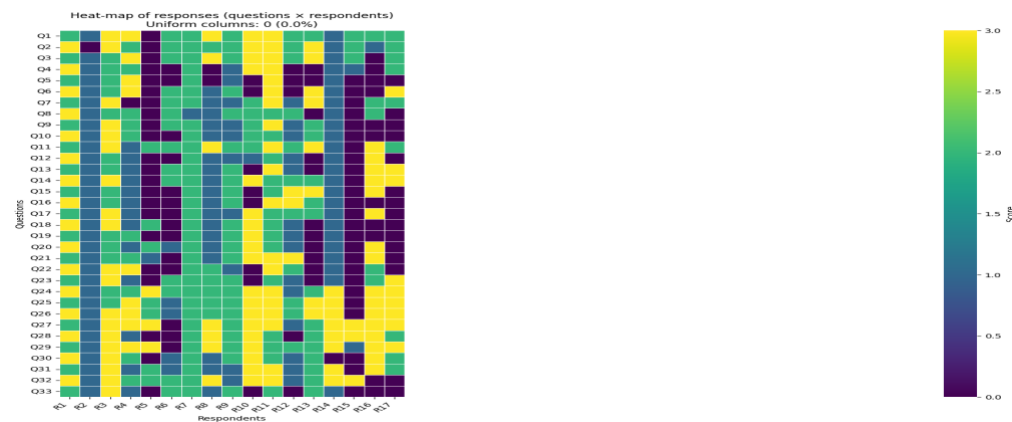## 3.2. Usefulness of the technologies & facilities supporting digital TLA

Fig. 3.2.2: Teachers respon

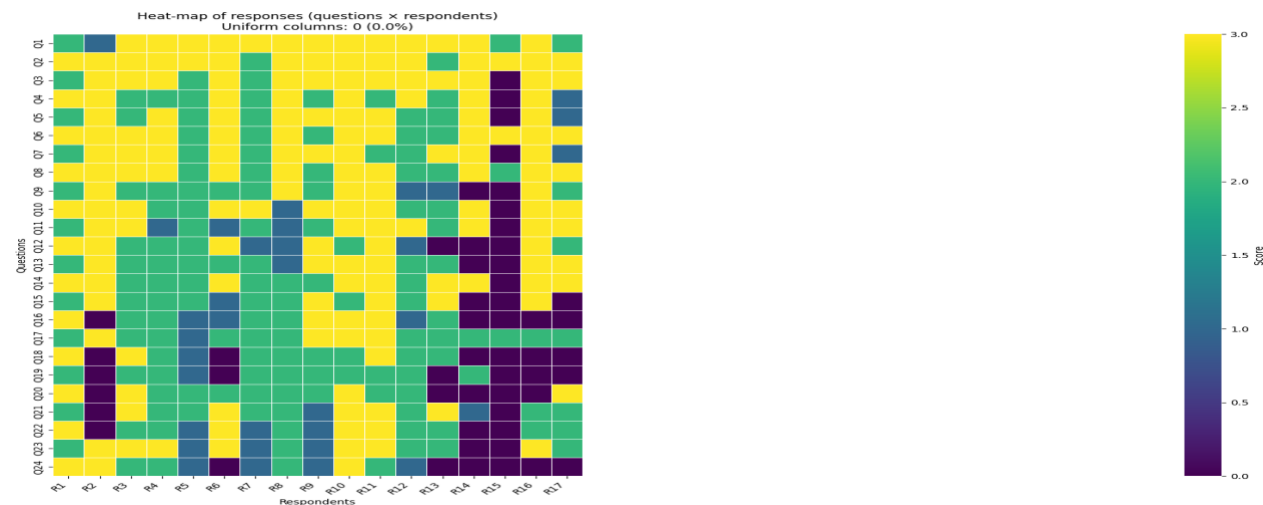## 4.2. Usefulness of the study materials for TLA

Fig 4.2.2: Teachers responses