

An exploratory study of Kazakhstani  
secondary school teachers' experiences in  
integration and use of ICT in  
teaching, learning, and management

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# Presentation Overview

1. Introduction
2. Research Objectives
3. Literature Review
4. Conceptual Framework
5. Research Questions
6. Methodology, Data sampling and Data gathering strategy
7. Findings
8. Discussion
9. Conclusion

# 1. Introduction

## The national ‘e-learning’ project

- **Aim of the project:** to provide all learning parties (e.g students and teachers) with equal and anytime access to e-learning resources and technologies (MOESRK, 2010).
- **Budget was spent** (for the first phase of the project between 2011-2015): more than **150** million U.S dollars — **To what extent was this project effective?**
- **Budget going to be spent:** (between 2016-2019 for the “one laptop per child” programme): **560** million U.S dollars from the country’s budget (Sagadiyev, 2016) — **How to ensure the positive outcome of this planned project?**

# 1. Introduction

## The national ‘e-learning’ project

	Kazakhstan	International best practices
“e-learning” connected schools	1157 out of 4000 (as of 2015)	All country schools
Broadband speed	4-10 Mb/s (only 50% are broadband)	100 Mb/s (and up to 1Gb/s) for every thousand student
Students per device ratio	13:1 (as of 2013)	near to 1:1
Spending for development of Digital Educational Resources	5-6% of total project budget (each costing \$1500)	40-60% of total project budget
Pass “e-learning” training course	11,163 teachers (in 2011)	All teachers

## 2. Research Objectives

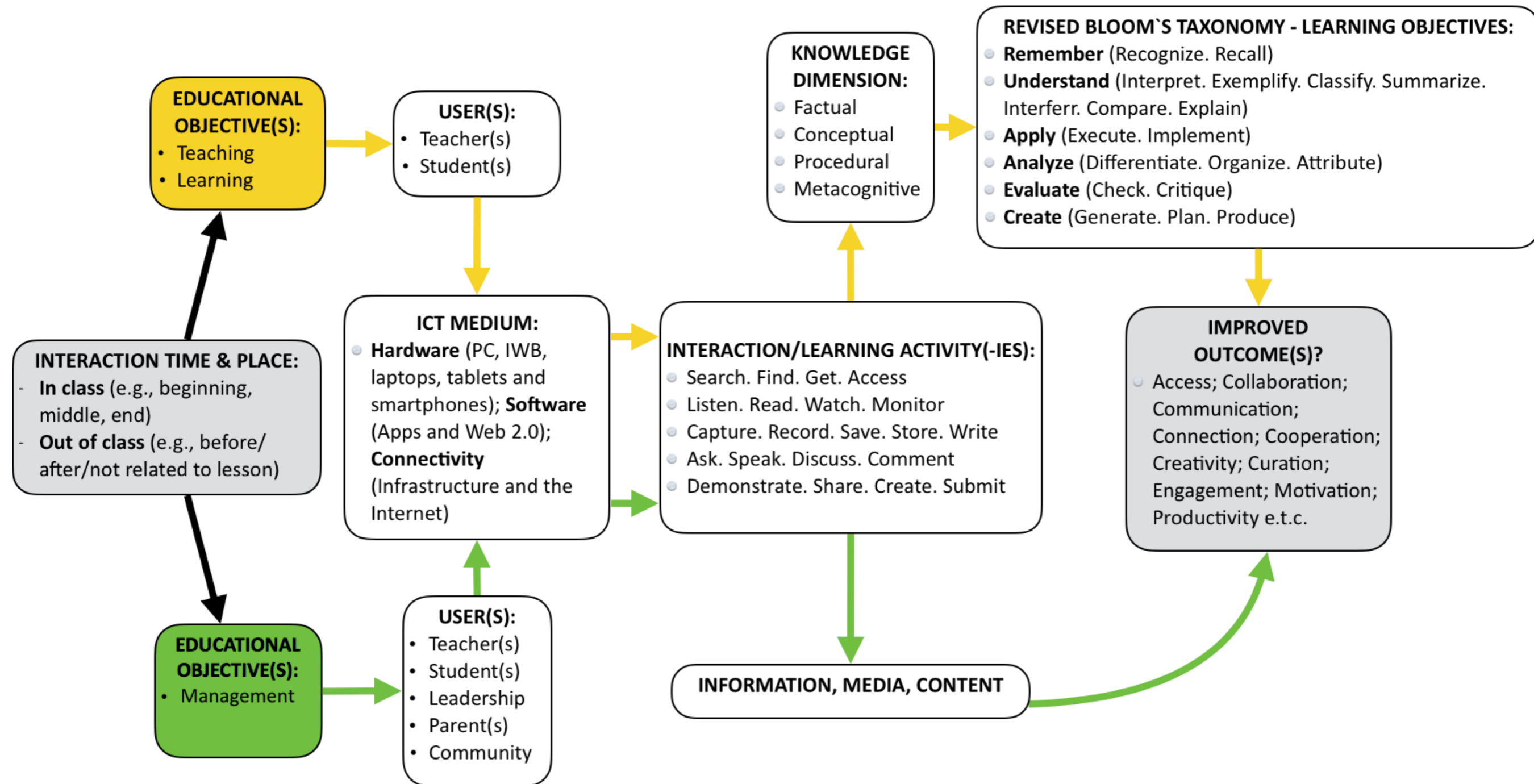
- A. Explore Kazakhstani teachers' **good practices** in integration and use of ICT in education
- B. Identify the **training and support needs** of teachers to successfully integrate ICT in teaching, learning, and management
- C. Explore the locally pertinent **barriers** and **enablers** to the teachers' integration and use of ICT
- E. Assess the **state of use of the 'e-learning'** programme at secondary schools

# 3. Literature Review

Advantages that ICT offers to schools, teachers, and learners  
(UNESCO, 2013, p.20)

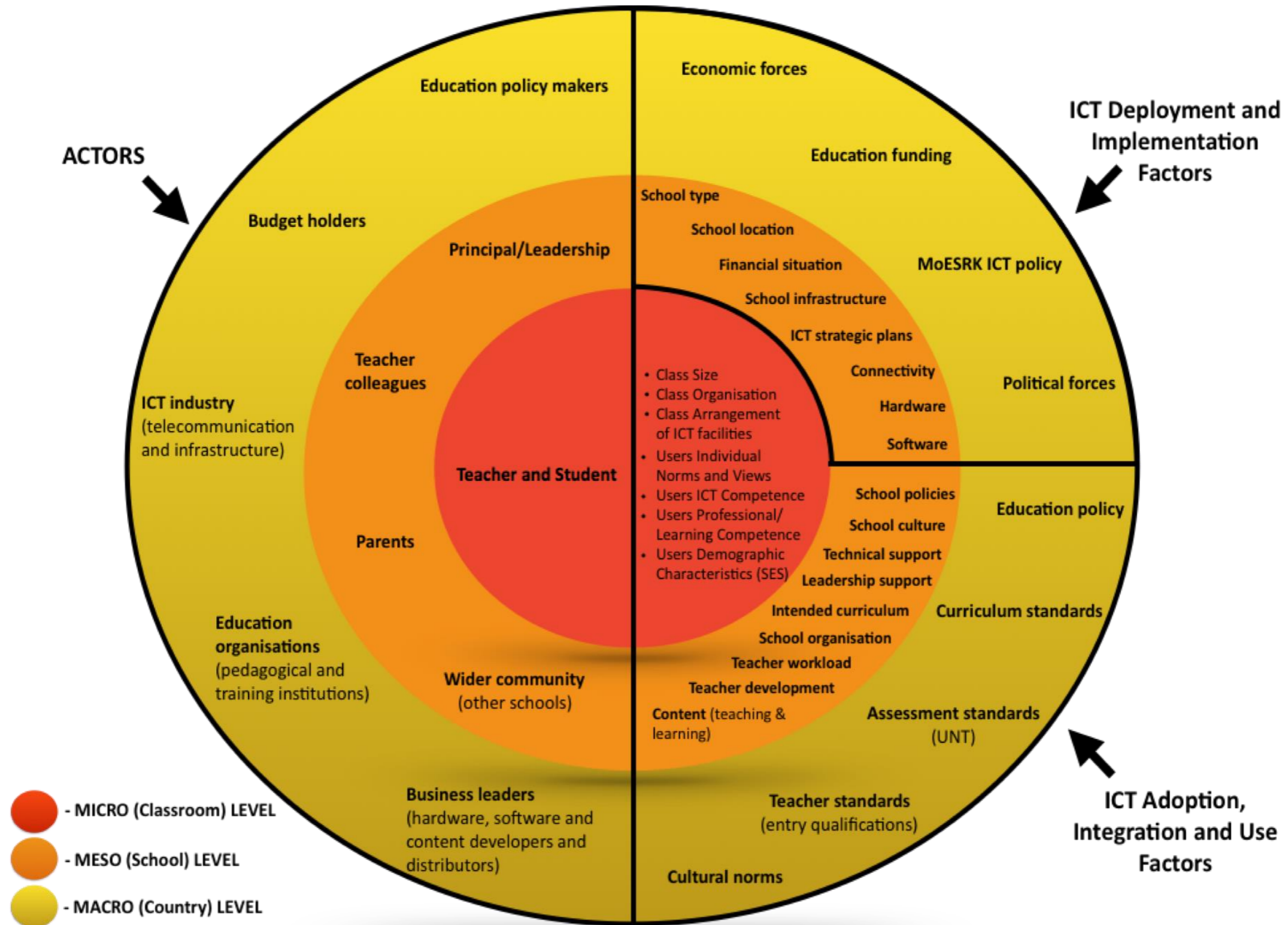
1. Expanding the **reach and equity** of education
2. Facilitating **personalized learning**
3. Powering **anywhere, anytime learning**
4. Providing **immediate feedback and assessment**
5. Ensuring the **productive use of time** spent in classrooms
6. Building **new communities of learners**
7. Supporting **situated learning**
8. Enhancing **seamless learning**
9. Bridging **formal and informal learning**
10. **Minimizing educational disruption** in conflict and disaster areas
11. Assisting **learners with disabilities**
12. Improving **communication and administration**
13. Maximizing **cost efficiency**

# So, what does “ICT in Education” mean?



# 4. "TBM" Conceptual Framework

A 'Three in a Balance Model' conceptual framework (built on Kozma's framework (2003, p.12))





# 5. Research Questions

**RQ1: How do secondary teachers in Kazakhstan use ICT in teaching, learning, and management?**

1.1) Is there a difference in use of ICT between lyceums?

1.2) How has ICT influenced KTL teachers' daily teaching practice?

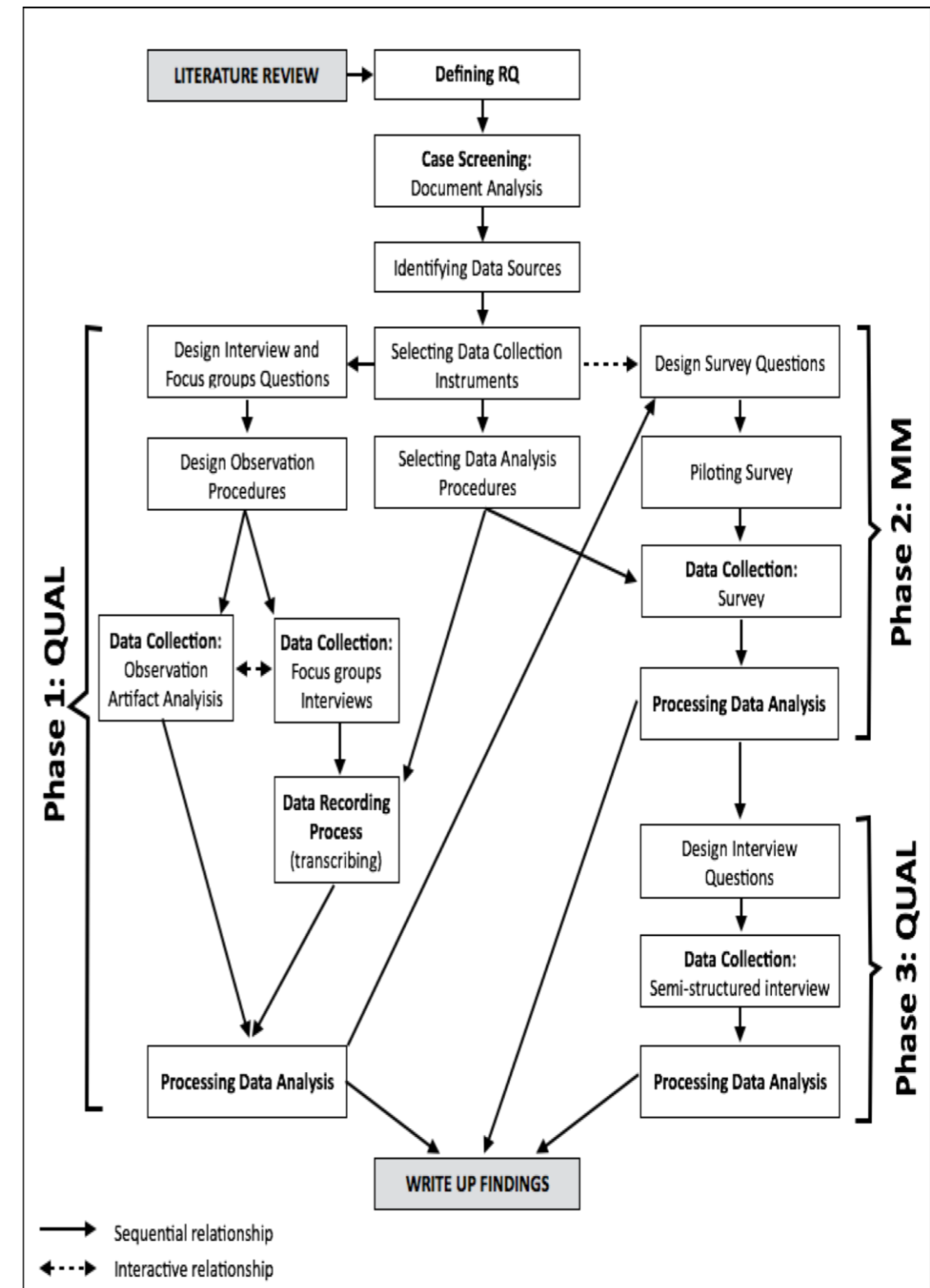
1.3) How do KTL teachers learn ICT use?

1.4) How is the "e-learning" programme, if at all, currently functioning in KTL lyceums?

**RQ2: What are the barriers and enablers to the teachers' use of ICT in their daily teaching practices?**

# 6. Methodology and Data Sampling Strategy

- **Mixed Methods Approach**
- **Two Phases**
- **1) Fieldwork (QUAL) - One Case Lyceum**
- **2) 148 item Online Survey (QUAN) - 29 Lyceums (17% turn out, 100 teachers)**



# 6. Methodology and Data Sampling Strategy

Data Collection Phases	Data Collection Objective	Type of MMR Design	Sampling Strategy (Sequential MM Sampling)	Data Source	Data collection Strategy (Between-Strategies Data Collection)	Data Collection Platform	Data Collection Period
1	<p><b>Objective 1</b> To look at good practices of teachers' ICT use</p> <p><b>Objective 2</b> To inform the design of survey questionnaire</p>	QUAL	Reputational case sampling	One lyceum:	<p>(1) Focus-group discussions</p> <p>(2) Semi-structured open-ended interviews</p> <p>(3) Non-participant semi-structured classroom observations</p> <p>(4) Artefact analysis</p> <p>(4) Unstructured school observations</p>	During site visits	April 11-15
2	<p><b>Objective 3</b> To explore all KTL teachers' experiences of ICT and "e-learning" programme use</p> <p><b>Objective 4</b> To look at barriers and enablers to teachers use of ICT and "e-learning" programme</p>	QUAN	Purposive random sampling	All KTL lyceums:	(5) 148 item Online questionnaire (137 close-ended and 11 open-ended questions)	Using Google Forms on Edmodo platform	May 11-15
3	<p><b>Objective 5</b> To validate the barriers and enablers to teachers use of ICT and "e-learning" programme</p>	QUAL	Purposive random sampling	Several lyceums	(6) Semi-structured open-ended interviews	Using Skype and WhatsApp App	June 1-5

# 7. Findings: Case Lyceum Characteristics (Private Lyceum in Astana)

- **9** teachers; **7** Semi-structured interviews; **2** Focus-groups; **5** Classroom observations; School observation; Artefact analysis
- **Privately-funded**
- **Works 5 days** a week
- **Very well-resourced**
- **Strong infrastructure** (WiFi: 75mb/s)
- **Students** are from families with **high SES** (many are iPhone and iPad users)
- **Great access** to WiFi, IWB, projectors, PCs, and printers in classrooms
- Teachers have personal smartphones, tablets and laptops
- **No restriction** over bringing and using personal devices
- **Strong leadership support** for using ICT in school and out of it
- **1:1 scheme** in several classes
- **ICT-enabled** school-teacher-student-parent communications is deeply integrated
- **Wide range** of in-person and distant ICT-enabled student-teacher-student interactions inside and outside of classrooms

# 7. Findings: Case Lyceum Characteristics (Private Lyceum in Astana)

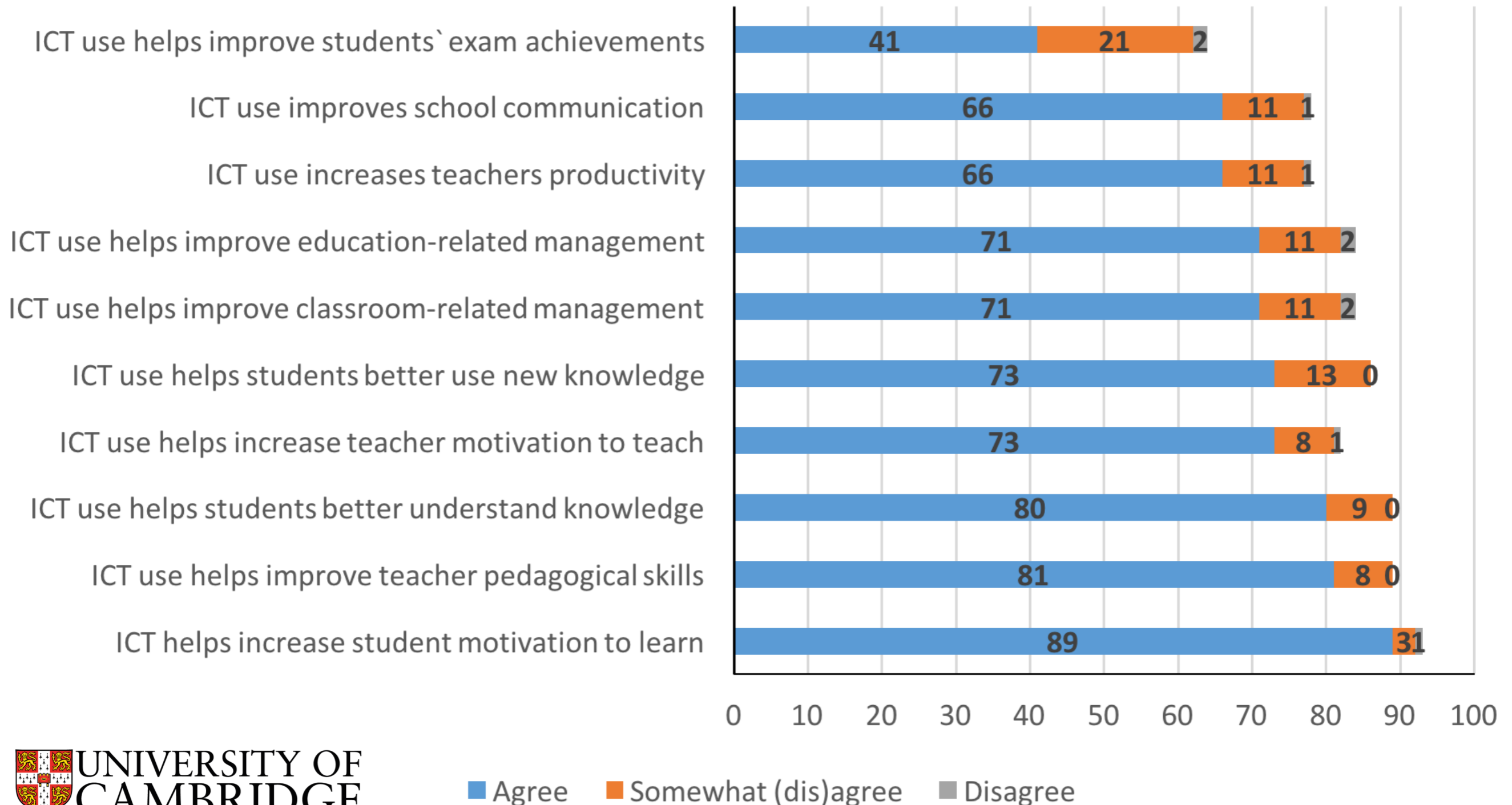
	<b>Teacher's name (pseudm)</b>	<b>Position in school</b>	<b>Teaching experience</b>	<b>Interview session</b>	<b>Focus-group sessions</b>	<b>Observations</b>	<b>Worked in other KTL</b>
1	Balnur	EFL teacher and class manager	3 years	+	+	+	+
2	Zhanat	EFL teacher and class manager	1 year	+	-	+	-
3	Binal	Turkish teacher and class manager	6 years	+	-	+	+
4	Shakarim	Kazakh teacher and class manager	3 years	+	-	-	-
5	Idayat	Biology teacher and class manager	7 years	+	-	+	+
6	Bayrak	Biology teacher and director of instructional materials	15 years	+	-	-	+
7	Darkhan	Physics teacher and class manager	6 years	+	+	+	+
8	Arnur	Math teacher and class manager	3 years	-	+	-	+
9	Erhan	Chemistry teacher and class manager	5 years	-	+	+	+

# 7. Findings: Sample Characteristics (All Lyceums)

- **600** KTL teachers were invited of which **17%** turned out (100 teachers)
- **70%** are males and **30%** females
- **70%** have previously worked in other KTL
- **57%** are newly qualified teachers
- **100%** have bachelors, **40%** masters, **30%** teaching category holders
- **200-300** is average number of students per KTL
- **6** days of work/study per week
- **10 mb/s** is the maximum broadband speed in KTL lyceums
- **21-26** is average number of students per classroom in KTL
- **15-25** is average amount of hours KTL teachers teach per week
- **60%** spend 1 hour or less for preparation of 1 lesson, **32%** - 2 hours, **8%** - 3-4 hours
- **57%** have two or more extra school responsibilities and are overloaded
- **52%** said that the extra duties can take their **7** hours per week, **48%** between **10-20** hours

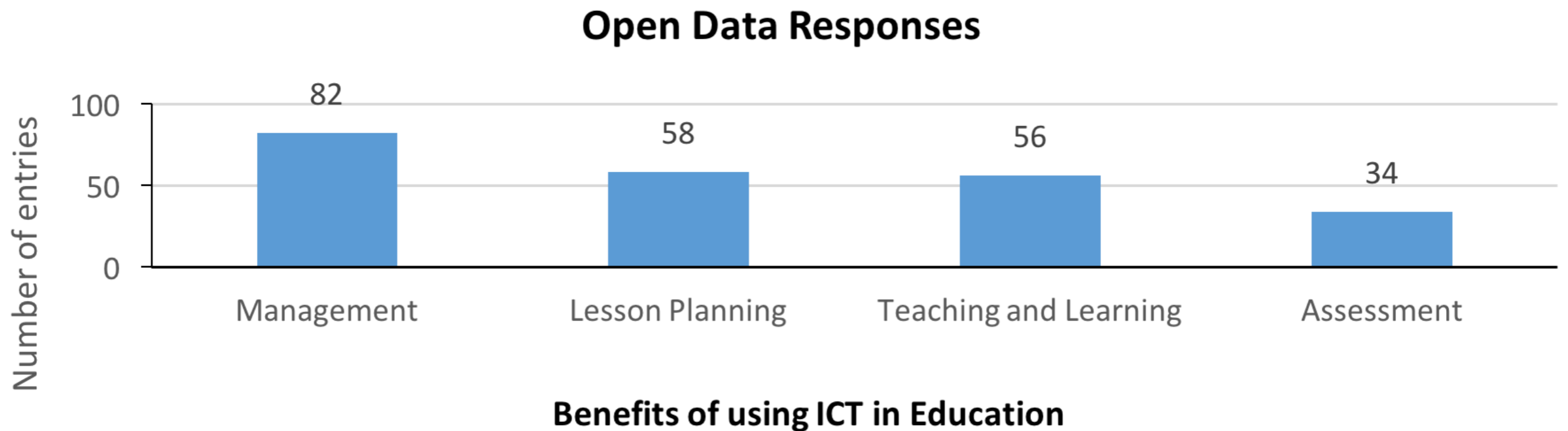
# 7. Key Findings: Online Survey Results (All Lyceums)

## Teachers perceptions about the benefits of ICT



# 7. Key Findings: Online Survey Results (All Lyceums)

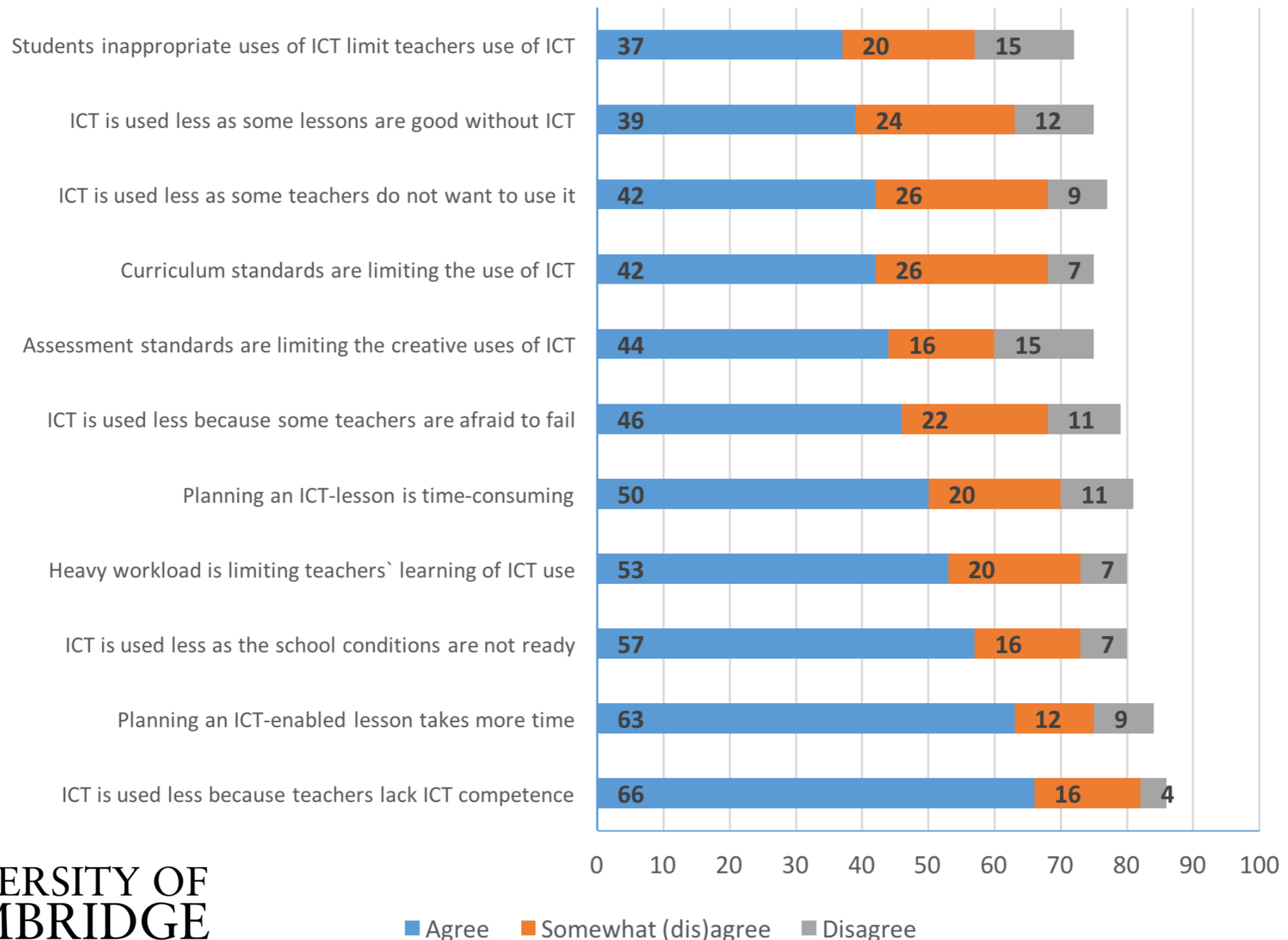
## How do Lyceum teachers use ICT?





# 7. Key Findings: Online Survey Results (All Lyceums)

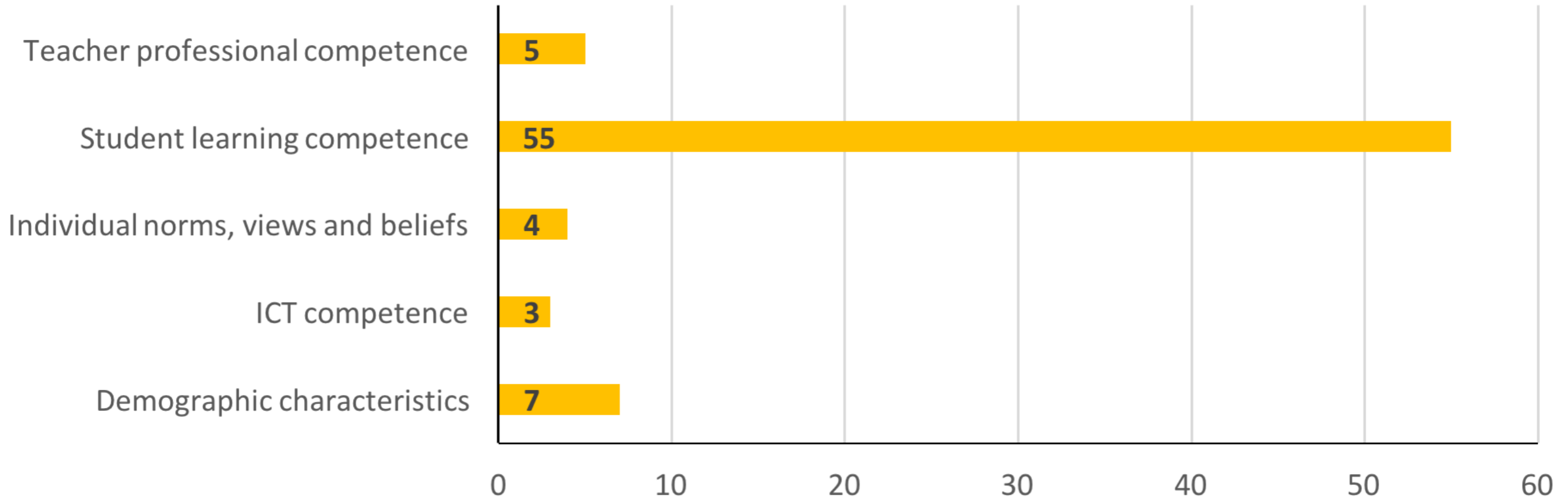
**Barriers to the teachers' use of ICT**



# 7. Key Findings: Online Survey Results (All Lyceums)

## Micro-level barriers

### Open Data Responses

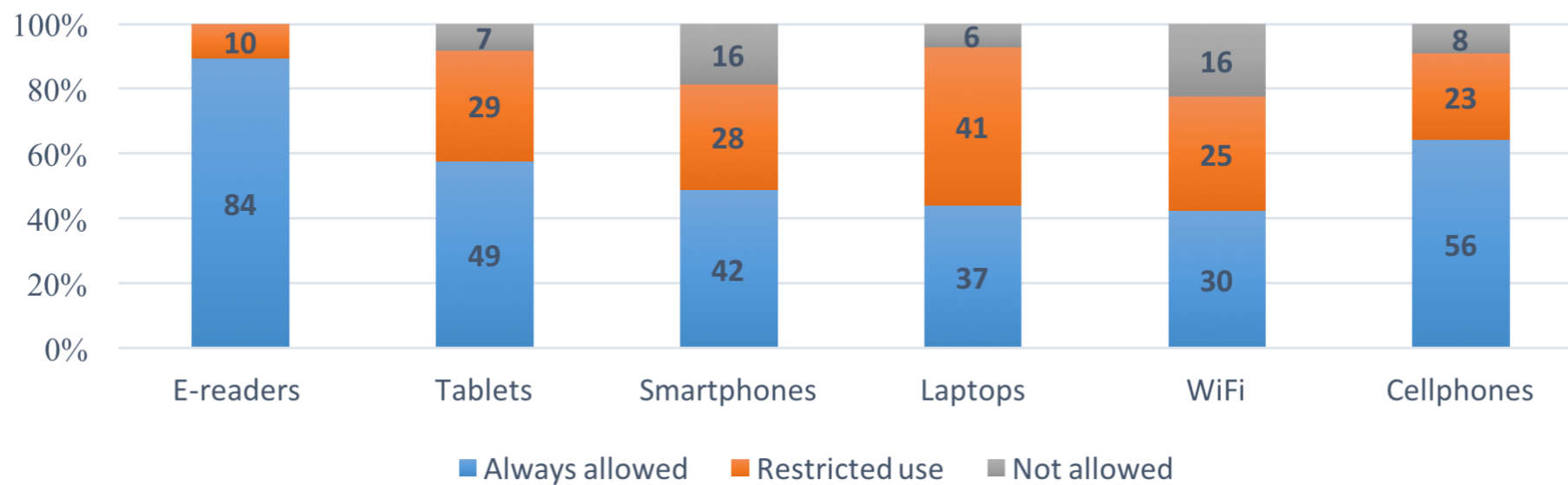


# Micro-level barriers

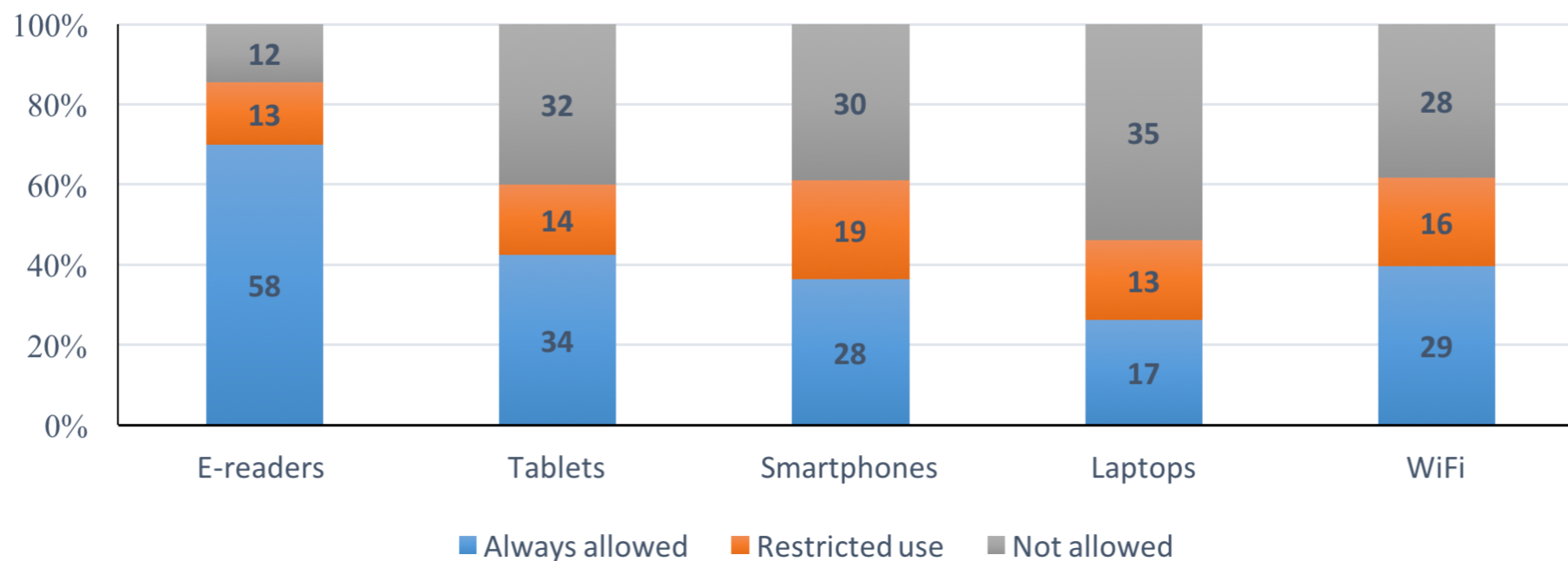
- Students tend to use their devices for purposes *“other than studying.”*
- To prevent this, KTL administration had to introduce UserGate (that allows WiFi access only to 25 users at a time). Consequently, students` access and teachers` **access became limited**
- It is challenging for teachers to educate their students to use ICT devices for purpose
- “Hedonistic” use of ICT was common to many **students who were from families with lower SES** - “Advantaged students are more likely than disadvantaged students to search for information or read news on line. Disadvantaged students, on the other hand, tend to use the Internet to chat or play videogames at least as often as advantaged students do” (OECD, 2016, p.1).
- “In the past, on my iPad by using my fingers I was drawing and recording 15-20 minutes long video tutorials, and spent many hours for creating them. But students, when some of them watched many others did not: partially because **some of them did not have the Internet access at home**. Thus I could not simply tell “Go, and watch it” because of some children who said “I do not have the Internet”, and then I replied “Ok” and that`s it” (**Darkhan, Astana Lyceum**).

# Micro-level barriers

## Students' out-of-class time ICT use School Policy

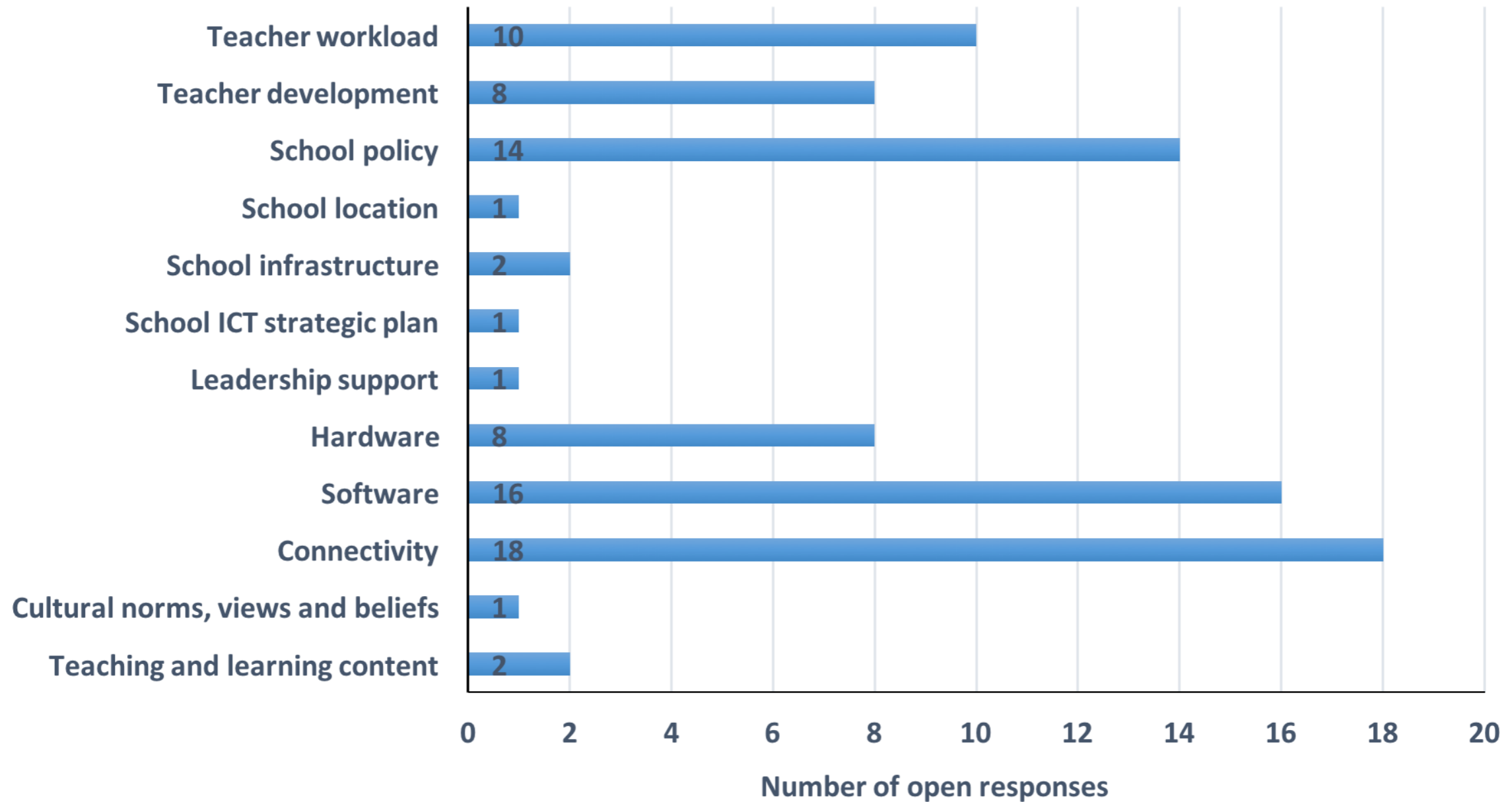


## Students in-class time ICT use School Policy



# Meso-level barriers

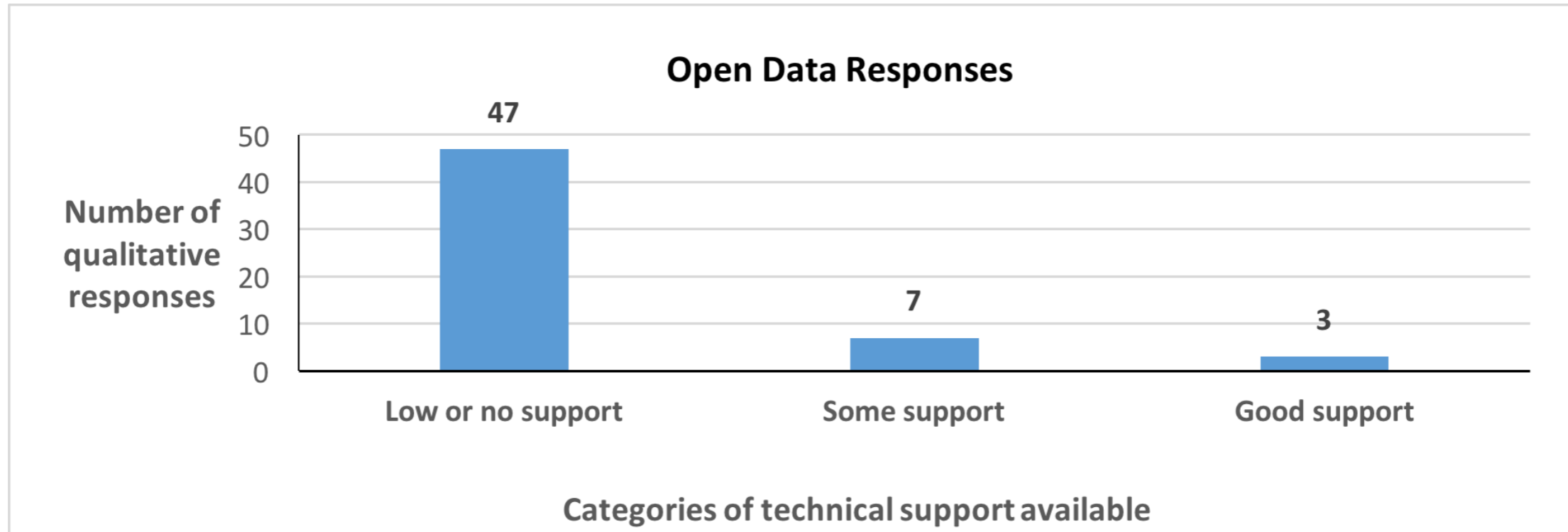
Open Data Responses



# Meso-level barriers

- “It is quite common that all KTL **teachers are overloaded with tasks not directly related to teaching**. For example, managing a classroom and Olympiad studies takes much of my time. We have to fill out school reports, student registers and parent meeting minutes. Moreover, I can assure that **this negatively influences on my lesson preparations**. I have to plan them at night or early in the mornings, in a rush... for sure with a negative impact on the quality [of the intended lesson]. Nevertheless, in the boarding KTL lyceums [which are mainly state-funded schools], **teachers also have to carry out one day and one night duties** in students` dormitories” (Nursultan, Astana Lyceum).
- “Whenever new teachers enter their profession, our lyceums, in general, **expect them to be immediately applying all these modern techniques and methods** – Project-Based-Learning, Flipped Education, Case Study, iPads in teaching and learning, Empowerment Education – whereas in reality, many of those newly qualified teachers wonder saying “What kind of method is that? What are the ways of using all of that innovations?” (Darkhan, Astana Lyceum).

# Macro-level barriers

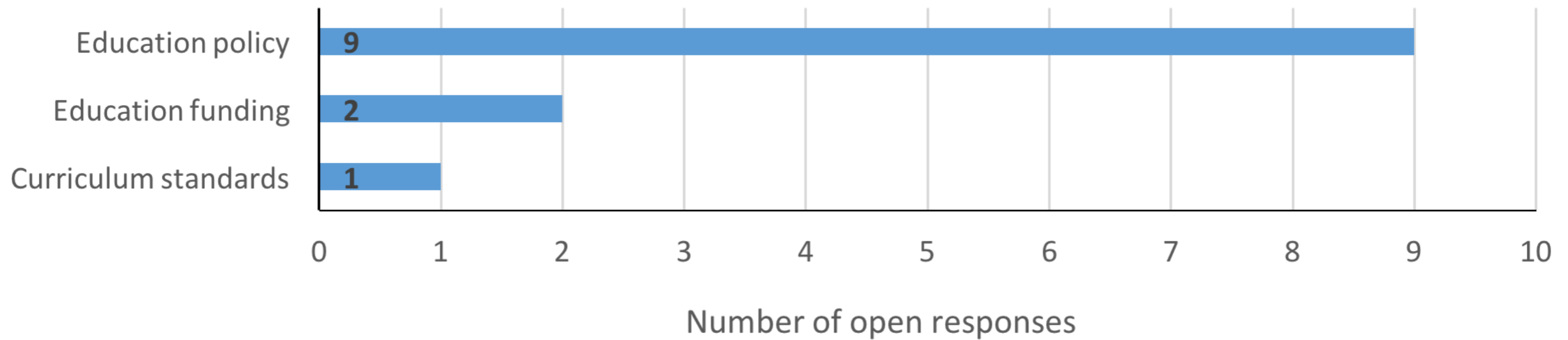


## What do you do when ICT gets broken?

- ‘Try to fix it myself’,
- ‘Continue my lesson without them’, ‘
- Will continue to use Blackboard’,
- ‘I will first try to find a classroom with a working equipment and replace with the rooms, if I can’t find such any class, I will continue to work with students and prepare hand-outs materials’

# Macro-level barriers

## Open Data Response



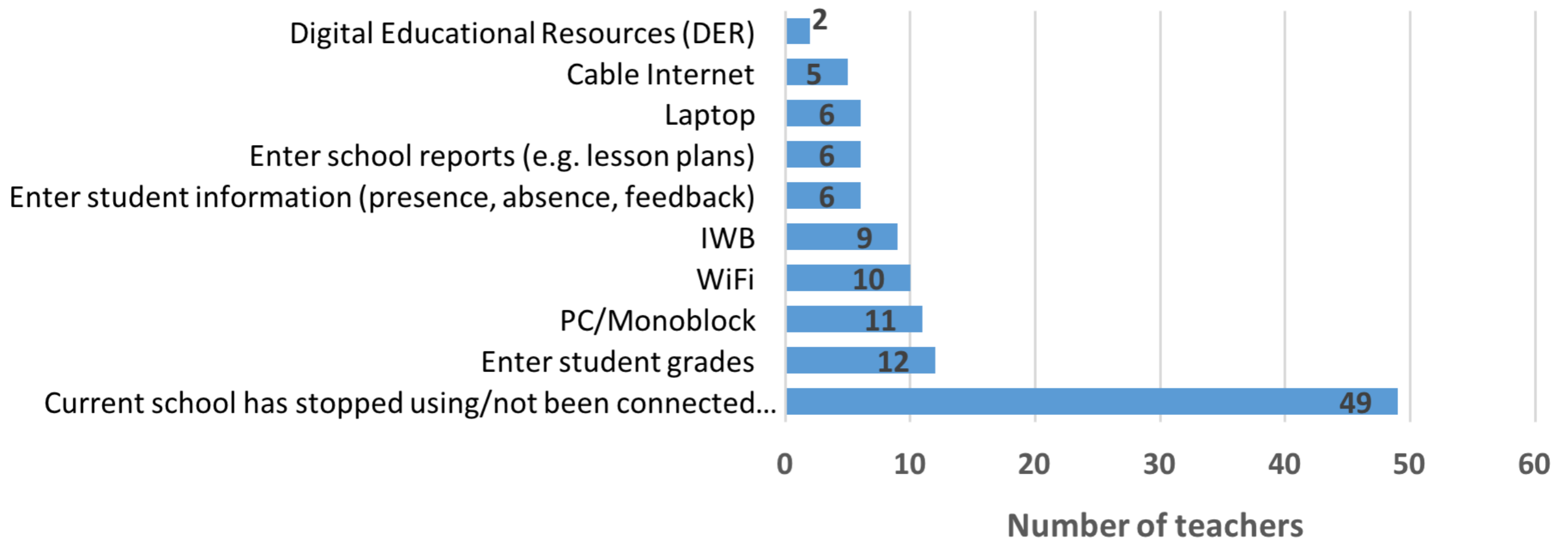


# Macro-level barriers

- “... They [his students] do not possess such a **mentality** [which would allow all of them creatively use ICT]. For example, during some lessons I prefer not to give them physics problems for solving, and instead conduct some learning activities. Whenever I do so, they usually say “Solve the problems!”. Moreover, if not to solve any problem, they usually express their objection by saying “Fuu, from me enough of theory” or “Fuu, from me enough of activities and projects, let`s instead solve some physics problems.”
- “It is a kind of a **mindset** that children of our society possess. Many people agree on this point and say so. For comparison, in European schools, the children got used to making something, sitting and messing with some stuff. They do not like solving problems. On the contrary, **our kids possess a strong desire towards solving the problems**. I strive to assign doing some creative projects to them. However, then some reply: “And what so? What will happen if we accomplish this project? It is not interesting”. Not all students say so, and when they say it, that not happens so often. For example, the 8<sup>th</sup> grades are more eager for solving problems. Firstly, [that is because] they got used to that, and secondly, they understand that they must sharpen their problem-solving skills if want to succeed in important exams such as the Unified National Test (UNT) and 'Bilim Tekseru Synagy' (Knowledge Check Test) that are awaiting them. As a result, they develop such a problem-solving culture in themselves starting from lower grades. Moreover, if they can solve the problems, they think that **it is a good indicator of their success**. They also can share such an understanding [between classmates] “I am cool and clever If I can solve problems”.

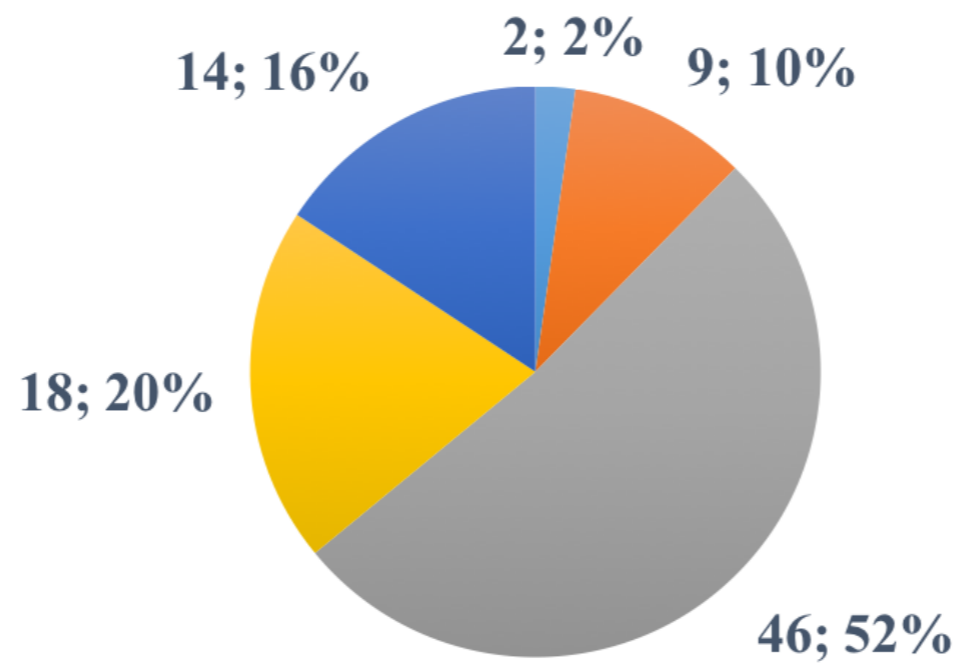
# Macro-level barriers

The "e-learning" programme features used by teachers



# Macro-level barriers

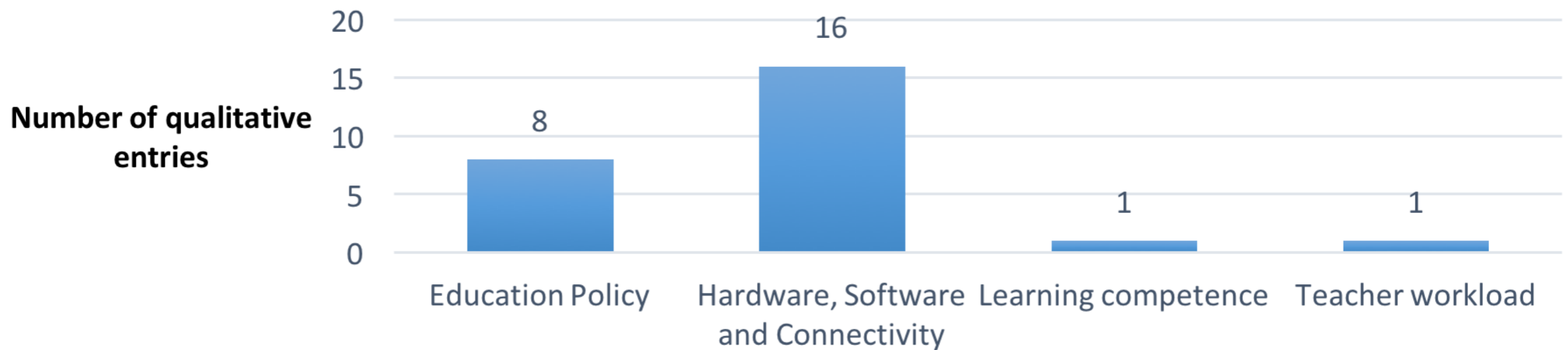
## Teachers perceptions about the national "e-learning" programme



■ Very positive   ■ Positive   ■ Neither negative nor positive   ■ Negative   ■ Very negative

# Macro-level barriers

## Teachers feedback on the features of the 'e-learning' programme



### Negative aspects of the 'e-learning' programme

# Macro-level barriers

## Problems that can be solved only through introducing changes into the Educational Policy Standards

- “The most **negative** aspect is that teachers **have to use both the "e-learning" journal and conventional paper-format journal** although they serve the same function at school which is only a waste of time” (Survey open responses).
- “It is **beneficial** that the government provided us with IWB and Monoblock computers. It is **bad** that schools (teachers and school administration) are **required to fill the hardly inspected electronic journals**, only for it to be seen in the reports for the local authorities. I do not know other functions of the e.edu.kz website other than requiring to fill the school journal just for the sake of filling which is all negative” (Survey open responses).

# 8. Discussion

- Using ICT can benefit teachers' and students' learning, but the **government's strong support** is needed for that
- **One size does not fit all**: the current Government Policies in how the Tenders are conducted standardize the provision of infrastructure and resources
- SES of families plays **a big role in how students use ICT** and this in turn influences the ICT-enabled teaching and learning processes
- Newly qualified teachers **are not well-prepared**, and pedagogical institutes need to be challenged to equip them with necessary ICT skills
- Government educational policies such as **the assessment system and curriculum standards** hinder students' and teachers' learning process in ICT-enabled environments

# 9. Conclusion

## To what extent was this project effective?

- Due to many factors that are (or can) not met, the state-funded schools (including school administration, teachers and students) in Kazakhstan are only "partially" ready to accept and/or benefit from the ambitious ICT-based educational innovations offered by the government.

## How to ensure the positive outcomes of the planned ICT projects?

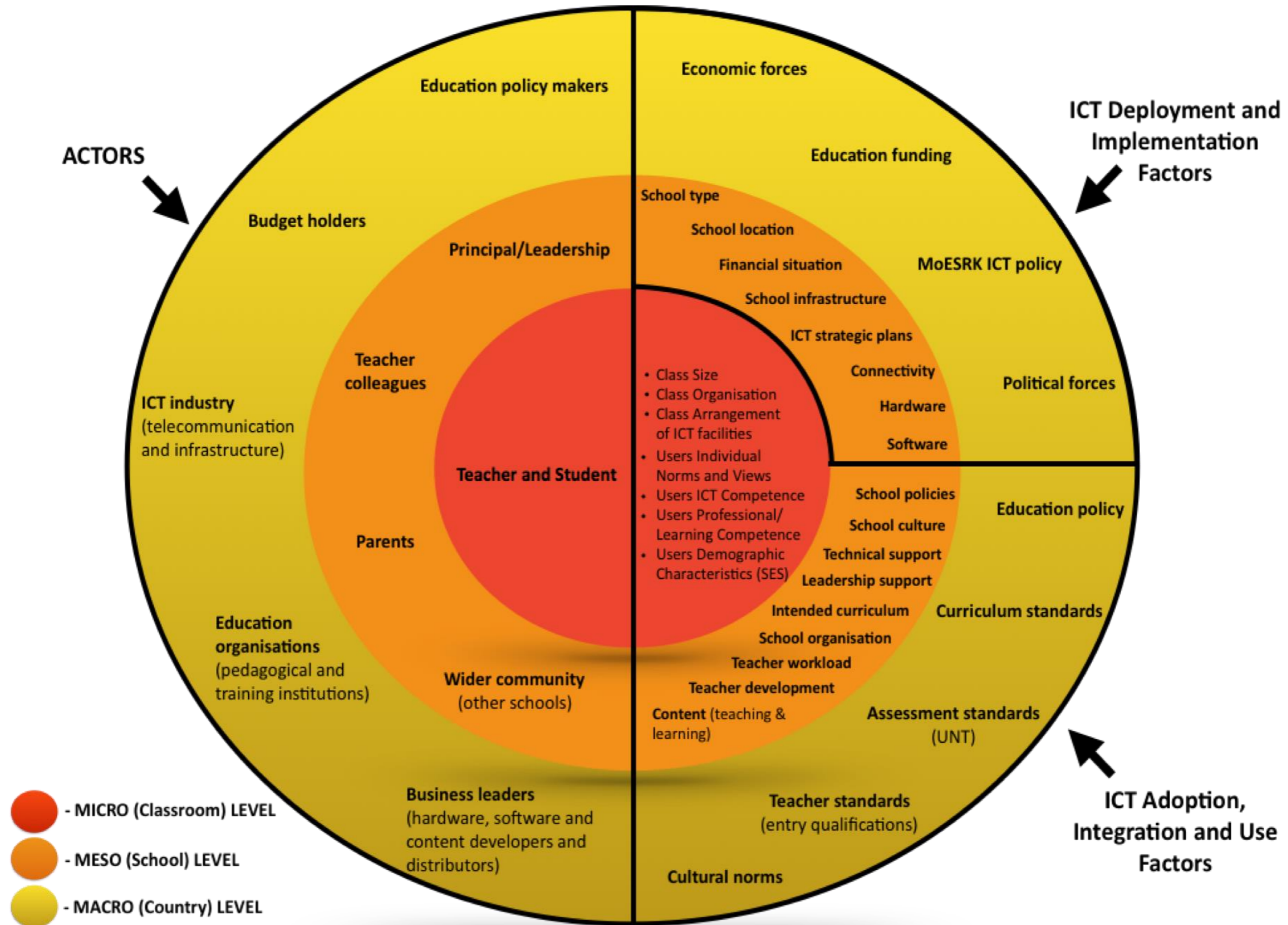
- Schools will continue to experience challenges and problems related to integration, use and management of 'ICT-based education' unless all stakeholders take **necessary steps** to meet the **factors** that were presented in “**Three in a Balance Model**” conceptual framework.

**Thank you!**



# 4. "TBM" Conceptual Framework

A 'Three in a Balance Model' conceptual framework (built on Kozma's framework (2003, p.12))



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The Agency of Statistics of the Republic of Kazakhstan ([stat.gov.kz](http://stat.gov.kz))

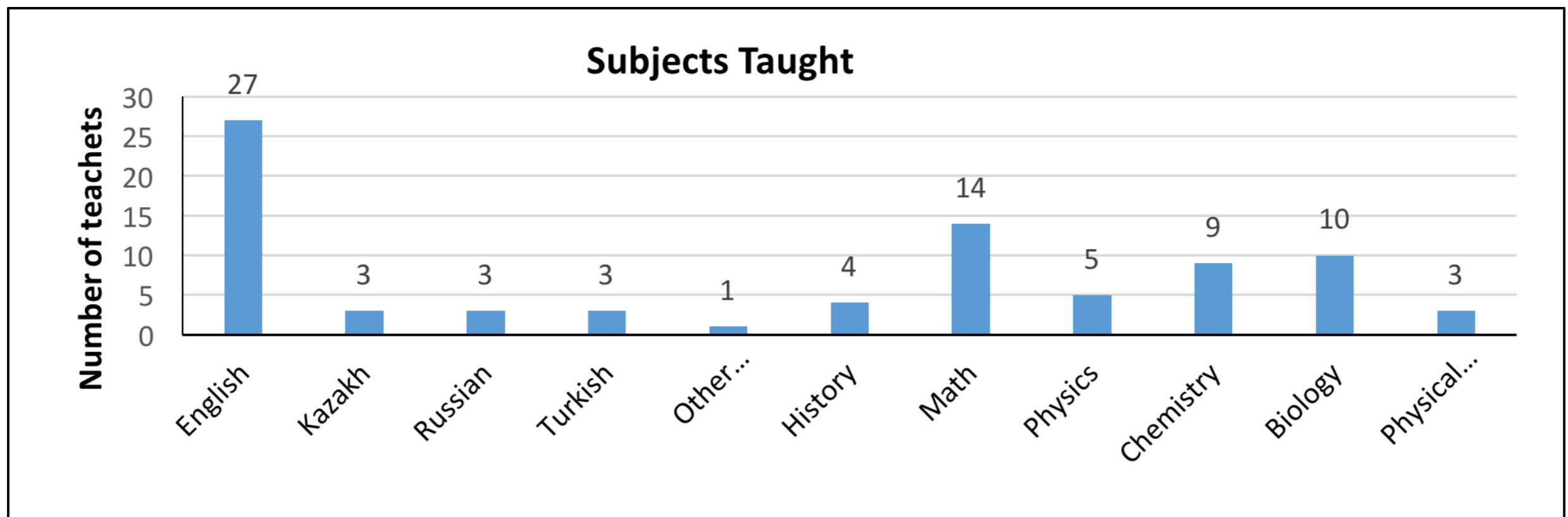
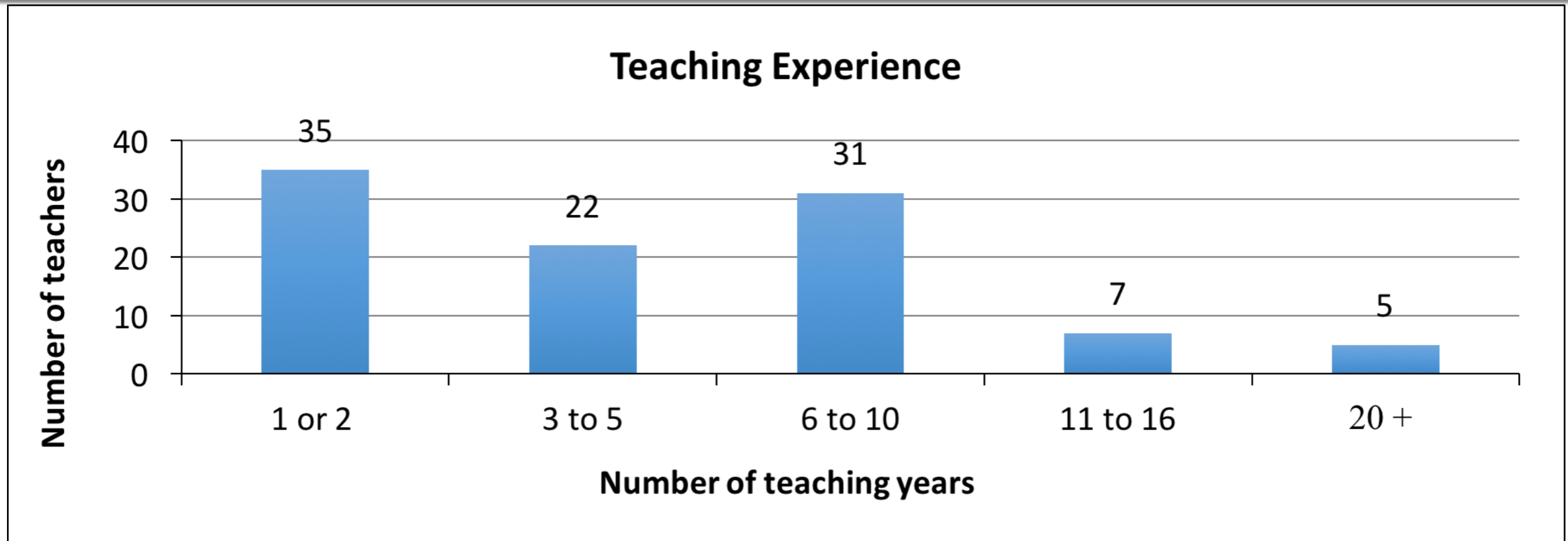
The national “e-learning” programme`s official website ([www.e.edu.kz](http://www.e.edu.kz))

The World Bank`s website (<http://data.worldbank.org/country/kazakhstan>)

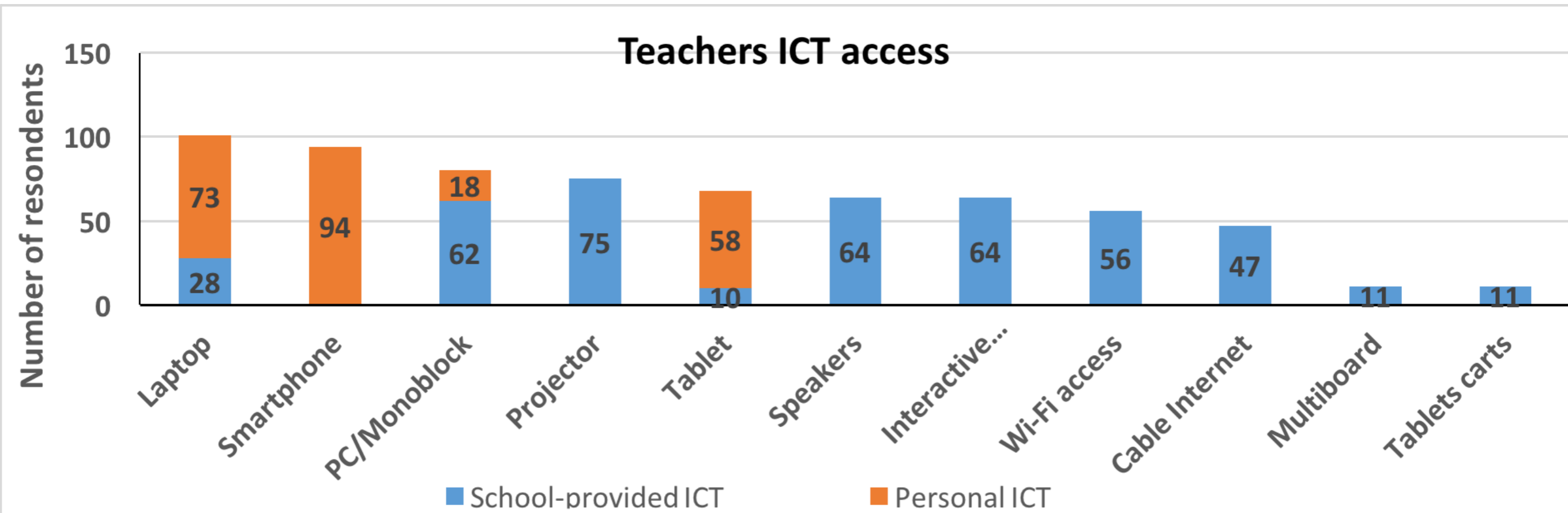
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# Appendices

# Teachers experience (Phase 2, All Lyceums)



# Teachers ICT access (Phase 2, All Lyceums)



# Barriers: lack of teaching content

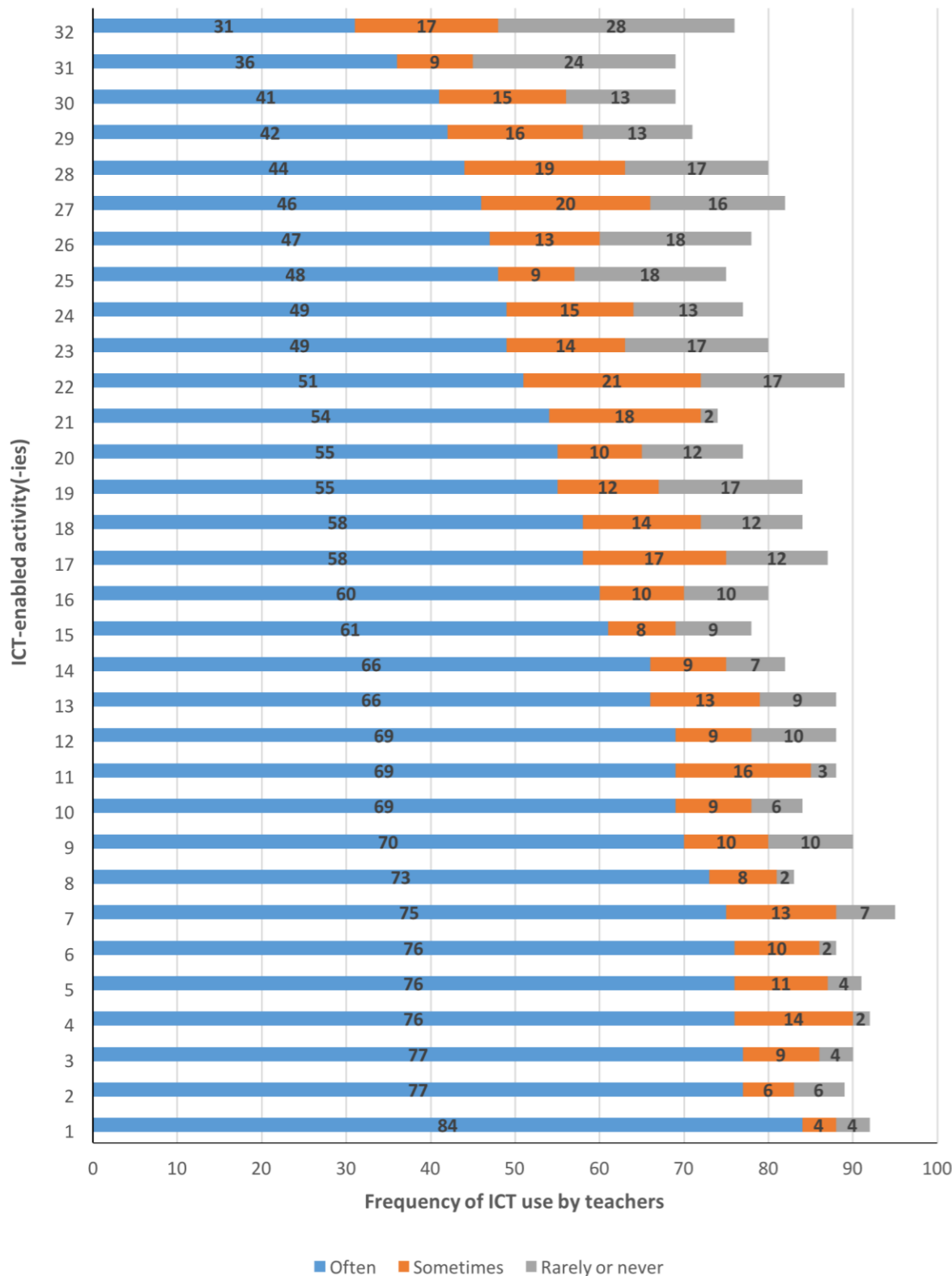
- *“... If I were an English teacher, I would have all materials and content ready for use right from the Internet or many other sources. I would just need to organize them properly, adapt and then use for my lessons. However, as a Kazakh teacher, it is tough to find such ready-to-use content, that is why in many cases I have to create them, adapt to learners` needs, turn it into a digital format and upload to the Internet. Let`s assume I found an excellent text to be used for teaching conversational Kazakh, and if it is in English, I first have to translate it into Kazakh, and after that read it out loudly and record an audio version of it. That is a challenge. Sometimes I spend up to four hours to prepare one lesson. Teachers of other subjects, let`s say Math, have a particular database of learning content for each of their lessons, but for Kazakh lessons, we do not have such a system as it has not been established since Soviet times. Another problem is that historically, Kazakh language similar to Russian is heavily focused on teaching grammar and linguistic aspects of those languages. When I was a kid I realized that learning Kazakh in that way was not engaging and exciting at all. Consequently, those lessons are boring not because a particular teacher teaches them better or worse, but because of what content is being taught. They have to teach grammatical aspects as it is what examinations will be assessing students for” (Shakarim).*

# Barriers: lack of teaching content

- *“If there is no computer and reliable Internet, Flipped Learning will not work. Moreover, you will need to trust fully in your students which is very difficult. If to trust in students, but continue without controlling them, they can easily give up watching your videos independently, or it even may be that they are not watching them at all. There are many advantages of it, but so many negative aspects” (Darkhan).*
- *In the past, on my iPad using my fingers I was drawing and recording 15-20 minutes long video tutorials, had spent many hours to create them, but students, some of them watched while others did not, some of them did not have the Internet access at home, and I could not simply say to them “Go, and watch it” because of some children who said “I do not have the Internet”, then I replied “Ok” and that`s it” (Darkhan).*
- *“I remember that videos never must be long. Otherwise, students will get bored. Maximum 13-15 minutes. I am now aware that Flipped Learning will work only with grown up children, or for the ones who got ill and missed the class, that is cool as the sick child will go home and watch it, and responsibility will be withdrawn from the teacher. That was good, and I liked it. However, in other cases, traditional classroom learning is better with a little bit of empowerment” (Darkhan).*

# ICT-enabled activities by KTL teachers

ICT use by KTL Teachers



List of ICT-enabled activities

1	Share and learn news and announcements from colleagues
2	Check up students attendance
3	Grade and give marks to students
4	Search subject-related engaging short videos
5	Share and receive learning materials, resources or documents from colleagues
6	Show/display presentations
7	Search subject-related creative lesson ideas and activities
8	Show/display videos
9	Share and learn news and announcements from students
10	Search subject-related text information
11	Search subject-related visual materials or pictures
12	Write subject-related lesson explanations on IWB
13	Search subject-related video explanations
14	Show/display subject-related text and visual information
15	Assign new home tasks
16	Compose own subject-related lesson plans
17	Create own subject-related presentations
18	Display the interactive games played by students in teams or individually in the classroom
19	Share and learn news and announcements from parents
20	Help students memorize/drill facts or new knowledge
21	Provide feedback or comment on student works and assignments
22	Search subject-related interactive or online learning games
23	Search subject-related ready-made presentations like PowerPoints
24	Create own subject-related text content and material
25	Share and receive learning materials, resources and home assignments from students
26	Create own subject-related interactive materials and hand-outs
27	Compile subject-related video explanations
28	Compile subject-related presentations
29	Conduct summative assessment
30	Conduct formative assessment
31	Connect students with other students for collaborative learning-related activities
32	Create own subject-related video explanations



# The good examples of ICT use by teachers

- *“Mobile devices may heavily distract students from the lesson and to avoid that we, the teachers, use platforms like NearPod. It can be utilized by all students and teachers simultaneously thus making students concentrate on one specific content at a time. The shared content appears on every single students’ personal device be it tablets or smartphones. In their NearPod lesson slides teachers embed not only videos and pictures but also different types of questions [true/false, open-ended, tests] for instant knowledge check” (Shakarim).*

# Appendix: benefits of ICT in assessment

- *“When I used to prepare the questions for a paper format assessment, I did many variants to avoid student cheating, but in Socrative we do not have such problems [with cheating], as it presents the exam questions in shuffled orders. Digital format assessments also make keeping students` progress portfolios much easier and safer. The biggest benefit of Socrative is that it allows teachers to save time on analysing the exam results which otherwise would take us ages to check them on paper formats. Moreover, it allows knowing your results instantly right students press the submit button on the App. At times when we conducted print exams, students usually could learn their performance only after days or weeks passed. That made them feel not only unenthusiastic about their progress but also they forgot what questions they were asked and answers they gave. Tools like Socrative, provide students with instant feedback using which students can reflect on their mistakes immediately and therefore immensely learn from that” (Idayat).*