The Use of ICT in the Science Lessons: Experience from Latvia

Inese Dudareva, Dace Namsone*, Liga Cakane

University of Latvia

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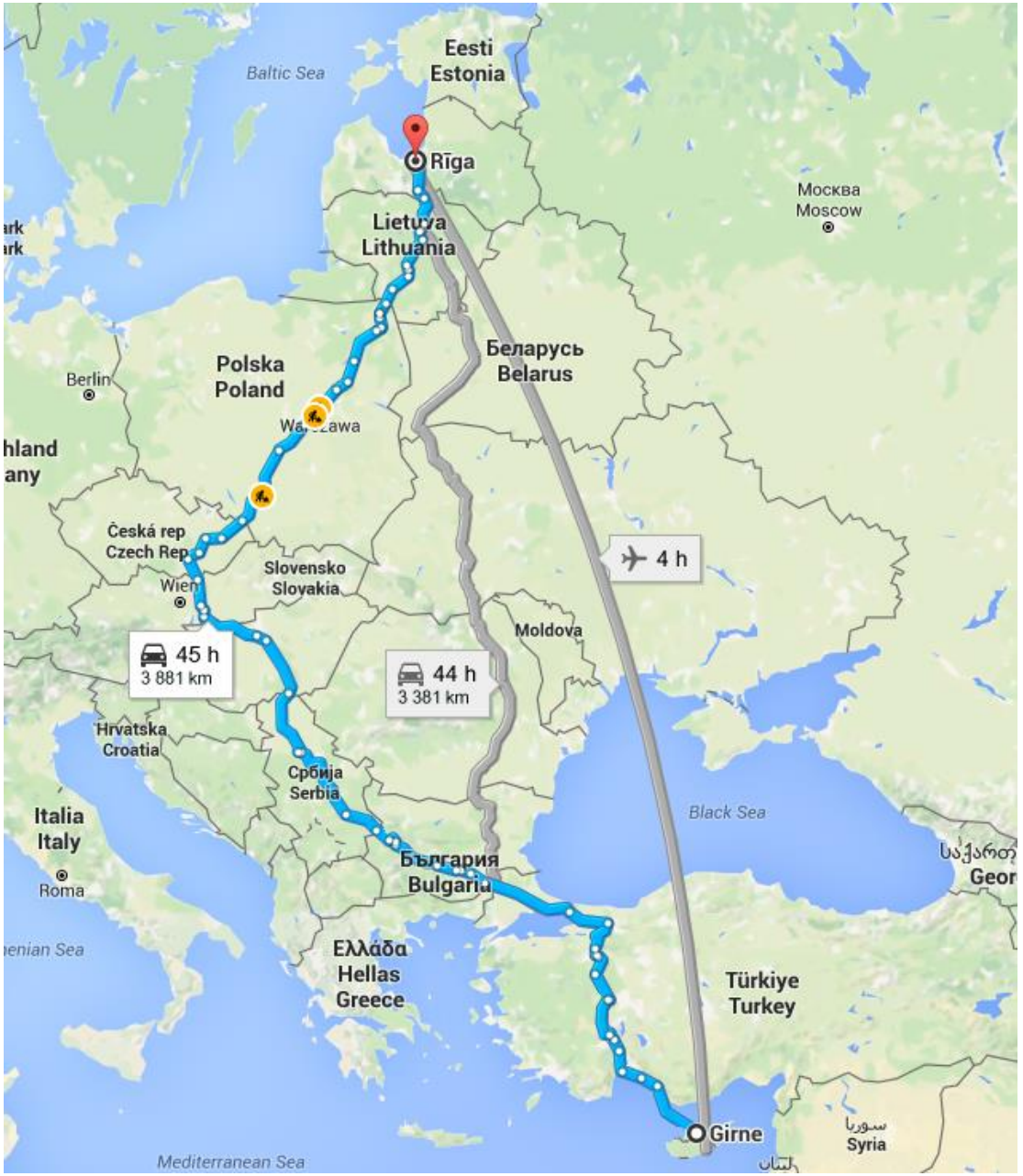
Kyrenia, North Cyprus

LATVIA

64 589 km²

Population:
1 997 500

Riga
700 000



Approach of competencies in science continuing education

- The implementation of key competencies, including digital competence, demanded changes in science teaching and learning practice in primary and secondary school education in Latvia.
- The emphasis lies on students' scientific inquiry and their ability to apply classroom-gained knowledge in real life situations, as well as on the use of ICT in the teaching/learning process.
- This research explores the situation in school practice before the new curriculum reforms occur.

Research questions

1. What ICT tools are used by teachers and students?
2. How meaningful are the ICT tools in the science teaching/learning process?
3. What information is obtained by the developers of the teachers' CPD?

Methodology of Research

10 schools of one municipality (grades 7 – 12)
64 science subject lessons observation by experts

- Specially developed e-observation sheet for lesson transcript and data analysis by using a Likert scale (0 – not present; 1 – minor presence; 2 – moderate presence; 3 – present)
- Conversation with the teacher after the lesson
- Content analysis (R. 3.1.2. software)

Methodology of Research

The use of ICT was set as the criteria for this research, focusing on what kind of ICT tools students and teachers used, how they did it and for what purposes.

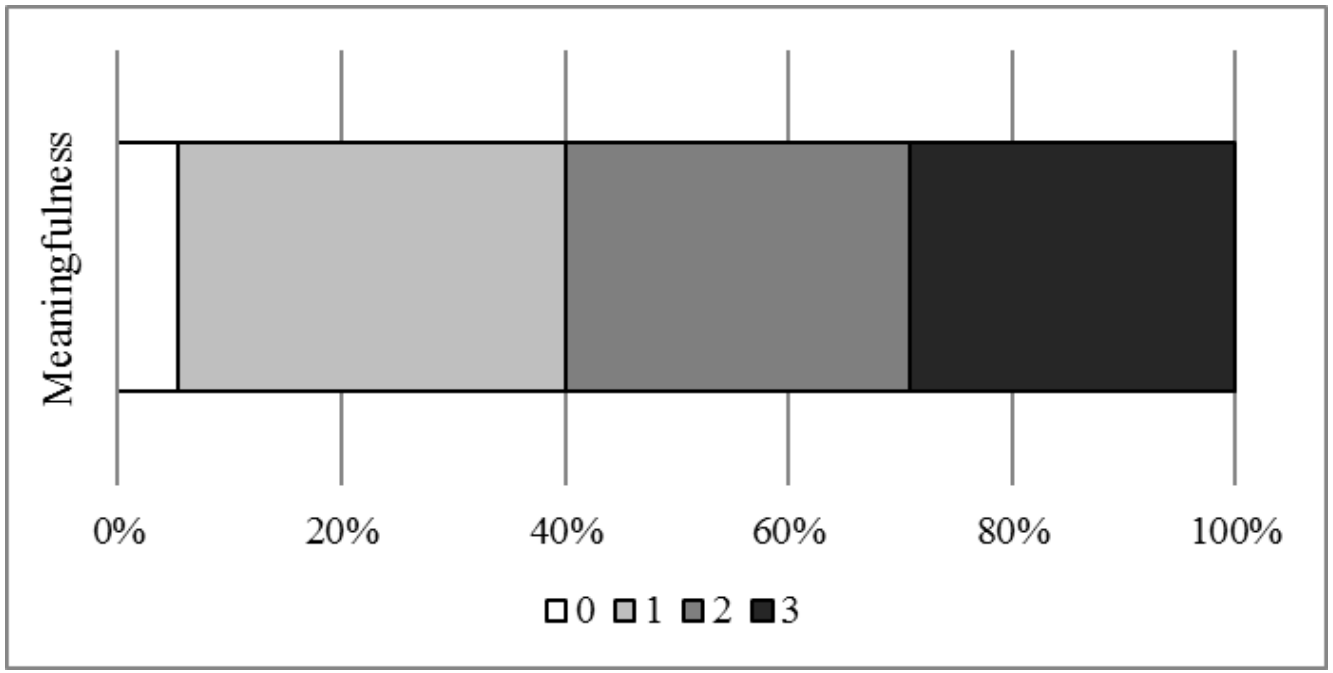
Results:

The ICT tools used by teachers and students during science lessons

ICT tools	Used by teachers, %	Used by students, %
Computer	45	37
Interactive whiteboard	34	18
Web camera	9	-
Data camera	12	9
Sensors and data loggers	-	18
Mobile phone	-	18

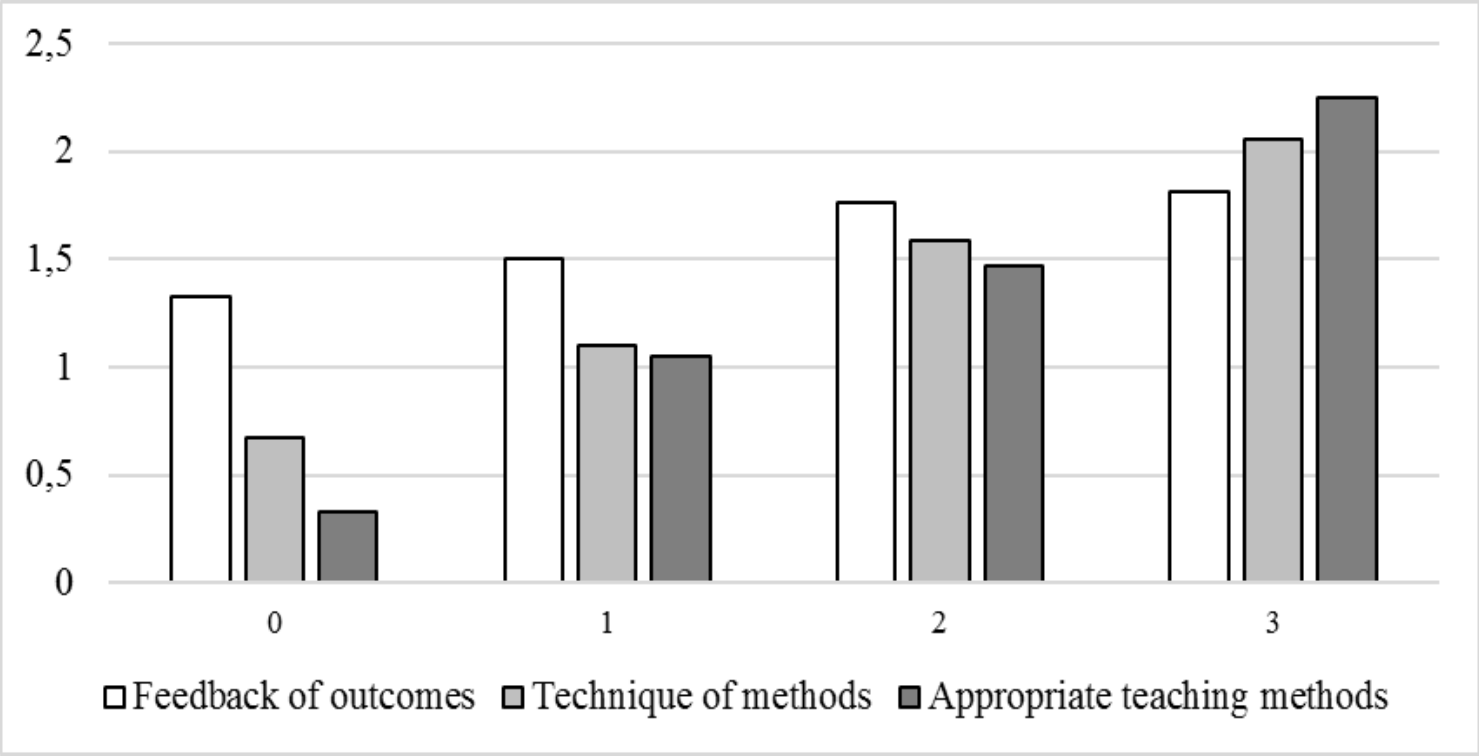
Results:

Meaningfulness of ICT tools in observed science lessons



Results:

The correlation between the use of ICT and implemented teaching methods



Conclusions

1. ICT is still mainly used by teachers as a tool for transmitting information and the involvement of students in the application of ICT is low.
2. Students have worked with data loggers and sensors, interactive whiteboards and mobile phone applications.
3. ICT serves as a meaningful tool during a lesson if the teacher has chosen appropriate teaching methods and manages the chosen methods according to the goals.

Conclusions

4. CPD programs should emphasize methods explaining the goal, technique and reason for using ICT in the learning process and focus on the development of digital competencies.

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