Research Group 3.1.10
DigitalEdu-SU

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Established researcher – Harvey Mellar – emeritus reader at IoE, UCL
General description of the project

The field of study - 'Digital education': the pedagogical use of digital technologies to support and enhance teaching, learning and assessment, and the development of digital competences of learners and training staff.

Digital competencies:
- both basic digital competences of all citizens,
- more advanced digital competencies for some students as preparation for later advanced study in informatics, or work within digital industries.
General description of the project

In this study we draw on:

- the wide range of existing research in the field.
- the definitions of competencies from three existing European competency frameworks:
  - DigComp 2.2. – the digital competence frame for citizens,
  - DigCompEdu - the Digital Competence Framework for Educators
  - EU Digital Maturity models for schools DigCompOrg (including DigBGSchool model the schools’ digitalization)
European Framework for Digitally-competent Educational Organisations
General description of the project

Our research efforts are directed towards the ‘state of the actual’ in digitalization of education as distinct from examining the ‘state of the art’.

We believe that the actual implementation of digital education differs significantly from the picture painted by reports of intervention studies on the one hand and national level statistical reports of provision and uptake on the other.

It is hoped that such a focus will enable the refinement of existing approaches and guidelines in order to develop more effective approaches to implementing digital education.
General description of the project

Research goals

1. Identification of the **digital competences** of teachers, students and schools as educational organisations

2. To identify how **existing curricula** support the development of students' digital competences and how digital technologies are used in their teaching, learning and assessment

3. Identification of the **approaches to teaching, learning and assessment** of digital competences in schools

4. Identification of the **pedagogical use of digital technologies** to support and enhance teaching, learning and assessment in schools, both in general and also in specific curriculum areas
5. Identification of the present use of **teacher training** to develop teachers' digital educational competences and hence the ability of teachers to address the development of digital competences of their students

6. To establish how the **leadership and management** of digital education is carried out in primary and secondary schools

7. Identification of the development of advanced digital competencies as an elective subject for some students as preparation for work within digital industries
Project activities in progress
What has been done so far?

Building up the research group – 26 researchers from 10 Faculties, including 1 leading researcher (R4), 1 established researcher (R4), 22 research fellows (R2), and two junior researchers (R1).
Project activities in progress
What has been done so far?

- Faculty of Education
- Faculty of Slavic Studies
- Faculty of Mathematics and Informatics
- Faculty of Educational Studies and the Arts
- Faculty of Classical and Modern Philology
- Faculty of History
- Faculty of Physics
- Faculty of Geology and Geography
- Faculty of Biology
- Faculty of Chemistry and Pharmacy
Project activities in progress

What has been done so far?

Project management platform has been set up and several project meetings have been organized – face-to-face and online including the research group training.
Project activities in progress

What has been done so far?

The project management platform has been set up and several project meetings have been organized, both face-to-face and online, including the research group training.
Project activities in progress
What has been done so far?

Several research sub-groups were established to address the research objectives and to cover all researched areas.

<table>
<thead>
<tr>
<th>Research Group 1</th>
<th>Natural Sciences with representatives from the departments of teaching methodology at the Faculty of Chemistry and Pharmacy, the Faculty of Physics, and the Faculty of Biology.</th>
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<td>Research Group 2</td>
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Efficient communication and interaction with the educational organizations where the data collection has to take place was established.

- Deans of all Faculties involved
- Ethics Committee of Sofia University
- The Center for Assessment in Preschool and School Education
- Ministry of Education
- Regional Inspectorates of Education
- School directors
Research carried out
At Sofia University as a teacher training institution

**Research aim 5** - Identification of the present use of teacher training to develop teachers' digital educational competences and hence the ability of teachers to address the development of digital competences of their students and to make appropriate pedagogical use of digital technologies

Research questions:

- What is level of digital competence of trainee teachers and teacher trainers as measured by self-report tools such as SELFIE and SELFIE for TEACHERS?
- What is level of digital competence of trainee teachers and teacher trainers as determined by observation of practice?
- What is the place accorded to digital competences in existing curriculum documentation for teacher training?
- What is the role assigned to the use of digital technologies to support teaching, learning and assessment by trainee teachers in existing curriculum documentation?
- How are teachers’ digital educational competencies being assessed?
Research carried out at Sofia University as a teacher training institution

- Research participants
- University teachers involved in teacher training programmes
- Students involved in TT programmes
Research carried out at Sofia University as a teacher training institution

Research methodology

- Documentation analysis – curriculum of teacher training programmes (TTP), syllabuses of disciplines
- Survey for university teacher trainers – 109 participants (statistically analyzed)
- Interviews – over 70 interviewed teachers (qualitative analysis)
- Classroom observations – 2-3 observations per participant
- Survey for students from TT programmes – 188 respondents by now
Research carried out at Sofia University as a teacher training institution
Research carried out at secondary schools

1) Online survey, developed on the basis of (DigCompEdu) as a tool for self-assessment of teachers' competences in 6 main areas of digital competences: Professional engagement, Digital resources, Teaching and learning, Assessment, Empowering students, Supporting the formation of students' digital competences.

418 teachers have completed the survey.
Research carried out at secondary schools

2) National study on the digital competencies of educational institutions – representative sample of 359 secondary schools

2.1. Online survey - based on DigCompOrg for teachers

2231 teachers have completed the survey.
Research carried out at secondary schools

2) National study on the digital competencies of educational institutions – representative sample of 359 secondary schools

2.2. Online survey - based on DigCompOrg for school managers

350 School managers have completed the survey.
What's coming up in the near future? Secondary schools

- Qualitative study in a sample of 30 schools
- Based on the results of the national survey
- In all key subject areas
- Interviews with school managers and teachers
- Classroom observations
- Focus groups with students
- Focus groups with parent
Publication activity
8 WoS publications during 2024 planned

6 research papers accepted for publication in the AMEE 23 AIP conference proceedings referenced in SCOPUS and WoS:

“Digitalization of Bulgarian Education in the European Context”
- Bistra Mizova, Roumiana Peytcheva-Forsyth, Margarita Bakracheva

“Teaching, Learning and Assessing Digital Competences in (Bulgarian) Primary Education: A Scoping Review”
- Veronica Racheva, Lyubka Aleksieva

“The Role and Positioning of Digital Competences in Mathematics Education in Bulgaria”
- Borislava Kirilova, Nikolina Nikolova, Temenuzhka Zafirova-Malcheva, Pencho Mihnev

“Teacher Attitudes toward ICT Implementation for Educational Purposes: Bulgarian and International Research (Scoping Review)”
- Bistra Mizova, Margarita Bakracheva

“Towards a model of Pedagogical Literacies to underpin Machine-Learning-based adaptive Teaching Support”
- Dejan Ljubojevic, Roumiana Peytcheva-Forsyth, Veronica Racheva, Stoyan Saev
Publication activity

Journal of Pedagogy, issue 3s/2024, year XCVI


**Digital Competence and Teaching Natural Sciences in Bulgarian Secondary Schools: Analysis of Regulatory Documents**
Nadezhda Raycheva, Milena Kirova
https://doi.org/10.53656/ped2024-3s.03

**The Role of Digital Competence in School Historical Education**
Katya Misheva
https://doi.org/10.53656/ped2024-3s.05

**Vision of digital competence of primary schools students and teachers in Bulgaria in educational documentation of the subject “Computer modelling”**
Lyubka Aleksieva, Veronica Racheva
https://doi.org/10.53656/ped2024-3s.01

**Analysis of the Digital Competencies of Physics Teachers in Bulgaria According to the DigCompEdu Framework**
Ivelina Kotseva, Maya Gaydarova
https://doi.org/10.53656/ped2024-3s.02
Digital Competence in Foreign Language Textbooks: Comparative Analysis of English, German, and Spanish Language Educational Systems
Irena Dimova, Plamen Tsvetkov, Mihal Pavlov
https://doi.org/10.53656/ped2024-3s.03

Regarding Digitalization and School Geography
Maya Vasileva
https://doi.org/10.53656/ped2024-3s.04

Leadership in the Context of Education Digitalization - Through the Prism of State Documents and Scientific Research
Vasya Delibaltova
https://doi.org/10.53656/ped2024-3s.07

Vision of Digital Competences of Primary School Students and Teachers in Bulgaria in Educational Documentation of All School Subjects
Lyubka Aleksieva, Veronica Racheva

Application of Digital Technologies in Chemistry Education: Attitudes of Teachers
Tsenova, M., Kirova, M.
Publication activity

Journal "Bulgarian Language and Literature" (https://bel.azbuki.bg/en/)


Publication activity

Journal "Foreign Language Teaching" (https://foreignlanguages.azbuki.bg/en/)
“Pedagogical Application of Digital Technologies in Foreign Language Education: Advantages and Challenges”
Irena Dimova, Plamen Tsvetkov, and Mihal Pavlov

Journal ”Mathematics and informatics” (https://mathinfo.azbuki.bg/en/ )
“Development of digital competences in the compulsory subject "Computer modeling and information technologies" in secondary school”
Borislava Kirilova, Nikolina Nikolova, Temenuzhka Zafirova-Malcheva, Pencho Mihnev
“Development of digital competences in the mandatory subject "Information Technologies" in secondary school”
Borislava Kirilova, Nikolina Nikolova, Temenuzhka Zafirova-Malcheva, Pencho Mihnev - Under review

Croatian Journal of Education – submitted for review
“Digitalization in Bulgarian science education: a comparative analysis of publications”
Elena Boyadzhieva, Adriana Tafrova
Publication activity - papers in conference proceedings

INTED2024 - 18th Annual International Technology, Education and Development Conference:
“Navigating The Future: Exploring Synchronous Hybrid Learning in Higher Education Post-Covid”
– Veronica Racheva, Roumiana Peytcheva-Forsyth
https://library.iated.org/view/RACHEVA2024NAV

“Incorporation of Flipped Classroom in Teaching Students with Special Educational Needs to Enhance Inclusive Education in Higher Education”
– Blagovesna Yovkova, Roumiana Peytcheva-Forsyth
https://library.iated.org/view/YOVKOVA2024INC
Publication activity - papers in conference proceedings

16th annual International Conference on Education and New Learning Technologies,
Palma (Spain) - 1st, 2nd and 3rd July 2024 – 5 accepted papers

“Pre-service primary teachers’ digital competences: how do university teachers foster them?”
- L. Aleksieva, M. Bakracheva

“Digital pedagogical competences of Bulgarian secondary teachers – preliminary data”
- B. Mizova, R. Peytcheva-Forsyth

“Development of digital pedagogical competences in the university initial teacher training programmes – the perspective of university professors and future teachers (Sofia university case)”
- R. Peytcheva-Forsyth, B. Yovkova

“Bridging digital competences: A Comparative analysis between university teacher trainers and secondary school teachers in Bulgaria”
R. Peytcheva-Forsyth, V. Racheva

Personality predictors of teachers attitudes towards digital tools and artificial intelligence
M. Bakracheva, B. Mizova
Thank you for your attention!