Students in Electronic Learning Environment

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IRNet

= International Research Network for study and development of new tools and methods for advanced pedagogical science in the field of ICT instruments, e-learning and intercultural competences

Theoretical background

Terminological note:

ELE - eLearning environments

VLE - Virtual learning environments

ILE - Institutional learning environments/UEE–University electronic environments

SLE - Smart learning environments

PLE - Personal learning environments

ELE - eLearning environments

most commonly associated with the LMS Moodle

- can save files containing study materials
- realize communication between the teacher and the students and between students
- plan studies
- assign and evaluate tasks
- evaluate other students
- test
- save study results
- etc.

VLE - Virtual learning environments
ILE - Institutional learning environments

refer to the same environment as ELE

SLE - Smart learning environments

term reflect the interconnection of pedagogy and technologies

Pedagogy is represented by

- learning and assessment paradigms
- social factors
- and policy

Technology includes

- emerging technologies
- innovative uses of mature technologies
- adoption usability and standards
- and emerging/new technological paradigms

Potencial contributions of SLE (Hwang, 2014)

- the system is able to provide learning support based on the learner's online and real-world status
- offer instant and adaptive support to learners by immediate analyses of the needs of individual learners from different perspectives
- is able to adapt the user interface

PLE - personal learning environments

- have the potential to change the paradigm of education (Schaffert and Hilzensauer, 2008)

- allow the learner to: learn with other people, control their learning resources, manage the activities they participate in, integrate their learning:

- a solution for keeping up with the rapid pace of knowledge change (Malamed, 2014)

- systems that help learners take control of and manage their own learning (IMAILE, 2015)

Main contributions of PLE (IMAILE, 2015)

- increases the students' motivation and creates a learning situation where they can control their own learning at their own pace
- allows students to actively design their own learning strategies
- enables better contact between student/teacher, and the education is less teacher-centered
- create a customized learning environment that suits the development of the 21st century classroom
- in combination with technical tools increase the students' interest in STEM (Science, Math and Technology) subjects
- allow young generation of today primarily learn by being interactive

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PLE in Key emerging techologies

(NMC Master List of Tracked Technologies (Source: NMC Horizon Report: 2014 Higher Education Edition))

2014 NMC Master List of Tracked Technologies

Consumer Technologies
- 3D Video
- Electronic Publishing
- Mobile Apps
- Quantified Self
- Tablet Computing
- Telepresence
- Wearable Technology

Digital Strategies
- BYOD
- Flipped Classroom
- Games and Gamification
- Location Intelligence
- Makerspaces
- Preservation/Conservation Technologies

Internet Technologies
- Cloud Computing
- The Internet of Things
- Real-Time Translation
- Semantic Applications
- Single Sign-On
- Syndication Tools

Learning Technologies
- Badges/Microcredit
- Learning Analytics
- Massive Open Online Courses
- Mobile Learning
- Online Learning
- Open Content
- Open Licensing
- Personal Learning Environments
- Virtual and Remote Laboratories

Key Emerging Technologies

Social Media Technologies
- Collaborative Environments
- Collective Intelligence
- Crowdfunding
- Crowdsourcing
- Digital Identity
- Social Networks
- Tacit Intelligence

Visualization Technologies
- 3D Printing/Rapid Prototyping
- Augmented Reality
- Information Visualization
- Visual Data Analysis
- Volumetric and Holographic Displays

Enabling Technologies
- Affective Computing
- Cellular Networks
- Electrovibration
- Flexible Displays
- Geolocation
- Location-Based Services
- Machine Learning
- Mobile Broadband
- Natural User Interfaces
- Near Field Communication
- Next-Generation Batteries
- Open Hardware
- Speech-to-Speech Translation
- Statistical Machine Translation
- Virtual Assistants
- Wireless Power

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Selected studies and research concerning ELE

Taraghi, B.; Ebner, M.; Kroell, C. (2012)

describe the development of the PLE and the emergence of the specific solution based on the web 2.0 technology at Graz University of technology in 2010. The number of its users increased by 400% compared to the original version LMS.

In 2004-2008, within the scope of the **iCLASS project,**

(which was part of the 6th EU framework program)

were created the so-called intelligent and knowledge-based open educational system and environment adapted to students' individual needs

(http://www.scientix.eu/web/guest/home)

ITEC project (Lewin, McNicols, 2014)

number of prototypes of new tools have emerged for the support of education e.g.:

TeamUp (for dividing students into teams)

SDE - Scenario Development Environment (for learning design which takes into account the user's profile)

The Widget Store (for cataloging of study resources)

The data shows the positive impact (Lewin et al. , 2013)

- on *students'* knowledge, skills and understanding – in particular 21st century skills, their motivation, engagement and attitudes and their learning practices.
- *on teachers´* technology-supported pedagogy, digital competence, and their motivation, engagement and attitudes.

ELE on University of Ostrava (UO)

LMS Moodle

- most widespread LMS system both worldwide and in the Czech Republic
- has been used for 10 years in UO
- enables the creation of simple courses at six level on UO

Six levels of LMS courses

1. The teacher posts study materials (mainly texts and presentations) which the students can browse or download
2. The course contains communication instruments (discussion forums, chat, e-mail, blogs, etc.), which enable students to communicate with the teacher or with their fellow students and thus present their opinions
3. The teacher can manage the education process, assign tasks, test students' knowledge and evaluate them
4. **The course contains interactive, multimedia and dynamic aspects such as animations, video sequences or computer simulations of the discussed phenomena**
5. **The teacher can manage the activity of individual students and individualize it; on the basis of the student's previous results, the teacher can, for instance, influence which tasks they should solve.**
6. The students can actively add their own notes or resources to the study materials and thus modify the entire course.

Pedagogical Faculty of the University of Ostrava mainly offers the **level 4 courses and some level 5 courses.**

Research on use of electronic learning environment by University of Ostrava students

Research subject:

- the use of the „electronic information environment" (EIE, construct used by IRNet team) by the university students.

Research goal:

- to collect and analyze data about the current situation concerning the use of individual components of the electronic information environment and learn whether it varies in various forms of study.

Research problem

There are no relevant data concerning the University of Ostrava students' use of electronic information environment instruments: which kinds and why the students of the particular university use them and what their needs and expectations are as far as this area is concerned

Research questions

1. Which components of the electronic information environment do students use?
2. What are the reasons for students' use of the electronic information environment?
3. What could have a positive impact on students' activity concerning the use of electronic information environment and which parameters of the environment could influence this activity?
4. Should be students' personal needs taken into account when developing the sources of the electronic information environment? If so, which are they?
5. Which components of the electronic information environment can influence a student's choice of university the most?
6. In which way could some of the instruments of the electronic information environment influence the planning of their study activities?

Research hypotheses

H1: The daily attendance (DA) students prefer to use different components of the electronic information environment than the combined study (CS) students.

H2: The DA students have different reasons for using the electronic information environment than the CS students.

H3: As far as the reasons for the increase in activity concerning the use of the electronic information environment are concerned, the opinions of the DA and CS students will vary.

H4: The needs of the DA and CS students concerning the expansion of the electronic information environment will be different.

H5: As far as the choice of university is concerned, the DA students prefer different components of the electronic information environment than the CS students.

H6: The opinions of the DA and CS students on the possibilities of the use of the electronic information environment will vary.

Method:

Questionnaire,

Questions with multiple choice answers

Sample:

Pedagogical faculty UO students

Data collecting:

By electronic system Google Questionnaire in April 2015

Category	Count	%
Daily attendance students	100	58,5%
Combined study students	71	41,5
Women	141	82,5%
Men	30	17,5%
BA students	99	57,9%
Follow-up MA students	60	35,1%
MA students	8	4,7%
Ph.D. students	4	2,3%
Students of teaching study programs	143	83,6%
Students of non-teaching study programs	28	16,4%
Students – advanced users	77	45%
Students – intermediate users	89	52%
Students – beginners	5	2,9%
Total	171	100%

Research question 1: Used components of the electronic information environment

- Students largely use search engines in their work (90% of students).
- They still work with printed publications (71%).
- They use electronic scientific databases (26.9%) and digital books (15.8%) to a small extent.
- Every fourth student (25.1%) uses stored data or saves their own data in open storages of electronic study materials.
- Every eighth student (14.6%) uses video channels.
- Students hardly ever make use of webinars or file sharing.
- The DA students use the mentioned resources to the same extent as the CS students.
- The CS students work more with digital libraries and less with search engines.
- The CS students have a more targeted approach to searching and using of study materials.
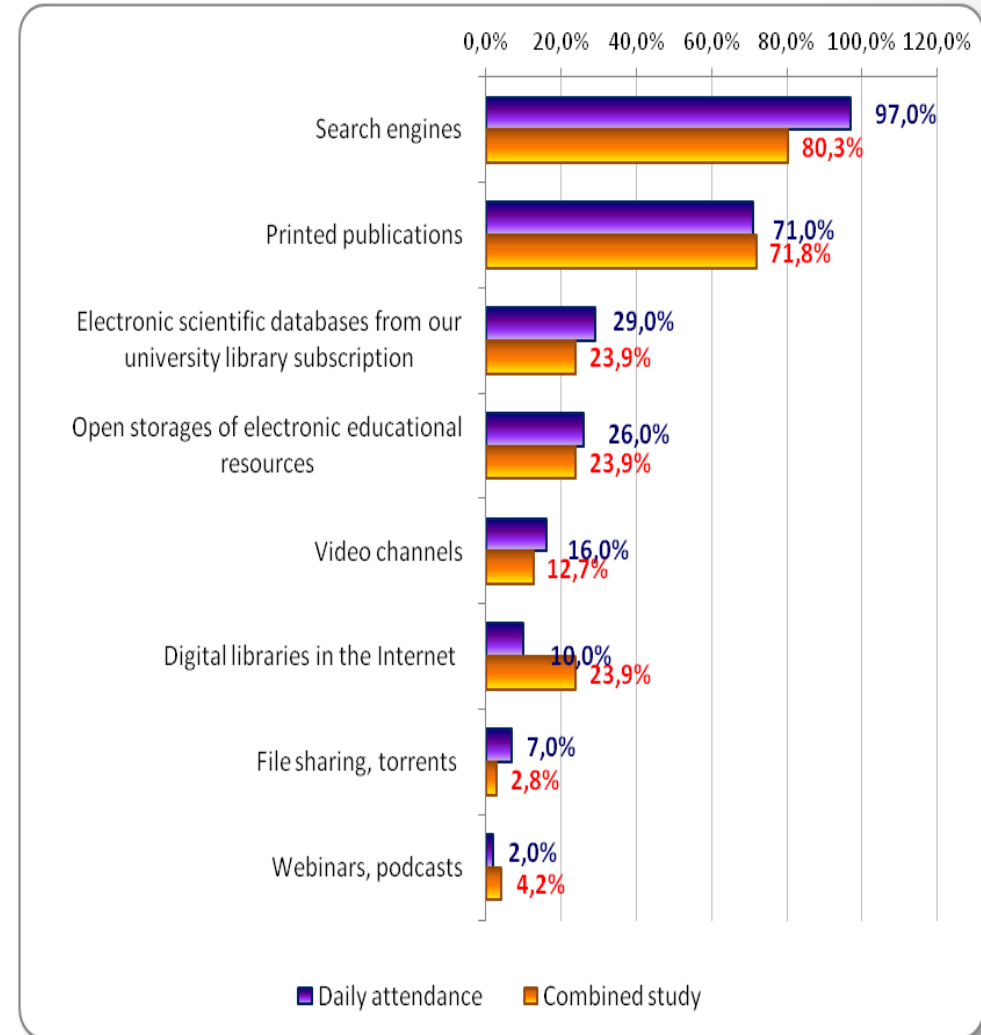
H1: The daily attendance (DA) students prefer to use different components of the electronic information environment than the combined study (CS) students: **cannot be accepted**.

Chart data:

Component	Daily attendance	Combined study
Search engines	97,0%	80,3%
Printed publications	71,0%	71,8%
Electronic scientific databases from our university library subscription	29,0%	23,9%
Open storages of electronic educational resources	26,0%	23,9%
Video channels	16,0%	12,7%
Digital libraries in the Internet	10,0%	23,9%
File sharing, torrents	7,0%	2,8%
Webinars, podcasts	2,0%	4,2%

# Research question 2: Reasons why students use the electronic information environment

- For both forms of study, the EIE is used because it is required by the teacher (40.0% and 36.6% of students).

- The CS students use the resources more of their own will because they help them meet the requirements.

- Only one DA student stated that he/she did not use the resources and 5.6% of the CS students search for the alternatives on the Internet.

- The similar number of both the DA and CS students states the reasons for their (non)use of the EIE instruments.

H2:The DA students have different reasons for using the electronic information environment than the CS students: **was not confirmed (0.670 significance).**
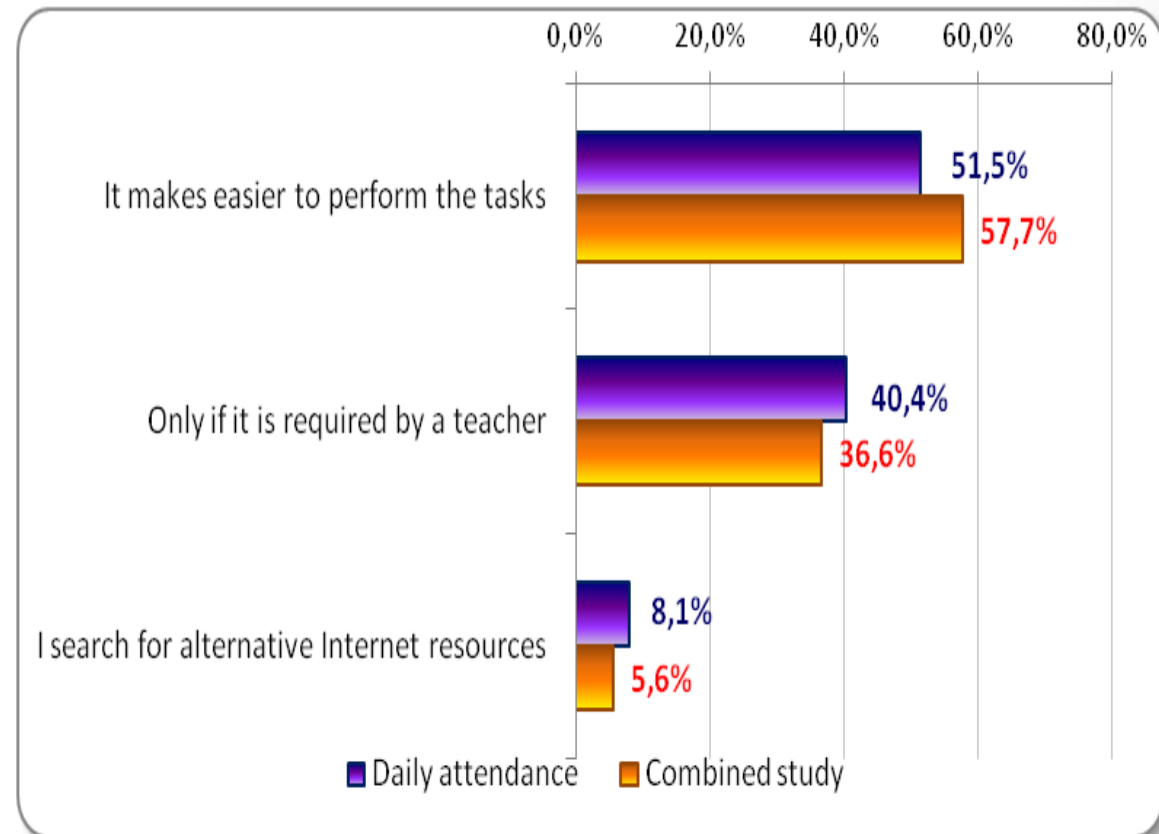
Research question 3: Factors potentially influencing students' activity concerning the use of the electronic information environment (1)

- Nearly 39% of the 252 reasons stated by the students was the possibility to perform the assigned tasks at their own pace.
- Next in line (30% of answers) was the opportunity to become acquainted with the possibilities and advantages of their use.
- The remaining two reasons accounted for 14,7% and 16,3%, respectively of the answers.
- One of the main advantages of the EIE was confirmed: a student's time flexibility when using it.
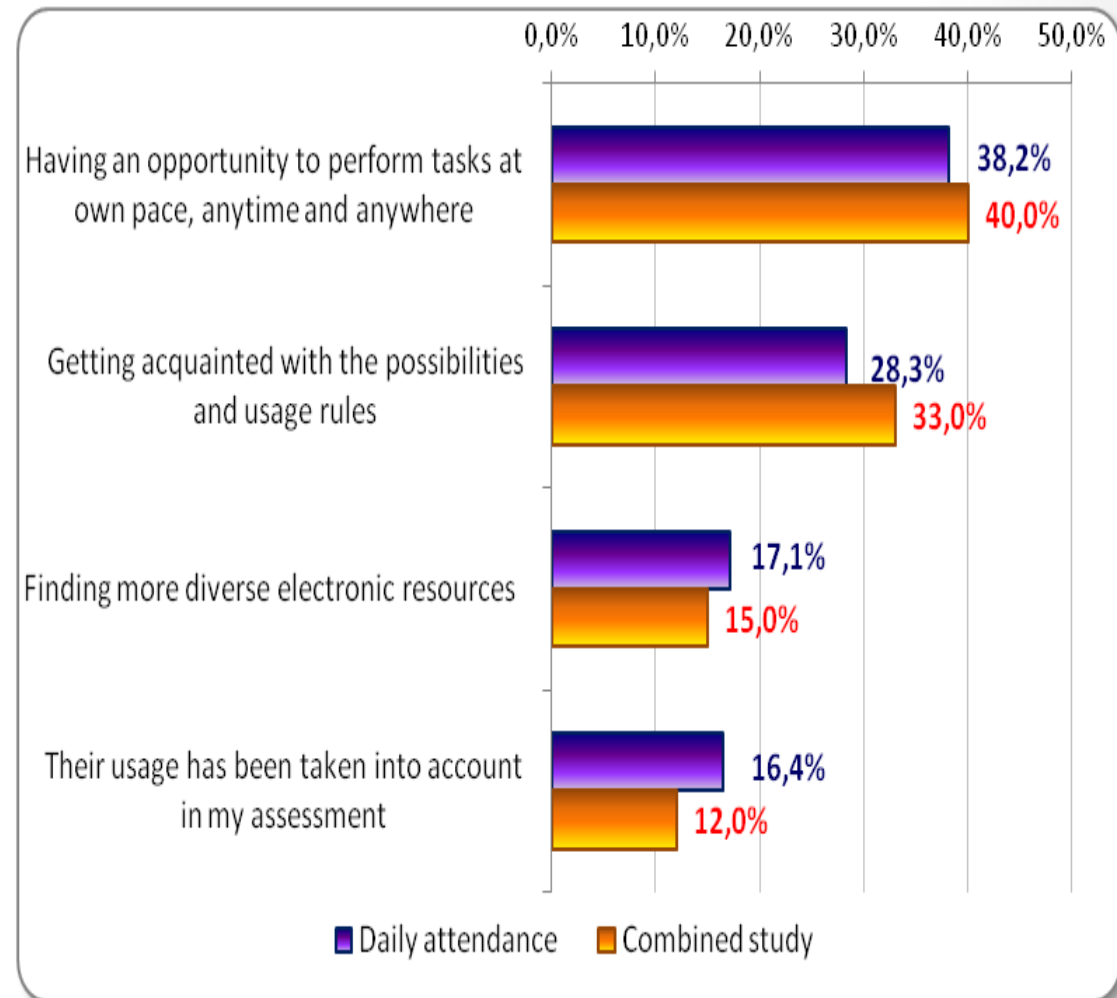
Research question 3 : Factors potentially influencing students' activity concerning the use of the electronic information environment (2)

Deciding about the more active use of the EIE resources is connected to students' opinions on the functionality or availability of its instruments and components.

- Students mostly prefer the availability of Wi-Fi access points (38%), then the availability of distance support, e.g. in the form of Moodle (22.2%), and a quality university website.
- The DA students, who spend more time at school than the CS students, find the availability of Wi-Fi access points more important than the CS students.
- The CS students prefer the availability of distance support and immediate feedback from the teacher. The CS students are more interested in the specialized EIE instruments than the DA students.
- Male students find the availability of Wi-Fi access points more important than female students and at the same time find the availability of distance support and immediate feedback far less important.

H3: As far as the reasons for the increase in activity concerning the use of the electronic information environment are concerned, the opinions of the DA and CS students will vary, **could not be confirmed.**
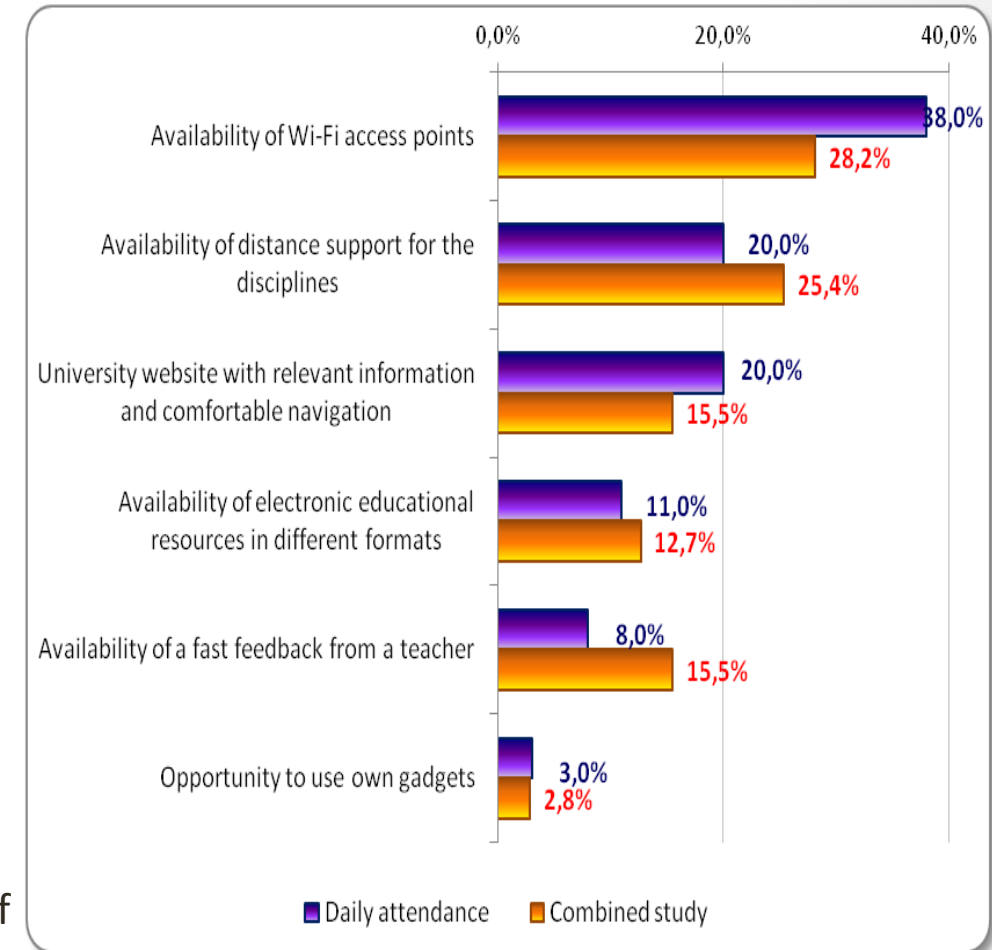
Research question 4: Students' personal needs concerning the EIE

- Nearly two thirds of students (72%) would welcome if the educational resources were adapted to their own needs. Male students would welcome this option even more (77%).

- 78% of the DA students answered this question in the affirmative.

- On the other hand, only 64,8% of the CS students answered this question in the affirmative.

- The difference can be interpreted as follows: the CS students choose their own study resources, they are used to them and do not expect their teachers to create resources adapted to their needs.
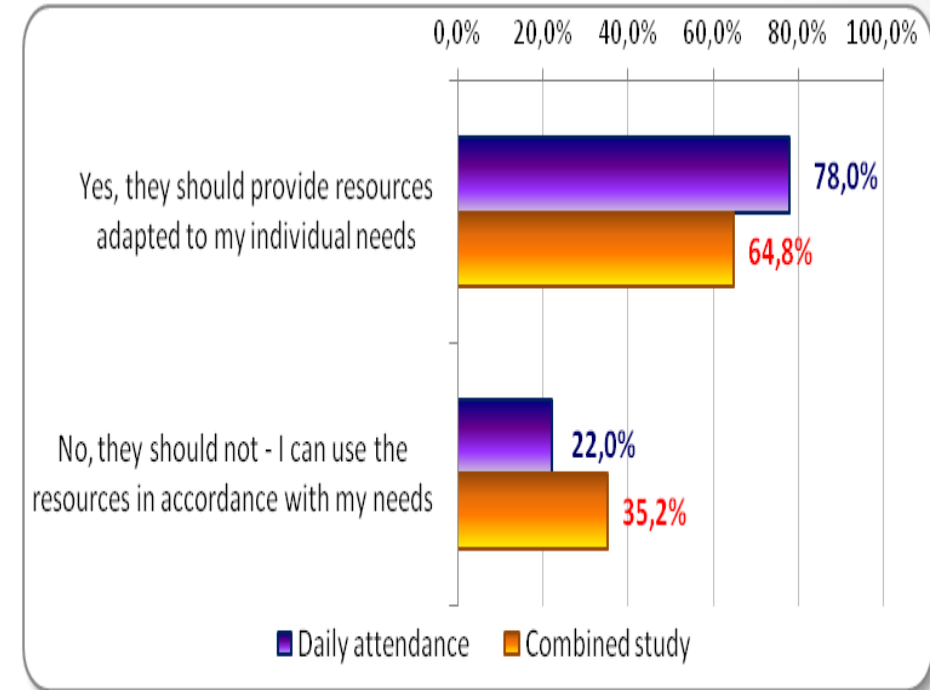
H4: The needs of the DA and CS students concerning the expansion of the electronic information environment will be different, **could not be confirmed**.

Research question 5: The EIE components potentially influencing the students' choice of university

- The largest portion – 27.8% - was represented by the information about cooperation of the university with lower level schools.
- As far as the number of students who stated this factor is concerned, the portion is 60.8%. It can be the result of 83.6% of the research sample students studying in the teacher study program. 62.2% of the teacher study program and 53% of the specialized program students considered this factor to be the most important.
- An attractive university website is the second most important factor (19.5% of all answers) followed by the participation of the university in social and cultural activities.
- As far as the DA students are concerned, the portion of answers preferring the influence of information about the cooperation of the university with lower level schools is higher (32.7% of all answers) than the CS students' (29.9% of all answers).
- The DA students also appreciate the significance of an attractive university website more than the CS students.
- CS students (as expected) stress the importance of the university massive online courses, the presentation of the university teachers' achievements and the participation of the university in social and cultural activities.

H5: As far as the choice of university is concerned, the DA students prefer different components of the electronic information environment than the CS students, **could not be confirmed**
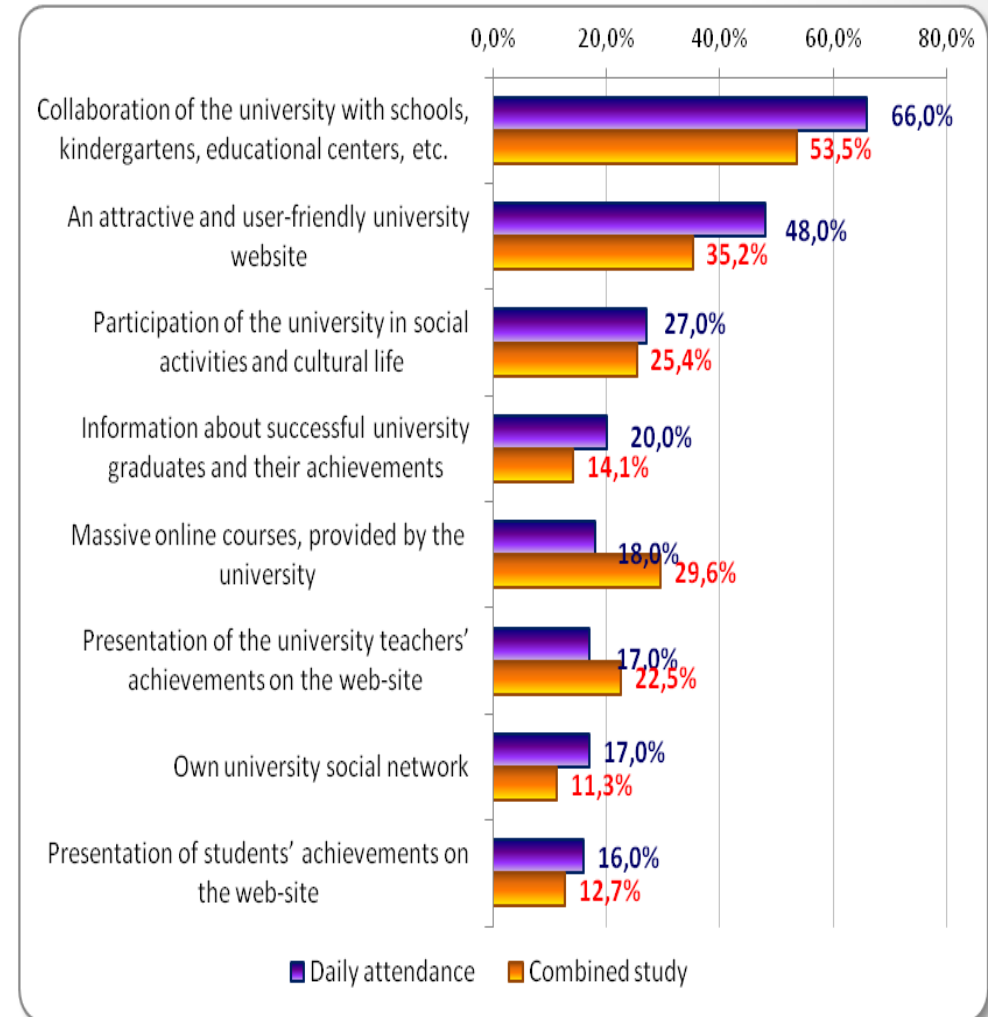
Research question 6: Students' opinions on the influence of the EIE on the planning of their study activities

- Nearly half of the students (45%) think that the EIE instruments will help them in the planning of their educational and extracurricular activities.
- The CS students are more skeptical – every fourth CS student believes that the EIE instruments will not help them with time management. The fact that they have already chosen other possibilities such as classic recorders, diaries, etc. and do not intend to change their habits may be one of the reasons.
- Every tenth female student is not using the instruments yet, but 46.8% of them are contemplating using them (more than male students).
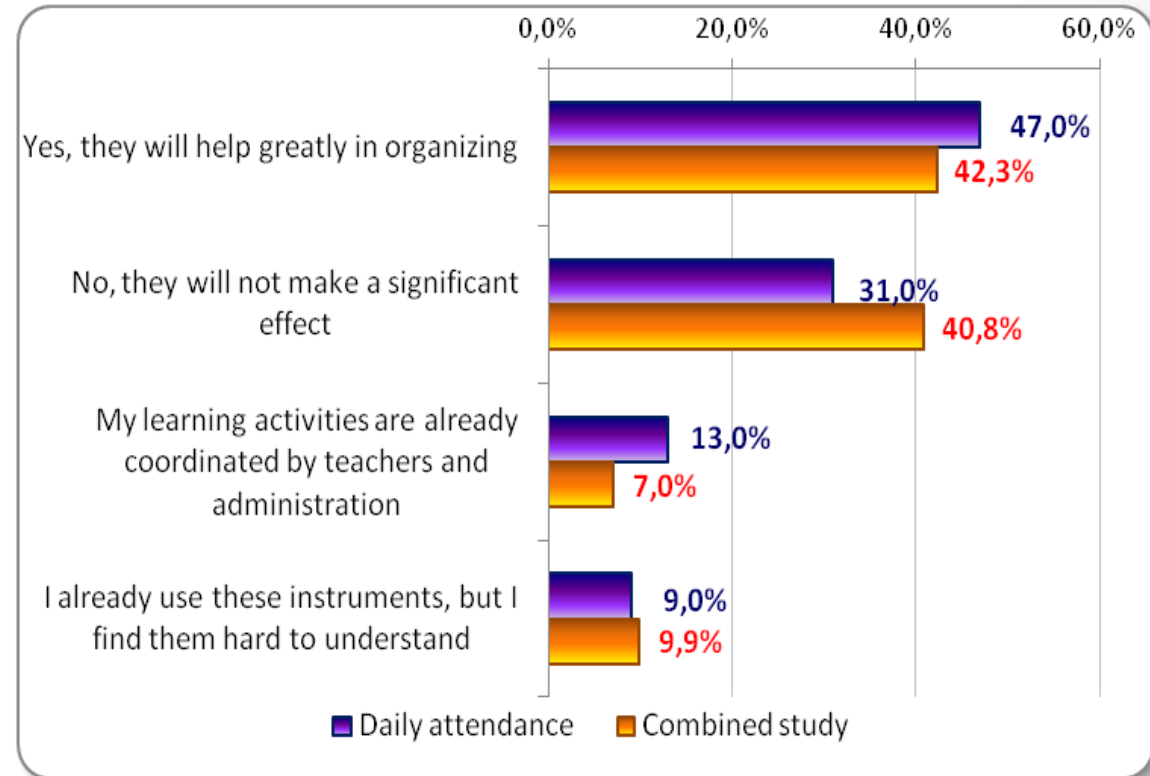
H6: The opinions of the DA and CS students on the possibilities of the use of the electronic information environment will vary, **could not be confirmed**

Conclusion

- In all the research hypothesis was anticipated impact study forms, as independent variable on the observed activity, study habits, opinions and attitudes of students in „electronical information environment" as dependent variables.

- None of the six hypotheses have not been confirmed.

- Wasn´t demonstrate statistically significant effect of the form of study to monitored dependent variables.

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Thank you for your attention

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