

## Introduction

The project is co-financed by the Polish National Agency  
for Academic Exchange

Nowadays, e-learning has become the basic form of education at all teaching levels. This has been a pandemic necessity, but a question arises whether the trend towards the development of online teaching methods will be constant, or whether this process will be continued only by innovators, whereas teachers will be relieved to return to classical education in the post-pandemic period. The project “E-learning and ICT in Education in Poland and Belgium. A Comparative Study” (Poland-Wallonia bilateral exchange program) was implemented under a grant of the Polish National Agency of Academic Exchange (NAWA). During the project implementation, researchers carried out numerous interviews and questionnaire surveys, and participated in a seminar and a conference devoted to the development and the future of distance learning and innovations in teaching at all education levels. The research results are presented e.g. in this publication and will be regularly published in scientific journals after finalization of the project. The first part of the e-book deals with the problems of e-learning implementation in Poland, the second – in Belgium. The issues connected with e-learning development in both countries are outlined, evolving interest of scientists in online education is discussed, and practical implications of distance learning are presented.

A major problem related to e-learning is stress experienced by students to a much greater extent than during full-time study. Working on one’s own, only with lecturer’s support (without direct contact), can generate emotional tension, especially when a student does not work systematically, is unable to work more frequently, and leaves tasks, projects as well as material to study at the last moment. No wonder then that a vast amount of knowledge to master in a short time causes stress. Hence, much depends on a student’s appropriate attitude to learning (without restrictive supervision of a lecturer), ability to cooperate in online groups (regular contact with other learners provides greater motivation), and support received from the environment (including family). Therefore, it is crucial for a student to work on a regular basis, divide large chunks of material

into smaller parts, as well as to plan learning stages appropriately and stick to the planned schedule. It should also be considered that all forms of e-learning involve search for information, its interpretation and analysis. It is necessary to evaluate usefulness and credibility of the information obtained, compare it with other sources, and check whether it is up to date, which is not easy under time pressure. Students who approach e-learning appropriately acquire the skills of critical thinking and text synthesis. All forms of teaching can typically create stress. In order to get rid of a nervous approach to acquisition of knowledge in e-learning, the stress-causing factors should be identified (e.g. accumulation of tasks to deal with) and limited. The basis is self-control (taking responsibility for own learning) and evaluation of own progress. Good motivators are also individual summaries of work, sent by lecturers as part of the tasks performed. In e-learning the greatest emphasis is placed on asynchronous communication, with special focus on various applications. After all, e-learning offers a flexible choice of place and time of studying. However, synchronous communication can be additionally used, in the form of videoconferences, chats or discussion forums.

It is important not only to implement e-learning consistently in the teaching practice of the higher education, but also to notice how important it is to look at distance learning from the perspective of corporations and companies who use e-learning in increasingly effective and profitable ways. Appropriate implementation of distance learning at all levels of education gives future employees of state enterprises and commercial companies opportunities to use their knowledge. Thus, e-learning is the future of education and of companies' development, which ought to be remembered by lecturers themselves who should upgrade their professional qualifications on a regular basis, in order not to disappoint students' expectations.

In the Polish part of the publication, the researchers deal with the history and current situation of e-learning at Polish universities and the popularization of online teaching in scientific journals (Lidia Pokrzycka), as well as selected didactic applications used in higher education as part of classes with Erasmus+ participants (Marlena Stradomska). It also describes the characteristics of digital tools that support innovative asynchronous teaching methods. The analyzed applications and programs allow the creation of various multimedia materials, including audiovisual ones, such as educational films and interactive presentations (Ewa Bulisz). Katarzyna Hałas reads the opinions of students about e-learning trends, while Jolanta Dyndur and Marlena Stradomska describe e-learning issues on the example of selected applications – Evernote, Lumosity, Pomotodo. Publications written by Polish e-learning researchers are finalized

with an article related to the future of e-learning. Paulina Niedziółka forecasts what the trends in the coming years will be and what we can expect in the future.

The Belgian contributions focus on three dimensions that are essential for a good understanding of how e-learning can be effective. The first relates to the preparation and design of distance learning systems. Indeed, before any implementation, it is necessary to define the solid foundations that will enable the construction of environments that are adapted to the audience, focused on the objectives and offering activities that are meaningful for the learners. The first model proposed by Housni, Descamps, Kumps, Marchal, Temperman and De Lièvre makes it possible, on the one hand, to define techno-pedagogical innovation in a socio-centric vision and, on the other, to propose a model to help the various actors involved in the dynamics of change to make their techno-pedagogical innovation projects sustainable and durable. This model is illustrated through three case studies. The second article (De Lièvre, Temperman and Decamps) proposes a model centered on the modalities of use of audio and/or video resources (podcasts) in order to show that it is the integration of the tools in the distance environment that is important and, consequently, not to attribute any intrinsic value to the tool as such. Indeed, it is the pedagogical use that will be made of it that will give it its qualities and determine its effectiveness. This model reinforces the focus on the sociocentric vision of the design of distance devices rather than on a technocentric vision.

The second emphasized dimension is the necessary pedagogical support that distance learners need to benefit from to lead a majority of them to success. Much criticism is levelled at all e-learning provisions when an assessment is made of the number of those who complete the course. One of the factors that helps to counter defections along the way is the tutoring, the support that learners can receive. A third article (Boumazguida, Kumps, Temperman and De Lièvre) focuses on the personal and professional characteristics and motives for entering training of learners enrolled in a MOOC. As it is discussed in the article, it is relevant to describe individual characteristics of learners as they can modulate their behavior. This proposal describes and compares the individual characteristics of two types of learners: on the one hand, registered students (N = 357) for whom participation in the MOOC is mandatory and, on the other hand, spontaneous learners who are free to register for the MOOC. The latter are the most numerous (N = 2,175) and therefore theoretically register for the MOOC by personal choice. The fourth article (Descamps, Marchal, Temperman and De Lièvre) aims to provide feedback on the use of Trello, a task management tool, in a context of supporting teachers in the design of online training. As part of

this research, focus groups were conducted with the design teams to analyze the usability and usefulness of the Trello tool in this context. Our results show that Trello is a fast, efficient and easy-to-use tool for managing a project remotely, visualizing progress, encouraging collaboration and supporting design teams.

The third dimension relates to the effects of e-learning devices on the quality of learning, the question asked here is if the distance device allows learners to learn effectively. The fifth article (Dragone, Temperman and De Lièvre) aims at analyzing the effects of formative assessment on the performance of the certificate assessment on the quality of practical work carried out at a distance by 3rd year university students. For this purpose, an experimental group was formed and subjected to a formative evaluation. A control group, exempt from the latter, is formed to prove the effect of our device. The analysis of our results indicates that the formative test has a real regulatory function. The sixth and last article (Temperman, Vandenplas, Giotis, Boumazguida and De Lièvre) deals with the integration of digital badges in a MOOC-type distance learning environment. By comparing two sessions of the same course (without badges vs. with badges), we observe that participants in the session with badges have a higher level of engagement than participants in the session without badges. From a questionnaire offered at the end of the course, the positive opinion of the students regarding the badges shows that badges can influence the motivational level and be beneficial in the implementation of self-regulation strategies during their learning process.

All our articles reflect the scientific rigor that we believe is essential to discuss the effectiveness of e-learning devices: firstly, a solid foundation in terms of design and integration model; secondly, the implementation of modalities to support learners and teachers in these distance devices and, finally, the analysis of the effects of these environments on the quality of learning in order to ensure their pedagogical effectiveness. This is our core business, of scientists, to rigorously mark out and evaluate the e-learning systems we design, and of teachers, to ensure the pedagogical alignment between our objectives, our implementation methods and our qualitative and quantitative evaluations of the expected effects.... for the benefit of distance or face-to-face learners.

Lidia Pokrzycka, Bruno De Lièvre