Higher Education in the Era of Digital Transformation

Pepa Petrova, Iva Kostadinova
University of Library Studies and Information Technologies (BULGARIA)

Abstract

Nowadays can be seen how the new technologies change the environment very fast. Many challenges are faced with higher education. Every day new technologies, software and hardware solutions are developed and how can the universities respond to these changes. To be part of the educational process, first the person has to be a good teacher. This knowledge the young lecturer receives from his mentor, who is part of the university staff. For 5 to 10 years the young lecturer become well educated and can manage his own subjects. How can young lecturers be well informed and educated in the new techniques and new trends? And how they can respond adequately to all students’ questions? This is the most pressing problem and an answer is given in this article. A new model of cooperation between Universities and Companies is given. An experiment with few young lecturers in Bulgaria is described. Here are certain important negatives of using speakers outside the university and some recommendations on how to move to the next level, set by the digital transformation.

Keywords: higher education, peer mentoring, research, rival mentoring, technologies, training.

1 INTRODUCTION

This article explores the benefits and challenges of university education in the new digital age. New technologies require a transformation of processes and approaches in the learning process. Innovative methods are considered as part of the learning process, as well as a new approach to training and developing the practical skills of teachers.

Digital transformation can be seen in each sphere of life and business. Today we can see totally different type of business functions. Traditional businesses are generally transformed based on new digital situation.

How new technologies transform the education? There are new platforms supporting or replacing traditional university education. Massive open online courses platforms as open HPI, open SAP, Cloudera, Coursera, Intellipaat etc. meet the students’ needs of certification. Where are universities in this situation and how they can handle it? An innovative way to deal with the new situation is the rival mentoring described here.

2 FUNDAMENTAL COURSES AND TRADITIONAL TEACHING APPROACHES AGAINST NEW STUDENTS NEEDS

Mathematics, Physics, Biology, Chemistry, History, Philology, etc. All this courses are fundamental for each scientific direction. But nowadays they are not enough. They can not meet the students’ needs for practical skills and knowledge in new technologies. Traditional courses are taught by established professors in the field who have fundamental knowledge and have gained practical experience from research and experience over the years. The transfer of knowledge from professors to young scientists is a stable and process. But when we talk about new technologies and the development of innovation beyond the reach of universities, we face the challenge of digital transformation. There are different ways to move from traditional to innovative education: peer mentoring; social and professional community; research reports sharing [5,6,10].

Young scholars draw on this experience and develop their views on the development of science led by established scientists. When we talk about fundamental science everything seems clear even when we think about new opportunity to answer students needs. During a Peer Mentor program young scientists are also found and assisted. The program in University in Massachusetts Amherst is a one-year student leadership development opportunity and has two purposes:

- To engage Peer Mentors, upper level students, in assisting first-year students with their acclimation to college, including providing them with tools and insights needed for their meaningful academic engagement;
To engage Peer Mentors in critical reflection on higher education, student development, interpersonal communication, and social justice, and to provide experiential learning opportunities that promote their academic, personal, and professional development.

Peer Mentors are scholar-practitioners whose personal, academic, and professional development is enhanced through an integrated curriculum of classroom readings and discussion paired with the practical experience and reflections on working with first-year students and with the Peer Mentor team [8, 11].

Exchange of information and experience is an essential communication tool, and for the younger generation of scientists it is accessible through social and professional networks. Given these realities, we need to explore the potential of new technologies and strategically assess the trends of digital transformation. The review in [4] clarifies how colleges and college students use social media technology and also challenges assumptions in two areas: how institutions can best exploit social media’s features and its impact on student outcomes. The review further provides a foundation to develop conceptual frameworks that would better capture the role and impact of social media technology among colleges and college students, and community colleges in particular.

The paper [2] shows that well established methodologies in engineering education research might allow the research community to be able to better address questions around key engineering education challenges, such as students' responses to innovative pedagogies, diversity issues in engineering, and the changing requirements for engineering graduates in the twenty-first century [7].

Peer mentoring, the approach of using social media technology and well established methodologies in the educational research is used to support students' success. But in this article we are interest in the process before students' education. How university lecturers are prepared to teach new technologies?

3 APPROACHES TO MAKE UNIVERSITIES READY FOR THE DIGITAL AGE

One popular approach today is Problem and Project-Based Learning, focussing on collaborative work on the issues of to society and highlighting the relationship between theory and practice. Problem and Project-Based Learning fits students as preparation for their future professions [1]. There are different approaches to using game elements, recreating real-world case studies, and providing business platforms for learning purposes. There is a trend of co-operation between universities and technology companies. Alliances created under the patronage of these companies to enable universities to apply technological innovations to the learning process. This type of collaboration assists universities in the transition to digital transformation by providing access to platforms and case studies. Since couple of years we have seen that international companies make University Alliance department in their structure to connect with universities. Such alliances are SAP University Alliance, Oracle University Alliance and others. This is a sign that both Universities and Companies realize that there must have connection between them.

Progressive countries like Germany support university education through the creation of state structures which analyse the impact of globalisation from a technological perspective. The ‘German model’ for higher engineering education based on developing technological skills at a very high level and the impacts on engineering education and on social competence for engineers. The goal in [3] is to explore to what extent engineering education in Germany trains engineers in social and intercultural competency to comply with the future demands of the challenge of globalisation.

Nowadays we talk about mentoring kids in their behavior, students in high school or at the university to help them manage with new subjects and way of study. But we do not notice that new technologies are in front of us and every day something new is invented or created. In this situation the question is how to make our lecturer ready for this fast changed new technologies. Of course, there are professors in the university who are instructing their young colleagues. Unfortunately, this is applicable for math, physics, chemistry and other non-changeable subjects, because at the university there are specialists in this fields of the science.

So far the article presents the approaches that are used to increase students' success and the role of new technologies in the learning process. The following section shows a new approach to improving the practical skills of university lecturers in order to facilitate students' realization.
4 REACHING A DIGITAL TRANSFORMATION THROUGH RIVAL MENTORING

This section considers a new approach to improving university education. Rival mentoring combines the academic knowledge of professors with the practical skills of specialists in this field [9]. Young educators undergoing this mentorship develop both theoretical knowledge and practical skills.

Facing digital transformation here is introduced a new approach to train lecturers. Under rival mentoring in the first teaching year the young lecturers have as a mentor a high-level specialist from the business side. The mentor should be a specialist who works in a company that produces the product, which is the object of the lectures reading from the young teacher. In the first year of teaching, young lecturers will have direct contact with the specialist. They could work as a team to solve problems and ask questions coming from the process of teaching. The young lecturer has as a mentor a person who has been involved in real cases with company customers, who well know the product and can answer any question. This process of communication brings an easy way of understanding and improving knowledge in young lecturer. Universities prefer to educate and train their own teaching staff. But in a fast-changing environment and with a lot of new technologies coming from the business side, sometimes it is easy to invite a person from the business side to read lectures. When a university decides to develop its lecturers, they must have well-trained and sophisticated people to mentor young lecturers in new subjects. Typically, these people come from the business side.

This article refers to a research that took place in a Bulgarian University and included five young lecturers. Two of the five were mentored under a method described above in their first year as an assistant professor at the university. The result represents that rival mentoring train young lecturers faster and make them more confident. For only one year under the rival mentoring program the young lecturers became specialists in the new subject, which they teach. On fig.1 can be seen two young teachers under rival mentoring program (RM1 and RM2) and three not included (NonRM1, NonRM2 and NonRM3).

![Rival Mentored VS Non Mentored Young Lecturers](image)

**Fig.1 The result of training young lecturer after one year.**

This experiment is in the field of information science, but with regard to digital transformation is applicable in every field of science. Three of the five young lecturers who were not included in rival mentoring program did not match the final goal at the end of the first year. It is not possible to measure exactly the missing of improvement of the people who were not included in rival mentor program because of the human, mental, and behavioral aspect. When were checked only knowledge in the field, there was an approximately 30% lower score for non-included people, than the people included in the rival mentoring program. When assess people and especially when they teach other people, it is necessary to measure confidence, way of speaking, introducing and organizing educational processes. It was visible that people non-included in rival mentoring program had a lot of gaps in their knowledge and confidence.

To increase their confidence and improve their behavior under rival mentoring, young lecturers look for someone who they could ask if they need help – their rival mentor. Having someone who they can turn to when they are struggling can really increase their confidence.
5 CONCLUSION

It is time to connect universities and business on new way. It is time to apply mentoring method in universities on new way. The big changes in new technologies and new science fields bring with them big changes in training lecturers approach. This changes come with rival mentoring. Adopting high specialist in new technologies field, make the process of training young lecturers shorter and more effective. As is shown in this article, using rival mentor bring benefits for universities and for business to. The business will have well educated students ready in short time for work. The rival mentoring is designed for young lecturer, but it is applicable for professors who teach a subject as non-specialist.

This article presents a research which is in long term, but results are clear, that’s why the work in this field will continue. In this article are considered subjects related with information science, but the rival mentoring can support the transition to digital transformation in the different fields of science.

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REFERENCES


