CHANGING THE LEARNING ATTITUDE OF STUDENTS BY A BYOD SYSTEM

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Abstract: The tocsins have been tolled, university lectures are going to die out like dinosaurs if everything remains the same. There are less and less students in the auditoriums to listen to old-fashioned lectures because they are bored of them – it is a fact that the efficiency of old-fashioned lectures are rather low whilst they are non-active learning processes. Therefore lectures have to be modernized somehow according to several opinion-shapers. This is why our aim is to give new elements to the standard university-lecture teaching methods and transform the whole learning process to be more active and more personalized according to the modern pedagogue principals. The goal is clear but the question remains how can two or three hundreds of students be activated in the same time and how can they be handled individually. We are in the middle of the task to implement a modularized real-time presentation management system in which some elements are already under testing phase. The system uses students' personal devices (it is called BYOD - Bring Your Own Device) to build a real-time personal connection between the teacher and all the students. Although technique is very important it does not solve anything itself, lecturer has to have a strong idea how it can be used to widen the teaching methods with new aspects. Therefore this paper will discuss the system and its pedagogical possibilities to activate students and engage them in learning process.

Key words: active learning, motivation, BYOD, lecture, teaching method, IT

1 Introduction

Some decades ago the newest scientific results available were reading printed books or listening to the professors' lectures. Nowadays everything has changed radically, modern technology offers just in time the lectures of the most famous professors online using MOOC-s (Massive Online Open Courses) and give the needed information immediately using internet. Students, and not just the students but almost everybody is surrounded by a lot of smart devices, laptops, tablets, smart phones, smart tv-s etc. and they are almost always online. They are accustomed to get help in their daily life using internet, forums and social networks – therefore education has to accept and react to these facts. [4] Every information, each sentence of a lecturer may be checked in real time! We have to highlight here that teachers' trainings all over the world also should have to follow these new trends to use as many possibilities to teach as it is available. [4, 13]

Everything has changed around us except for the form of the standard university lecture. The lecturer explains the sketch of the topic, the main ideas about it. The only thing with which we have stepped forward a bit, that they usually use some new presentation tools instead of chalks and boards but they are very far from students' need.

a) If we go to the depth of it, we understand that for students it must be really boring, because it is an **information mono-flood** opposite to the colourful multi-media possibilities they are used to. This negative effect is strengthened by their **hyper-attention**, which means that they switch quickly between several information sources (TV, phone, friends, music etc.), but they are not able to pay attention too long for the same thing. [10]

b) Moreover, we know from Edgar Dale's research, that a **non-active learning process** is less efficient than an active one (Figure 1.) It is hard to imagine a more non-active thing than to sit in an auditorium and listen to a lecture. [8]

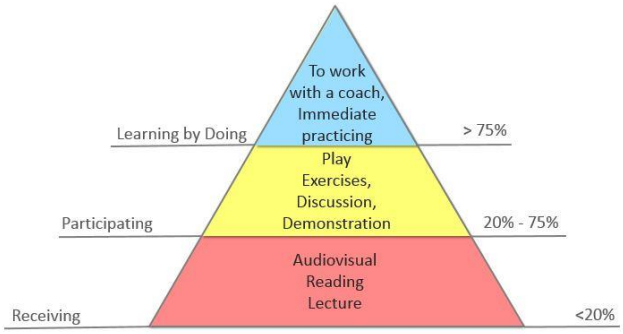

Figure 1: Cone of Learning [8]

c) Last but not least a high percentage of students work in full-time jobs in the industry. Frequently they have the impression that everything which is not useful for that special work is not useful at all, so **they are not engaged in learning, they are not really motivated** about a lot of topics.

The above-mentioned problems lead to the fact that lectures are not so popular among students. Of course, there are always such talented public speakers who attract students into the auditoriums, but they are the rear exceptions.

Our first question must be whether it is a problem at all or not, that students do not attend to lectures regularly? Are not they able to follow everything through online courses, online information which are much more convenient for them? For students with outstanding abilities and with a strong engagement towards the subject almost any type of course methods may be adequate. Otherwise there are two different types of students who learn continuously and the deadline rush learner. Students belonging to the first group will learn and deal with the material continuously and try to understand each aspects of it. Others who are not so interested in the given topic or of whom self-discipline is not so strong, might leave the learning only before exams. This type of learning, learning in the last minute in rush is not so efficient, because it does not let enough time for repetition, stamping, rethinking, testing etc. - it might be enough for passing an exam but it will not give a deep understanding.

2 The modernization of university lectures

We designed from the very start to use students' smart devices to implement our system. (We made a survey to realize the possibility of using BYOD (Bring Your Own Device). You may read for the details in [7].) Mobile applications are parts of our daily life from the field of communication (Facebook, Twitter) to organizing holidays in tourism [12]. Due to the different platforms it seemed to be easier to create a mobile optimized web-application instead of several native programs. Therefore we implemented a real-time web-application written in ASP.NET with SignalR modul **eLection** for presentation management. You may read more details in [1,2]. For today new useful features are added to it.

The program is able to authenticate students with the standard student login, password pair they use generally in university laboratories. Besides the well-known authentication the lecturer may ask a QR code from the students as well during the login process to be able to decide their actual place. (The QR codes specialize the lecture-room, the row and the seat.)

Our further plan is to build a face-recognition feature into the system instead of the QR code usage.

With the help of the application the lecturer may put questions to students and they may choose between the given answers similar to a ready-made voting system. They may send their answers through their own mobile devices. The innovation of our system is that students also may send questions to the lecturer real-time. Therefore the possibility of having a discussion is given. While everything is logged the questions, answers, signs, we are able to deal with the students' personal knowledge as well.

Now we are to summarize the pedagogical advantages of our system in modernizing university lectures according to the above-mentioned problems. In another paper *Trending Towards a Personalized Real-time Evaluation System Based on BYOD* we will discuss the benefits of its usage to create dynamic examinations [14].

3 To break the monotony of lectures

What can we do to avoid boredom, to avoid an information mono-flood? What can we do if the fact is that they are surrounded by their smart devices and accustomed to use it continuously? We do not forbid the usage of them moreover we encourage them to use their devices and participate in the lecture actively – what a "cool" thing they might think. We should forget the old-fashioned teaching methods, according to which we are continuously speaking and they just have to listen! It is obvious to use various teaching methods during the lectures as well. There is nothing new under the sun: use questions to break the monotony and involve students into an active learning process but for now with the help of their smart devices!

It is not so easy as it sounds having several hundreds of students in the auditorium, but there are several ready-made voting systems which have been used for decades in different universities for this and for other purposes as well. According to the previously mentioned … we implemented an own bidirectional real-time informatics system, eLection using students' own smart devices as client devices (BYOD). Some good questions in good time will break the monotony of lecture, which helps us to keep the attention.

4 To activate students

The second problem is the lack of activity during lectures. Of course in the "old times" lecturers tried to involve students into the topic as well by asking questions, but without a voting system we may activate only the most agile students. [3] Moreover with good questions by which we not only want to get back the previously explained material, but raise a problem that makes students thinking about the topic, motivates them to take part in creating a solution actively (problem-based learning) [9].

But the innovation of our system is not this - it offers a bidirectional real-time communication possibility between the teacher and the students. Not only lecturers ask questions and get answers from students – as it is usual - but the opposite communication direction is also available. Students may send a signal to the teacher whenever they think that they have lost the thread or may send a real question - with this feature we can generate some brainstorming as well. (Figure 2)

The lecturer may follow the signals and the questions in real-time and may decide to react to them just in time or later. (Avoiding the disruption of lectures with stupid jokes – we use the built in authentication.) This way, the lecture becomes much more dynamic and interactive. It is a good technique if the lecturer asks an immediate feedback at the end of

the lecture to be able to fine-tune the content, the teaching methods and his personal behaviour to the students' actual needs for the next time.

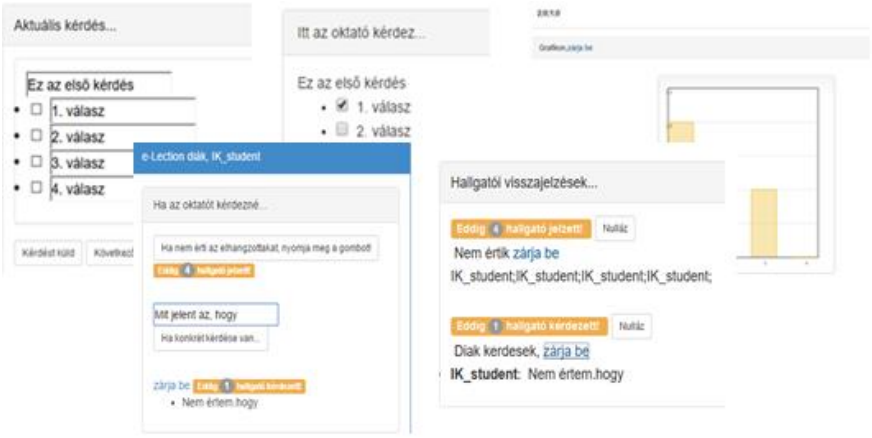

Figure 2: Students' signals and questions in eLection

5 To motivate students

It is obvious that a positive teacher-student relationship helps creating a deeper engagement towards learning and it naturally motivates the learning process itself. In the last decades pedagogical literature has dealt a lot with this viewpoint. [5, 6] There are a lot of suggestions how a teacher may strengthen students' motivation and engagement. Mainly they are decided by the lecturer's pedagogical knowledge and personal behaviour. In this paper we do not want to review each element, only those which is supported by our tool, eLection. We start with a statement: Motivation is based on special biological, psychological and sociogenic needs, drives – given by Bábosik, I..

What type of needs have they which help the learning process? The need of creating a solution, to understand or getting to know something new, to avoid monotony, to achieve results and to be proud of it, to be noticed, to be important for the others, to work together and to be considered justly.

With the help of our system the lecturer may ask their opinions about any problem therefore they may take part in producing the result. If they are really involved in the problem solving, they may feel that they are working together with the lecturer. Asking them to find answers in small groups we may strengthen this type of motivation. While eLection is a real-time system, students get immediate feedbacks from their actual knowledge. Seeing their success they should have to be more motivated to take part further in the learning process. Inasmuch as the evaluation of answers are made by a computer program favouritism is not possible. Demonstrating caring is one of the most powerful ways to build positive relationships with students [11]. The new feature of eLection helps the teacher to remember students personally. As you see on Figure 3. the system writes the names of students on the map of the lecture-room. Moreover it signs who has problems understanding the topic by giving a red border around the names and hovering above it shows students' question. (Figure 3.)

Figure 3: Map of the auditorium with names

If the lecturer does not want to respond to a question immediately, it is possible to give it to the seminary teacher who may deal with it later. During the semester educators may follow the students' result personally comparing to the knowledge of the others. Another good practice is to ask for feedbacks from students frequently – maybe at the end of each lesson. It shows for them that their opinions are important for.

6 To map the weak points

A practiced lecturer knows the truth of Heracleitos' phase: *No man ever steps in the same river twice, for it`s not the same river and he`s not the same man.*

The students, their preknowledge and the lecturer as well is changing year by year! So it is not obvious at all what they know exactly and what things need some extra explanation! With our system a lecturer may be up-to-date about the momentary knowledge of the students. The base features of eLection application were already under testing, others were tested only small private groups at the time of writing this paper.

7 Conclusion

In the 21st century technological modernization has changed our daily life as well. Students who are digital natives have changed their learning habits, they get information just in time, they use virtual communities to get help. Old-fashioned university lectures are not suitable for them any more so we have to modernize them and find more efficient ways to teach. We have implemented a real-time presentation management tool with which we may activate and motivate students better even in a huge crowded auditorium. We state that the results are reassuring, students accepted it with pleasure.

Bibliography

[1] DR ILLÉS, Z., H BAKONYI, V., ZYTNY, R., SZABÓ, T., PSENAKOVA, I.: *Concept of Supporting university Education by using Students' Personal devices* . In: 11th International Scientific Conference on Distance Learning in Applied Informatics, 2016. ISBN:978-80-7552-249-8, 10p

[2] ILLÉS, Z, H. BAKONYI, V., IFJ ILLÉS, Z. *Supporting dynamic, bi-directional presentation management in real-time,* In: 11th MACS conference 2016, 6 p.

[3] H BAKONYI, V., DR ILLÉS, Z. *Interactive talks*, In: Edukacja Technika Informatyka / Education Technology Computer Science 11: (1), 2015, 298-303.pp

[4] DR ILLÉS, Z., H BAKONYI, V., *Mobile driven Changes in Education,* In: Edukacja Technika Informatyka / Education Technology Computer Science 11: (1), 2015, pp. 310-315.

[5] BOYNTON, M. and BOYNTON, C., *Educator's Guide to Preventing and Solving Discipline Problems***,** 2005, ASCD, ISBN-13: 978-1416602378, 1st Chapter

[6] BÁBOSIK, I. *Neveléselmélet,* Osiris kiadó 2004, 963-389-655-X, IV CHAPTER, 6.2 (Online). Available: http://bit.ly/1sVEDTz [Accessed on: May. 28, 2016].

[7] PSENAK I, SZABÓ T , DR ILLÉS Z, H BAKONYI V, IFJ ILLÉS Z, ZITNY R. *Okoseszközök felhasználási lehetőségei a felsőoktatásban,* In INFODIDACT 2015. Conference Paper 5. 6 p. ISBN: 978-963-12-3892-1

[8] Cone of learning: (Online) Available: http://bit.ly/1TNR2o6 [Accessed on: May. 28, 2016].

[9] PRINCE, M.: *Does Active Learning Work? A Review of the Research In:* Journal of Engineering Education 2004, (Online) Available: http://bit.ly/1sjNRZ7

[10] DANI, E.: *E-létezés és „hiperfigyelem",* In: Könyv és Nevelés, 2013/4 (Online) Available: http://bit.ly/1OsFALM [Accessed on: May. 28, 2016].

[11] KERMAN, S., KIMBALL, T., & MARTIN, M. *Teacher expectations and student achievement*. Bloomingdale, IN: Phi Delta Kappa. (1980).

[12] ŽITNÝ, R. 2015. *Klasifikácia mobilných aplikácií v cestovnom ruchu* . In: Ekonomická revue cestovného ruchu. ISSN 0139-8660, Roč. 48, č. 1 (2015), s. 23-31.

[13] PŠENÁKOVÁ, I., SZABÓ, T. *Az m-learning lehetőségei a szlovákiai tanárképzésben Az m-learning lehetőségei a szlovákiai tanárképzésben* 2015. In: XXI. Multimédia az oktatásban és IKT az oktatásban konferencia : Szabadka, 2015.05.22 - 23. – Subotica, Újvidéki Egyetem, 2015. - ISBN 978-86-87095-54-0, S. 133-137.

[14] DR. ILLÉS, Z. *Trending Towards a Personalized Real-Time evaluation system based on BYOD 2016 XXIX DidMatTech, Hungary, Budapest,*

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