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INCREASING INTERACTIVITY IN CLASS

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Increasing interactivity in large size classes is a major issue in our teaching experience. One possible tool is an Audience Response System (ARS). This short paper aims to put the use of this tool in a theoretical framework, gives an overview of different products to consider, introduces a pilot-study from the University of Pécs and describes our first experiences.

GENERAL OVERVIEW

Problem description

Any person who deals with any form of teaching has already encountered one of the following problems:

- large classes;
- passive students;
- lost attention.

Different problems may work both as cause and effect. Cost effective management of high number of applicants result in large size classes/groups. It is inevitable that people with different habits should be included in these groups, which can lead to loss of attention and the passivity of certain students. Lecturers cannot interact with all of them individually, which can also lead to the loss of attention

However, these problems can be remedied in a number of ways, and such a solution may be the Flipped Classroom model.

Theoretical framework (Jackie Gerstein, 2012)

Briefly, the Flipped Classroom is a strategy to reverse the traditional learning environment usually by delivering instructional content (often online), outside of the classroom. The model is basically a cycle of learning model. The cycle often begins with an experiential exercise. This is an authentic, often hands-on learning activity that fully engages the students: they become interested in the topic because of the experience, they have a desire to learn more. The next step is the What phase: students are exposed to and learn concepts touched upon during the Experience, they explore what the experts have to say about the topic (the information is presented via online/videos/websites/etc.). The third phase is the So What step: students reflect on their understanding of what was learnt during the previous steps. The final step of the cycle is the Now What: during this phase, the students will show what they have learned and try to apply based on what they mean to them. This goes beyond reflection and personal understanding in that students must create something that is individualized and extends beyond the lesson with applicability to the students' everyday lives.

In this framework, the so-called knowledge transfer is not executed in the usual form and new tools, new opportunities appear. Although, this leads to another problem: how could these new tools be integrated in teaching?

Possible solutions

We believe that a possible solution to the problem is the use of ARS (Audience Response Systems). It helps to create a two-tiered relationship between the presenter and her/his audience. It is needed to have all the member of the audience the possibility to be able to vote online in the simplest possible way. The use of ARS involves many options: for instance, the listeners can join in with a simple vote during the presentation (they can participate in the course, *Figure 1.*), to indicate if they have lost the thread somewhere. The presenter will be able to check presence (authentication is possible) and the opportunity of embedded questions related to the presentation is given. There is the opportunity for the audience to influence the lecture flow and to get extra credits. The advantage of the system is that it can be seamlessly integrated with different LMS systems. With the help of ARS people can learn more efficiently.

Figure 1. Learning pyramid. (Infographic published by Neil Beyersdorf on Linked in 2015)

Available solutions

This system is already available from the technological side in the market, and many providers offer similar opportunities. The main features are:

- Hardver-, software-based or hybrid
- Embedding into presentation tools
- Question and answer types
- Additional features

The main products are:

- Optivote

It seemed a promising solution: it offered a hardware-based solution to which a special device was needed. The price of the device was relatively cheap, but the service was not. The project was discontinued after 2010. The moral of a fable: expensive, extra hardware is unnecessary.

- Adobe Connect

A software-based solution that allows full video/audio integration, image and application sharing. There is no need to install it, you just have to pay for it. There are plenty of extensions available for it.

- Poll Everywhere

This product can be used to access various online polls from various devices such as browsers, Twitter, and mobile. Web and PowerPoint embedding is available. The results can be displayed in several ways, including a geolocation mapping.

- Turning Technologies

Hybrid Solution: combines hardware and software-based technologies.

- SOPRESO

Primarily a presentation sharing system (PDF, Keynote, Prezi, PPT, etc.). The audience can also initiate various issues, such as questions, problems, etc. Social network authentication is also possible. Hungarian innovation and development.

- Learning Catalyst

Specifically linked to educational and eLearning/Presentation environments. It is innovative and contains many types of questions. It operates based on the principle of Flipped Classroom and Student-Student Interaction. Independent of the operating system, only a browser needed.

- Moodle survey
- kahoot.it
- etc.

PILOT AT THE UP

First of all, it is necessary to find out from the student side, whether there is a need for an ARS service. For testing purposes, a group of 70 students was tried to determine if they are susceptible to voting. The response rate for the open method questionnaire was not influenced by the fact that the scores were compiled by an instructor or by a student. Behind this phenomenon, the students cannot assume their answers and opinions before each other. Afterwards, it was possible to look at the different products more closely.

Time schedule

In the organization of our Faculty, we tried to try out several products to learn its potential benefits and disadvantages and to see that given product in a crisp situation. Within this opportunity, we have participated with our colleagues in the following programs:

- Pearson Learning Catalyst demo (Nov. 2015)
- SOPRESO demo (Dec. 2015)
- Turning Technologies demo (Feb. 2016)
- kahoot.it demo (Mar. 2016)

Basically, all demos had their own advantages and disadvantages. We also received positive feedback from our colleagues. The charm of novelty and the welcome of the students will be the question.

Students' expectations

With a survey, we also tried to assess students' needs. A total of 235 fills were generated, and their aggregated results are shown in the following 3 figures.

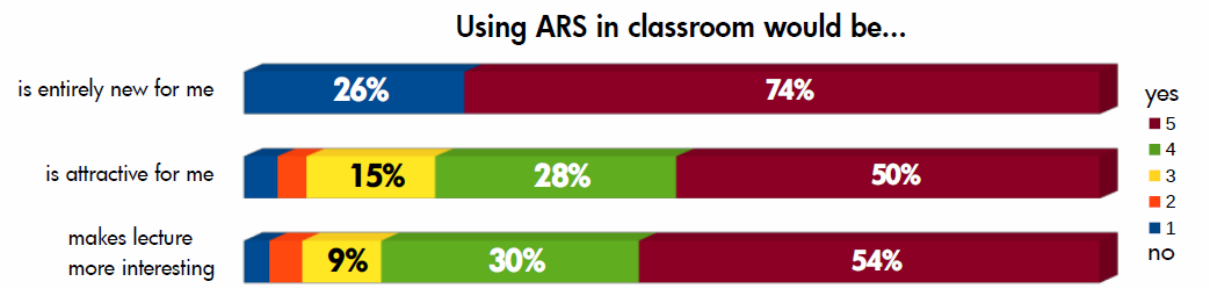

Figure 2. Using ARS in classroom would be…

Figure 2. shows that the introduction of ARS into a given course would be a whole new world for most of the students, but it would be an attractive value for the majority and could make the presentation more interesting. Involving new technologies in education may seem like a novelty, but with the advancement of technology both sides need to develop.

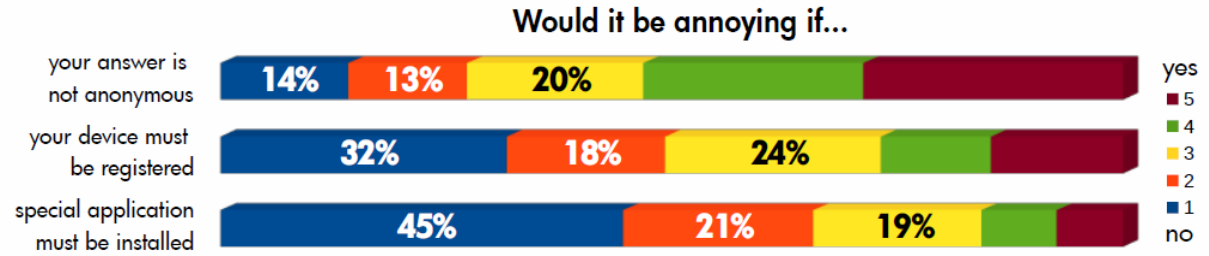

Figure 3. Would it be annoying if…?

Based on Figure 3., anonymity plays an important role (we got similar results from our classroom experiment). However, it may be interesting to note that installing a third-party application would not be annoying (neither the registration of that device).

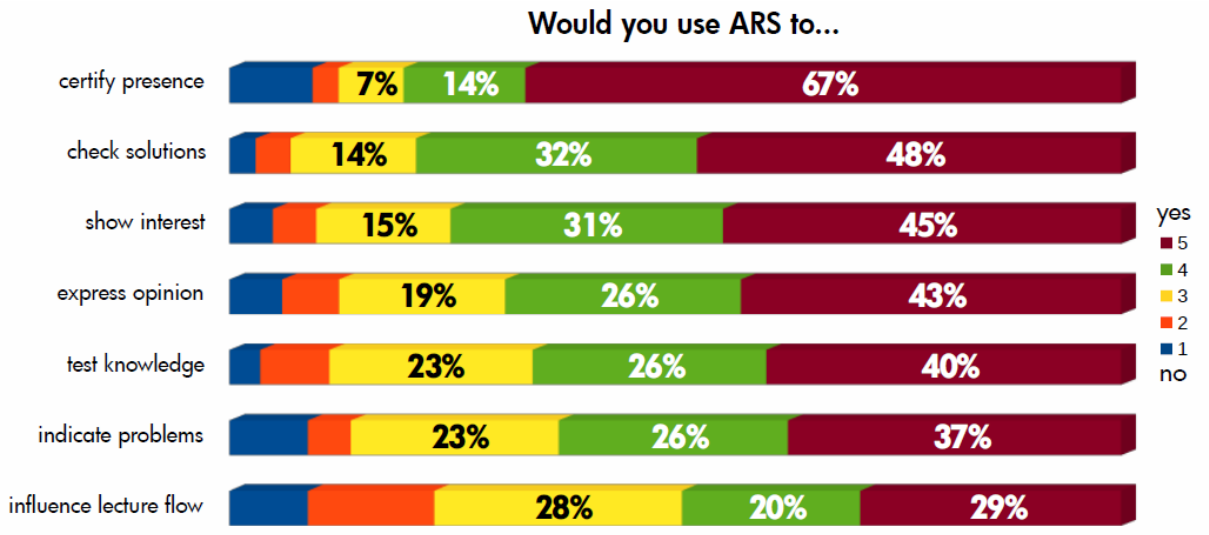

Figure 4. Would you use ARS to…?

Also from Figure 4. we can read the results that confirming our tentative experiment. Students are less likely to use ARS technology to change the flow of the lecture, rather they consider it as an administrative tool (confirmation of presence). What is more of a matter of interfering with questions in the lecture flow, the more the number of insecure responses and the proportion of yes replies decreased.

Most importantly, the survey found out: anonymity for students is an important thing and they do not really want to take the responsibility to have a say in the class' flow. This is a very interesting mentality.

Lecturers' expectations, opinions

After the students, we were curious about the colleagues' opinions, so different possibilities were discussed. Some respectable (older) colleagues have showed resistance. Fear was basically because of the need to allow mobile devices to be used in such systems, and in some cases their use should be encouraged. If we did not want to use mobiles, then in case of „clicker"-based solutions the ownership and distribution of devices is a question. It is another problem with the building such system: is it used by every single colleague or just the majority? For further uses, how should the data have obtained from the in-class polls? At the same time, it would also be important to have an opportunity to switch between anonymous and unanonymous use – once the students experience the unanonymus mode, then everything else is just a matter of trust.

Turning Technologies „clickers"

We have been able to use this technology for a free trial period: we received a receiver and a few clickers. It was basically a pleasure for the students, it was easy to manage, they considered the tool interesting. Rather, it was considered useful at BA level than the master, where interactivity is not (such) a problem. The question really is how much losing its interest in continuous use – we are not sure about long-term usage. Interactivity is limited but supported, it can be used for presence-checking, quick tests. The price of 45 euro/device plus receivers. The students argued that they would rather support smart devices (though they also know that they do not have 100% coverage). There is a chance of cheating (of course not in the investigated groups), especially if the tests were counting on half-yearly performance as well).

Kahoot

A free, web and mobile device-based voting system. It's easy to use: participants need to answer simple choice questions only at the moment. No pre-registration required, e.g. Neptune code can also be used. More and more colleagues start using it in different ways. One semester was tested with Probability and Statistics „readiness tests" for extra credits – it's also a proxy for presence. The results were promising (Figure 5.).

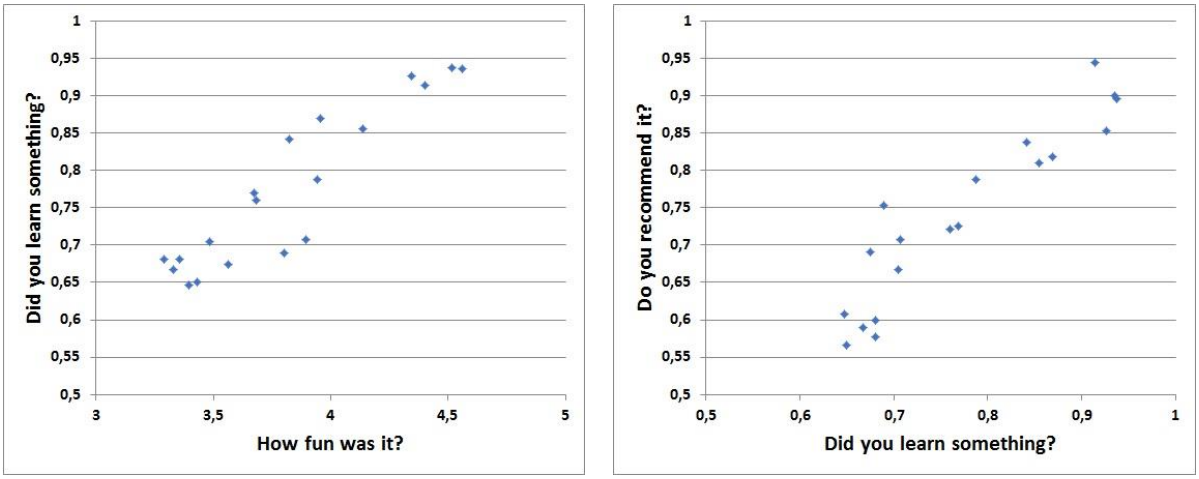

Figure 5. Correlation results from different KAHOOT Quizzes.

Each point in the figure represents a lecture with a KAHOOT test. Each test ended with a survey where students were able to express their opinion about the questions: they marked on a 1 to 5 scale that how they liked the test (quiz) or not, did they learned something, or did they recommend it for somebody else. There is a clear correlation between the fun-learn and learn-recommend relations.

CONCLUSION

Basically, our suggestion is to start using some free solution first. The participation from the lecturer's side should not to be forced, instead it should be voluntary. After a while, when the "critical mass" is reached, one might consider a flexible paid service. It should also be noted that different importance/techniques are needed for smaller and larger groups. The students seem to like it if it is not overused, but using them at the right time is a great tool to break the long lecture and shake the audience. Last but not least, it is a great possibility for students to show their excellence.

As a result of our testing, we found that bandwidth proved to be the most important bottleneck after all: without the expansion and development of the Wi-Fi network, only mobile solutions could be considered – in connection with this fact, a project for the development of our Wi-Fi network was also launched.

REFERENCES

Gerstein, Jackie (2012). *The Flipped Classroom: The Full Picture*. Amazon Digital Services LLC.