eLEARNING APPROACH eBIG3: DEVELOPMENT, DELIVERY, AND EVALUATION

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Abstract. *In this report in addition to previous results we present the evaluation results of multi-screen e-learning courses – eBig3. It is a new approach and technology to lifelong learning embodying effective integration of popular television, Internet, and mobile phones technologies. We present the results of ten eBig3 pilot courses delivered in 2013 in Latvia. The target group of eBig3 courses was society at large. It demonstrates radical increase of registration in eBig3 courses compared with the traditional registration in the Internet. The course delivery was more successful than that of blended learning courses. The new approach strongly increases the availability of e-courses, and contributes to closing the gap between the expectations for future life-long-learning and real achievements. We didn't observe connection between learner's age and attitude towards the usage of SMS in the eBig3 approach.*
KeyWords: *e-learning, t-learning, m-learning, eBig3-learning*

Introduction

Each big breakthrough technology has encouraged and announced the creation of a new type of learning. TV-learning was inspired by large-scale penetration of television, m-learning developed in line with smart phones. It was initially considered that e-learning involved only Personal Computer technologies for education. Now we mostly consider that e-learning involves all digital technologies for learning. Often the learners are using the three main technologies in their own style, but the e-learning developers are having separate approaches for e-learning, m-learning and t-learning. To close the gap between the three technology-driven e-learning approaches and the integrated habits of the users, we designed, piloted, and evaluated a new approach for learning – eBig3 learning.

eBig3 learning is a complementary application of the TV, the Internet, and the mobile phone to ensure high quality user-friendly learning. eBig3 learning employs the traditional skills/habits of large target groups of users across all ages of lifelong learning. eBig3 learning tends to reach, deliver content, and learning support to large target groups. eBig3 learning does not insist on permanent upgrading of technology or special skills.

The project has been carried out in the cross-border area of Latvia and Lithuania. The target group of eBig3 courses was society at large. This paper

reports on the evaluation results in Latvia. At the beginning of the project, the Enterprise Knowledge Development (EKD) method was used to capture and systematize the experts' and stakeholders' knowledge about various learning approaches and content delivery technologies. Each of the three chosen technologies (computer & internet, mobile, and television broadcast) has been used for the learning content type & interaction type which it suits best. Technologies have been combined to reach widest possible audiences by a) getting them inspired for joining the course while watching a 12 minutes long entertaining educational TV broadcast; one or more short video films have been prepared for each course; b) ensuring a smooth registration process and providing regular organisational and context dependent learning support by SMS messaging; c) making available full instructional material in an online learning environment. After the initial study of the situation and acceptance of the first conceptual eBig3 principles, we designed the prototype of eBig3 course.

eBig3 Course Prototype

The eBig3 course prototype consists of three contents: t-content, e-content, and m-content. The t-content is created by a discovery-oriented video transmitted over the television channel. This video is interesting to watch as a traditional TV movie. The difference lies in the fact that the video has a special title for inviting people to join the e-course (Figure 1).

Figure 1 **eBig3 course t-component with a special title to join the course by sending SMS: "eBig3 name, family name (course number)"**

Joining the course by sending SMS "eBig3 name, family name (course number)" is very easy. An additional course can be selected sending an additional SMS: "eBig3 name, family name (course number2)".

It is much easier to use than complete the profile in an Internet e-environment. The user receives his/her login details in about one minute. Our system corrects some typical mistakes, and around half of registration attempts are successful. After an unsuccessful registration and receiving an error message, all users can repeat registration the second or third time. After 1-3 attempts all users are usually logged in successfully.

Typically, users often loose logins. eBig3 offers simple recovery of a login – by sending SMS "ebig3 password".

The m-component has been designed to support learning. The high drop-out rates of e-learning encouraged us to design additional robust easy to use support receiving SMS in selected learning situations like:

- Congratulations after joining the course;
- Remaining to be more active in the course;
- Confirmation of active participation in the Course Unit;
- Information on the place and time of face-to-face seminars;
- Congratulations on completing the course;
- Information on newly published courses;
- Other specific information.

The SMS system helps to maintain virtual contact with the learners. It strengthens the contact established by seminars and phone contacts.

The SMS sending decisions and content are sourced by:

- Planned events data base;
- Special actions of the users (like registration);
- Analysis results of the users' behaviour.

The e-content is the central part of content – it ensures the level, volume, assessments, tests of the learning objectives, etc. The e-content has been located in the Moodle learning environment. The users' behaviour is registered by mouse click data in each course unit.

eBig3 Course Delivery

eBig3 course delivery was organised after registration. 90% of registered users entered the course using the login received by phone (Figure 2).

The eBig3 courses and seminars were organised at four universities in Latvia – Riga Technical University, Daugavpils University, Liepaja University, and Latvia University of Agriculture.

After the first week of activities the motivating SMS was sent to the users. The SMS content was selected on the basis of user activities in the course.

The seminars were organised every week at a different university. The information on the place and time of the next seminar was sent by SMS to each registered user. These activities maintained the spirit of on-going learning.

The users completed the tests, exercises and the final assessment work, they also communicated with the course teachers.

The users who successfully completed the course with a final assessment work received the partner university certificate.

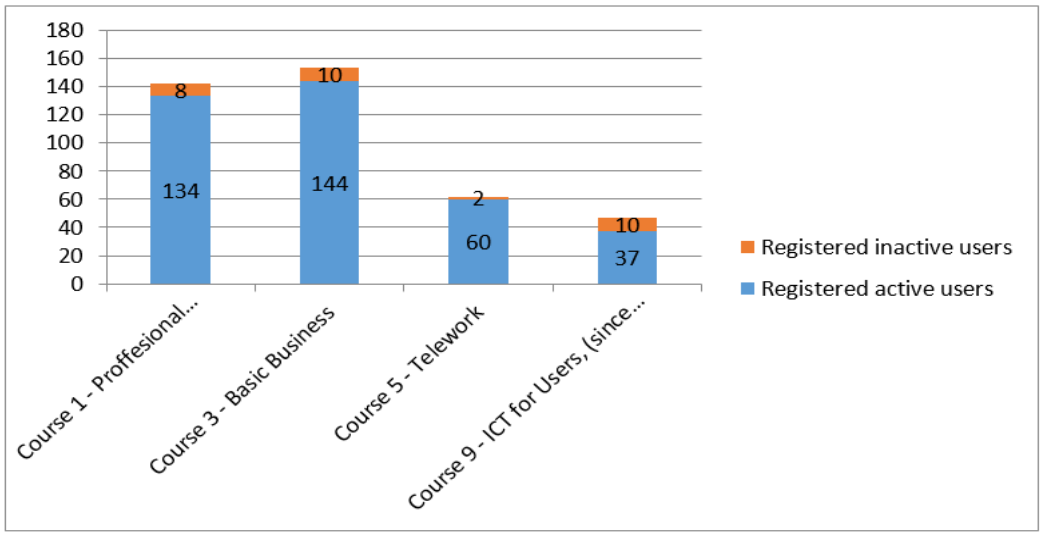

Figure 2 **Registered users and users entering the courses 1,3,5,9, week 1-13**

eBig3 Course Piloting

The information on eBig3 courses – titles, learning objectives, and delivery approach was published in the www.ebig3.eu portal.
Partner universities created a set of ten courses,

1. Professional Communication (23 learning objects LO)
2. Basic Business (190 LO)
3. Information Society and Telework (82 LO)
4. Computer course for Beginners (58 LO)
5. Computer course for Users (170 LO)
6. Landscape Architecture and Design (54 LO)
7. Renewable Energy Resources (39 LO)
8. Latvian–Lithuanian Communication (27 LO)
9. 23 things for Business Beginners (59 LO)
10. Internet Marketing and Advertising (1 link to a course)

The most popular courses were:

1. Professional Communication
2. Basic Business
3. Information Society and Telework
4. Computer course for Users
5. Landscape Architecture and Design

Course content was uploaded in Moodle. Course No 10 was located in another e-learning environment with a link to Moodle.
There were 12 minutes long videos broadcasted 30 times on the Latvian Regional TV – each course had a separate video with a title inviting people to

join eBig3 course by sending SMS. The Project flyers were also distributed by libraries and municipalities in regions of partner universities.

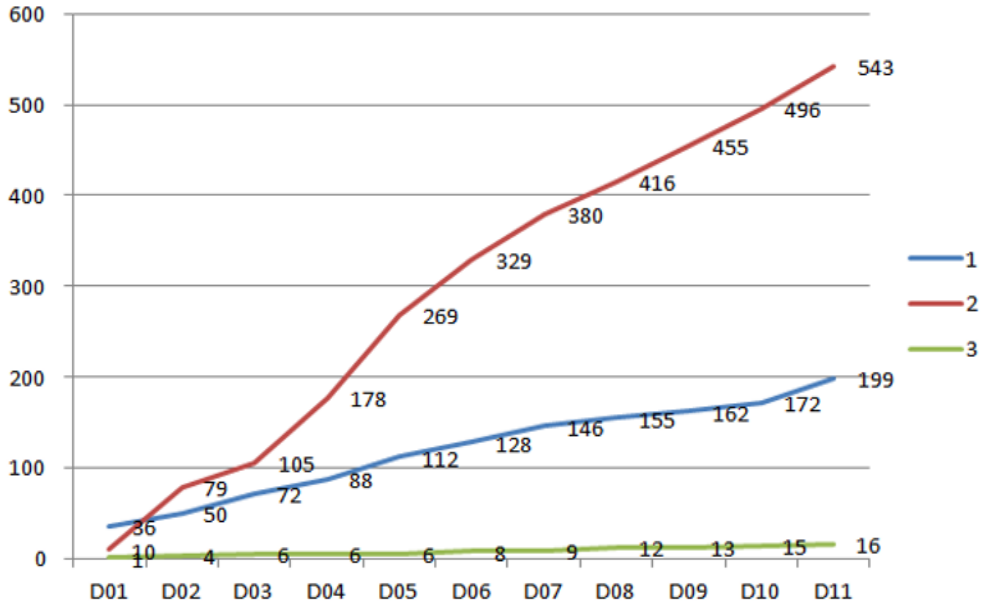

Figure 3 **The number of participants in the Latvian speaking area in the first eleven days of course delivery: 1-eBig3 courses (registration of personal information by SMS) up to 199, 2- public IT courses in Riga City portal www.riga.lv (large scale advertising, without personal registration) up to 543, 3- public business courses (medium advertising, registration of personal information in the Internet) up to 16.**

The number of participants was rapidly increasing. Figure 3 shows the number of participants in the first eleven days of course delivery.
Figure 4 shows the increase of eBig3 users during the first 13 weeks of course delivery.

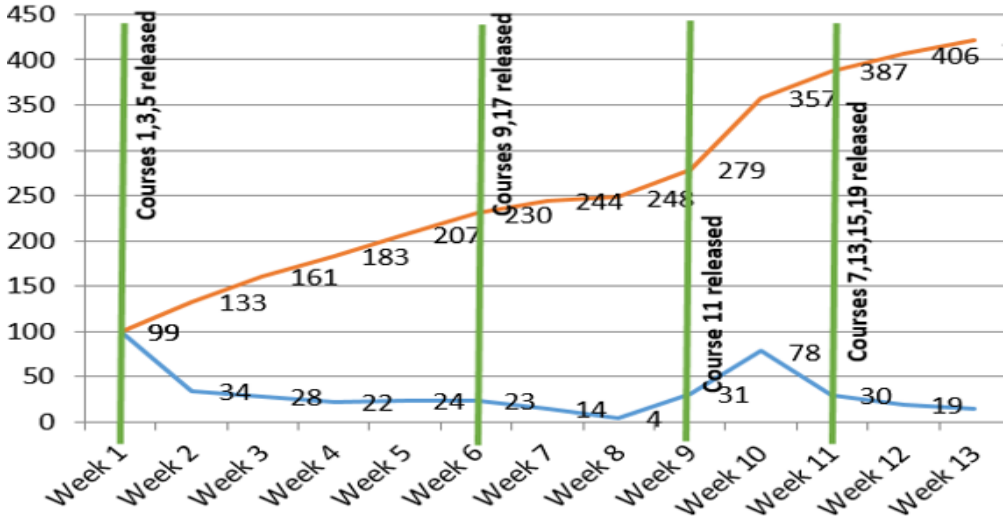

Figure 4 **The number of participants in the Latvian speaking area in the first 13 weeks of eBig3 course delivery (upper line), and the number of new registries every week (lower line)**

Each course had from 23 to 190 learning objects. The eBig3 information system collected data on mouse clicks in each course.
We calculated the cumulative ratio of the number of user mouse clicks in each course:

1. Professional Communication – 1.50
2. Basic Business – 0.48
3. Information Society and Telework – 0.83
4. Computer Course for Users – 0.59
5. Landscape Architecture and Design -1.39

The cumulative ratio is the average ratio of mouse clicks / number of learning objects for all users who entered to course. Figure 5 shows the increase of the cumulative ratio vs the number of learning objects.

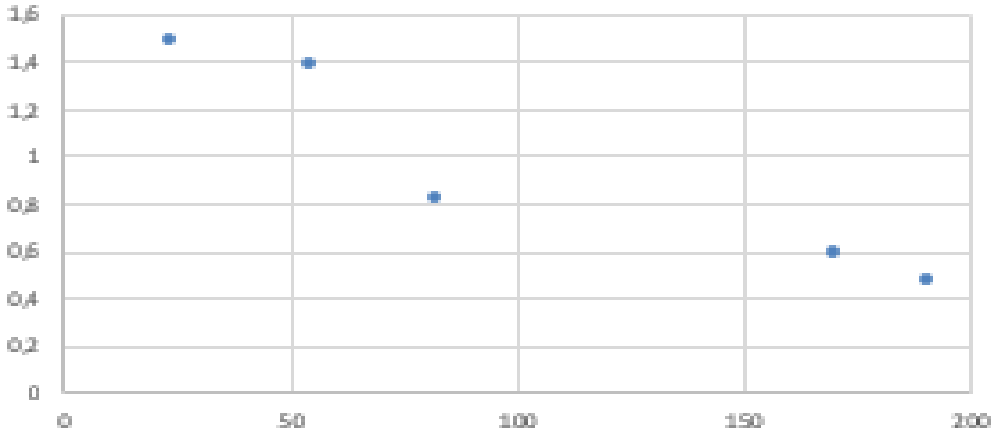

Figure 5 **The cumulative ratio (mouse clicks / number of learning objects) vs the number of learning objects in five most popular eBig3 courses**

We calculated how many learning objects were clicked by each participant. Figure 6 shows, that more than 216 from 523 participants used content the volume of which was more than one eBig3 course. More than 267 participants used content the size of which was more than 0.5 eBig3 course, and more than 403 participants used content the size of which was more than 0.1 eBig3 course.

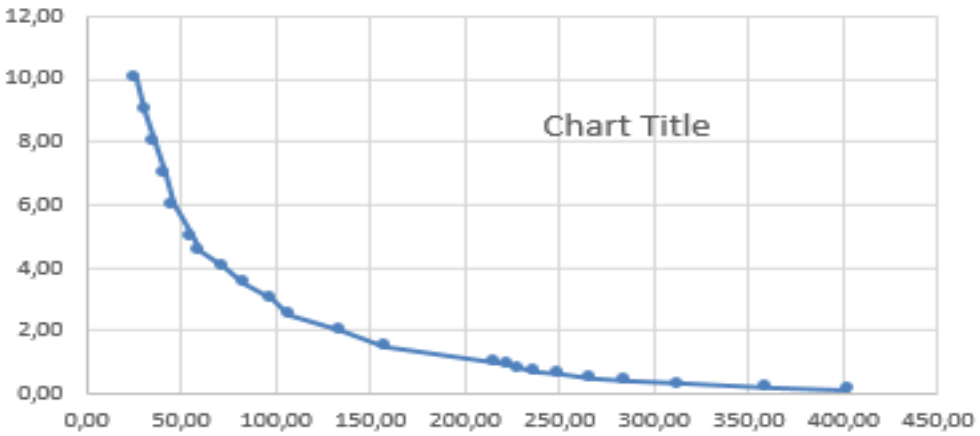

Figure 6 **The volume of used eBig3 courses vs the number of users**

Participants' feedback

A survey through e-mail was carried out after the piloting of eBig3 courses. We received 94 responses which gave us an overall view of who the participants are and their satisfaction with the new e-learning approach.
Figure 7 shows the age groups of participants in eBig3 courses which we had managed to attract through the used advertising methods. The 3 most significant groups include participants aged 21-50. 38% of the participants were 21-30 years old, 27% were 41-50 years old, 20% were 31-40 years old.

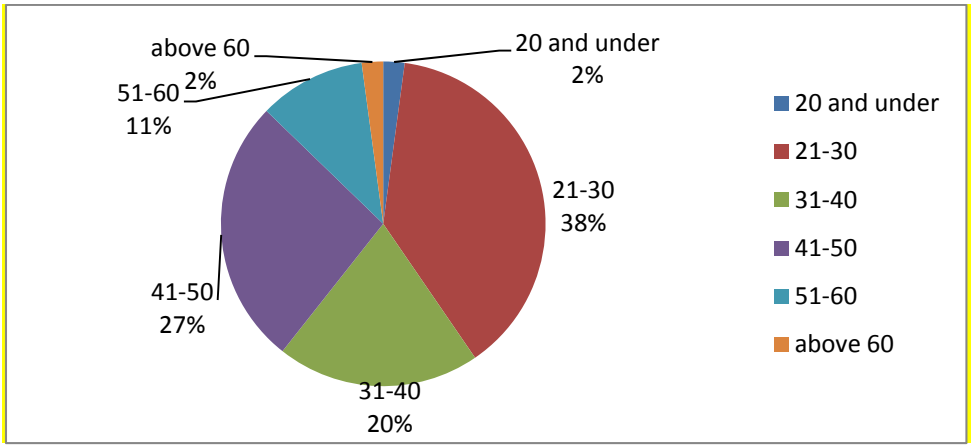

Figure 7 **The age of eBig3 course participants according to the e-mail survey**

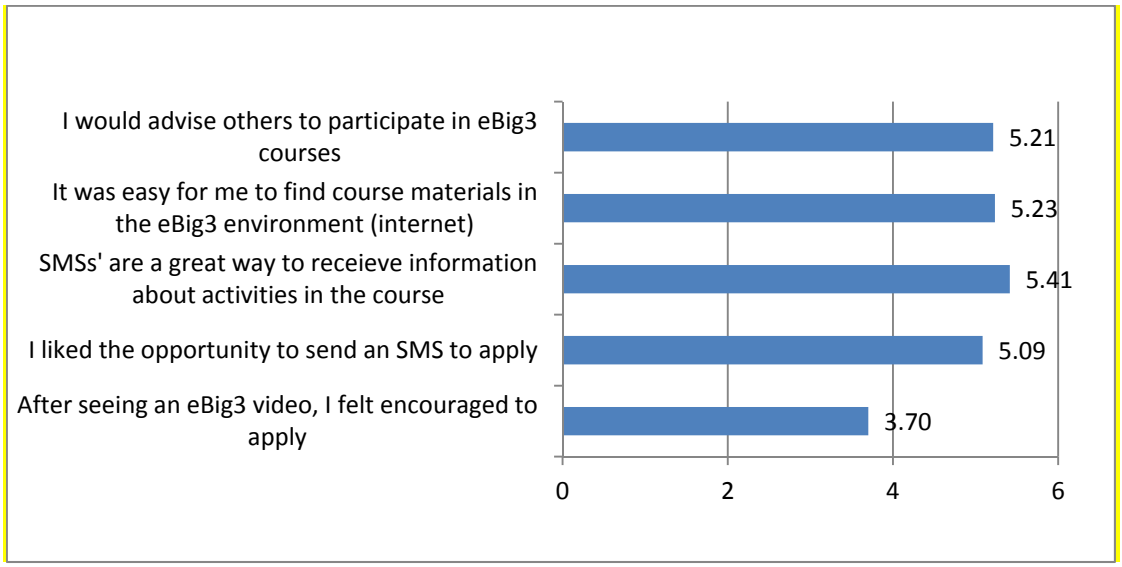

Figure 8 **Participants' evaluation of 5 statements in the eBig3 e-mail survey**

Figure 8 shows the average evaluation of 5 statements about the eBig3 approach on the scale of 1 to 6. There is a positive result in evaluation of SMS usage in the approach. Participants agree that it is a good idea to use SMS to register (5,09) and receive information (5,41). Also, the participants agree that the eBig3 internet environment is easy to use (5,23) and they would advise others to

participate in eBig3 courses (5,21). Significantly lower result the last statement ("After seeing an eBig3 video, I felt encouraged to apply") suggests that the eBig3 video did not play such a strong role to encourage people to apply to the courses. This can be explained by the fact that a lot of participants mention that they have seen the videos after they had registered or some had not seen them at all.

Participants were asked about how they found out about eBig3 courses (Figure 9). 23% of the participants responded that it was a result of eBig3 advertising – flyers (13%), video (5%), web page (5%). Majority of participants responded with "other" (62%), these responses mostly include word-of-mouth.

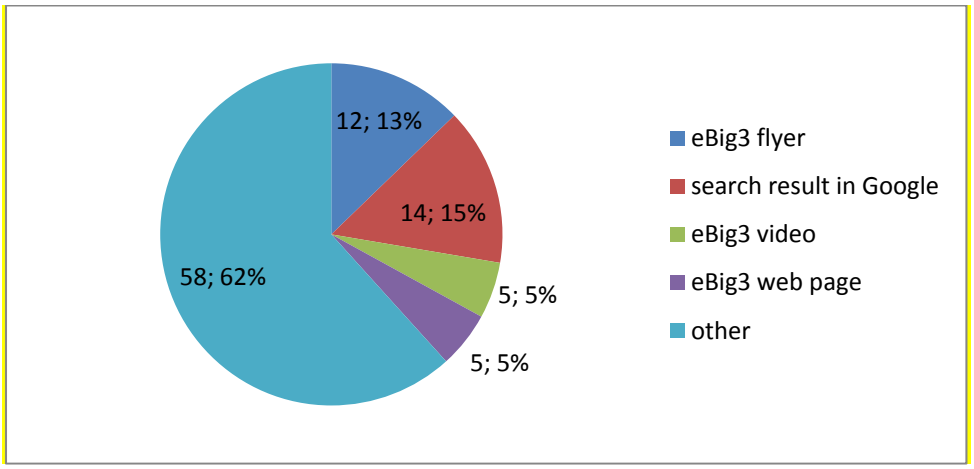

Figure 9 **Different ways of how participants found out about eBig3 courses**

In the end, the survey results showed that there is no significant connection between age and attitude towards the usage of SMS in the eBig3 approach. Also, there is no significant connection between participants' activity in courses (number of clicks) and attitude towards the usage of SMS in the eBig3 approach.

Conclusions

1. Registration by SMS for e-courses having eBig3 approach strongly – up to 10 times – increases the number of participants and the availability of e-learning.
2. 40% of the eBig3 learners who had joined the course covered the content the volume of which was more than one eBig3 course.
3. The triple-screen eBig3 approach meets the needs of life-long-learning of tomorrow better than the traditional single screen-based eLearning.
4. There is no significant connection between age and attitude towards the usage of SMS in the eBig3 approach.
5. There is no significant connection between participants' activity in courses (number of clicks) and attitude towards the usage of SMS in the eBig3 approach

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