

## Use of Videos to Support Teaching and Learning in the Study Process

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**Abstract:** Teachers use various modern educational tools such as an Internet, smartboard, multimedia and videos along with traditional lectures to ensure an optimum student-learning environment. The global adoption of new technologies into education provides an opportunity for modernising of studies. Learning videos make it possible for students to see and revisit complex activities from multiple perspectives. *The aim of this article* was to explore the use of videos to support teaching and learning in education in Latvia University of Agriculture. The study was conducted at the Latvia University of Agriculture (LUA) during October 2016. All of the students in this study were between 18 and 24 years old. A validated questionnaire containing 10 questions was distributed to 220 respondents from the Latvia University of Agriculture. A questionnaire was developed to obtain respondents' opinions about the usefulness of videos in teaching and learning in the educational process. The first eight questions, related to the usefulness of learning videos during lectures, required dichotomized (agree/disagree) responses. The last two questions about Internet use were provided with multiple response options. The data were analysed statistically by using SPSS computer program – *chi-squared test, contingency table or crosstab, Wilcoxon signed-rank test*. The overall conclusion after data analysis is that all respondents use the Internet, the respondents from the Faculty of Veterinary Medicine (61.9 %) use it most of all. It could be explained that the students have a lot to learn and the most recent literature on Veterinary Medicine can be found in the Internet global databases. Students consider (p-value is 0.001) the supplement of learning video in the lecture is helpful and lectures with video are clearer than without them. Learning video helps to remember the content of lecture better; it helps to maintain the interest in the lecture. The acquired knowledge from the learning video can be used to reproduce and study learning content easy; and it is stored for a longer time compared with lectures without the video.

**Keywords:** videos, university education, Internet, information and communications technology.

### Introduction

The rapid changes of life require a support for continuous learning and ongoing creation of new ideas and skills. The lifelong education becomes a necessity in tomorrow's world. Thanks to Internet, the education process changed significantly in last two decades. Internet and information and communication technologies have greatly expanded into the field of education in last two decades. The global adoption of new technologies into education provides an opportunity for modernising of study process (Virtič, 2012).

Information and communications technologies are increasingly influencing the delivery of education in tertiary institutions (Arguel, Jamet, 2009; Johnson, List-Ivankovic, 2010) and they are attractive to contemporary students who have been exposed to technology use from an early age (Duncan, Yarwood-Ross, 2013; Kelly, Lyng, 2009).

The Internet helps students develop their computer skills. In some forms the Internet can help students with critical thinking skills. Students are faced with more information than they could ever use or need. This requires them to sort through the information and decide what is most important and relevant (Deore, 2012).

Video technology has several advantages, including the capability to be forwarded, reversed and watched repetitively at the user's convenience (Ramlogan, Raman, 2014).

Learning videos make it possible for students to see and revisit complex activities from multiple perspectives (Brophy, 2003; Wetzel, Radtke, 1994).

Interactive teaching methods allow one to accelerate the process of understanding, mastering and creative application of knowledge to solve real-world problems. Efficiency is achieved through more active involvement of students in the process of not only acquisition, but also the direct use of knowledge. Interactive learning increases motivation and involvement of participants in solving the issues discussed,

giving an emotional boost to the subsequent search activity of participants, encourages them to action; the learning process becomes more meaningful (Панина, Вавилова, 2008).

It is possible to carry out both practical classes (seminar) and lectures in the interactive learning form. For example, the following can be distinguished:

- *problem lecture* – the lecturer creates problematic situations on the beginning of lecture and during the presentation of educational material involves students in analysis;
- *provocation lecture* - lecture with pre-determined errors – at the beginning of lecture the lecturer announces that there will be deliberately included mistakes; students should find and list them on the end of lecture;
- "*press conference*" *lecture* – the lecturer asks students to ask him a question of interest on the announced topic of the lecture; during the lecture the lecturer incorporates the answers to the questions;
- *dialogue lecture* – the learning content is taught through a series of questions that students must answer directly during the lecture;
- *visualization lecture* – the transfer of information from the lecturer to students is accompanied with presentation of various graphics, video information using IT technologies (Аронова, 2012).

Visualization lecture emerged as a result of the search for new opportunities to implement the principle of visualization. Visualization contributes to the successful perception and memorization of training material; it happens due to the work of both cerebral hemispheres. The left brain hemisphere is responsible of logical thinking, usually it is employed during acquiring of the exact sciences. The right hemisphere is responsible for the figurative and emotional perception of the presented information and it begins to work actively with its visualization.

This type of lectures also implements a didactic principle of accessibility: an ability to combine visual and verbal information perception. The difficulty of the perception of the study material is caused by presentation of theoretical concepts, abstract processes and phenomena. Visualization makes it possible to vastly overcome this difficulty and to turn abstract concepts in a clear, understandable way.

S. Kolkov (Колков, 2012) has developed a classification of learning videos (Figure 1). S. Kolkov (Колков, 2012) recognizes that recorded lecture and video lecture are different training video materials.

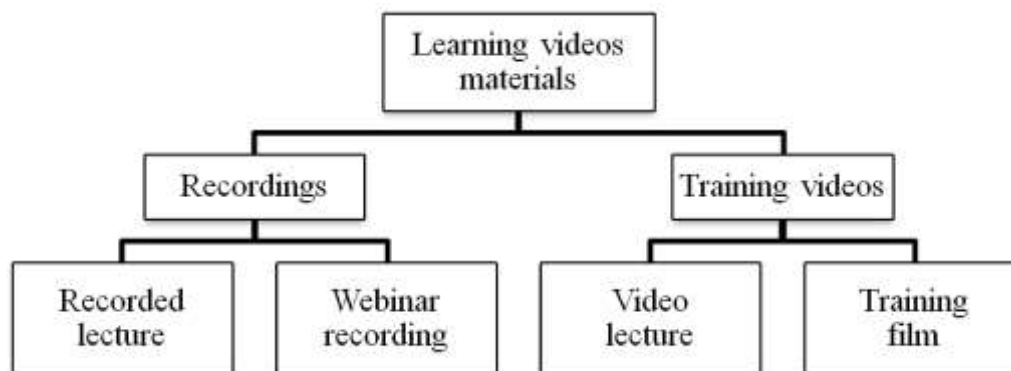


Figure 1. Classification of learning videos materials (Колков, 2012).

Recordings - Yesterday there was a class, but I was not able to participate. Classmates visited the class, filmed everything and posted on the Internet, and now I can watch it.

Training videos are specifically prepared for viewing on a big size screen (or not a big one) in full-time, part-time or distance learning, both in groups and individually.

The difference between the video lecture and training film is in the foreground. In the video lecture the lecturer should be in the foreground! And he/she should occupy most of the screen. Materials illustrating the performance can be a background.

The training film demonstrates a process and/or events and/or unit in the foreground. Conversely, the background can be the voice of the announcer (Колков, 2012).

The aim of the article was to explore the use of videos to support teaching and learning in education in Latvia University of Agriculture.

### Methodology

The study was conducted at the Latvia University of Agriculture during October 2016. All of the students in this study were between 18 and 24 years old. A validated questionnaire containing 10 questions was distributed to 220 respondents from the Faculty of Information Technologies, the Faculty of Food Technology, the Faculty of Economics and Social Development, the Faculty of Environment and Civil Engineering, the Forest Faculty, the Faculty of Agriculture, the Faculty of Veterinary Medicine, and the Faculty of Engineering. The questionnaire was given to first-year students by selecting them randomly.

A questionnaire was developed to obtain respondent opinions about the usefulness of videos in teaching and learning in the educational process. The first eight questions, related to the usefulness of learning videos during lectures, required dichotomized (agree/disagree) responses. The last two questions (Internet use) were provided with multiple response options.

The data were analysed statistically by using SPSS computer program – *chi-squared test* (test where in the sampling distribution of the test statistic is a chi-squared distribution when the null hypothesis is true), *contingency table or crosstab* (table in a matrix format that displays the (multivariate) frequency distribution of the variables; *crosstab* provide a basic picture of the interrelation between two variables and help find interactions between them), *Wilcoxon signed-rank test* (used when comparing two related samples to assess whether their population mean ranks differ).

### Results and discussion

Teachers used various modern educational tools such as an Internet, smartboard, multimedia and videos along with traditional lectures to ensure an optimum student learning environment.

An overview of the questionnaire (with answers of respondents from Latvia University of Agriculture (LUA)) about Internet use in the educational process is given in Figure 2, where can see a clustered bar chart, where was compared respondents' assessment depending on the faculty.

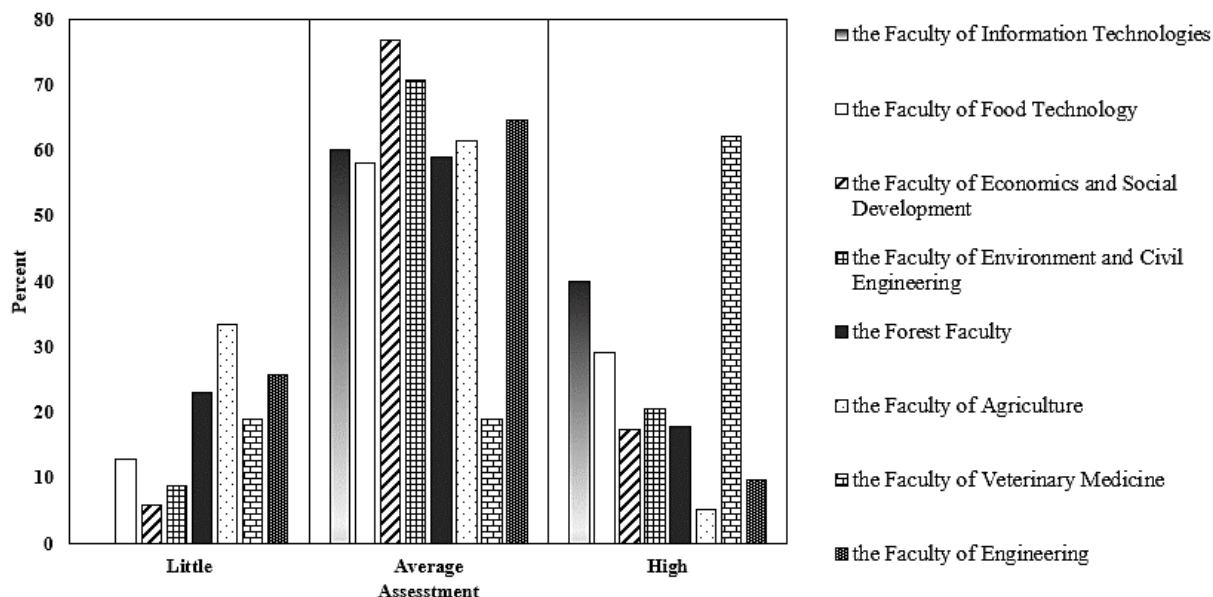


Figure 2. Respondents' assessment on using the Internet depending on the faculty.

High assessment or much use the Internet 40.0 % of respondents from the Faculty of Information Technologies, 29.0 % of respondents from the Faculty of Food Technology, 17.3 % of respondents from the Faculty of Economics and Social Development, 20.6 % of respondents from the Faculty of Environment and Civil Engineering, 17.9 % of respondents from the Forest Faculty, 5.1 % of

respondents from the Faculty of Agriculture, 61.9 % of respondents from the Faculty of Veterinary Medicine, 9.7 % of respondents from the Faculty of Engineering.

Average are using the Internet 60.0 % of respondents from the Faculty of Information Technologies, 58.1 % of respondents from the Faculty of Food Technology, 76.9 % of respondents from the Faculty of Economics and Social Development, 70.6 % of respondents from the Faculty of Environment and civil Engineering, 59.0 % of respondents from the Forest Faculty, 61.5 % of respondents from the Faculty of Agriculture, 19.0 % of respondents from the Faculty of Veterinary Medicine, 64.5 % of respondents from the Faculty of Engineering.

Low assessment or little use the Internet 0.0 % of respondents from the Faculty of Information Technologies, 12.9 % of respondents from the Faculty of Food Technology, 5.8 % of respondents from the Faculty of Economics and Social Development, 8.8 % of respondents from the Faculty of Environment and Civil Engineering, 23.1 % of respondents from the Forest Faculty, 33.3 % of respondents from the Faculty of Agriculture, 19.0 % of respondents from the Faculty of Veterinary Medicine, 25.8 % of respondents from the Faculty of Engineering.

To summarize the relationship between two categorical variables *Faculty* and *Assessment*, the most accurate answer is given in Table 1, where contingency table was used for data analysis.

Table 9

**The relationship between two categorical variables *Faculty* and *Assessment* (%)**

Faculty	Assessment		
	Low	Average	High
the Faculty of Information Technologies	0.0	3.8	7.4
the Faculty of Food Technology	9.1	11.3	16.7
the Faculty of Economics and Social Development	6.8	25.2	16.7
the Faculty of Environment and Civil Engineering	6.8	15.0	13.0
the Forest Faculty	20.5	14.5	13.0
the Faculty of Agriculture	29.5	15.1	3.7
the Faculty of Veterinary Medicine	9.1	2.5	24.0
the Faculty of Engineering	18.2	12.6	5.5
<b>Total</b>	100.0	100.0	100.0

As the percentage distribution is different, it can conclude that there is a relationship between two categorical variables *Faculty* and *Assessment*.

To test whether the relationship is significant was use contingency table *Pearson Chi-square* analyzes. The fact that the *Pearson chi-square* value is 0.001 and less than 0.05 indicates that the rows and columns of the contingency are dependent.

In this particular case, it means that the variable *Faculty* is not distributed similarly across the different respondents' assessment.

The overall conclusion after data analysis is that all respondents use the Internet, the respondents from the Faculty of Veterinary Medicine (61.9 %) use it most of all. It could be explained that the students have a lot to learn and the most recent literature on Veterinary Medicine can be found in the Internet global databases.

B. A. Al-Jandan, I. Farooq and S. Q. Khan conducted a questionnaire on related to the usefulness of videos during lectures. In general, a very high percentage of both male and female students perceived the inclusion of videos in the lectures to be useful (Al-Jandan, Farooq, 2015).

An overview of the questionnaire (with answers of respondents from University of Dammam and for comparison from Latvia University of Agriculture (LUA)) about the usefulness of videos in teaching and learning in the educational process is given in Table 2.

Table 10

**Percentage of respondents showing significance of addition of videos in the lectures**

Question	University of Dammam students (Al-Jandan, Farooq, 2015)		LUA students	
	Agree	Disagree	Agree	Disagree
Is addition of a video useful in the lecture?	95.2	4.8	93.5	6.5
Are lectures having videos more comprehensible than the ones without them?	92.0	8.0	96.8	3.2
Are videos clarifying the facts?	95.2	4.8	90.4	9.6
Are videos helpful to remember the lecture better?	88.7	11.3	90.4	9.6
Are videos helpful to maintain the interest in the lecture?	85.6	14.4	96.8	3.2
Are video mediums significant educational tools?	91.0	9.0	83.9	16.1
Can knowledge gained from the video be applied/ reproduced easily?	92.6	7.4	90.4	9.6
Are knowledge gained from the video will be retained for a longer period of time compared to lectures without videos?	68.5	31.5	80.7	19.3

Author used Wilcoxon signed-rank test to understand whether there was a difference in respondents' answers (i.e., dependent variable would be "answers of students", and two related groups would be answers values "agree" and "disagree").

The Wilcoxon signed-rank test result shows that  $p\text{-value} = 0.001 < 0.05$ . It means that the observed difference between both measurements is significant. Thus, can reject the null hypothesis that both samples are from the same population, and can assume that the respondents' answers "agree" and "disagree" are significantly different.

Analyzing the research data, it can be concluded that LUA students like video lectures at the classes. Also, when comparing LUA students' opinions about video lectures with students from the University of Dammam, it can be seen that the students think mostly the same.

It means that students consider the supplement of learning video in the lecture is helpful and lectures with video are clearer than without them. Video helps to remember the lecture better; it helps to maintain interest in the lecture. The acquired knowledge from the video can be used to reproduce and easy; and it is stored for a longer time compared to lectures without the video.

The scientists T. Seidel, G. Blomberg and A. Renkl underline the importance of choosing an appropriate instructional approach when designing video-based learning environments. The use of video in teacher education should be adapted to the specific learning goals (Seidel, Blomberg, Renkl, 2013).

I. Burov (Буров, 2009) recognizes that the experience of using visualization lectures in the learning process leads to the following conclusions:

- such a lecture creates a kind of support for the thinking, develops skills of visual modeling, which is a way to increase not only intelligent, but also the professional capacity of the trainees;
- this kind of lectures is best used at the stage of introducing the students to the new topic;
- in the presentation of complex for perception and understanding themes it is advisable to use a combination of figurative and symbolic visibility.

Videos, shown in the lectures, are obtained from various sources, namely, YouTube and Google videos or are created using video making programs.

### Conclusions

- The overall conclusion after data analysis is that all respondents use the Internet, the respondents from the Faculty of Veterinary Medicine (61.9 %) use it most of all. It could be explained that the students have a lot to learn and the most recent literature on Veterinary Medicine can be found in the Internet global databases.
- It means that students consider (p-value is 0.001) the supplement of learning video in the lecture is helpful and lectures with video are clearer than without them. Video helps to remember the lecture better; it helps to maintain interest in the lecture. The acquired knowledge from the learning video can be used to reproduce easier; and training content is stored for a longer time compared with the lectures without the video.
- Videos, shown in the lectures, are obtained from various sources, namely, YouTube and Google videos, or are created using video making programs.

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