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ANALYSIS OF THE POSSIBILITIES OF USING GOOGLE CLASSROOM AS MOODLE REPLACEMENT

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Abstract

Moodle is the most popular open source e-learning system, which is available for free. In 2015, Moodle had 22,98 % market share. Just for sake of illustration, Blackboard LMS had 34,22 % (iSpring, 2015). Although Moodle is commonly used on all types of schools in the Czech Republic, its complexity and robustness can be a problem for example at primary school. Simply put, it is too complicated in case that we want to use very simple and straightforward e-learning with basic functions. According to the Pareto Principle, 80 % of users need only 20 % of features available in LMS. That´s why Google released in 2014 Google Classrom - a very simple and easy-to-use LMS with elements known from world of social networks. Its market share is rapidly growing (Ronen, 2014) and by now, schools in the Czech Republic use this tool since it is a part of free Google Apps for Education. It is also available for non-pofit organisations for free. Google constantly improves this tool. In our research, we focused mainly on following questions: Is Google Classroom ready to replace Moodle? What are advantages and disadvantages of Google Classroom? Is it missing any important features and tools? For comparison, we used well-known methodology by Burgerová, introduced in 2013. This paper introduces Google Classrom and presents first results of comparative study.

Keywords: LMS, Moodle, Google Classroom, E-learning, Education, Cloud.

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1. Introduction

Software tools like LMS (Learning Management System) are long perceived as a suitable support for education, not only in the field of information and communication technologies. Today, these systems are very widespread in schools in the Czech Republic and around the world. Modern tools like LMS offer advanced options and tools for teachers and students. For example, standardization in the area of qualification, online tasks and tests, communication tools and, the ability to use the application at any time and on any device. Students in the LMS proceeds according to their abilities and possibilities. Tests can be evaluated automatically or semi-automatically. Teachers can thus facilitate the work and the students have quick feedback. Users can use the LMS practically anywhere. The application can be run through a web browser, or download the appropriate application, if available. One of the most popular and probably the most famous is undoubtedly the LMS Moodle, which can be used in a web browser or through an application for Android or iOS. It is an open source system, which is available for free, even for commercial purposes. In 2015, Moodle had a share of 22.98% of the market (iSpring, 2015). Moodle offers many options and tools for the work of teachers, student testing and support of online learning. It's a very complex system, which may in some cases be too complicated for the user. Due to its complexity is often needed to employ system administrator.. It is also useful (and sometimes necessary) that teachers had at least basic training before starting to use the system. Often it is also necessary to show the basic steps to students, in order to prevent complications such as when submitting files.

Moodle is not the only system on the market today. One of the other, whose popularity is growing day by day, is Google Classroom. It is relatively new LMS, which was released in 2004. Its advantages include simple interface and easy-to-use tools for communication and online submission and assessment tasks. It is not necessary to employ an advanced administrator for its deployment and maintenance, because it is a cloud application, offered by Google for free (as a part of Google Apps for Education). Google Classroom is a very popular LMS worldwide (Ronen, 2014) and is becoming increasingly popular in the Czech Republic. The aim of the research is to compare the aforementioned LMS, Moodle and Google Classroom. We want to find out whether Google Classroom can at least partially replace Moodle and in what types of schools and institutes is this replacement possible. We also search for the advantages and disadvantages of deploying Moodle versus Google Classroom. The research method is comparative analysis.

2. Problem Statement

We live in the digital age, when for many students it's popular and fun to learn new information from the Internet. Recently, great emphasis is placed on introducing modern technologies in schools. For this reason, use not only hardware equipment, but also also specific software tools to facilitate the work of teachers and students. Many of these tools are available as online cloud application for free - it is a guarantee that these tools will have many supporters and enthusiastic users. But the free licence of software itself will not bring new users. The big advantage is also simple and attractive user interface, functions and simplicity of use, which ensures quick understanding of how to use the software. If the work with new software is fun, it gains new users much faster.

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Fun to work with a particular application is achieved if it contains elements of gamification. Gamification is the application of the techniques of the game thinking in a non-gaming environment (for example, web applications). Thanks to the principle of rewarding users for their achievements, carried on websites or forums, are similar applications which contain elements gamification, very popular (Pappas, 2015).

Today's e-learning is a multimedia interactive way of educating the new generation. It is a process that addresses the creation, distribution, management of teaching and feedback based on e-learning courses. The form of training via e-learning has its pros and cons. The positives are, for example, time-independent individual approach to the exchange rate, duration of education, information sharing, accessible anytime and anywhere where there is internet (e-learning systems are usually cross-platform). Negatives are especially frequent need for further training with a similar system, lack of motivation and desire to self-education, the need for computer equipment and Internet, and also a kind of depersonalization of education (Maněna, et al., 2015).

Gamification principles can also be used in e-learning systems. E-learning allows online distance learning. If the LMS integrate elements of Gamification, education is carried out by using such a system may soon look like some kind of a fun game. Gamification can increase the attractiveness of using the system, but also the actual forms of education. This kind of teaching motivates peacefully keep going forward. Another important trend in the LMS is integrating elements from social networks such as Facebook. For example, Moodle has its own course format, called "social". Another example of the use of elements from social networks in Moodle is that each user has their profile in the system. In this profile, user can set up photo, fill interests, contact information, etc. Users can also send private messages to each other. It is also possible to allow users to create own blog. Of course, users can add comments to blog entries. To sum it up, modern LMS must allow teacher to integrate elements of gamification and social networks in their courses. Both Google Classroom and Moodle allow that use, but each has its own approach.

The popularity of e-learning education around the world is rising. In 2016, revenue is expected to grow around 51 Billions of US dollars. The largest e-learning giant is North American market (more than $ 23 billion a year in revenue from eLearning services), as stated in the study “Google Penetrates The E-Learning Market To Expand Chromebook Sales” (Ronen, 2014). According to study “E-learning Market Trends & Forecast 2014 - 2016 Report” (Docebo, 2014), the expected increase in income in 2017 is up to $ 27 billion. In this case, e-learning is the general term used to describe the use of technology in education. It includes many categories (computers designed for teaching, training with the Internet, virtual learning environment, online classrooms, etc.). Each category is used in various stages of education (from preschool to university or adult education). Google's technology is contained in almost all the above mentioned areas. The popularity of e-learning tools is increasing rapidly and throughout the world (see figure 01).

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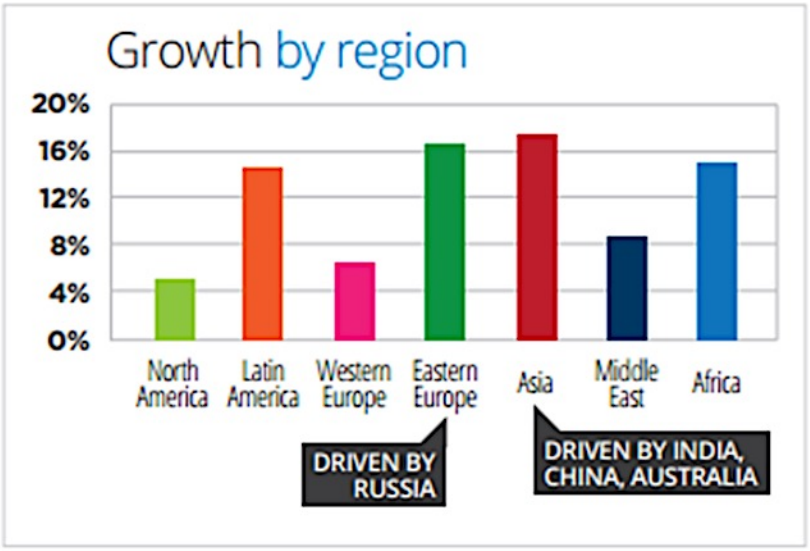

Figure 01. 2011-2016 E-learning growth rates by region (Docebo, 2014)

Moodle allows teachers to create their own online courses. It is an online platform application that runs on a web server, usually in school. There is also a Moodle Mobile application, available for Android and iOS. Moodle allows teachers to change the overall appearance and display of courses. It provides users with a forum, wikis, glossaries, databases and various polls, calendar. It allows teachers to insert files from the cloud (including Google), YouTube videos, both in the actual course, assignment of tasks and into tests. It allows users to use simple and advanced text formatting, automatic notifications of new tasks or deadlines, private messaging, chat etc. Teachers and students can watch a number of activities, especially the evaluation and their progress. The teacher can also create groups of students, which make it possible to divide the work and materials that students see. Moodle allows the administrator to install plugins and extend the capabilities of LMS. Thanks to regular updates safety is ensured. Moodle provides tools for inclusion Gamification elements into teaching (Moodle, 2016).

Moodle is very robust and complex tool, which can be on the other side one of its negatives. To teach effectively work in Moodle, it's usually not possible without training with this system. The teacher begins to use the system effectively after some time. We cannot possibly say that Moodle is little intuitive. But it offers so many features and options that can confuse users. Likewise, the system should be at least minimally introduced to students, even if they have access to far fewer features than the teachers. A possible disadvantage is the need for installation. Management of the system itself requires an experienced administrator. It is also necessary to update and maintain the system and keep user data safe. Positive and negative aspects of the LMS together with a comparison with the LMS Google Classroom are enclosed in the table below (see table number 1).

On the other hand, Google Classroom is less complex than Moodle. Its popularity is increasing each year, and it is becoming very popular with teachers and students. It is a virtual environment for teachers that allows students to easily submit homework electronically. It is a tool from Google that is very simple. That's where its greatest strength. In Google Classroom teacher can set the task to which will require a response from the student. Teacher can either attach a file to assignment for the whole class (just like sharing works on Google Drive), or copy it separately (each student receives one of the copies).

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Everything is fully automated. Students perform task and sent it back through the system. The folder in Google Drive is automatically generated for the teacher, in which individual students' answers are saved. The teacher then checks the files, evaluates and sends it back. Teacher can also send an auxiliary files to help student with solving the problem. The attached file can be a table, presentation, document or drawing, image, video link from YouTube or web page. Advantages of assigning tasks in this way are clear. It also eliminates problems with the "forgotten" workbook. For teachers, it also eliminates the concern of many mails or manually correcting tasks in the workbook. Google Classroom can use the schools that have Google Apps for Education, which are available free of charge to schools, including technical support. At first glance it may seem that Google Classroom is not a full-featured e-learning system. It is rather considered as a supporting tool to traditional teaching. The truth is that it is rather an additional application that complements and uses Google Documents and similar tools. Actually, it unites the processes that would otherwise be used separately with help of Gmail, Google Drive and Google documents to the assignment of tasks, communication, assignment and correction. Using this tool is very simple. After logging into Google Classroom, teacher can create course only by entering its name and description. The course gets straight a unique identifier, allowing students can enroll in this course. The teacher can enroll students also manually. The course teacher can set different rights for students (add posts and comments, add only comments or just view the content). More settings include option to show and hide deleted items, in what classroom course is physically held and whether teacher wants to get email notifications for new submissions. In the course, we can also select different images and color themes, and thus a change its appearance. The course in Google Classroom is not structured into topics. It works by using so-called stream, thus resembles more blog or Facebook's timeline than learning environment. Teacher can add either task or notification into course. Everything is arranged chronologically. Google, in this case again bet to maximum simplicity. At first glance, the task is not different from notification (except the text and any attachments) but also contains the date when the task should be completed by student. New task is automatically added to the course stream. There, the teacher can see how many students have already submitted their task. Tasks can also go back and evaluate (the teacher can enter a point value of the task). Communication takes the form of comments. For tasks, then there are two types of comments (public concerning the task and private, that belongs to the task of the student). Private comments sees only the student and teacher. Through the application you can send emails to individuals or to all participants. These emails are not archived in this application - everything goes through Gmail.

The positive of Google Classroom is primarily simplicity and accessibility. Compared with robust tools such as Moodle, Google Classroom is definitely easier in all aspects. It does not require installation and setup. Environment itself is minimalist, fast and easy to understand. Positive is also integration with other Google services , such as Google Drive. Tasks can be easily edited and annotated. Of course it is cross-platform application. It is not necessary to work strictly with Google Chrome browser (although it is better). Google Classroom is also available as application for iOS and Android. Application is also very simple, easy to use and has clear user interface.

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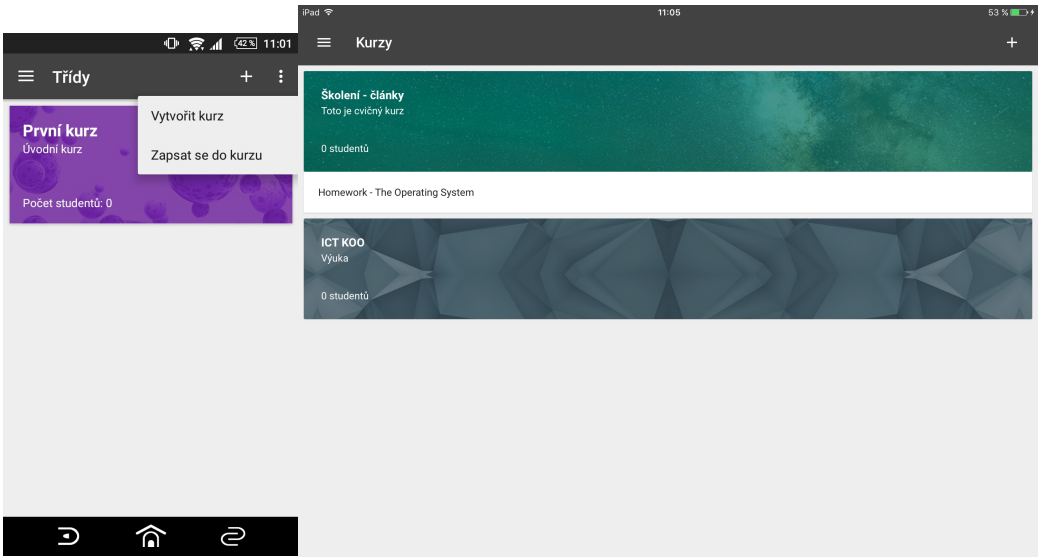

Figure 02. Left: Google Classroom on Google Android OS (Mobile Phone Sony Xperia Z3), right: Google Classroom on iOS (iPad)

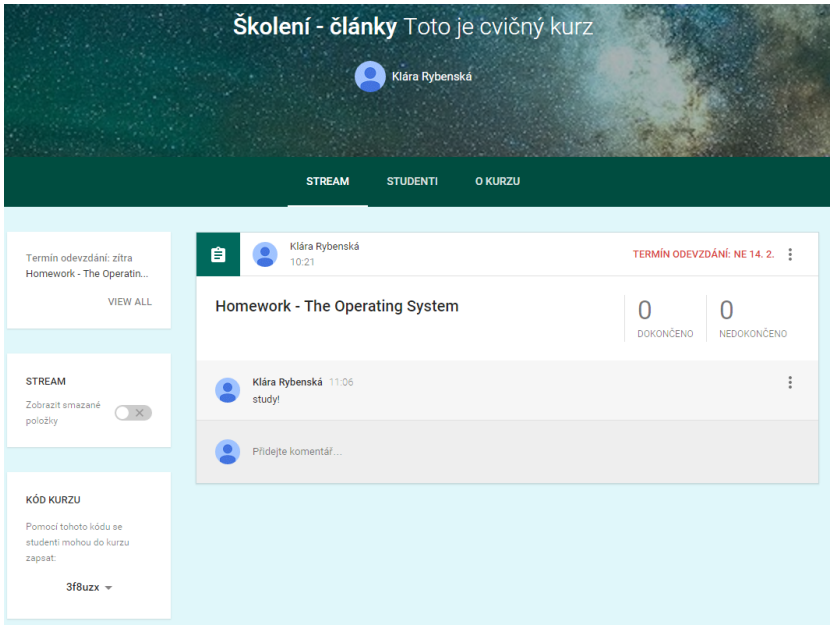

Figure 03. Google Classroom in a web browser Google Chrome (Windows 7)

As seen in the figures 2 and 3, Google Classroom is truly cross-platform. We tested it on many different platforms and the conclusion is, that it displays and behaves almost identically in all tested cases It should not be a problem for teachers to move between different platforms.

We must also mention the negatives. First negative should be the simplicity of the application - but it can either strong or weak side, depends on the way of use it. There are very limited functions, the course is not possible to structure and for some time that stream can become confusing. There are no summaries and it is not possible to view students' profiles (for example, to watch his submitted and not submitted assignments and see his overall progress). Compared to Moodle, it is missing the possibility of testing, advanced discussion forums and many advanced tools. But, thanks to the complete

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interconnection with the Google account, the user has enough space to cope with these shortcomings. The absence of a forum can be replaced by notifications and comments. Test or questionnaire can be solved by using Google Forms. To make simple tests with automatic evaluation, we can use the Flubaroo, a free Google forms add-on. Flubaroo help teachers to evaluate test and sort information from submitted forms (Flubaroo, 2016).

Table 01. Positive and negative aspects of Google Classroom

Positive	Negative
Cross-platform	Missing automatic test evaluation (can be partially achieved with help of Flubaroo)
Minimalist (depends on way of use)	Minimalist (depends on way of use)
No installation (cloud)	Limited conversation tools
Almost no setup	Hard to see students overall performance
Easy to use	

3. Research Questions

In our research, we focused mainly on following questions: Is Google Classroom ready to replace Moodle? What are advantages and disadvantages of Google Classroom? Is it missing any important features and tools? For comparison, we used well-known methodology by Burgerová, introduced in 2013.

4. Purpose of the Study

Learning management systems today are in undeniably very popular. There exists a wide range of these products. Some integrate a variety of tools for communication and learning management, access to educational materials and perform online tests. Others provide only teaching materials or content. For both of these categories, we chose a typical representative (Moodle and Google Classroom). Both of these systems are completely free for schools (Google Classroom are part of Google Apps for Education). Both tested LMS streamline a number of learning activities.

5. Research Methods

Our research method was based on comparative analysis for e-learning systems introduced by Burgerová, Maněnová and Adamkovičová (2013). The project objective was to compare the Moodle and Google Classroom and find out which tool is better suited for creating e-learning content and under what circumstances. The research came out that each of the tested tool is able to enrich teaching, but in a different way. Moodle is a robust system that offers users many options. Google Classroom in its minimalist form can only provide efficient submitting and checking homework. Each of the systems, however, are suitable for different type of use. We would recommend Moodle especially for high schools and university, or wherever there is need for testing effectively managing students. Google Classroom is suitable for primary and some secondary schools, wherever there is need to rapidly deploy a supportive e-learning system that facilitates teachers working with pupils tasks and provide possibility to work on homework online.

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6. Findings

The criteria that we have set are in the table number 2, which is based on criteria introced in publication derives from the publication "New perspectives on communication and co-operation in e-learning" by Burgerová, Maněnová and Adamkovičová (2013).

Table 02. Feature comparison of Moodle and Google Classroom

		Moodle	Google Classroom
Generating content of study	Page	x	x
	URL	x	x
	File	x	x
	Folder	x	-
	Legend	x	-
	Book	x	-
	Lecture	x	-
	Syllabus	-	-
	Lesson plan	-	-
	Integration with study contents of other LMS	x	-
Communication tools	Discussion panel	x	*
	Chat	x	*
	Reports	x	x
	Inquiry	x	-
	Comments	x	x
	Blogs	x	*
	Survey question-form	x	-
	Quickmail	x	x
Collection and evaluation of activities	Task	x	x
	On-line text		
	Set		
	Off-line activity		
	Workshop (Self and Peer Assessment)	x	-
	Safe Assignment	-	-
Tools for cooperation	Dictionary (index)	x	-
	Database	x	-
	Wiki	x	-
Tests		x	-
Tracking		x	x
Statistics		x	-
Group mode		x	-

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Language adjustment		x	-
Gradual loosening		x	-
Calendar		x	-
Internal mail		x	-
Certificates		x	-
Virtual classroom		-	-
Price		-	-

The symbol * means that feature can be partially achieved with help of other tools from Google Apps suite or external tools.

The table clearly shows that LMS Moodle offers more options. This can not be denied, but it does not mean that it is always better to use Moodle for e-learning purposes. On the other side, Google classroom is very simple tool with basic functions, which is easy to deploy. In many cases, it can beat Moodle with its simplicity (especially on primary schools).

7. Conclusion

Both provide a suitably distributed information sources, allow teachers to work effectively with students and even his own time.

The research showed that Google Classroom despite its simplicity and the absence of many features compared to Moodle is able to replace this robust system in many cases. Especially wherever just use a simple and effective tool with which it does not require too much to learn. Google Classroom is intuitive at first sight. Despite the fact that its disadvantages include the inability to track long-term growth (evaluation) of a student or tests or automatic evaluation tasks, in many schools, the system will just allow flexibility, modernity, comfort of use and efficient task management not only for teachers, but mainly for students.

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