Using cloud computing in Stjepan Benceković elementary school

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Abstract - Cloud computing means storing and accessing data and programs over the Internet instead of your computer's hard drive. By introducing cloud computing in 2012, the school has managed to ease access and sharing, enhance collaboration between teachers and school management and was able to adopt and consummate another digital competence in order to benefit our school curriculum. Another crucial benefit from implementing cloud technology to our school is saving money. Stjepan Benceković elementary school is a small school with very limited resources and it is very important to us to explore and use technology in order to save money and time. This paper will show how did we implemented cloud computing, how much money has been saved and how did cloud computing evolve school curriculum.

I. INTRODUCTION

Stjepan Benceković elementary school introduced cloud storage in 2012. It changed the way pedagogical documentation is stored, it enhanced collaboration between teaching and administrative staff and it opened the door for many more possibilities in order to increase digital competencies of teaching and administrative staff and to enhance students' learning outcomes.

II. SCHOOL'S CHARACTERISTICS

Stjepan Benceković elementary school is a small school with limited resources. It is not self sustainable and is almost fully dependent of Zagreb city educational office. The building is very old and it is not very well equipped. It has a total of 6 classrooms and a gym. Class is organized in two shifts.

Technical characteristics of the school are not at all satisfying: our computers (30) are 10 years old on average and the Internet connection has not been set in every classroom. Every projector that school possesses doesn't function properly or it doesn't function at all.

Despite the disadvantages, the school is very active in various projects (over 20 in the past 2 years), it constantly develops their curriculum and innovates, annually publishes school newspaper and cares about the community.

III. CLOUD STORAGE

Cloud storage is a way to save information to the web. Cloud computing services are online services which store this information in a safe and secure location online; they offer a quicker, easier and safer backup than conventional methods of file storage.

Using cloud computing, you can access your files and programs from any computer anywhere in the world; all you need is an internet connection.

IV. IMPLEMENTATION PROCESS

A. The idea

At first, the school management started using Skydrive (today's OneDrive) to store various school documentation which later evolved into the idea to store school documentation and resources and making it transparent for the whole teaching and administrative staff without using paper in any way.

B. Pedagogical documentation in Croatian elementary schools

Pedagogical documentation in Croatian elementary school consists of: school curriculum, school's annual work program, school's annual subject program, school's annual civil program plan, school's monthly subject program, various certificates of development of teaching and administrative staff, calender of written tests, various laws and regulations. The school had to print out everything listed above which would consist of thousands of sheets of paper every year.

C. Tools

We are using Microsoft technology since the Croatian Ministry of science, education and science closed the deal that all Croatian schools have benefited from Microsoft technology which includes operating systems and Microsoft Office tools.

The school is now using Microsoft OneDrive and Office 365. We have 15 GB of storage at our disposal.

D. Workshop – learning how to use cloud storage

The school management organized workshop for all teaching and administrative staff in order to learn how to use cloud storage. In the beginning of the school year
2013/2014 the whole teaching and administrative staff was using OneDrive to store school's documents.

The workshop consisted of several parts: introduction, managing workspace, uploading and downloading files, creating folders and sharing folders and/or files.

V. Financial background

School's financial resources are very limited. The educational office of the city of Zagreb endorsed around 1700.00 kn monthly for office material which contained of paper, printing toners, pens and other.

![Figure 1. School's monthly income for office supplies](image)

From Figure 1, we can see the decrement of income throughout the years. The average monthly income in 2012 for office material was 2208.67 kn, in 2013 it was 1540.17 kn and in 2014 it was 1495.33 kn.

![Figure 2. School's monthly expenditure for office supplies](image)

Analyzing Figure 2, we can see that monthly expenditure in 2012 is significantly bigger than 2013 and 2014. Average monthly expenditure for office supplies in 2012 was 1405.64 kn, in 2013 it was 682.36 kn and in 2014 it was 391.82 kn.

![Figure 3. Comparison of school's average monthly income and expenditure in the period from 2012 to 2014](image)

Figure 3. shows significant decrement of income and expenditure for office supplies in 2014. It also shows that the difference between income and expenditure, despite decrement of the income, becomes bigger every year. In 2012 it was 803.03 kn, in 2013 it was 857.81 kn and in 2014 it was 1103.51 kn. This is the direct consequence of implementing cloud storage in school because we downsized the need for using paper, pens, printing toners and other office supplies.

VI. Results of implementation process

A. Increasing digital competencies of teaching and administrative staff and improving collaboration

By implementing OneDrive and introducing Microsoft Office 365 tools in general into our school, we developed and increased digital competences of our teaching and administrative staff. We improved collaboration between our staff by sharing resources and now we can see more clearly the collaboration between subjects (through individual subject plans) and how it has been done.

B. Saving money

Since the school has very limited resources, we are very eager to save money, however we can, but the imperative was that our students don't suffer in this process. Now we can direct the money we saved for student's projects and needs which we had to decline in the past because we had no resources to endorse them.

C. Transparency

The whole school documentation became transparent, which enormously helped our teaching staff. We can see how our school curriculum develops during the school year, what other teachers do with their students and how they present their matter so that we can correlate easier and efficiently.

D. Care for the environment

Saving paper shows our care for the environment which is very important for our school since it is a part of our curriculum to awake our students to care for the nature in general and to educate others to care following their example.

E. Future plans

In the future we have plans to save enough money so that every classroom could have Internet access which would propel us to develop our e-learning model. We believe that it would influence student's motivation in class and that it would make them more proactive.

VII. Conclusion

Implementing cloud storage had many benefits for our school; it increased digital competencies and care for the environment, saved money and made us more determined to try to implement more components of information and communication technology in order to benefit our students and grant them the conditions in which they can all progress.
REFERENCES

