

# MODERN MOBILE TECHNOLOGIES AS THE SUPPORT FOR UNIVERSITY STUDENTS IN THE LEARNING PROCESS

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ABSTRACT

Students of the generation Y actively use new technologies every day, communicating mainly through social media with the help of smartphones or tablets. Thanks to the development of new media, modern students have at their disposal a wide and comprehensive range of tools to improve information, communication, education and integration of the academic community. The purpose of this article is to review the modern mobile applications that assist students in the learning process. The article is enriched with the results of the research conducted among students of the Czestochowa University of Technology, which aim was to determine their level of knowledge on mobile applications dedicated to higher education, the level of interest in them and the scope of their use by students. For this purpose, the authors conducted a survey among 181 respondents. For the research, non-random method of sampling – convenient sampling was chosen.

## Introduction

Internet users increasingly use mobile devices and hence the services available on them. It can be said, that it turns into a constant trend. Mobile devices are nowadays the main source to meet needs of their users, thanks to them, users communicate, obtain information, read, buy, watch movies, manage time and many others. Such a situation forces the development of solutions adapted to the limited functionality of mobile devices and

their small screens. More and more service providers adapt their offer to the lifestyle and needs of its customers (Poradnikprzedsiebiorcy, 2017). Among the solutions developed, in addition to mobile websites and responsive sites, mobile applications have emerged. The most popular mobile applications on Android and IOS, in 2016, according to Gemius, are sequentially (Mobirank, 2016): Google, YouTube, Messenger, Facebook, Google Maps, Gmail, Google Drive, Google +, OLX and WhatsApp.

## Mobile device users — Smartphonisation of Poles

Without a doubt smartphones are the most used mobile devices these days. According to research results in the report "*Polska jest Mobi*" (2015), having regard to data from June 2015, smartphonisation in Poland was 58%, this means that almost 19 million Poles aged 15+ had smartphones (for comparison, tablet penetration in Poland in the same period was 21%). Within this group, 61% were women and 55% men. As far as Internet users are concerned, men are more likely to be equipped with the smartphone. As far as the operating system is concerned, the unquestioned market leader in Poland is the Android operating system, about 65% of Polish smartphones are equipped with it. Another place belongs to Windows Phone (16%). Only 4% of respondents have smartphones with IOS operating system. 12% of smartphone owners do not know what is the operating system of their smartphone. Smartphones are by their users constantly. According to statistics, people spend the least time on these devices between 2 and 5 a.m. Poles spend almost 3 hours with mobile devices every day. The longest time with the phone falls on the morning, just after waking up and during breakfast and in the evening from 7 to 8 p.m. When using the smartphone, consumers use it for tasks that require an Internet connection. According to research results, we use the Internet every day for about 2 hours long. Smartphone users consciously use mobile applications, they do not download them by accident or just in case - if users already install an application, they do it when they are convinced that it will play an important role. When no longer needed, it is removed from the device to make room for another one.

## Mobile applications for students

Students, right after the youth aged 15–19, belong to the most active group of Poles, taking into account owned mobile devices. In 2015, 88% of young people aged 20–29 years had the smartphone. Currently, on the market, many mobile applications are available (both payed and free), which may benefit students during the academic year. For the purpose of this article, the authors analyzed modern mobile applications, available on the most popular platforms: Android, IOS, Windows Mobile, which could be used by students of the Czestochowa University of Technology, during the learning process. The applications have been divided into six categories.

### Applications for scanning and storing data

**Office Lens** – free application, which allows to crop and retouch images and documents and increase their legibility. Optimization of the documents scan function at an angle will automatically straightened all the images. With the use of Office Lens it is possible to convert scans/images to PDFs, Word and PowerPoint files, and even save images in OneNote or OneDrive. It was considered one of the best mobile applications of Microsoft (Kotkowski, 2015) and is available for Android, Windows Phone and IOS.

**PDF Documents Scanner** – free application, one of those, which allow to store scans in the memory of the mobile device. With the PDF Scanner application, one can tidy up scans/images and make them easy to get to. Thanks to special filters, all the images are very clear, each page can be converted to PDF format, which can greatly facilitate the transfer and transmission of collected data. The application also allows to merge multiple scans (any quantity) into the one document (Stecklein, 2014). It can be installed on Android devices.

### Time management applications

**My Study Life – School Planner.** Another free and easy to use application. It is a cross-platform dedicated to students and teachers. It allows to store all the data in the cloud and makes them available on any device, no matter where the person is. The application allows to introduce and easily control the schedule. Exercises, lectures or labs are displayed in a friendly, tiled form (Luzak, 2016). The application can be installed on Android, IOS, Windows Phone devices.

**Evernote** – free application. Evernote is at the forefront of time management solutions, often referred as “life management” application. The tool gives the ability to: create notes, lists, save results, organize images, articles from the Internet, documents or sound recordings, and search the text. The application also helps to keep track of expenses by organizing bills and even planning trips (booking tickets or reservations) (Majchrzyk, 2016). It can be installed on Android, iOS, Windows Phone devices.

### Applications for storing data in the cloud

**DropBox** – free application, which provides the ability to edit, share, synchronize files in Excel, PowerPoint or Word. Users of several devices can have them updated, on the servers of the service provider is available backup. File transfer is intuitive, uncomplicated, and one does not need to have account in Dropbox. The application offers 2GB of storage space (Brzozowski, 2011). It can be installed on Android, IOS, Windows Phone devices.

**SugarSync** – free application, it give the ability to send files to the service via email (by sending a file to a special address) and the ability to synchronize multiple folders and multiple devices – SugarSync lets to share folders with other users of the service. With the application one can synchronize images from the mobile phone or even play mp3 tracks. The free account offers 5GB of space for files (Trajdos, 2011). SugarSync is available on all existing mobile platforms.

### Applications for mathematicians

**Kalkulator Plus** – free application, giving access not only to basic calculations such as addition, subtraction, multiplication and division or roots, but also to trigonometric functions, integrals or percentages. It has an intuitive interface, and shows exactly what the person is doing (Cyganek, 2015). Application for Android and IOS.

**WolframAlpha** – the only paid application in the list, it can calculate numerical, symbolic and algebraic expressions. Thanks to the application one can solve complex differential equations, it will show the next steps leading to the result, visualizations, graphs. The tool can also visualize statistics data as well as show data about the world (Połowianiuk, 2014). The application for Android, IOS and Windows Phone.

### Applications for learning foreign languages

**Speeq** – free application. The application offers vocabulary at four levels of learning (4800 cards), with three unique learning modes: Memorizing, Writing, Repetitioning. It gives the ability of creating own collections from the selected vocabulary. Thanks to Speeq, a few people can learn on one device. All words and phrases were recorded by native speakers. The Unique functionality of the application are the so-called memory anchors – thanks to these short connotations, the user quickly assimilates the most difficult words or phrases (Gryplikacje, 2016). The application can be installed on Android and IOS.

**T-Translator** – free application based on Google translator and supports 72 languages. Words or phrases can be entered not only using the smartphone's keyboard – in the case of dozens of languages, speech recognition is also available. Translate phrases can be read by the speech synthesizer (SpidersWeb, 2013). The application is available on Windows Phone.

### Applications involving students

**Exit Ticket** – free application for both students and lecturers. The application was designed by teachers to engage students and accelerate their achievements. The application is based on gamification - students in real-time solve tasks, surveys, quizzes and exams, etc (Swacha, 2015). They are constantly evaluated and can see their results individually and against the background of the rest of the group (Ptak, Lis, Bajdor, 2016). This application encourages students to learn and gain better grades (Owczarek, 2015). The application is available for Android devices.

**iTunes U** – free application for students and teachers, with a function of giving homework, an integrated journal of evaluations and private discussions. The application makes it easy to conduct classes, assess tasks as well as streamline communication through the use of iPhone, iPad or iPod. iTunes U allows teachers to create and manage educational courses and share them with users around the world. With iTunes U students have access to the world's largest free educational content catalog, prepared by universities such as Cambridge, Harvard, Oxford, and Stanford (Owczarek, 2015). It is available for IOS devices.

### The research methodology and the research results

The research on the use of the Internet on mobile devices and knowledge on mobile applications dedicated to students while studying, was conducted among students of Czestochowa University of Technology from April to May 2017. For conducting the study the authors chose convenient sampling. It was also dictated by the fact that respondents represent the most active group on the market of mobile devices and applications, which minimized the risk of incorrect interpretation of questions.

The questionnaire in total consisted of 9 questions. The first three of them were about the sex, age and the studies degree of the respondents. Other questions were related to the owned mobile devices, the frequency of Internet usage on mobile devices, most used mobile applications while studying and advantages of mobile applications dedicated to students.

It was one-off survey, the questionnaire was in a form of paper, and it was handed over to fill by the respondents. All the survey questions were closed questions, five of them were questions of a single choice and four were questions of multiple choice (up to 3 answers). All of received questionnaires were filled out correctly.

The tested group consisted of  $n = 181$  students (104 men and 77 women) of three fields of study at the age of 18 to 35 years. They were students of 1st degree studies and 2nd degree studies, studying in full-time. 81% of respondents were students of the first degree studies and 19% of them were students of second degree studies. According to the research results, each respondent has a smartphone, additionally 58% of students declared to have tablet, and 53% have laptop. 15% students have iPad and 2% of them use an e-Book reader. As the most popular operating system of mobile device students chose Android (81% of responses). Next places among the most popular mobile operating systems were occupied by IOS (10% of responses), Windows Mobile (4% of responses) and Windows Phone (2% of responses). Also 2% of respondents does not know what kind of operating system has the owned mobile device. All respondents use the Internet on a mobile device every day. The responses for the question on the use of mobile applications dedicated to students, indicate, that 60% of respondents are aware of the existence of mobile solutions dedicated to them and use them in a greater or lesser extent. 40% of students never used such an application, many of them have not even heard of mobile applications that they could use while studying.

Further questions are addressed to respondents who use mobile applications dedicated to students and concern applications, which respondents use while studying.

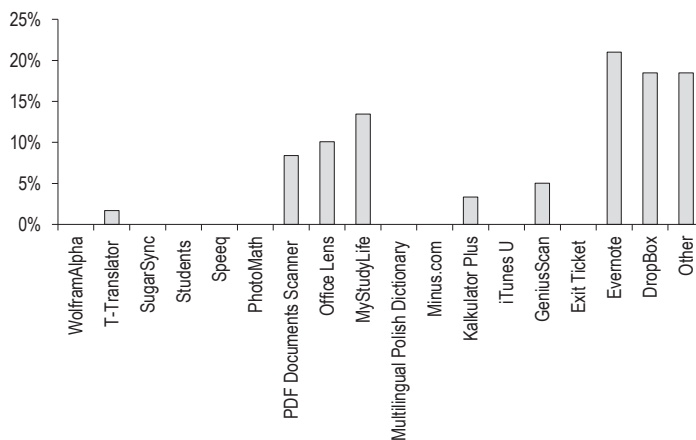
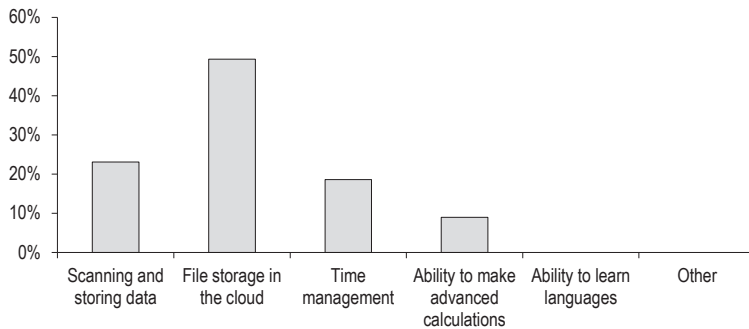


Figure 1. The kind of application used by respondents while studying

Source: own work.

As shown in Figure 1, 21% of respondents using mobile applications while studying, declare using Evernote, 18% of them use Dropbox. Also 18% of respondents have chosen answer „Other” indicating that they are using Google Drive. One person from this group of respondents declared using application Pomodoro for time management.

The last question of the survey refers to the most useful functions of mobile applications for students, according to the studied group of respondents.



**Figure 2.** The most useful functions of mobile applications for students

Source: own work.

As it is apparent from Figure 2, the largest number of respondents (49% of students) are of the opinion that the most useful function of mobile applications is ability to *storage different files in the cloud*. Another important function is possibility of *scanning and storing data* in the memory of the mobile device, chosen by 23% of respondents. 19% of respondents are of the opinion that *time management* is also very useful while studying.

## Conclusions

The flood of mobile products is unstoppable, the availability of smartphones and broadband wireless Internet is growing steadily. The standard equipment for students are smartphones, tablets, iPads, so it was obvious that mobile applications would soon become available to make learning easier and more enjoyable. The article analyzes available mobile applications and presents tools in each of the categories, which, according to the authors, deserve attention. For the purposes of this article authors conducted the research to know the state of knowledge on mobile applications available for students. As is apparent from the research, 60% of the respondents are aware of applications offered for them on mobile devices. Many of them use such applications while studying, mostly on their smartphones. Students most often use applications to *storage files in the cloud* and for *scanning and storing* different kind of data in the memory of their mobile devices. They are of the opinion, these are the functions of mobile applications, which are most useful for them while studying. Among the large number of applications available to help students in the learning process, respondents indicated that they most often use *Time management applications* such as Evernote and/or My Study Life and *applications for storing data in the cloud* – Dropbox and Google Drive, which was pointed out mostly as “Other”. In the category *applications for scanning and storing data*, the mostly chosen ones were Office Lens and PDF Documents Scanner. Students rarely use applications for mathematicians, motivating this lack of knowledge about them. What is interesting none of the respondents uses involving students app.

Although mobile applications are massively used today, their users should not forget about the threats associated with them. Users of mobile devices, using the Internet, often do not remember to protect them from unauthorized access, by installing anti-virus and firewall. The applications presented in this article are very interesting and undoubtedly helpful in everyday life. One should, however, think whether young people soon will be able to function normally without the help of mobile devices and modern technologies?

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