

KYMENLAAKSON AMMATTIKORKEAKOULU

Degree program of International Business / International Marketing

Wang Fangbing

REQUIREMENTS OF MOBILE APPLICATIONS AT FINNISH UNIVERSITY OF AP-
PLIED SCIENCES

Bachelor's thesis 2012

ABSTRACT

KYMENLAAKSON AMMATTIKORKEAKOULU

University of Applied Sciences

Business Management

WANG, FANGBING

REQUIREMENTS OF MOBILE APPLICATIONS
AT FINNISH UNIVERSITY OF APPLIED SCI-
ENCES

Bachelor's Thesis

66 pages + 11 pages of appendices

Supervisor

Hugh Clack, Senior Lecturer

Commissioned by

mFabrik Production Oy, July 2012

Keywords

mobile application, education, Finnish University of
Applied Sciences, study life

The thesis was commissioned by mFabrik Production Oy which is specialized in mobile solutions. With the growth of smartphone and smart mobile devices users, especially among school age people, increasing number of mobile applications were used by students daily, which draw potential market of mobile applications for education purposes.

The aim of this study was to define the mobile application user groups of Finnish University of Applied Sciences and to find out their interests and general requirements towards mobile applications.

Both quantitative and qualitative research methods were used. Questionnaires were designed for each user group and in-depth interviews were carried among every user group.

After analyzing the research results, there were needs for mobile applications with certain features which could help users' study and working life. The mobile versions of several existing systems were demanded. Meanwhile, in order to make best utilize of these mobile applications, UASs should prepare to increase the awareness of applications once they were put in use.

TABLE OF CONTENT

ABSTRACT

1	INTRODUCTION	7
1.1	Motivation	7
1.2	Research questions	8
1.3	Research methods	8
1.4	Applicability of the research	9
1.5	Research validity and reliability	9
2	INTRODUCTION TO MOBILE APPLICATIONS	10
2.1	Mobile application overview	10
2.2	Mobile application categories	11
2.3	Internet use outside home and work	12
2.4	Students attending higher education 1920-2005	13
2.5	Future mobile application usage	14
3	E-LEARNING FOR HIGHER EDUCATION	14
3.1	What is e-learning?	15
3.2	Why e-learning?	15
4	MOBILE APPLICATION USER GROUPS OF FINNISH UNIVERSITY OF APPLIED SCIENCES	18
4.1	Students	18
4.2	Staff	20
5	ANALYSIS OF SURVEY RESULTS	22
5.1	Students	22
5.1.1	Background information	22
5.1.2	Facts of using learning-related systems	25
5.1.3	Moodle and Winha features used from students' mobile devices	29
5.1.4	Students' study life problems	33

5.1.5	Open-ended question	37
5.2	Staff	39
5.2.1	Background information	39
5.2.2	Facts of using existing programs	43
5.2.3	Moodle and Winha features used from staff' mobile devices	45
5.2.4	Open-ended question	47
6	ANALYSIS OF QUALITATIVE DATA	48
6.1	Student	49
6.1.1	Background information	49
6.1.2	Experiences of using mobile applications	50
6.1.3	Experiences of using learning related systems via mobile devices	51
6.1.4	Willingness to use learning related mobile applications	52
6.1.5	Opinions on having mobile applications to help study	53
6.1.6	Willingness to pay for the application	55
6.2	Staff	55
6.2.1	Background information	55
6.2.2	Using experiences of mobile applications	56
6.2.3	Staff' opinions on the importance of having mobile versions of existing programs	57
6.2.4	Using experiences of mobile applications for working or teaching purposes	58
6.2.5	Opinions on mobile devices help staff' problems at work	59
7	CONCLUSION AND SUGGESTIONS	60
7.1	Students	60
7.2	Staff	62
7.3	Suggestions for further study	63
	REFERENCES	64
	APPENDIX	
	Appendix 1. Questionnaire for students	

- Appendix 2. Questionnaire for staff
- Appendix 3. Interview questions for students
- Appendix 4. Interview questions for staff

LIST OF FIGURES

Figure 1 Students attending higher education 1920-2005 (Statistic Finland)..... 14

Figure 2 Respondents' age distribution in age groups23

Figure 3 Respondents' gender distribution.....23

Figure 4 Respondents' study department distribution.....24

Figure 5 Respondents' study type and study year25

Figure 6 Mobile device types of respondents25

Figure 10 Students' enrol time to Winha29

Figure 11 Moodle features used by students from mobile devices.....31

Figure 12 Winha features used by students from mobile devices31

Figure 13 Awareness of existing learning related mobile application.....32

Figure 14 Usage of existing learning related mobile application33

Figure 16 Respondents' age distribution in age groups40

Figure 17 Respondnets' gender distribution.....40

Figure 18 Staff distribution of working areas41

Figure 19 Staff living places42

Figure 20 Staff working place allocation and differences with living places.....	42
Figure 21 Mobile device types of respondents	43
Figure 25 Moodle features used by staff from mobile devices.....	46
Figure 26 Winha features used by staff from mobile devices	47

LIST OF TABLES

Table 1 Prevalence of Internet usage and certain purposes of use in 2011 (Statistic Finland)	12
Table 2 Purposes of the use of the Internet in spring 2008, per cent of Internet users by age group	16
Table 3 Use frequencies of learning related systems.....	26
Table 4 Devices that are used by students to access learning related system.....	27
Table 5 Willingness to install mobile version of learning related system.....	28
Table 6 Difficulties and situations in study life	33
Table 7 Use frequencies of existing programs.....	44
Table 8 Willingness to have mobile versions of work related programs.....	44
Table 9 Devices that were used by staff to access existing programs	45
Table 10 Interviewees background information (students)	49
Table 11 Interviewees background information (staff)	55

1 INTRODUCTION

The thesis is commissioned by mFabrik corporate. mFabrik provides mobile internet and application solutions and services are offered as SaaS (Software as a Service) services which allows fast and easy, yet very cost effective, deployment of mobile internet based services anywhere in the world. Headquartered in Helsinki, Finland with operations in Finland, Germany, Sweden and United Kingdom, today mFabrik services are running in over 30 countries on all continents. mFabrik has built consumer and enterprise systems for small start-ups as well as global media brands and other enterprises.

This thesis aims to find out the Finnish University of Applied Sciences' (UAS) general requirements and interests towards mobile applications. The research consists of overview of various mobile applications in order to define the potential mobile applications for UAS; identify different user groups; surveys and interviews will be conducted with different user groups.

1.1 Motivation

According to Garrick and Jakupec (2000), flexible learning is seen by education and training institutions as a vehicle for addressing current economic, social, political, technological and cultural issues caused by the forces of globalization. That is, globalization has made it imperative for education and training organizations and public and private enterprise to develop more flexible approaches to learning. This includes new approaches to course planning, structures, delivery methods and access to education, training and staff development. With the mobile devices and applications popularity surges, increasing number of people have their own mobile devices and use for different purpose.

The author had been doing her internship in the commissioner, mFabrik for three and half months. During her working period, she noticed that there are limited mobile applications for higher education in Finland. In addition, as a student of Finnish University of Applied Sciences, she observed that mobile applications sometimes could help students and teachers better in many situations. Thus, the needs of mobile

applications for Finnish University of Applied Sciences students are interesting to the author and she closely associates with the mobile solution provider and Finnish University of Applied Sciences.

1.2 Research questions

The research questions which are to be answered in this thesis are then:

1. Is there need and interest for Finnish UAS to have mobile applications?

Sub-questions:

- a. What are mobile applications and how and to what extent are they used?(Introduction to mobile applications)
- b. Who are the users of mobile applications in a UAS?
- c. What are the needs of different user groups in a UAS?

2. What kind of mobile applications would be suitable for UAS?

1.3 Research methods

Both qualitative and quantitative methods were used in the empirical part of the thesis.

The quantitative methods emphasis on testing and verification, focus on facts and reasons for social events and hypothesis testing; it is a logical and critical approach and has controlled measurement. (Ghauri & Gronhaug, 2010, 105) The quantitative researches were carried out in the form of surveys; two questionnaires were designed for two targeted user groups which included fact statements, attitude statements and free comments. The questionnaires also have a set of background questions. Additionally, the questionnaires allowed leaving respondents' contact information once they were interested in being interviewed to give more detail opinions and information.

Qualitative methods are flexible and unstructured. When compare with quantitative methods, they employ a limited number of observation and try to explain different

aspects of our problem area. It is generally accepted that, for inductive and exploratory research, qualitative methods are most useful, as they can lead us to hypothesis building and explanations. Qualitative methods emphasis on understanding from respondents' or informants' point of view. It gets subjective "inside view" and closeness to data. Qualitative methods are process and exploration oriented methods. (Ghauri & Gronhaug, 2010, 105-106) Interviews were conducted among 7 people from each group in order to get in-depth opinions on having mobile applications for educational uses. Interviewees were selected among respondents who left their contact information voluntarily.

1.4 Applicability of the research

As Finnish UASs have many common grounds, for instance, Finnish UASs using the same application; the similar UAS structure and student profile, the research result could be applicable to other Finnish UASs in large scale.

Due to the education systems vary from country to country, the research result has limited possibilities to be applied to Universities in other countries.

1.5 Research validity and reliability

Scientific research has to be valid and reliable for it to be credible. Reliability means the consistency of the measurements and validity means the accuracy of the measurement used in the research. The research trustworthiness and quality can be tested using validity and reliability. The credibility of the research can be improved by discussing about strengths and weakness of the research. (Ghauri and Gonhaug 2002, 139)

The research used both quantitative and qualitative methods. For quantitative research, the invalid answers, for example, failed in answering the control questions rightly, are not taken into consideration. The responding period is two weeks' time from 1 February 2012 to 15 February 2012 when most of the students were presenting at school and doing regular study activities. Moreover, it is long enough to get

adequate respondents. The research successfully got respondents from each age groups, gender, departments, and study type and study year.

For qualitative research, the people who were chosen were considered suitable for providing information according to their answers in quantitative survey. The interviews not only carried on with those who are currently using or interested in mobile applications for higher educations, but also the people who don't use or not interested in those applications were interviewed which is trying to figure out the reasons for people who have negative attitudes towards to mobile applications.

The questionnaires and interview questions were designed based on research problems, goals and company's suggestions. The questions were checked by the supervisor that they are relevant to the research and will give the right results. All the respondents and interviewees were voluntarily involved in this research and were allowed to give information freely.

All above brings reliability and validity into the research results.

2 INTRODUCTION TO MOBILE APPLICATIONS

2.1 Mobile application overview

Mobile applications or mobile apps are applications developed for small handheld devices, such as mobile phones, smartphones, PDAs and so on. Mobile apps can come preloaded on the handheld device as well as can be downloaded by users from app stores or the Internet. (Viswanathan, 2012)

Mobile applications are categorized into two strategies:

- A native smartphone application, which resides locally on the device and is published through the major application stores.
- A Web-based mobile application, which is cross-platform and fully accessible via mobile browsers. (Info-Tech Research Group Inc., 2012.)

2.2 Mobile application categories

Also known as downloadable, mobile applications are common on most phones, including inexpensive, entry-level models. Their wide use is due to many functions they perform, including providing user interfaces for basic telephony and messaging services, as well as for advanced services such as games and videos. (Mobile Applications, 2008) Nowadays, large number of mobile applications is available on the market. Most can be categorized as follow 6 main types:

Communication	Games
- E-mail Client	- Puzzle/Strategy
- IM Clients	- Cards/Casino
- Mobile Web and Internet Browsers	- Action/Adventure
- New/Information Client	- Sports
- On-Device Portals (Java Portals)	- Leisure Sport
- Social Network Client	

Multimedia	Productivity
- Graphics/Image Viewers	- Calendars
- Presentation Viewers	- Calculators
- Video Players	- Diary
- Audio Players	- Notepad/Memo/Word Processors
- Streaming Players (Audio/Video)	- Spread sheets
	- Directory Services
	- Banking/Finance

Travel	Utilities
- City Guides	- Profile Manager
- Currency Converters	- Idle Screen/Screen Savers
- Translators	- Address Book
- GPS/Maps	- Task Manager
- Itineraries/Schedules	- Call Manager
- Weather	- File Manager

2.3 Internet use outside home and work

A research results provided by Statistics Finland shows that the use of internet both outside home and work is becoming more and more common. Devices and web connections suitable for using the Internet outside home and work are becoming widespread. Forty-two per cent of Finns had in use a smartphone in spring 2011. Smartphones are purchased most by persons aged under 45 and men, on the other hand. Of all households, 67 per cent had a laptop computer. Thirty-three per cent of households had a wireless broadband connection from their computer to the mobile phone network (3G). In 2010 this share was just 24 per cent. (2011)

Table 1 Prevalence of Internet usage and certain purposes of use in 2011 (Statistic Finland)

	Used the Internet in the past 3 months	Uses the Internet usually several times a day	Bought over the Internet in the past 3 months	Followed some social network service in the past 3 months	Uses the Internet with a laptop outside home and workplace	Uses the Internet with a mobile phone in 3G network	Has a smartphone in own use	Used at least one election engine online before the Parliamentary elections
Percentage of population aged 16–74 years								
Aged 16-24	99	73	56	86	26	36	53	46
Aged 25-34	100	80	67	78	35	46	55	66
Aged 35-44	99	76	64	58	36	47	60	58
Aged 45-54	95	60	46	29	30	26	42	41
Aged 55-64	81	41	26	15	18	13	28	30
Aged 65-74	53	23	10	6	11	5	11	16
Men	89	61	44	43	30	39	49	42
Women	88	57	47	46	22	19	35	45
Total	89	59	45	45	26	29	42	43

As reflected from table 1, the most common way of use internet outside work and home is having a smartphone in own use among all the age groups. Additionally, the percentages of having smartphone in own use between age 16 and 34 are almost as high as age group 45-54. It indicates that there is potential need for mobile applications and it keeps growing when the people from younger groups turn to older age.

2.4 Students attending higher education 1920-2005

Statistics Finland (2007) has details of students attending higher education between 1920 and 2005. As can be seen from Figure 1, at the end of the 1960s, the number of students attending higher education had reached nearly 60,000, that is, their number nearly trebled over one decade. The threshold of 100,000 students was exceeded in 1988. The number of students continued to grow rapidly in the 1990s, and at the end of the decade students in universities numbered more than 150,000. In 2006 there

were nearly 180,000 university students. In 1991 a new element, temporary polytechnics, was added to the tertiary level education sector. The last temporary polytechnics were made permanent in the early 2000s. At present some 130,000 students attend polytechnics. Polytechnic education has replaced vocational post-secondary and vocational tertiary level education.

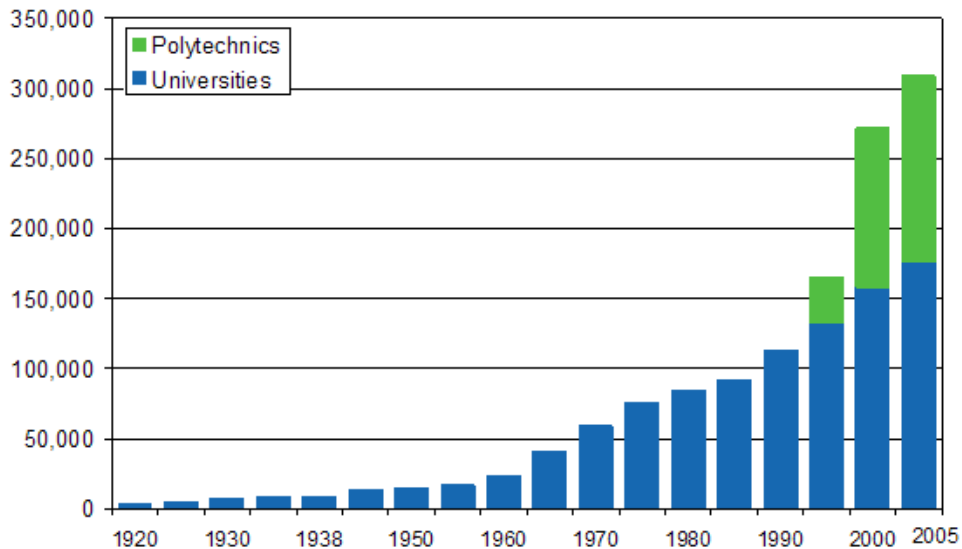


Figure 1 Students attending higher education 1920-2005 (Statistic Finland)

2.5 Future mobile application usage

Ipad and Ipod touch device enable the uses of mobile applications. Refer back to Chapter 5.1.1, 92% of students are between 18 and 38 years old, if calculate all the smartphone, Ipad and Ipod users together, the total amount is 53.7%. This number is in accordance with the figures of age group 16-24 and 25-34 in Chapter 2.3 Internet use outside home and work. The increasing number of students create needs for mobile applications at current and when these students graduate and become members of Finnish society, the demands for mobile applications in society will be driven up.

3 E-LEARNING FOR HIGHER EDUCATION

In the past few years the popularity of the Internet has facilitated new ways of learning, numerous educational tools and applications have appeared and e-learning has

come into being. (Fernández Manjón 2007, 27) The influence of technology needs to be understood on two levels: it enables these changes to happen but it also affects people's expectations about what is normal and possible. For example, the use of ICT in higher education makes it possible for universities to offer students much more flexible access to learning resources, administrative service and academic staff, but it also encourages students to expect such flexibility. (Elli & Goodyear 2009, 2) Also, the developments in internet and multimedia technologies are the basic enabler of e-learning, with consulting, content, technologies, services and support being identified as the five key sectors of the e-learning industry. (Nagy 2005, 79-96)

3.1 What is e-learning?

E-learning comprises all forms of electronically supported learning and teaching. The information and communication systems whether networked learning or not, serve as specific media to implement the learning process. The term will still most likely to be utilized to reference out-of-classroom and in-classroom educational experiences via technology, even as advances continue in regard to devices and curriculum. (Tavangarian D, Leybold M, Nölting K & Röser M, 2004)

3.2 Why e-learning?

During the past decade there has been a substantial investment in higher education in e-learning and, more recently, a rapid growth in the use of digital technologies and social networking among a generation who are regularly using these in their day-to-day lives. (Lea & Robin 2007, 135)

It is widely known that e-learning has its advantages compare with the traditional way of learning. First of all, it is a cost saving teaching method. E-learning frees the learning location; therefore, there is no need to spend on Facilities. Also, it saves the costs of trainer, materials, travel expenses etc. Secondly, the teaching is available 24 hours per day and 7 days per week, learners are enabled to study whenever they want. More specifically, technologies were regarded as crucial to making possible a curriculum which in principle could be accessed anytime and anywhere, arguably providing the possibility of decoupling it from institutions and operating more effec-

tively within a global higher education. (Lea & Robin 2007, 135) Thirdly, e-learning ensures all the learners can receive consistent messages.

Derived from Statistics Finland, Table 2 shows the purposes of the use of the Internet in spring 2008, per cent of Internet users by age group. As can be seen, there were 44% of people looked for information about education, training or course offers and 37% of people consulted the internet with the purpose of learning. It is noticeable that 17% of people and almost one third of young people have done an online course in year 2008.

Table 2 Purposes of the use of the Internet in spring 2008, per cent of Internet users by age group

Purpose of use	All	16-29 yrs	30-49 yrs	50-74 yrs
Sending or receiving e-mails	90	95	91	83
Finding information about goods or services	88	92	92	79
Internet banking	87	84	92	82
Browsing travel and accommodation websites	70	63	75	68
Reading or downloading online magazines	69	68	73	66
Seeking health-related information	62	60	66	57
Obtaining information from public authorities' web sites	56	54	63	49
Looking for information about education, training or course offers	44	57	46	28
Listening to web radios or watching web television	40	53	41	25
Listening to music online or downloading music on PC or other device	39	64	37	16
Reading weblogs	38	53	35	28
Consulting the Internet with the purpose of learning	37	60	34	18
Instant messaging	35	69	28	12
Looking for a job or sending a job application	32	55	31	11
Downloading programmes to the PC	32	45	32	18
Chatting or writing on discussion boards	30	54	26	11
Using browser based news feeds e.g. RSS for reading new content on websites	23	31	23	14
Buying secondhand goods at online auctions or flea markets	23	30	25	13
Internet phone calls	18	19	18	16
Selling goods or services e.g. via auctions	17	22	19	10
Doing an online course	17	29	15	8
Playing games online	14	31	8	4
Subscribing to news services or products to receive them regularly	14	11	17	12
Videoconference	10	12	10	7
Downloading games to the PC	9	17	7	3
Using peer-to-peer file sharing for exchanging movies, music, video files	7	18	5	0
Creating or maintaining own weblog or blog	5	9	4	2

4 MOBILE APPLICATION USER GROUPS OF FINNISH UNIVERSITY OF APPLIED SCIENCES

In order to examine different needs of different group in KyUAS, three main user groups, students, lecturers and administration are predefined according to their intrinsic difference and the utilization on different software and application at KyUAS through personal interviews conducted with KyUAS Chief Information Officer, Moodle administration and student administration. This section has brief introduction on the computer software provided by KyUAS that each user group are currently using.

According to KyUAS CIO, Mr. Timo Pirtilä, the main user group of KyUAS are students and staff which include lecturers and KyUAS administration. Following table shows the computer software that are provided for KyUAS students and staff.

	Student	Staff
Moodle	X	X
Winha	X	X
Webmail	X	X
Time table	X	X
Kymi	X	X
Nelli	X	X
TEM		X
Tweb		X
SAP		X

4.1 Students

KyUAS has 4247 students includes 331 from abroad. KyUAS has 3 faculties which are divided in seven departments: Business, Design and Media, Social Care, Health Care, Technology, Mathematics and Science department. (KyAMK, 2011a) All the students are provided following software and applications with the same features and functions by KyUAS.

Moodle

Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE) (Moodle.org, 2012) It is a software package for producing Internet-based courses and web sites. It is a global development project designed to support a social constructionist framework of education. (Moodle.org, 2012)

Moodle is very similar to a learning management system. Moodle can be used in many types of environments such as in education, training and development, and business settings.

Some typical features of Moodle are (Wikipedia, 2012)

- Assignment submission
- Discussion forum
- Files download
- Grading
- Moodle instant messages
- Online calendar
- Online news and announcement (College and course level)
- Online quiz
- Wiki

Except features above, KyUAS Moodle Administration has utilized another two functions: SMS course message and ask for course feedback. SMS course message allows lecturers to send emergency message from computers and the students will receive message on their mobile phones. Course feedback is electronic feedback in Moodle or by mobile phone. Lectures can ask for course feedback through Moodle and students get the message as an SMS link. The feedback can be submitted in Moodle or by mobile phone.

Winha

Winha is an application for management of completed courses. Winha's student interface includes achieved credits, course planning and information on exams and grades. In the Winha system, students sign up for exams and register themselves as present or absent in the academic year. All students must enrol as present or absent in every academic year. (KyAMK, 2012)

Webmail

Currently, KyUAS is using Novell GroupWise which includes following features: (Novell, 2012)

- Mobile Synchronization
- Server
- Calendar
- Features
- Tasks
- Contacts
- Web
- Corporate Instant Messaging

Timetable

Any KyUAS intranet user is able to check timetable. The information of course timetable, lectures teaching timetable and room availability are available.

Kymi

Kymi is part of KyUAS library service for searching and library account management use. The search results are based on KyUAS library database. Users can renew books in Kymi. Kymi is available for all the staff. The mobile version of Kymi is alive in Finnish.

Nelli

Nelli is an information retrieval system which provides end users with access to a variety of information resources, such as databases, library catalogues and e-journals. (Nelliportaali, 2012) All the students and staff are able to access Nelli. Nelli is used by 16 Finnish Universities, 25 Finnish University of Applied Sciences, and 15 regional portals in Finland.

4.2 Staff

KyUAS has 615 employees; 194 are employed as lecturers. Rest of the staff are distributed in KyUAS 8 services units which are Human Resources Services,

International Affairs, Housing Management, Library and Information Services, Student Guidance and Administration, Financial Management, Data Administration, and Communication Services. (KyAMK, 2011b)

All the staff are provided Travel Expense Management (TEM) and Tweb.

TEM

Travel & Expense Management (TEM) is a versatile solution that automates travel planning and expense reimbursement processes. In addition, the software enables reporting, analysis, and direct integration with back end systems, banks, and credit card companies to give control over business travel expenses. (Basware, 2010)

KyUAS staff can only log in TEM from KyUAS network. Staff that are on travel frequently and top management have access to VPN, therefore they are able to use TEM regardless the location.

Tweb

Tweb is KyUAS web document management system, it allows file storing, organizing and sharing for users and group of users. The users, groups, files and sharing rules are managed by an integrated admin system. The user accounts are only created for KyUAS staff, but in some cases, the documents from Tweb are accessible to students as the documents sometimes be placed elsewhere.

SAP

SAP is used by KyUAS administration and management; it is an integrated enterprise resource planning (ERP) software. KyUAS uses very limited amount of SAP modules.

Moodle

Lecturers use Moodle to assist their teaching and are offered more features than students. Features for lecturers are:

- Editing course content
- Course settings
- Assign roles
- Make groups

- Grading
- Course content backup
- Import information
- Reset course
- Reports
- Making online quiz
- File upload

Winha

Corresponding to Winha student interface, teachers use Winha mainly for giving course grades and credits, managing the course enrolment dates and exams.

5 ANALYSIS OF SURVEY RESTULTS

The survey results are presented in this chapter. In accordance with the questionnaires, first the background information are examined which contains age, gender, student related information and types of mobile device. Then move on to the facts of using several education and management related programs, and the interests towards having mobile version of them. In student survey results, the problems in students' study life are illustrated before finally analyse the free comments.

5.1 Students

In order to get enough students' opinions towards mobile applications for their study life, the target was to collect as much as respondents from all KyUAS students. Eventually, there were 278 questionnaires returned and 264 of them are valid. The analysis will base on the answers from 264 valid respondents. All the following figures are illustrated as per cents.

5.1.1 Background information

Respondents' age and gender

All the students were categorized into five age groups; one respondent's data was missing in this question. As shows in the Figure 2, 72.3% of respondents were between 18-28 years old which was largely distinguishable rather than other age groups, 19,7% were between 29-38, 5.3% of age from 39-48 and only 2.7% of respondents were over 48.

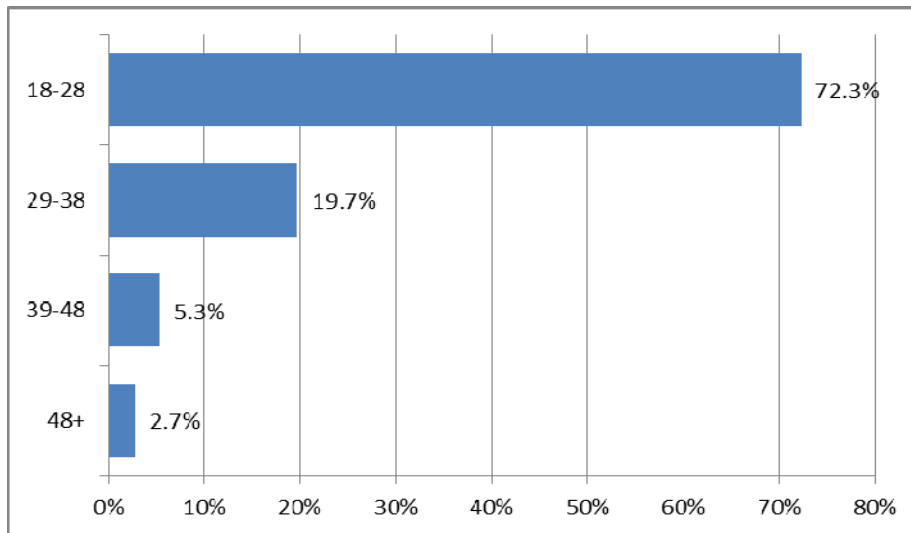
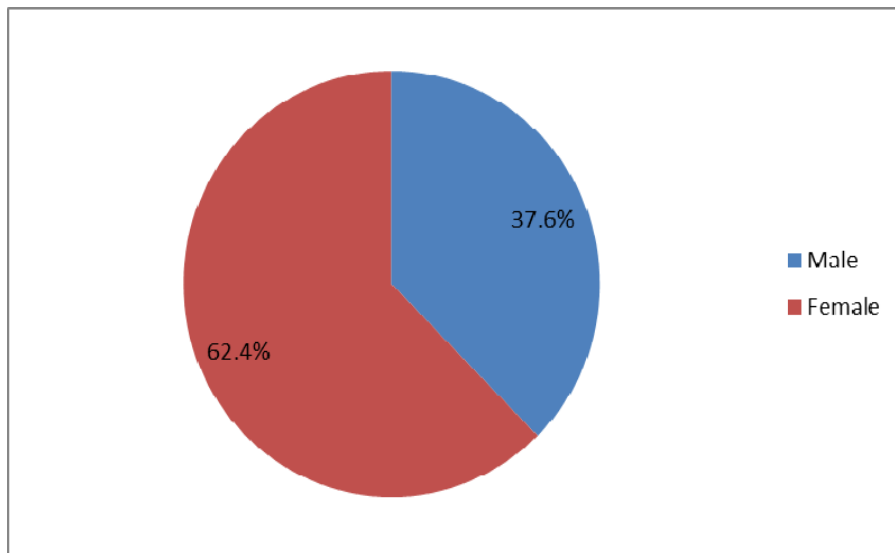


Figure 2 Respondents' age distribution in age groups

According to the statistics from KyUAS student office, male students counted for 43.8% and female students were 56.2%. There were more female respondents for this research which was accordance with the statistics from student office, see Figure 3.

Figure 3 Respondents' gender distribution



Department

As can be seen from Figure 4, most respondents were from Business (35.5%) and Technology department (26.3%). Health Care and Media students were counted for 13% and 9.9%. There were 7.3% of design students among the respondents and 4.6% were from Social Care department. Only 2.7% of students were from Culture depart-

ment. With 0.8% participates from all the respondents, Math and Sciences students were the smallest group involved in the survey.

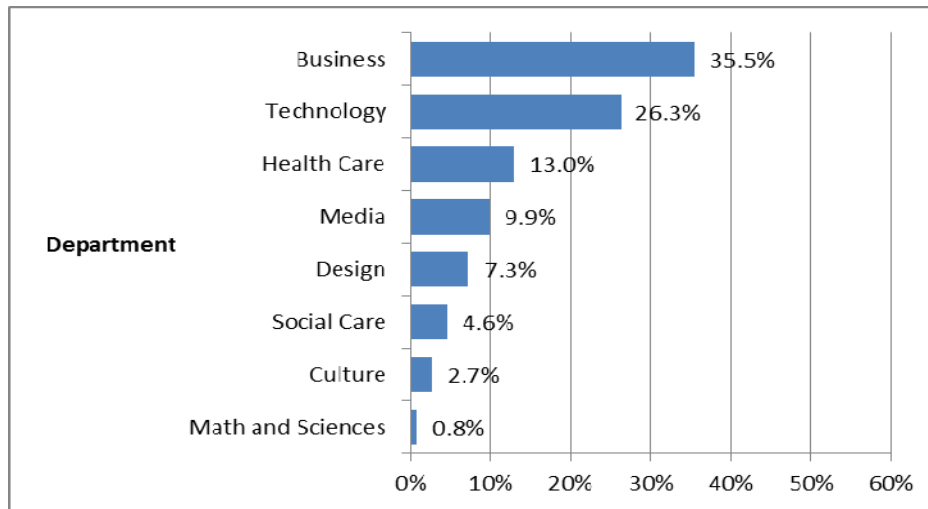


Figure 4 Respondents' study department distribution

Student type and study year

In KyUAS, students were categorized into following four types: full-time study which leads to bachelor degree, part-time student who will get Master degree, exchange student and adult education. The pie chart on the left side below shows 86.6% respondents were full-time students and small portion of other student types. The background information in the survey also checked their study years, as the pie chart on the right side presents: the distribution of respondents' study year was quite even, no exact major group can be seen from the results.

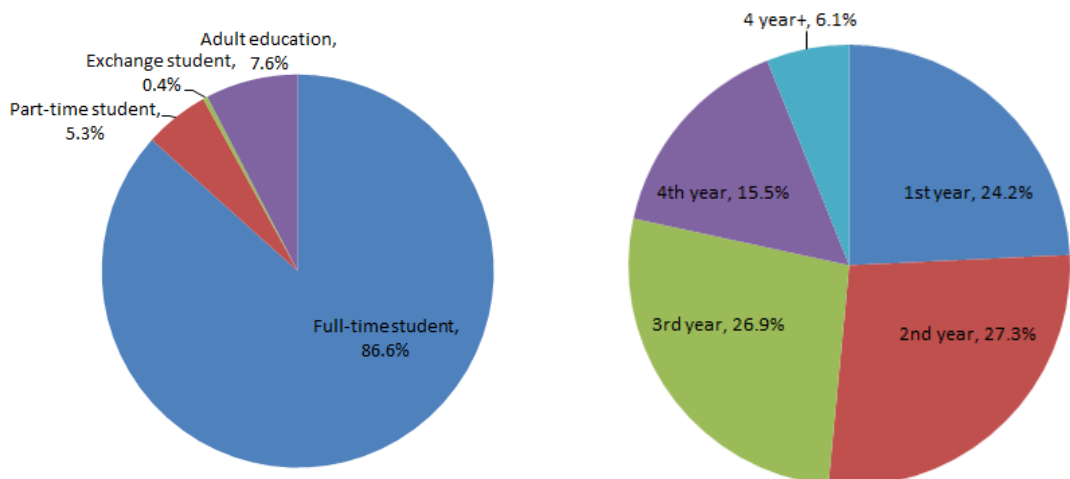


Figure 5 Respondents' study type and study year

Mobile device types

Knowing what kind of mobile devices that respondents have is essential in this research, because having mobile devices is precondition for using mobile applications, the results give the overview of possibilities and potentials of using mobile application for respondents' study life. The question was designed as a multiple choice question.

With 58.7% of respondents, laptop was the most common mobile device among all the respondents. Having both laptop and net stick can be seen as a substitute of small handheld device with 3G, because they also enabled the free access to internet anywhere and anytime. 21.2% of respondents owned feature phone with 3G. In all the smartphone (based on platform), Android phone was the most popular among respondents (17.8%), there were around same number of respondents had iPhone and Symbian smartphone. Rest of mobile devices listed in the questionnaire were not commonly used among students.

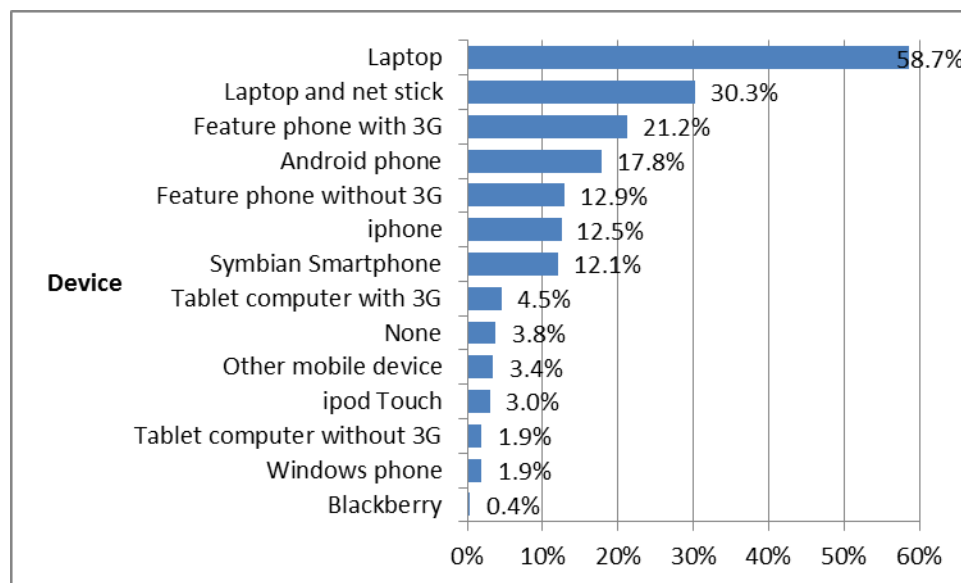


Figure 6 Mobile device types of respondents

5.1.2 Facts of using learning-related systems

The survey tried to find out the facts of using already existing learning related system, Moodle, Winha, Timetable, School Webmail, Kymi and Nelli for their studies. The

responding period is from 1 February to 15 February 2012. Therefore, respondents' answers were based on their activities from the beginning of January to the middle of February.

Use frequencies

The results answered to the question of "How many times do you use following programs during last month?" Five options were given which can find out if the program was used everyday, very often, few times, seldom or never.

Firstly, School Webmail and Moodle were most frequently used programs during research period. There were 45.6% of respondents used Webmail every day and 38.8% use it weekly based (10-30 times). 40.5% of respondents used Moodle between 10 to 30 times, 29.9% is Moodle daily users.

Secondly, compare to Moodle and Webmail, Winha and timetable had less use frequencies. It was noticeable that almost two third of respondents used Winha 2-9 times during the research period; only 3% used Winha every day, 21.6% Winha users used it relatively often. As indicated in the figure below, the gap between different use frequency options of Timetable were smaller than other programs, even though January was the beginning of a new period, still, 7.7% of respondents checked it only once and 14.9% of them didn't check at all. However, 18% of Timetable users needed to check it every day and 32.3% of them used quite often.

Thirdly, less than 5% of respondents used Kymi and Nelli every day. The portions of 10-30 times and only once were both around 10%. 41.8% used Kymi between 2 to 9 times in January. There were 26.4% of respondents didn't use Kymi and 40.9% of them didn't use Nelli for one month at least, which means Kymi and Nelli were not commonly used as other systems.

Table 3 Use frequencies of learning related systems

	At least 30 times	10-30 times	2-9 times	once	I didn't use it
Moodle	29.9%	40.5%	24.6%	3.0%	1.9%
Winha	3.0%	21.6%	59.8%	14.4%	1.1%
Timetable	18.0%	32.2%	26.8%	7.7%	14.9%
School Webmail	45.6%	38.8%	11.4%	1.9%	2.3%
Kymi	3.4%	15.3%	41.8%	13.0%	26.4%
Nelli	3.1%	12.0%	30.5%	13.5%	40.9%

Devices that were used by students to access learning related system

The survey tried to figure out if students accessed learning related systems via mobile devices, how many tried and what kind of systems they accessed. This question is a multiple choices question.

Accessing from respondents' own computers was the most common way in all listed programs. It was worth noting that 25.1% of respondents had accessed Timetable and School Webmail via mobile devices. Thus, the needs for schedule management and communication in time were more distinctive. 18.3% Moodle users and 14.4% of Winha users accessed from their mobile devices by last month. Very small portion of respondents used mobile devices to explore Kymi and Nelli, so it can be understood as there were less needs and interests on using Kymi and Nelli via mobile devices.

Table 4 Devices that are used by students to access learning related system

	Use from my own computer	school computer	from my mobile devices	I didn't use it
Moodle	97.0%	66.9%	18.3%	1.5%
Winha	93.9%	55.1%	14.4%	1.1%
Timetable	79.5%	51.3%	25.1%	14.8%
School Webmail	94.7%	64.3%	25.1%	2.3%
Kymi	57.8%	40.3%	3.1%	26.0%
Nelli	60.6%	32.7%	1.2%	37.8%

Willingness to install mobile version of learning related system

By asking students if they would like to install mobile versions of learning related systems once they were available, the survey will directly find out students willingness toward having those programs as mobile applications.

As can be seen from **Error! Reference source not found.** and Table 5, the mobile version of School Webmail was most interesting to students because it got highest

positive answers from respondents. 38.5% of respondents were definitely willing to install mobile version of Timetable and 26% of them tend to install if it was easy. Around 60% of Moodle users and 50% of Winha were interested in mobile applications. Hence, the desires for mobile versions of Moodle, Winha, Timetable and School Webmail were more obvious. Near 55% of Kymi and Nelli users gave negative answers, so once mobile version of Kymi and Nelli exist, the usage may not be as optimistic as other four systems.

Part of students chose option “I don’t know”, unfortunately, the survey was not able to find out the reasons, but from the qualitative research results, it could be understood in two ways- they didn’t care or they were not sure if these mobile applications worth to install. Therefore if mobile applications of learning related system were designed in a way that can largely help students’ study life, then these students’ answers will be affirmative by then.

Table 5 Willingness to install mobile version of learning related system

	Definitely yes	Yes, if installation is easy	I don’t know	Probably no	Definitely no
Moodle	30.7%	31.8%	11.0%	21.2%	5.3%
Winha	20.2%	29.4%	15.6%	27.5%	7.3%
Timetable	38.5%	26.0%	10.7%	16.4%	8.4%
School Webmail	39.5%	33.0%	6.9%	14.6%	6.1%
Kymi	10.1%	10.9%	24.8%	35.3%	19.0%
Nelli	8.6%	13.2%	22.6%	35.8%	19.8%

Students’ enrol time to Winha

A question was designed to make it clear if students had time management problems to enrol in Winha. Students need to enrol as “present” at the beginning of the new study year, as well as the courses that they are going to take so that they will get evaluation and credits once they complete the courses. So enrol in time was seen significant by students. Finally, 249 respondents told their enrol time to “Present” and 242 gave the enrol time to courses.

All the respondents’ answers were based on their last experiences of enrolment in Winha. Thus, most of the students were able to complete enrolments before deadline with no hurry. 12.8% of respondents registered in courses and 4% of them enrol in

“Present” by last minute. Together there were 10.3% of respondents didn’t meet the course enrolment deadline and 4% missed and forgot enrolments.

From the results it was known that students have more serious time-orientation on enrolling in “Present” rather than enrol in courses.

Winha mobile solution would be helpful for the students, who normally enrol in by last minute and missed deadline, because it frees the location, for instant, when lecturers remind students to enrol into the courses, students are able to do it immediately on class with Winha mobile version. It also useful to students from misses the deadline which was caused by no access to computer.

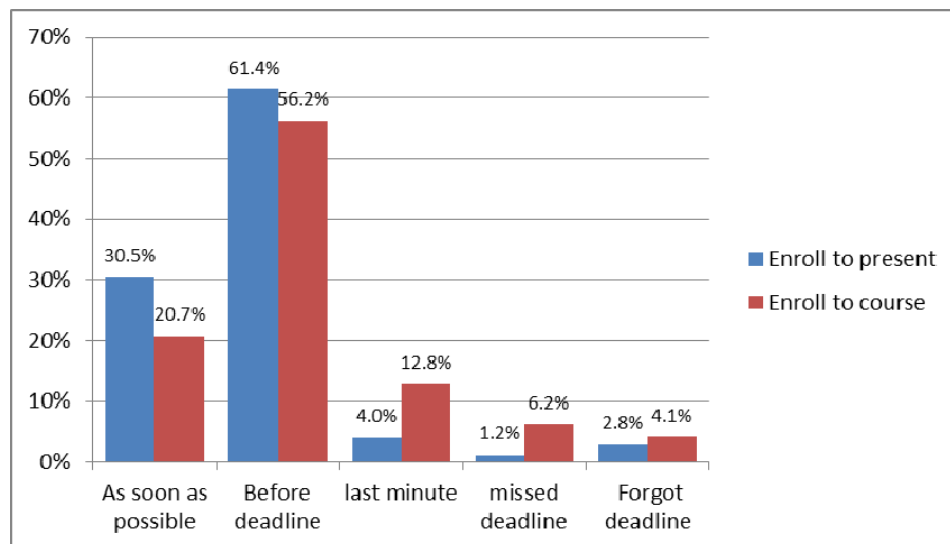


Figure 7 Students' enrol time to Winha

5.1.3 Moodle and Winha features used from students' mobile devices

In case of underutilize of a mobile application, it is advisable to include frequently used features. Thus, the survey tried to figure out what features are commonly used via students' mobile devices by asking what they do with Moodle and Winha through their mobile devices. The questions were designed as a multiple choices question. 255 students responded to the question concerning Moodle features and 253 for Winha features.

Moodle

Compared with other features, percentage of check homework deadline was the highest (36.1%). The number indicated students more tend to use mobile devices to help their study time management and homework deadline was the most demanding information that they needed to know from Moodle in many circumstances. The author has noticed many students check course and assignment instructions on class with their mobile devices when discussing the instructions with lecturers, as was expected, 27.8% of respondents checked course and assignment instructions via mobile devices.

From the research results, 18% of respondents had done homework grade checking via mobile devices, this shows students were eager to know their homework evaluation as soon as possible. 17.6% of respondents downloaded study materials into their mobile device, which means they would like to study course material regardless time and location. Figure below that 15.7% of respondents submitted homework from their mobile devices, so we can assume that some students used mobile devices to do homework.

Students also used Moodle from mobile devices for communication purposes, as can be read from the following figure, 12.9% of students checked Moodle announcement and updates, 11% of them checked message box and 9.8% of them participated discussions in forum. There were small portions of respondents checked wiki, did quiz and edited profile through mobile devices. Other purposes that were given by the respondents were checking course feedback, course cancellation (can be categorized into Moodle announcement), check value of the course (can be categorized into check course instruction) and chat.

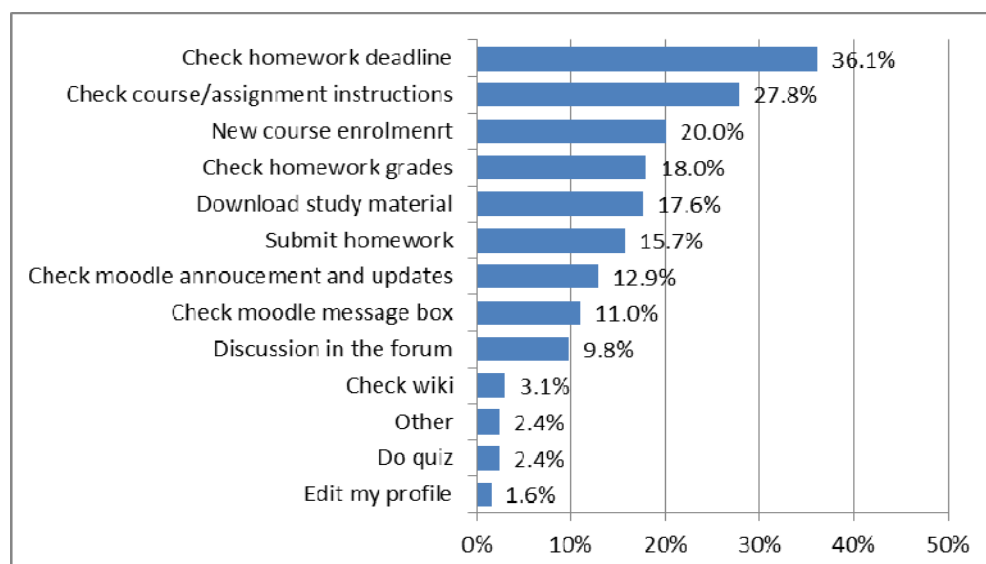


Figure 8 Moodle features used by students from mobile devices

Winha

The figure below points out those students had used their mobile devices for study planning. Among the respondents, 14.6% and 9.5% of them had done course enrolment and “Presents” enrolment.

Winha course arrangement allows students to check the courses which are supposed to complete for the new period and optional study information can be found. There were 8.3% of students had accessed from their mobile devices for such purpose. Small part of students enrolled resit exams and updated personal information in Winha with their mobile devices.

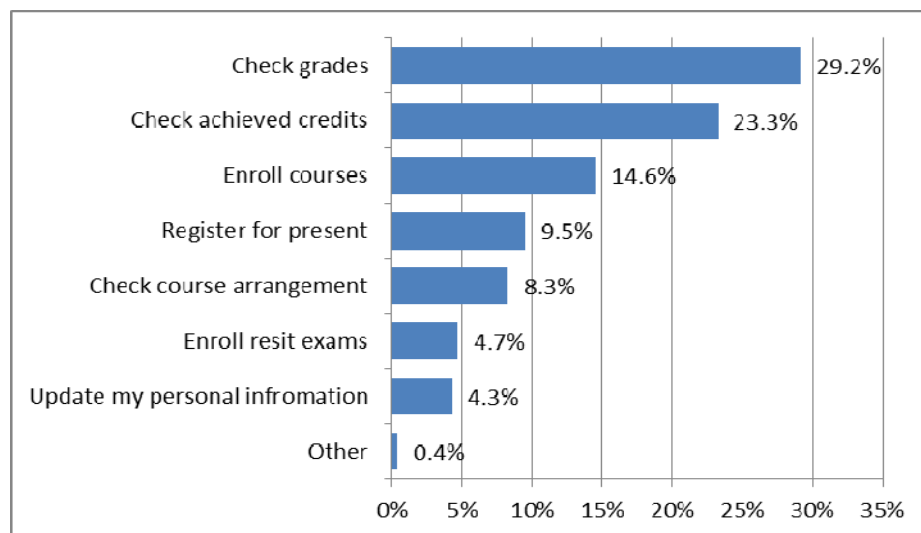


Figure 9 Winha features used by students from mobile devices

Awareness and usage of existing study related mobile application

Currently, KyUAS mobile site, Kymi web-based mobile application and School Webmail mobile application are in use. Two questions were designed to understand students' awareness to the existing mobile applications and if they were sufficiently used.

The following figures reflect the question of asking students if they know mobile versions of KyUAS site, Kymi and School webmail are available. School Webmail got

the highest awareness (38.3%) compare with other two programs, as shows in Figure 10. In addition, the usage of School Webmail mobile application was the highest among three programs. Altogether, 23.2% of respondents had used mobile version of School Webmail, however, only 7.8% of them used it constantly.

The awareness of existing KyUAS learning related mobile applications was relatively low. So it is recommended to improve the communication in order to make students be aware of mobile applications' existence and get more potential users. Another reason for students didn't use existing mobile applications would be the limited functions of their devices according to the analysis result of mobile devices type in background information.

As can be seen from Figure 10, 27.3% of students knew KyUAS mobile site, but the usage was relatively low. Only 1.9% of students used KyUAS mobile constantly.

It is obvious that Kymi had the lowest awareness and usage; there was no respondent use mobile version of Kymi constantly. As discussed, use frequency of KyUAS learning related system in chapter 5.1.2, the low usage might due to low use frequency of Kymi.

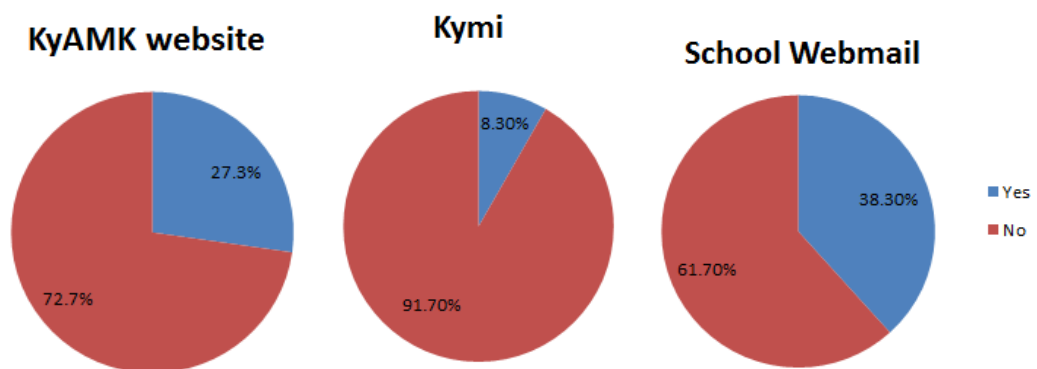


Figure 10 Awareness of existing learning related mobile application

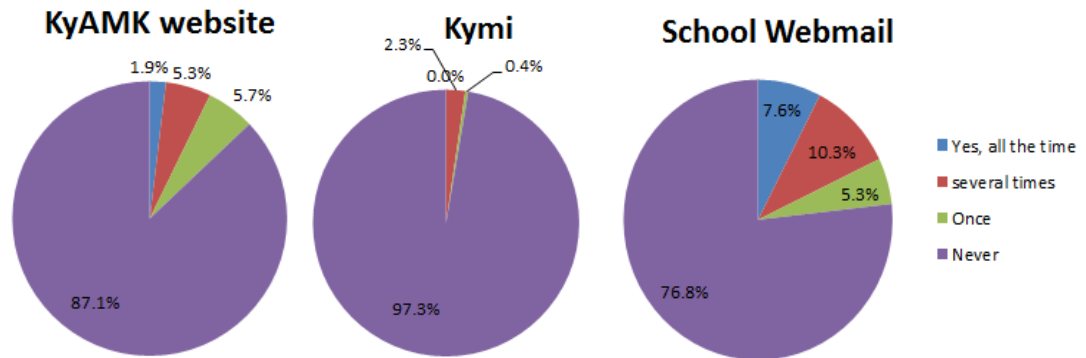


Figure 11 Usage of existing learning related mobile application

5.1.4 Students' study life problems

The purpose for students to have mobile applications is to make their study life easier, therefore, first it is essential to define the problems and difficulties that students might have in their study life, then find out if mobile application would help them to cope with these problem. In the last section of questionnaire, nine situations were listed and students need to tell if they have been in such situation by giving Yes/No answers to each situation. Also free space was given after each situation in order to see if students have other related situations or experiences. The list of situations can be found from questionnaire, see appendix. The results were sorted from biggest to smallest based on Yes answer.

Table 6 Difficulties and situations in study life

	Yes	No
3.7	57.8%	42.2%
3.2	55.3%	44.7%
3.8	55.1%	44.9%
3.4	53.1%	46.9%
3.3	47.9%	52.1%
3.5	40.7%	59.3%
3.1	34.1%	65.9%
3.9	31.9%	68.1%
3.6	19.8%	80.2%

Q3.7

As can be seen from Table 6 and **Error! Reference source not found.**, 57.8% of students had been in situation 3.7 (“It makes difficulties for me to find my class when the timetable and classroom are changed frequently at the beginning of a period”). 28 respondents gave comments on it, 10 of them had been in such situation for quite many times, they complained about the “last minute” change and did not get informed, 3 students even felt frustrated when they cannot find information anywhere. Moreover, 2 respondents pointed out here that they didn’t get informed about the cancellation of the class. There were 2 respondents said that mobile application would help them better in such situation. There are also respondents who always check before getting in classes, and they call their classmates if they cannot find the classroom. A student from design department and another from Health Care department said timetable was well-organized in their study, so they were rarely in such situation.

Q3.2

There were 55.3% of respondents have had problems of agree on group meeting time and 32 of them gave their opinions. It has been found from comments that the main method for agreeing on meeting time were using Facebook, email, face-to-face meeting and phone call or text message, but all the methods have defects. Some Facebook users pointed out that it was hard to get everyone online or reply in Facebook, sometimes even though everybody was on Facebook, but the real topic was easily skipped. Same problem for people who agree on meeting time via email, there are group members who rarely check email or even don’t check at all. Some of the respondents just call or text their group members, however, in many cases, they don’t have all the members’ phone number. So far, students think the best way was to set meeting time when having face-to-face meeting, still, some group members’ schedules might change later on, so another meeting time discussion was needed. Thus, it would be helpful to have a mobile application which allows group members make a reservation on their public calendar, once the reservation was made, a message for asking meeting time confirmation will be sent automatically to other group members’ mobile phones with options of Yes, No and suggest another meeting time. Also every member’s confirmation status were shown on their open schedule.

Q3.8

Table 6 and **Error! Reference source not found.** show 55.1% of students would like to see lunch menu on their mobile devices. From the comments concerning to this situation, many students pointed out lunch menu were very nice information especially there were two cafeterias in Kasarminmäki campus, some of them strongly ask for mobile application for lunch menu. Several students stated that they already use lunch menu application on their mobile devices, but very small amount of students know about this recently launched application.

Q3.4, Q3.5 and Q3.6

It has been a problem for student don't meet assignments deadline since 53.1% of students totally forgot some of their homework. Twenty respondents put their thoughts for this situation, 7 of them said this situation happen too often, one said this happen with or without Moodle. Some of respondents said it would be nice to have reminders on their phones. Moreover, it has been pointed out that the confusing layout of Moodle was hard for students to find out homework deadline and a respondent suggested that there should be a front page in Moodle with the updates, like a timeline on Facebook, reminding about deadlines and showing who wrote what, where and when. It is noticeable that 40.7% of students mixed up homework deadlines. There were 19.8% of students missed deadlines because they were in the middle of the party or trip. Some of them said it was very easy to forget and miss the deadlines in business trips. Therefore, time management and reminders were demanded for some students.

Q3.3

It was found 47.9% of students would like to study their textbook during travelling and holidays, but they don't have those books with them. From the comments, we know that many students carry their laptop to study during the holiday and travelling, but same time they think laptop was a bit heavy. Some of students already use devices like iPad to study during travelling particularly when at abroad, textbooks take too much kilos in luggage. In 5.1.3, 17.6% of students have downloaded study materials to their mobile devices. So having mobile version of textbook would meet students' study needs.

Respondents pointed out that the availability of most books in school library was relatively low. Apart from the situation in travelling and holidays, a respondent also said:

“I'd like to be able to check certain chapters of study books for example simply at school during group work (if heavy books were at home) but not many course books were available in electronic form at all.” For the students who don't have suitable mobile devices for E-study, they might have limited access and usage of mobile version of textbook.

Q3.1

There were 34.1% of students have bad problem with contacting KyUAS staff or student in urgent case. From respondents' comments, we found that most of them won't let themselves in such situation if there was no solution for it, for instance, they normally check beforehand if they know they need it or saved KyUAS phone centre where can connect to all the calls. Other students call 020202 or call someone else who might know staff phone number or go or call student affairs office. Still, many students were in such situation quite often and would like to have KyUAS phone book application or database on their mobile phone.

Q3.9

As it is known from Table 6 and **Error! Reference source not found.**, 31.9% missed interesting events at KyUAS or around the city. There were 4 respondents stated that they hardly get events information in English, so they missed interesting events very often, 1 of the 4 was very unhappy about this situation. Three respondents check it from Facebook or KyUAS intra or insider. Moreover, a respondent that he thinks the events should be informed by SMS. Two respondents pointed the poor event promotion at school: “...*That happens quite a lot unless it's an event made by Huvitoimikunta Kupla, their promotion is quite good. Usually the special days at the university are not promoted enough that everyone would be updated what's going on...*”

“*KyUAS doesn't really advertise its events, at least in Kotka, so I rarely know what's going on outside my own study programme. I used to be an exchange student in the Netherlands...*”.

5.1.5 Open-ended question

Students were encouraged to write their comments freely concerning having mobile applications to help their study life at the end of questionnaire. Eventually, 65 respondents gave comments. All the replies were categorized and will be analysed in this chapter each by each. The comments were mainly about students' desire on certain mobile applications, suggestions on improving KyUAS IT services, ideal applications and reasons for students who were indifference to mobile applications.

Desire on having certain mobile applications

Many respondents thought it was quite a good idea to have mobile applications for their study life, and they once thinking about having such mobile applications. They pointed out that having those applications would make their study life easier and convenient; even there was one student wants to have all the learning related applications as soon as possible. Winha, Moodle, calendar mobile version of textbook were mentioned by more than 1 respondents.

Additionally, several respondents specified certain features that they wanted in mobile applications: assignment deadlines reminder, enrol in resit exam, information board with latest information, for example, cancelled courses. Respondents also thought the mobile applications should be convenient to check information rather than login into many places.

Suggestions on improving KyUAS IT services

Many respondents commented on KyUAS IT services, the analysis of these comments would be helpful to develop mobile applications and also create better environment for using mobile applications at school.

For the applications that are constantly used by students like Moodle, Winha, Timetable and Webmail would better be in KyUAS front page so that students don't need too much time and many clickings to access them. The webpages were too heavy to use, on a simple android phone with slow internet connection; all the KyUAS features should be easy to access.

Quite many respondents mentioned they would like to get SMS for the course cancellation in a hurry, so they won't go school for nothing. The automatically sent SMS service was used by many lecturers, however, seems still many students didn't get this service. School Webmail mobile application didn't work very well on their mobile devices, and respondents saw it as very important application.

Moodle was sometimes hard to use as students had lots of courses there. It took a lot of time to scroll and search for the right course at Moodle. It would be nice if it was possible to move the completed courses to some other place. A respondent said Moodle should have a timeline or newsfeed otherwise he or she is not able to check every course's page to find out any changes.

KyUAS should pay more attention on the promotion of existing KyUAS mobile applications, because many students didn't know for example, the availability of mobile version of School Webmail. They hoped school Wi-Fi was up and running in all around campus every day and barcodes.

Ideal applications

In this section, students described ideal applications for their study. The descriptions remain originally.

“School timetable in a format that can be accessed from ical or similar and so having all your personal and school schedules in same calendar; push notifications from courses, deadlines etc. from Winha/Moodle and easy access to them from mobile devices.”

“A good mobile app would be a single application with Moodle, Winha, email, menu, events all listed, instead of having a hundred different applications. Then there could be similar notification system as on Facebook.”

“Mobile instant messaging service for school, for instance, G/talk where you can add contacts - classmates or teachers. Would serve its purpose to have everyone involved online or at least when they are offline you know this is as fact.”

“The ideal, of course, would be having all the essential stuff concerning my studies on a single application.”

Students who were indifference to mobile applications

The research also tried to find out the reasons for students who don't use and don't care about mobile applications. The most common reasons were their low-end mobile devices, no internet access on mobile devices and personal preference, for instance, small screen makes it difficult to do anything, only use laptop for study while other devices were for fun, and trust less in security of mobile devices.

Some respondents never tried on mobile devices because they thought they didn't need them, but they thought if the application was helpful and good enough, they might change their minds.

5.2 Staff

Eventually, one hundred questionnaires were returned from KyUAS staff. Figures were presented as per cents in this chapter.

5.2.1 Background information

Respondents' age and gender

All the staff were categorized into 5 age groups, 1 respondent's data was missing in this question. As shows in Figure 12, 35.4% of respondents were between 49-58 years old which was largely distinguishable rather than other age groups, 29,3% were between 39-48, 22.2% of age from 29-38, 8.1% were older than 59 years old and only 4% of respondents were between 18 and 28. Most of KyUAS staff were middle aged and elderly people.

With 49.5% of male and 50.5% of female respondents, the staff gender distribution was balanced, see Figure 13. Two respondents' answers were missing from this question.

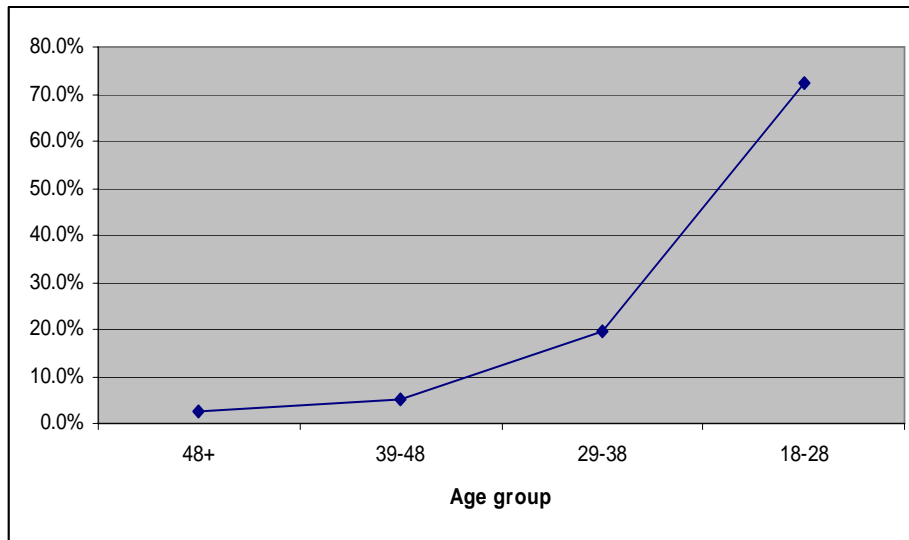


Figure 12 Respondents' age distribution in age groups

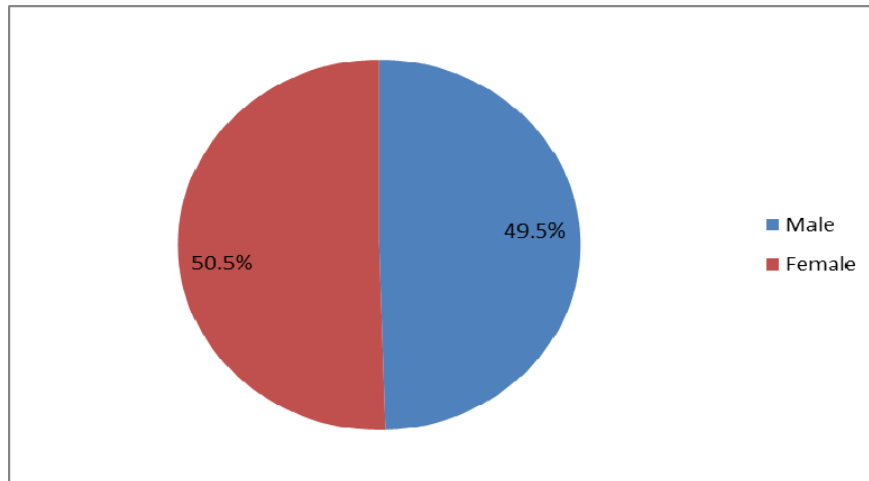


Figure 13 Respondents' gender distribution

Staff distribution of working areas

As can be seen from Figure 14, more than half of the respondents were lectures (58.2%), 13.2% of respondents worked for student guidance and administration. Data administration was counted for 7.7%. Small amount of respondents were from rest of areas and no respondent from Financial Management department. Eight answers were missing from this question.

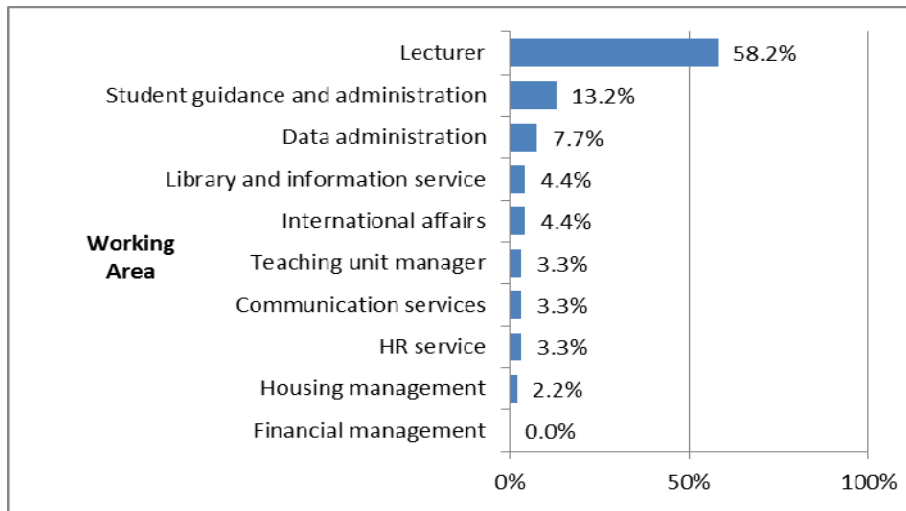


Figure 14 Staff distribution of working areas

Staff living and working places

In background information, the research also aimed to find out the distribution of staff living cities and working cities, then figured out how many live and work in different cities by asking their living cities and campuses, because the people who traveled a lot might be the potential group that were inclined to have mobile applications. The campuses were either located in Kouvola or Kotka. 92 valid data were collected.

It was found out that 51.1% of staff worked only in Kouvola and 42.4% of them worked only in Kotka, 6.5% of staff worked in both cities. According to the data shown in Figure 15 and Figure 16, there were 27.2% of staff needed to travel to and back from work.

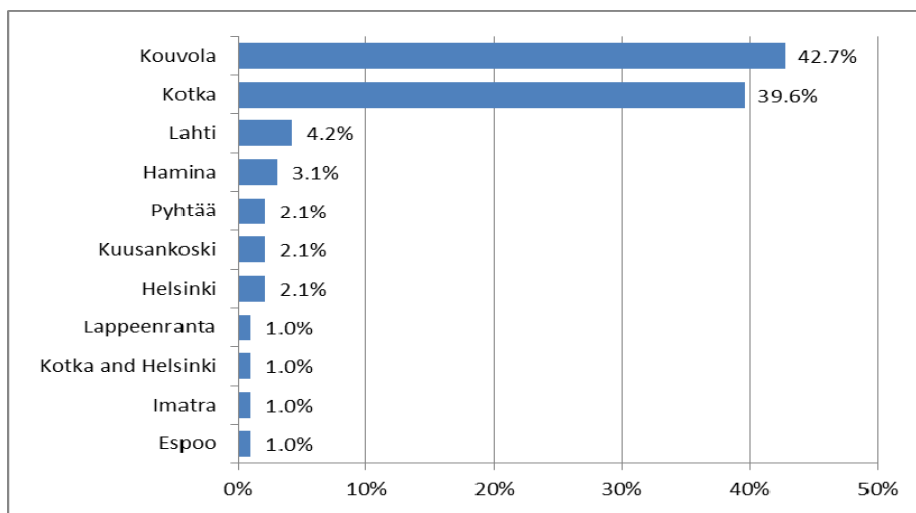


Figure 15 Staff living places

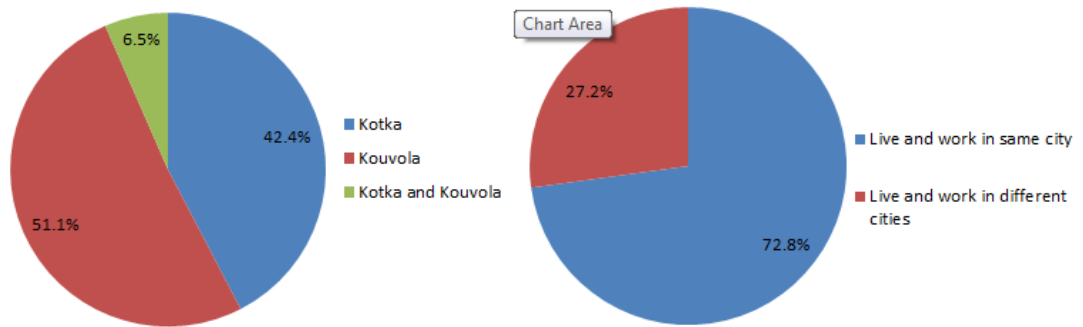


Figure 16 Staff working place allocation and differences with living places

Mobile device types

Same with the research for students, the questionnaire for staff examined what kind of mobile device types staff used as well. The question was designed as a multiple choice question.

Laptop (71.7%) was the most common mobile device among all the respondents and 30.3% of respondents had both laptop and net stick. The second most popular mobile device was feature phone with 3G. In all the smartphone (based on platform), Android phone was the most popular among respondents (13.1%), it can be seen from the figure that Symbian Smartphone (10.1%), tablet computers (14.2%), Windows phone (9.1%) and Iphone (6.1%) had considerable users. Nokia N900 (Maemo) was listed by a respondent in other mobile device option.

Generally to say, compare with students, staff were equipped or afforded themselves more smart mobile devices such as tablet computer, ipod Touch and Windows phone.

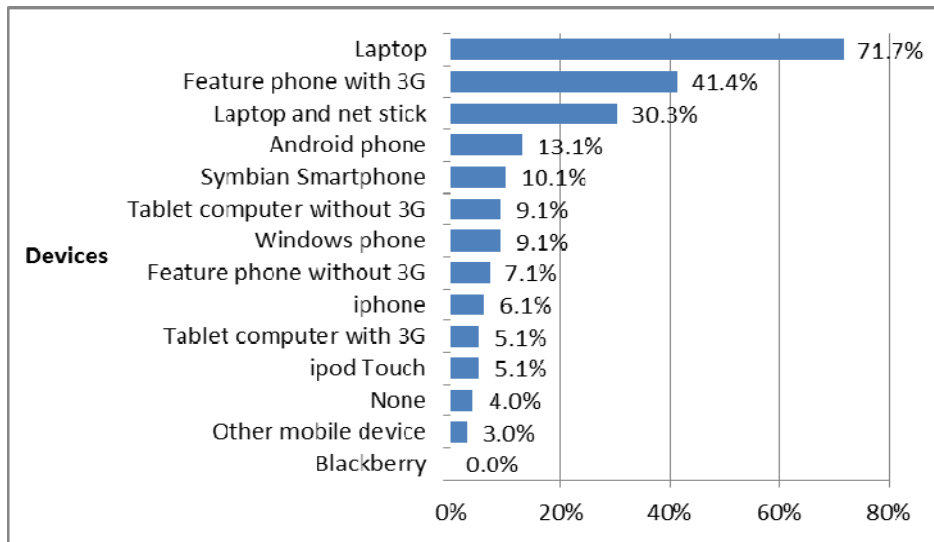


Figure 17 Mobile device types of respondents

5.2.2 Facts of using existing programs

Use frequencies of existing programs

This section aims at finding out how often staff used existing computer programs by asking “How many times do you use following programs during last month?” Five options were given which would help to know if the program was used every day, very often, few times, seldom or never. Different from students, due to employees were from different department, so each KyUAS’s employee didn’t need to use all the listed programs at work.

School Webmail, Moodle and Timetable were most frequently used programs during research period. There were 55.7% of respondents used Webmail every day and 17.5% use it weekly based (10-30 times). 40.8% of respondents were Moodle daily users, 18.4% were between 10 to 30 times. As can be seen that 34.4% of staff used Timetable more than 30 times during responding period, 20.8% of respondents checked Timetable 10-30 times and 2-9 times as well. Different from Moodle and School Webmail, around one third staff didn’t use Timetable during responding period.

The use frequencies of Winha, Tweb and Kymi were far less than previous three applications. Most of the Winha, Tweb and TEM users accessed these two programs 2-9 times during the responding period, still Winha and Tweb had significant amount of daily and weekly users. TEM was monthly used since it has biggest amount of users

(21.6%) who accessed once during the responding time. Kymi and Nelli were not so often used and SAP was rarely used by employees.

Table 7 Use frequencies of existing programs

	At least 30 times	10-30 times	2-9 times	once	I didn't use it
School Webmail	55.7%	17.5%	11.3%	3.1%	12.4%
Moodle	40.8%	18.4%	22.4%	3.1%	15.3%
Timetable	34.4%	20.8%	20.8%	1.0%	33.3%
Winha	16.7%	20.8%	38.5%	1.0%	22.9%
Tweb	14.4%	21.6%	25.8%	13.4%	24.7%
Kymi	8.5%	5.3%	19.1%	4.3%	62.8%
Nelli	3.1%	9.4%	14.6%	12.5%	60.4%
SAP	2.2%	2.2%	7.5%	3.2%	84.9%
TEM	2.1%	4.1%	35.1%	21.6%	37.1%

Willingness to install mobile version of learning related system

By asking staff if they would like to install mobile version of listed programs if they were available, the result will show staff' willingness toward having those programs as mobile applications.

There were similarities between the answers from staff and student, as can be seen from **Error! Reference source not found.** and Table 8, staff were most interested in having mobile version of School Webmail, moreover, School Webmail, Timetable, Moodle and Winha were top four applications with relatively high positive answers. Therefore, the needs for mobile version of Moodle, Winha, Timetable and School Webmail were obvious among KyUAS's staff.

Most Tweb and TEM users were quite clear about whether they wanted to have mobile versions or not because small portions of respondents chose "I don't know". Together there were 35.1% Tweb user and 28.7% TEM users would like to have mobile versions. The staff' and students' demands for Kymi and Nelli were very near to each other. It might due to SAP was not widely used in KyUAS, so the demand for mobile version of SAP was very low.

Table 8 Willingness to have mobile versions of work related programs

	Definitely yes	Yes if installation is easy	I don't know	Probably no	Definitely no
Webmail	43.6 %	23.4 %	3.2 %	14.9 %	14.9 %
Timetable	32.3 %	28.0 %	8.6 %	21.5 %	9.7 %
Moodle	22.6 %	28.0 %	8.6 %	28.0 %	12.9 %
Winha	16.3 %	18.5 %	7.6 %	35.9 %	21.7 %
Tweb	13.8 %	21.3 %	5.3 %	25.5 %	23.4 %
TEM	9.6 %	19.1 %	7.4 %	42.6 %	21.3 %
Nelli	8.4 %	15.8 %	15.8 %	34.7 %	25.3 %
Kymi	6.4 %	14.9 %	22.3 %	30.9 %	25.5 %
SAP	3.2 %	3.2 %	14.0 %	37.6 %	41.9 %

Devices that were used by staff to access existing programs

Table 9 and **Error! Reference source not found.** shows only School Webmail, Moodle and Timetable have been accessed from mobile devices. It implies that staff have been in the situations that they needed to use mobile devices to work with these programs. The most common device that was used by staff was school computer, which means staff tended to do jobs at work places. Additionally, it was worth to notice that the portions of staff that had smart mobile devices were higher than students, but compare with students, very small amount of staff accessed listed programs via their mobile devices. The mobile version of School Webmail and Kymi were available, however, only 10.1% of staff accessed Webmail from mobile devices and no one used Kymi in their mobiles during the responding period.

Table 9 Devices that were used by staff to access existing programs

	From own computer	From school computer	From mobile device	I didn't use it
Webmail	71.7 %	60.6 %	10.1 %	11.1 %
Moodle	54.1 %	75.5 %	7.1 %	13.3 %
Winha	13.3 %	68.4 %	0.0 %	22.4 %
Timetable	33.7 %	58.2 %	15.3 %	33.7 %
Nelli	18.1 %	26.6 %	0.0 %	62.8 %
Kymi	14.4 %	30.9 %	0.0 %	64.9 %

5.2.3 Moodle and Winha features used from staff' mobile devices

The survey tried to figure out what features were commonly used via staff' mobile devices by asking what they did with Moodle and Winha through their mobile devices.

The questions were designed as a multiple choices question. There were 96 respondents gave the answers to Moodle features and 93 to Winha

Moodle

Generally, lecturers and administration used Moodle at work. All the given Moodle features were utilized when staff use Moodle via mobile devices. The most commonly used features were edit course content (20.8%) and check student's assignment (16.7%). 7.3% of respondents gave assessment and assigned role through mobile devices. Small portions of lecturers had used mobile devices to make quiz and wiki on Moodle, and several respondents mentioned they had been doing administration or check information.

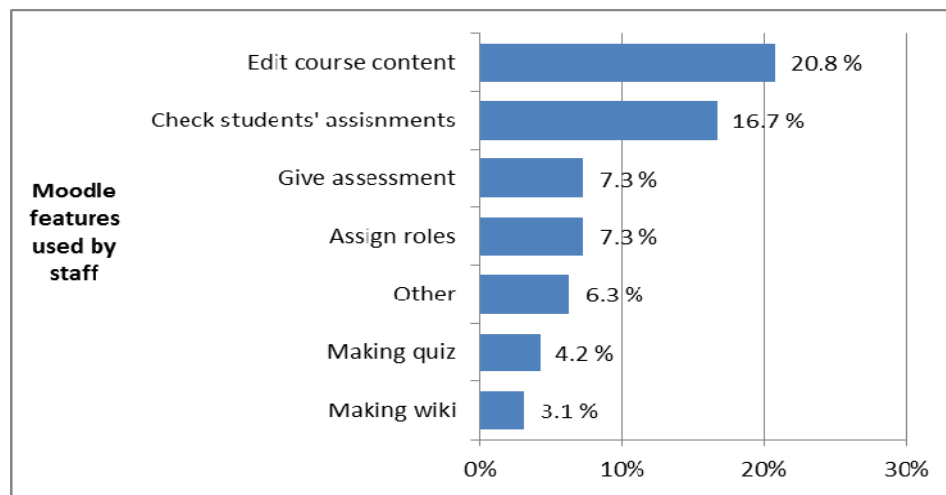


Figure 18 Moodle features used by staff from mobile devices

Winha

The main Winha users were mostly lecturers and staff in student offices; therefore, it was no surprise that 84.9% of staff didn't use Winha from their mobile devices. All the listed features were utilised when staff used Winha in mobile devices. As can be seen from Figure 19, the distribution of three features was quite even, thus, the three features should be included once a mobile version of Winha was designed.

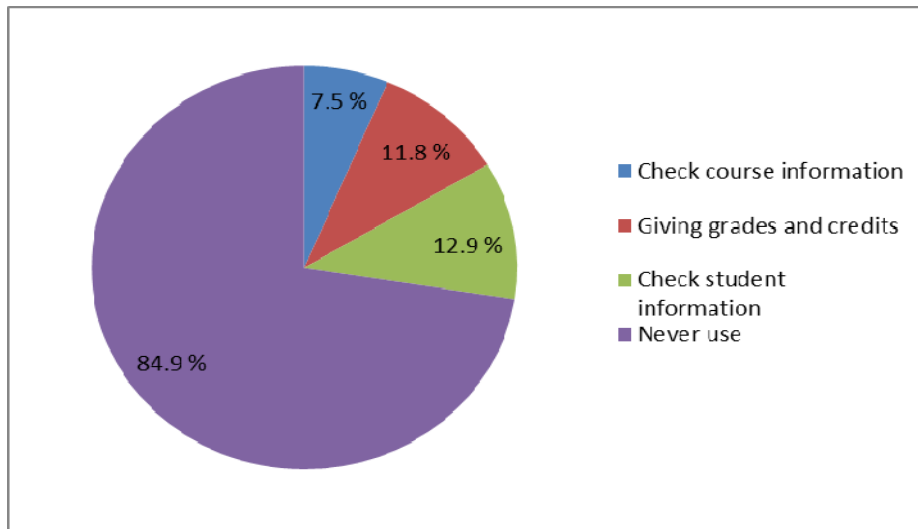


Figure 19 Winha features used by staff from mobile devices

5.2.4 Open-ended question

Staff were encouraged to write their comments freely concerning having mobile applications to help their work at the end of questionnaire. Eventually, 26 respondents gave comments. All the replies were categorized and will be analysed in this chapter. The comments were mainly about staff' needs on mobile devices, desires on certain mobile applications, opinions on the cost of applications, ideal applications and reasons for some staff did not want to have mobile applications for work.

Staff' needs on mobile devices

In all the comments, 10 of them were concerning about staff' needs for up-to-date mobile devices. Ipad type of device was considered very useful to most of administrative programs and Moodle, especially when staff had business trips and fair stands. It was also pointed out that staff should have up-to-date mobile phones or smart phone given by KyUAS, mobile applications were not going to work on their current working mobile phones.

Desires on certain mobile applications

Several respondents thought mobile versions of School Webmail and Moodle would be useful. One staff pointed out that dynamic timetable for students could be very handy and they should be updated.

Cost of applications

Many staff would like to have mobile applications, but meanwhile, they were worried about if the cost of mobile applications was affordable, especially it required more investment rather than the cost of mobile applications themselves, for instance, the smartphone or Ipad devices for staff.

Ideal applications

There were 5 staff gave ideas about ideal applications. One of them said it would be ideal if there was a single mobile application for syncing calendar, email, files, documents and all the information that was needed at work and it should work on different platforms. There was also another comment concerning mobile calendar, a shared calendar information would be beneficial, especially an application, where appointments and meetings could be scheduled at suitable times for all desired participants. Refer back to Chapter 5.1.4, it can be seen that not only students have difficulties on agree on group meeting time, according to the comments from staff, it was also not easy for staff to find suitable meeting time.

There was one staff member talked about having a quick method to send an email or text messages to a group of students, who had many different class codes, without had to write their names in full.

Generally, staff thought the mobile applications should be very easy to use and install, easier than existing software, the interface would allow using the most common tasks immediately, otherwise they didn't see the value of using mobile applications. Moreover, staff thought they shouldn't install those applications by themselves.

Reasons for some staff did not want to have mobile applications for work were due to most mobile devices had small size screen

6 ANALYSIS OF QUALITATIVE DATA

In order to get in-depth opinions from KyUAS students and staff, qualitative research was conducted. This section presents the qualitative results collected from seven students and seven KyUAS employees taking part in an individual interview voluntarily.

All the interviews were done via phone call or email. The results were all personal opinions of KyUAS current students and staff.

6.1 Student

Seven students took part in the interview. After summarising the data, following headings were formed:

1. Experiences of using mobile applications
2. Experiences of using learning related systems via mobile devices
3. Willingness to use learning related mobile applications
4. Opinions on having mobile applications to help study
5. Willingness to pay for the application

6.1.1 Background information

Table 10 shows the background information of the seven students who participated in this research. Only one interviewee was in age group of 29-38, rest of them are between 18 and 28 years old. There were 3 female students and 4 male students and no 3rd year and 4 year+ interviewees; no interviewees are from Culture, Media and Health Care department. All the interviewees had Laptop. Moreover, 6 out of 7 of them had smartphones.

Table 10 Interviewees background information (students)

	Age group	Gender	Study year	Department	Mobile devices
Student 1	18-28	Female	4th	Social care	Laptop; smartphone
Student 2	18-28	Female	1st	Design	Laptop; Android smartphone
Student 3	18-28	Female	1st	Business	Laptop; Symbian Smartphone
Student 4	18-28	Male	4th	Technology	Iphone
Student 5	29-38	Male	4th	Technology	Laptop; Iphone
Student 6	18-28	Male	2nd	Math and Sciences	Laptop; feature phone
Student 7	18-28	Male	2nd	Business	Laptop; Iphone; tablet computer

6.1.2 Experiences of using mobile applications

The most popular applications among interviewees were Facebook, Twitter and email. Apart from these, interviewees also mentioned news application, making study notes, navigator, football club application, calendar and some applications for hobbies like applications related to astronomy.

Student 2 used mobile applications mostly for killing time on the train as she had to travel between Kotka and Kouvola every day. Student 5 used mobile applications everywhere, at home, at school and when he is driving.

“...I use both computer and mobile devices at home, because mobile device is much easier to access the content and there is no need to turn on the computer and wait...”

“...I use laptop at kitchen, when I am cooking and doing homework. But I use Ipad at school and around 40 applications were installed because it is portable, easy to make notes, search information and download presentation at class. I read emails from Iphone, but the small screen restrict me doing many things, I only got 8 or 9 applications in my Iphone...teachers know I have Ipad, so they always ask me to open links and check information from Ipad on the class...”

It was found that student 1 and student 6 never had experience of using mobile applications; one of the main reasons was that they think it was not necessary to use mobile

applications, usually they went to computer, and it was much easier to plan or do everything on a computer because the most mobile devices had very small screens. It was noticeable that student 1 had Android smartphone, when she was asked why she had a smartphone if she never used mobile applications, she said that she got this smartphone from her father, but she only used it for making phone call or sending message. In addition, she thought an instruction of how to download and use mobile application was needed if she decided to use any mobile applications.

Expensive 3G kept some interviewees away from using mobile applications. And it was impossible for them to get free internet access.

6.1.3 Experiences of using learning related systems via mobile devices

Students were asked if they have ever access Winha, Moodle, Timetable and Nelli from their mobile devices and in what kind of circumstance. Three interviewees mentioned Timetable was frequently used because they always didn't remember which classroom they should go. Student 7 said that he enrolled in courses in Moodle from mobile devices several times. Nelli was mentioned by an interviewee as well. Additionally, an interviewee checked lunch menu and teacher's contact information on the train. Normally, they access those systems from mobile devices on the train, in school yard, in the class and drive. Meanwhile, interviewees pointed out that they used School Webmail from mobile devices very often, and it was important to know information and reply quickly, but one interviewee complained about the outbox of Webmail mobile application never worked and he didn't see anyone around him who succeed to send out message from their mobile devices.

Except the reasons like not mobile devices, expensive 3G, interviewees who didn't access from mobile also stated their arguments:

"...I don't use them via my mobile phone because there is no such application available..."

It implies that the interviewee was willing to use mobile versions of learning related applications, and once they are available, he will use them most likely.

“...I have never accessed any of these. For Winha, I rarely need it during the study time, only after exams or before a new study period. For Moodle, it is hard to manage all those links online via mobile because Moodle contains wiki, links, and documents and so on. I do not access timetable because I know it or if I need it, I would access from a PC in the school corridor, it does not take much time. In other situations I have not accessed the timetable via mobile. I have not accessed Nelli either because I do it very seldom...”

From the statement above, we know that the interviewee thought using mobile applications was dispensable mainly because of low use frequency and awkward operation.

6.1.4 Willingness to use learning related mobile applications

When asked about if interviewees were interested in using mobile version of Winha, Moodle, Nelli and Timetable if they were available, 6 out of 7 gave positive answers. They would like to see mobile version of Moodle which should contain updates and newsfeed, moreover, the interface should be understood easily, but it was hard to find out certain course from a student's course list at current. Mobile version of Nelli was considered useful as well, for many assignment, lecturers requested students to use credible sources, therefore, Nelli was the first place that students will go for.

“...I think Moodle is the most important application. It could contain updates and I would like to know where, when and what was opened, written and changed by the teacher and which course, so I don't need to check each course one by one...”

For those who never used mobile application, they think it is a must to receive instruction on how to install and use these applications. Otherwise it will be very difficult for them to start using.

An interviewee was unwilling to use mobile applications because of his low end mobile device. He thinks mobile application is not useful to him and he does everything on computer.

6.1.5 Opinions on having mobile applications to help study

From the interview, it was found that few mobile applications were mentioned by students to assist their study, for example, Webmail, calculator and Microsoft Office. Interviewees were asked what kind of mobile applications they would like to have to help their studies, and most of them also talked about the problems that they had in their study life and possible to be solved by mobile applications. The demanded applications concern about the time management and information gathering.

An interviewee pointed out that she easily mixed up assignment deadlines, therefore, an updated schedule which could tell the homework deadline, exam schedule and course timetable would be very helpful. Moreover, as the interviewee was the last year student and got a job, she thought having such kind of application would help her to graduate soon since her main concentration was working and study was left behind. Such dynamic timetable can act like an alarm and urge her to complete her school assignments.

From the interviewee who studies in Social Care department, there were 7 people in a group and it was really hard to set meeting time, so she thinks it would be useful to have a public calendar.

Two interviewees mentioned mobile application for information gather; it was much convenient to find necessary information quickly and from one place because they had to make so many clickings to check information from website at the moment.

Mobile version of Moodle was also discussed, as students sometimes forget to check updates on News Forums in Moodle for each course, they didn't bring the necessary equipment with them for the classes, and in many cases, teachers posted updates quite late so that students would not check. Therefore, a mobile version of Moodle with better interface and newsfeed on the front page was seen essential.

Student 7 had the problem of finding classroom, he suggested that the timetable should not only give the classroom number, but also shows the location. Sometimes going to the wrong direction was one of the reasons being late for class. He had another concern which related with the availability of the classroom. When a group find an empty computer room, they went in and had the discussion. Many times, teachers

and students came in and said this room was taken for lessons, they group had to shut down, saved everything and changed the classroom in the middle of the discussion. And many students checked through all the computer rooms in all the floors just to find an empty one for group meeting. So he thought it was very useful to have an application that enables students to check dynamic classroom availability.

Via email interview, student 4 described a mobile application with concrete features which can be classified as an application for information gather:

There should be an application that students would login with their school accounts and create own profiles, students would see all the courses have there and mainly each student can have his or her own schedule there ,so it is so easy for students to check on what course next .

1. Enrolled courses
2. Schedule which students create themselves
3. School calendars (that student can see all the holidays and things like that)
4. News feed includes news happening in school and if teacher is sick, there should be an alert on the course that he/she teaches.
5. Lunch menu: The lunch which school is offering every week, so students know about it before they eat or they can plan where to eat
6. School parties, school or student union always create parties for students, this can be also put to the news feed.
7. Most important: Career services, this service opens when students get to second academic year. So they would plan where they want to work and companies can make ADs there which can bring profits to this application.

Those are all integrated into on mobile application.

6.1.6 Willingness to pay for the application

Most of the students were not willing to pay for the application themselves, but if the applications were really helpful and good, an affordable price was acceptable, for example 1 or 2 Euros. But they definitely won't consider paying for applications if the cost was like 10 Euros. One interviewee was not willing to pay for it at all because students in Finland don't need to pay for their study, so the applications for study use should not pay by themselves.

6.2 Staff

Following results were received from seven KyUAS employees. The results were presented in the similar order by different headings as students' results.

1. Using experiences of mobile applications
2. Staff' opinions on the importance of having mobile versions of existing programs
3. Using experiences of mobile applications for working or teaching purposes
4. Opinions on mobile devices help staff' problem at work

6.2.1 Background information

As expected, eventually there was interviewee from each age group, so the opinions can be heard from different age groups. Three interviewees were female and four were male. Four interviewees work as lecturers, one interviewee was data administrator and one was teaching unit manager. All of them have laptop, four out of seven owned smartphone and two had tablet computer.

Table 11 Interviewees background information (staff)

	Age group	Gender	Work as/for	Mobile devices
Staff 1	29-38	Male	Data Administration	Laptop; Android Smartphone; Nokia N900 (Maemo)
Staff 2	59+	Female	Lecturer	Laptop; feature phone
Staff 3	29-38	Female	Consultation	Laptop; Iphone; tablet computer
Staff 4	39-48	Female	Lecturer	Laptop; feature phone
Staff 5	49-58	Male	Lecturer	Laptop; Iphone, tablet computer,; feature phone
Staff 6	18-28	Male	Lecturer	Laptop; Android smartphone
Staff 7	39-48	Male	Teaching unit manager	Laptop; feature phone

6.2.2 Using experiences of mobile applications

The section will illustrate interviewees using experiences of mobile applications in general, either in daily life or at work.

Three interviewees mentioned school webmail via their mobile devices and emphasized by one of the interviewees that it was nearly irreplaceable application for him. This mobile application was used whenever the interviewee cannot use it with any computer. It could happen in the classroom, for example a break between lectures; during the travelling; at home when the interviewee didn't feel like using laptop.

It was found from interviews that staff sometime borrowed iPad from KyUAS library, and used different applications with it such as Webmail, Moodle, internet in general and newspapers. Two interviewees would also consider using many applications if they had their own iPads or better mobile phones.

In addition, social network applications, news reading applications, event service, bank service, and calendars were mentioned by one or more than one interviewees.

A staff told she had a smartphone but never use mobile applications mainly because of unreliable and poor internet access. She didn't want to pay extra for something that didn't necessarily need when at work, and she didn't travel during the school year. Some staff didn't access Winha, Moodle, Nelli and timetable from mobile devices be-

cause they didn't need them at work or their mobile devices were not suitable for complicated mobile applications.

6.2.3 Staff' opinions on the importance of having mobile versions of existing programs

Interviewees were asked how important they see to have mobile version of listed programs:

Winha Moodle Timetable Nelli Tweb TEM SAP

From the interviews, it was found that mobile versions of Moodle, Winha, Timetable and Nelli were seen very important to staff. And two staff members pointed out that Timetable would be very useful to students. Three interviewees were interested in TEM, but not all of them thought it was important. None of interviewed staff mentioned mobile version of SAP was useful.

"...Moodle is very important by mobile, Nelli is quite important. Others not so. But of course, if Tweb, TEM and Winha would have a more ready-to-use access then they would be ok to use through mobile, too..."

"...Timetable is most important, but none are very important to me as I use my KyUAS supplied laptop to access all of the above. Rarely require access to these programs when not at home or at work."

"...Moodle and TEM would be interesting to have a try but not necessary..."

It should be remember that not all the listed programs were used by each KyUAS employee, also this was the main reason that interviewees thought mobile versions of certain programs were not useful. Staff 2 didn't think all of them were important; also she never used mobile applications with her smart phone. It is noticeable that she was over 59 years old, the mobile applications were not popularized among the people at this age as indicated in Table 1. Another reason for staff were not interested in these mobile applications was that they do everything by desk and did not work in free time.

Question "Would you use mobile versions of listed programs if they are available." Interviewees tended to use the mobile versions of the listed programs which they regularly used at work. Staff thought Timetable, Winha and Moodle were essentially needed for students.

“...I would appreciate the possibility to use these systems on my iPad as well as on my laptop, but most of the time I need these programs when I sit by me desk. Moodle and Tweb are the systems that I use elsewhere as well...”

“...I would use most of the mobile versions IF I HAD A BETTER DEVICE. With my mobile phone, it is quite complicated to use any of these applications...I would certainly use: Moodle, Timetable, Tweb, We are many times not able to crab a laptop or it takes more time to use it in the meeting for example. The most important reason to use mobile apps would be that you’re not able to use any network so the only way to use those applications would be the mobile network. These situations occur everyday: while teaching in a building that is not part of KyUAS network, visiting companies, travelling somewhere, participating a seminar or conference or staying abroad as a visiting lecturer, at home, while having a walk or waiting for your kids in your car...Mobile apps and a good device to use them will make me more flexible and faster to react...”

6.2.4 Using experiences of mobile applications for working or teaching purposes

From the interviews, we know that 3 of the interviewees didn’t use any mobile applications for working or teaching purposes. One staff used different applications occasionally for working. Calendar application was mentioned by 2 interviewees:

“... I use the Calendar on my phone and it gets synchronized with my iPad and laptop...”

With iPad, an interviewee used note application when travelling or in the meeting; read emails via school Webmail application and used Nelli; sometimes, she used Safari browser when she was on the go. She sometimes downloaded interesting electronic publications like doctoral thesis, research report and stores them in iBook so she didn’t have to print them because she can easily read and access them. She also once attended an Adobe Connect meeting with iPad using Adobe Connect Mobile version; she had been using iPad for presentation in a video conference:

“...I had the presentation on my iPad and iBooks in pdf-version and when it was my turn to do my presentation, I conncet my iPad with video conference system and was able to do my presentation using iPad as a computer or data storage like ‘memory stick’...”

One of the interviewees who work as a lecturer said she answered her emails with her phone using school Webmail every day, and sometimes she checked something from the Moodle. Just couple of days ago of interview date, she read students reports with the iPad that she borrowed from school library. She would have used the iPad in the classroom to check the reports while students presented their topics but she generally teaches in the classroom which was not located in the school network.

6.2.5 Opinions on mobile devices help staff' problems at work

Many of the interviewees didn't think the problems they had at work can be solved through mobile solutions. Still few interviewees told the problem. One of them thought if she had quick access to all the important information, she didn't need to print the documents, and she had most of her working papers stored somewhere in internet so that she can access them anywhere. She thought carrying a USB flash drive was difficult and a threat to data security. It was much safer if information can be stored in a safe place and retrieved from there when needed. She also pointed out she would use a mobile version of article search engine from library databases if it was available. In addition, the mobile accesses to Tweb and to home directory in KyUAS network (F-drive) were appreciated.

Staff 4 and staff 5 who both were lecturers had been in the situation where they were forced to know or to tell the information urgently instead of using PC. One of them said it was not a major problem, but it was good to know quickly so one doesn't need to wait. Another one thought this problem was very important:

"... If I need to check something in the net or from Moodle or Winha, it would be a lot easier to do it anywhere and whenever, not just in the classroom or office. If I notice that I will be late I could easily inform the students or participants of the meeting. I would be more easy to get in touch with as I would have a phone which I could use for all the necessary matters, I could check Winha faster in the classroom or in the lobby, then I would get the answers for any problems faster..."

Interviewees were also given the chance to talk freely about ideal mobile applications and features. They can be categorized as follow:

1. Mobile noticeboard for staff

2. Fast messaging in case of emergencies
3. Automatic notices to mobile phones about what is happening in the campus. As interviewee said, this idea is derived from Nokia Lumia phones which do automatic notices for Facebook events.
4. Facebook type of application only for the KyUAS people-staff and students. Interviewee pointed out such application is already exist, for example PKAMK is using such applications. This would help to teachers and students to be connected with each other.

At the end, two basic premises were restated by interviewees. One concerns the better mobile devices for using mobile applications. Moreover, it is very important that the wireless network of KyUAS works properly; otherwise there is no use for mobile applications.

7 CONCLUSION AND SUGGESTIONS

This chapter will summarize the results to research questions and make the suggestions for the development of mobile applications for education purposes. Students and staff were defined in this thesis as main user groups in Finnish University of Applied Sciences; accordingly the conclusion will be illustrated separately.

7.1 Students

Mobile versions of Moodle, Winha and Timetable would be useful to students with the most used or desired features. For Moodle mobile application, it should at least include functions of course search and enrolment, course instruction and information, downloadable study materials, homework submission, announcements and updates, message box and discussion forum, with clear and simple interface. To make it more easy to use, a feature works as timeline or newsfeed is recommended, and the information such as homework deadline, group presentation time, guest lecturer or course cancellation can be included. Mobile version of Winha should enable students to check grades and achieved credits; enrol courses, presents and resit exams, check course arrangement as well. Nelli is not commonly used by KyUAS, but as mentioned

in chapter 4.1, it is used by 41 Finnish higher education institution and 15 regions, so it would generate substantial mobile application users.

The requirements on Timetable features not limit to course schedule, lecturers teaching timetable and room availability. The major problems that were found in this research are hard to gather information, difficult to agree on meeting time, and teachers or staff contact information are not convenient to find. This thesis suggests that a time management mobile application can be created for students which contains students course schedule, teaching classroom, assignments deadline, group work schedule, events, course cancellation and changes. As many students wish to have one application for everything, if it is possible, lunch menu, public calendar for agree on meeting time with message notification once meeting time is reserved, dynamic computer room availability and staff phone book can be integrated to time management application. Refer back to Chapter 2.2 Mobile application categories and from the research results, it is clearer that the communication, productivity and utilities type of mobile applications would be valuable for students.

Students are also interested in studying textbooks during holidays and travelling, moreover, due to limited availability at school library, it is a good idea to have mobile versions of textbooks. For the books which have hundreds or even thousands of pages, the mobile versions can be simplified with the main concepts and chapters.

All of the mobile applications should be easy to access and use. If mobile application developers have limited resources to run the mobile applications on all the platforms, it is recommended to make them work on Android platform firstly.

The research also gives some findings of existing mobile versions of School Webmail, Kymi and KyAMK website. Major of students didn't aware the mobile versions of these programs. The mobile versions of School webmail and KyAMK website are used by half of the students who aware of these mobile applications; the usage for Kymi mobile application is very small. In addition, complains about Webmail mobile application functions poorly at mobile devices should be noticed. The suggestions on this issue are that University of Applied Sciences needs to promote existing mobile applications or the applications that are going to be launched; the applications should work smoothly on most of popular mobile devices.

In the research it was rarely found students who are firmly against mobile applications, the non-mobile application users are major group due to expensive 3G, low-end mobile devices or less knowledge of the advantages of mobile application; these students have possibilities to become mobile application users.

7.2 Staff

The mobile version of school webmail is seen the most useful and important to staff, as it is aware and using by many staff. For the Moodle, Timetable and Winha users, mostly are lecturers and administration people, it is recommended to develop mobile versions of these systems. Moodle should at least enables course content editing, assignment checking and evaluating, and assign roles. Staff are able to check students' information, give grades and credits and check course information in Winha mobile application once it is created. Staff notice board can be considered to add into Timetable

Not like systems mentioned above, the demands for mobile versions of Tweb and TEM are less, still they will benefit the staff that use them regularly and remotely. The market for mobile versions of Kymi and Nelli are not optimized currently, even though Kymi mobile web-based application exist, still none of the staff has been accessed it from mobile devices during research period. It is clear that SAP mobile application is no use for University of Applied Sciences' staff.

Quite similar with students, staff also would like to have one single application for information gathering, more specifically, the applications integrates syncing calendar, email, documents and all the other files that are needed at work. It reflects that staff' ideal application is easy and quick to use, the amount of applications is better to be minimized. The research results also suggest that if a shared calendar is decided to make for students to agree on group meeting time, it also can be created for staff where appointments and meetings could be scheduled at suitable times for all desired participants. Emergency messaging service is currently used by KyUAS, however, fast messaging in case of emergencies is mentioned by staff, which implies that the current service system is not efficient enough to make notification in emergencies. Therefore, the improvement or renovation of existing messaging service is well advised to be done.

It should be kept in mind that most of staff don't have suitable mobile devices for using mobile applications at work. This is the precondition for using any mobile application. Moreover, some staff emphasized that even having mobile applications would make their work more convenient and flexible, still it needs certain amount of investment, some University of Applied Sciences might not be able to provide such resources due to current savings.

7.3 Suggestions for further study

Due to the limitation of resource and research time, the research was only carried in one University of Applied Sciences. Therefore, it is recommended that further research be undertaken among several University of Applied Sciences, more comprehensive and diversified can be gathered and analysed.

REFERENCES

- Basware.com 2010, *Travel & Expense Management*, viewed 7 March 2012, <http://www.basware.com/sites/default/files/upload/basware_travel_and_expense_management_fact_sheet_a4.pdf>
- EC (2000). *Communication from the Commission: E-Learning – Designing "Tejas at Niit" tomorrow's education*. Brussels: European Commission
- Elli, R & Goodyear, P 2009, *Students' Experiences of e-Learning in Higher Education*, Routledge, New York
- Fernández Manjón, B 2007, *Computer and education: E-learning, from theory to practice*, 1th edn, Springer
- Garrick, J. and Jakupec, V. (eds), 2000, *Flexible learning, Human Resource and Organizational Development: Putting Theory to work*. Routledge, London
- Ghuri, P & Gronhaug, K. 2005. *Research Methods in Business Studies: A Practical-Guide* (E-Book) New York.
- KyAMK 2011a, *KyAMK-Right On Target*, viewed 10 March 2012, <<http://www.kyamk.fi/Kymenlaakso%20UAS/About%20KyAMK/>>.
- KyAMK 2011b, *Organisation Info*, viewed 15 February 2012, <<http://www.kyamk.fi/Kymenlaakso%20UAS/Organisations%20info/>>
- KyAMK 2012, *Winha*, viewed 10 March 2012, <<http://www.kyamk.fi/Services/Study%20Affairs%20Services/Winha%20Student%20Pages>>
- Info-Tech Research Group Inc. 2012, *Mobile Application Type Assessment Tool*, viewed 11 April 2012, <<http://www.infotech.com/research/mobile-application-type-assessment-tool>>.

MM mobile marketing association 2008, *Mobile Applications*, viewed 11 April 2012, <<http://mmaglobal.com/mobileapplications.pdf>>.

Moodle.org 2012, *About Moodle?*, viewed 28 March 2012, <http://docs.moodle.org/22/en/About_Moodle>

Moodle.org 2012, *What Is Moodle?*, viewed 28 March 2012, <<http://moodle.org/about/>>

Nagy, A. (2005). The Impact of E-Learning, in: Bruck, P.A.; Buchholz, A.; Karssen, Z.; Zerfass, A. (Eds). *E-Content: Technologies and Perspectives for the European Market*, Berlin: Springer-Verlag, pp. 79–96

Nelliportaali.fi 2012, viewed at 29 February 2012, <http://www.nelliportaali.fi/V/DFJL2ATXXXCCGSP9CY7YK2DSGLXFTQLCNDPRT3DSN4B51YPN2U-03254?func=file&file_name=home>

Novell.com, *GroupWise Features*, viewed 5 March 2012, <<http://www.novell.com/products/groupwise/features/>>

Statistic Finland 2007, Use of information and communications technology [e-publication], *Purposes of the Use of the Internet in Spring 2007, per cent of Internet Users*. Helsinki, viewed 6 March 2012, <http://www.tilastokeskus.fi/til/sutivi/2007/sutivi_2007_2007-09-28_tau_001_en.html>.

Statistic Finland 2011, *Internet use outside home and work becoming more common*, Helsinki: Statistics Finland, viewed 6 March 2012, <http://www.tilastokeskus.fi/til/sutivi/2011/sutivi_2011_2011-11-02_tie_001_en.html>.

Tavangarian D., Leypold M., Nölting K & Röser M., 2004, 'Is e-learning the Solution for Individual Learning?' *Learning*, vol: 2, no 2, viewed 11 April 2012, <<http://www.mendeley.com/research/elearning-solution-individual-learning/>>.

Viswanathan, P 2012, *What Is Mobile Application?*, About.com, viewed 11 April 2012, < <http://mobiledevices.about.com/od/glossary/g/What-Is-A-Mobile-Application.htm>>.

Wikipedia 2012, *Moodle Features*, viewed 5 April 2012, <<http://en.wikipedia.org/wiki/Moodle>>

Appendix 1 Questionnaire for students

Terminology:

Smartphone--A high-end mobile phone, which combines different functions, such as the ones of a personal computer and a traditional mobile phone.

Feature phone--any mobile phone that is not a smartphone.

Mobile device-- a mobile device is a small, hand-held computing device, eg. smartphone, iPad, iPod Touch.

Kymi — for searching books and materials in KyAMK library database and managing your library account use.

Nelli-- Nelli portal is a library service allows you access variety of information resources, eg. Library catalogues and e-journals

1. Background information

1.1 Age: 18-28 29-38 39-48 49+

1.2 Gender: Male Female

1.3 Your department:

Business Culture Design Media Social Care Health Care Technology
 Mathematics and Science

1.4 You are: Full-time student/ Bachelor Part-time student/Master

Exchange student Adult education

1.5 Your study year: 1st year 2nd year 3rd year 4th year 4 year +

1.6 Which of the following devices do you use? (Multiple choice)

Laptop Both laptop and net stick/mokkula iphone Android smartphone
 Windows smartphone Blackberry Symbian Smartphone iPod Touch

Feature phone with 3G Feature phone without 3G

Tablet computer with 3G (eg. iPad; Samsung Galaxy Tab)

__Tablet computer without 3G (eg. iPad; Samsung Galaxy Tab)

Appendix 1/2

__Other mobile device, please specify_____ __None

2 Section 2

2.1 How many times do you use following programs during last month?

Moodle	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
<u>Winha</u>	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
Timetable	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
School Webmail	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
<u>Kymi</u>	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
<u>Nelli</u>	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it

2.2 How do you use following programs during last month? (Multiple choices)

Moodle	use from my own computer	school computer	from my mobile device	I didn't use it
<u>Winha</u>	use from my own computer	school computer	from my mobile device	I didn't use it
Timetable	use from my own computer	school computer	from my mobile device	I didn't use it
School Webmail	use from my own computer	school computer	from my mobile device	I didn't use it
<u>Kymi</u>	use from my own computer	school computer	from my mobile device	I didn't use it
<u>Nelli</u>	use from my own computer	school computer	from my mobile device	I didn't use it

2.3 Would you install following programs as mobile applications on your mobile device or book-mark it if such applications are available?

Moodle	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
<u>Winha</u>	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
Timetable	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
School Webmail	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
<u>Kymi</u>	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
<u>Nelli</u>	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no

2.4 When do you manage to enrol in Winha last time?

enrol "present"	as soon as it was available in <u>Winha</u>	before deadline with no rush	almost last minute before deadline	missed deadline	forgot to enrol
enrol courses	as soon as they were available in <u>Winha</u>	before deadline with no rush	almost last minute before deadline	missed deadline	forgot to enrol

2.5 Which features of Moodle you have used with your mobile device? (Multiple choice)

- Check homework deadline Submit homework
 Check course/assignment instruction New course enrolment
 Download study material Discussion in the forum
 Check homework grades Check moodle message box
 Check Moodle announcement and update Edit your profile
 Do quiz Check wiki
 Moodle I never use mobile device to access Moodle
 Other, please specify here _____

2.6 Which features of Winha you have used with your mobile device? (Multiple choice)

- Register for present Enrol courses Checking grade
 Checking achieved credits Enrol resit exam Check course arrangement
 Update your personal information Other, please specify _____
 I never use mobile device to access Winha

2.7 Do you know mobile versions of following programs are available?

<u>KvAMK</u> website	Yes	No
<u>Kymi</u>	Yes	No
School Webmail	Yes	No

2.8 Have you used mobile versions of following programs?

<u>KvAMK</u> website	yes, all the time	several times	once	never
<u>Kymi</u>	yes, all the time	several times	once	never
School Webmail	yes, all the time	several times	once	never

3 Section 3

Have you ever in the following situation?

3.1 "I urgently need to contact a staff/student from our school, but I don't have his or her phone number. And I only have mobile phone/device with me and don't have time to go online to find it out from somewhere. "	Yes	No	Your comments:
3.2 "When our group has more than 3 members, it is not convenient and take long time to settle the meeting time via school email or chatting tools, since not everybody is online or checking email all the time"	Yes	No	Your comments:
3.3 "I'd like to study my textbook during my travelling and holidays, but I don't have them with me"	Yes	No	Your comments:
3.4 "I once forgot my homework totally, so I even not remember to check deadline from Moodle"	Yes	No	Your comments:
3.5 "I mixed up assignment deadlines"	Yes	No	Your comments:
3.6 "I missed assignment deadlines because I was in the middle of the party or trip"	Yes	No	Your comments:
3.7 "It makes difficulties for me to find my class when the timetable and classroom are changed frequently at the beginning of a period"	Yes	No	Your comments:
3.8 "I want to see lunch menu on my mobile phone/device, so I can plan where to eat"	Yes	No	Your comments:
3.9 "I missed an interesting event at <u>KvAMK</u> or <u>Kouvola</u> "	Yes	No	Your comments:

4. Feel free to write your own wishes and thinking concerning having mobile applications to assist your study. You can even describe your ideal mobile app here.

If you would be happy for me to contact you to arrange a more in-depth interview concerning mobile application for education, please fill in your contact details below.

___ I agree that you may contact me by phone or email as indicated bellow

Name _____

Email _____ or Phone number _____

Thank you! All the answers will be treated confidentially; no information will be transferred to the third party.

Appendix 2 Questionnaire for staff

Terminology:

Smartphone--A high-end mobile phone, which combines different functions, such as the ones of a personal computer and a traditional mobile phone.

Feature phone--any mobile phone that is not a smartphone.

Mobile device-- a mobile device is a small, hand-held computing device, eg. smartphone, iPad, iPod Touch.

1. Background information

1.1 Age: 18-28 29-38 39-48 49-58 59+

1.2 Gender: Male Female

1.3 Which city are you living _____

1.4 I work as/for:

Lecturer HR service International Affairs Housing Management
 Library and Information Services Student Guidance and Administration Financial
Management Data Administration Communication Services Teaching Unit Manager

1.5 Campus _____

1.6 Which following devices do you use? (Multiple choice)

Laptop Both laptop and net stick/mokkula iphone Android smartphone
 Windows smartphone Blackberry Symbian Smartphone
 iPod Touch Feature phone with 3G Feature phone
without 3G

Tablet computer with 3G (eg. iPad; Samsung Galaxy Tab)

Tablet computer without 3G (eg. iPad; Samsung Galaxy Tab)

Other mobile device, please specify _____ None

2. Section 2

2.1 How many times do you use following programs during last month?

TEM (Travel Expense Management)	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
TWEB	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
SAP	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
Moodle	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
<u>Winha</u>	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
Timetable	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
School Webmail	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
<u>Kymi</u>	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it
<u>Nelli</u>	at least 30 times	among 10 - 30 times	among 2 - 9 times	once	I didn't use it

2.2 Would you install following programs as mobile applications on your mobile device or bookmark it if such applications are available?

TEM	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
TWEB	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
SAP	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
Moodle	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
<u>Winha</u>	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
Timetable	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
School Webmail	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
<u>Kymi</u>	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no
<u>Nelli</u>	definitely yes	yes, if installation is easy	I don't know	probably no	definitely no

2.3 How do you use following programs during last month? (Multiple choices)

Moodle	use from my own computer	school computer	from my mobile device	I didn't use it
<u>Winha</u>	use from my own computer	school computer	from my mobile device	I didn't use it
Timetable	use from my own computer	school computer	from my mobile device	I didn't use it
School Webmail	use from my own computer	school computer	from my mobile device	I didn't use it
<u>Kymi</u>	use from my own computer	school computer	from my mobile device	I didn't use it
<u>Nelli</u>	use from my own computer	school computer	from my mobile device	I didn't use it

2.4 If you are Moodle user, which features of Moodle you have used with your mobile device? (Multiple choice)

Edit the course content Check students assignments

Assign roles Give assignment grades Making quiz
Making wiki Other, please specify _____ I never use
mobile device to access Moodle

2.5 If you are a Winha user, which features of Winha you have used with your mobile device?
*(Multiple choices)

Giving grades and credits Check student information
 Check course information Other, please specify _____

No, I never use mobile device to access Winha

3. Feel free to write your own wishes and thinking concerning having mobile applications to assist your work. You can even describe your ideal mobile app here

If you would be happy for me to contact you to arrange a more in-depth interview concerning mobile application for education, please fill in your contact details below.

I agree that you may contact me by phone or email as indicated bellow

Name _____

Email _____ or Phone number _____

Thank you! All the answers will be treated confidentially; no information will be transferred to the third party.

1. Could you please tell me about your experiences with using mobile application?

(If you have such experiences, please tell: what kind of mobile apps/names of app, in what situation/circumstances/when/where you use them)

(If you never use mobile applications, please tell: why you don't use mobile applications)

2. Have you ever access Winha, Moodle, Timetable and Nelli from your mobile devices?

(If yes, then how often you access them from your mobile device? And What are the situations/circumstances that you access them from your mobile device?/Why you don't go to the web application?)

(If no, please specify why you don't access them via mobile device)

3. Would you use mobile version of Winha, Moodle, Nelli and Timetable if they are available and why?

4. Have you ever used any mobile apps in current study?

(If yes, what kind of mobile apps? And in what kind of situation/circumstances)

5. Do you think your mobile phone could help you to manage the difficulties/problems in your study?

5.1 What kind of difficulties you have had?

5.2 Do you think the difficulties you just stated are big problem/important?

6. If I am going to develop a mobile app to help your study life, do you have any idea of it?

7. Are you willing to pay for these apps?

Any other comment or wish?

1. Could you please tell me about your experiences of using mobile application?

(If you have such experiences, please tell: what kind of mobile apps/names of app, in what situation/circumstances/when/where you use them)

(If you never use mobile applications, please tell: why you don't use mobile applications)

2. Have you ever accessed Winha, Moodle, Timetable and Nelli from your mobile devices?

(If yes, then how often do you access them from your mobile device? And What are the situations/circumstances that you access them from your mobile device?/Why don't you go to the web application?)

(If no, please specify why don't you access them via mobile device)

3. How important do you see it is to a have mobile version of the listed programs?

Winha	Moodle	Timetable	Nelli
Tweb	TEM		SAP

4. Would you use mobile version of programs listed in Q3 if they are available and why?

5. Have you ever used any mobile apps for working/teaching purposes?

5.1 What kind of mobile apps?

5.2 When/Where/ in what situation you use it?

6. Do you think your mobile phone could help you to manage problems/difficulties or in your working/teaching?

6.1 What kind of problems/difficulties?

6.2 Do you think the difficulties you just stated are important?

7. If I a mobile app could be developed to help your working/teaching, do you have any ideas of it?

Any other comment or wish?