

Debasish Basak

# **DESIGN OF AN APPLICATION FOR INTERNATIONAL STUDENTS' PARTICIPATION IN UNIVERSITY DEVELOPMENT**

Examiner: Prof. Kaisa Väänänen  
Examiner and topic approved by  
the Dean of the Faculty of  
Computing and Electrical  
Engineering on 31 October 2018

# ABSTRACT

**DEBASISH BASAK:** Design Of An Application For International Students' Participation In University Development  
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International students are the part and parcel of a University. Their participation for the development of a university is urgently required. Normally university provide different facilities to the students. How this facility can be improved is the main objective of this thesis. Youth plays a great role for the development of a country and a society. Now young people are more interested to give their recommendation in digital service rather than manual system. For this purpose, a software has been designed and it has been evaluated by the students as well.

For the thesis, literature on "youth participation in digital environment" was reviewed. The review revealed that young people are more interested to participate in online media than the traditional media. Young people not only participate in digital media but also the policy maker or the agenda setter in digital participation. In addition, an environment has been created by the digital world where young people can enjoy autonomy to learn and shape their life. The influence of digital media in all aspect of the society is also increasing and youth's participation can make a change of the society. Although, international students' participation depends on background, region, type of institution but they prefer to participate in internet based system. There may be some conflicts or problems in digital participation but this can be solved by engaging the policy maker of the society. Young people can also learn civic education by participating online media which can help to grow a civilized society. Although the learning material for civic education needs to be improved and in this regard policy maker of a society can play a role. The definition of good citizen can also be changed because outside formal education people can also learn from digital media as well. However, some young people also misuse the online media and waste their time but if they are guided in a proper way then it can be solved. Social media also has an impact on young generation and with the help of this they can solve different social problems.

The research in this thesis try to make a connection with all the youth projects and also increase the connection in young people and their communities. Firstly, the study of related work gives an idea of youth participation in University development. Secondly, Interview was conducted to the international students. After that data has been analysed and a web service prototype has been designed. Then this prototype has been evaluated by the international students. After getting feedback from the users the research of this thesis can be considered as a successful attempt for the international students to participate in university development. The university authority will get an idea how they can improve the facility for the international students.

# PREFACE

I get an idea for this thesis from the course named “User Experience Design and Evaluation”. I have learned a lot by doing this thesis regarding youth participation in University development.

First I would like to give a great thank to professor Kaisa Väänänen who patiently guided me during my thesis. I still remember the day when we first met and discussed about that topic. As the International students’ participation in university development is a new topic for me my supervisor gives valuable suggestion from time to time and closely monitor how I can go ahead. Besides, I would also give thanks to the international students’ who participated to the interviews and evaluation process.

It is quiet impossible for me to complete this research without the help of my family. So, I also like to give thanks to my family and their continuous support for my education. I would also like to give thanks to all of my friends who always stand by my side and give me motivation to my studies and research work.

Tampere, 10 March 2020

Debasish Basak

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# 1. INTRODUCTION

Finland is a small country with 5.5 million people but it has one of the best education systems in the world. Every year lots of international students come here in Finland for their graduation, post graduation and research level study purpose. Finnish universities give different facilities to the students such as library facility, restaurant facility, sports facility, laboratory facility etc. How these facilities can be improved is the main objective of this thesis. How international students can actively take part in university development, is one of the main purposes of the thesis. Universities usually take feedback from the students both in manual and in digital system but there is no specific web or mobile service for this. For example teachers take the course feedback at the end of each course. So at the end of each course students can give their opinion of what they like and what they do not like about a particular course. As a result after getting feedback from students, the teacher gets an overall idea what needs to be improved to that particular course. Similarly if the international students can get the opportunity to participate to the development of the university then the facilities of the university will be increased and more international students will come to Finland for their study purpose. For this purpose interviews were taken from the international students from different parts of the world. Some specific questions were asked to the students for the further development of the different facilities of the university. The students gave their opinion about that. As a result we got an idea what the students want. Then we think that if we design a digital service from where students can give their feedback then it would be more easier for the students as well as teachers. For this purpose we designed a web service prototype and evaluated this service with the international students. This web service prototype contains different facilities of the university and students can give their feedback for the further development of these facilities. The prototype is designed by analyzing the interview data because students' demand is our first priority. Different students gave different opinions in the interview and according to their opinions the web service prototype is designed. Then our prime concern was whether the service could meet the user requirements or not. For this reason we went to the users again and this time we went for evaluation. We gave them a feedback questionnaire form. The questionnaire form contains different types of information related to the web service and by getting feedback from this form we can get an idea whether this prototype meets the user requirements or not. It is

an iterative process so if it meets the requirements then the prototype is OK but if it does not then the prototype needs to be modified until it fulfills the requirements of the users.

Above all students are the important part of an University. If they can actively take part for the development of an university then the overall development of university will definitely be increased. How these students can take part in university development more easily, is the main objective of the thesis. The university authority will also get an idea of what facilities are needed to be improved in the university and how international students will be attracted to the university. As a result a huge number of students will be inspired to get admission in that university which may help the university to get an international environment. It will help the existing students as well. They will get an international atmosphere and will get more facilities if the student feedbacks are monitored by the authority.

## **1.1 Objectives and Research Questions**

The objective of the thesis is to design a web service prototype for international students' participation in university development. How the Finnish university can become more internationalize is also one of the purpose of this research. What type of facilities the international students want is also a principal of this thesis. As a result international students will get involve in the development of the university and different service of the university will be improved. The university authority will also get an idea for the further development of the university. So more and more international students will be attracted to study in Finnish universities. The university will be more diversified and research opportunity of the university will also be increased. To collect data interview was taken from the international students with predefined questions. With that interview an idea is generated and data is collected about what an international student wants.

Research questions of this thesis are

RQ1: How international students' can easily participate in university development?

RQ2: How an university can develop its facilities by taking feedback from the students?

RQ3: What type of services international students want from the university?

RQ4: How the international students demand can be transferred digitally to the university authority?

These are the research questions and the answers of these questions give an overall goal of the thesis. The research creates a link between the international student and the university authority .

## **1.2 Research Process**

The research process of the thesis can be described as follows

1. literature review
2. Interview
3. Data analysis
4. prototype design
5. User testing/ Evaluation of the prototype.

In the literature review the related work has been studied and how the international student can give feedback to the university development is discussed briefly. Then the interview was taken with the predefined questions. The participants of the interview were the residents of different parts of the world . They are international students and study here in Finland. By taking the interview we got an idea of what the international students want from the university. Then the data has been analyzed and an interactive web service prototype has been designed according to the data. Then this prototype has been evaluated by the participants and determined whether it is fulfill the demand of the participants or not. It is an iterative process and if it does not meet the user requirements then the prototype will have been changed again. In our user testing we changed our first prototype and then evaluate it with the user again.

## **1.3 Structure of The Thesis**

The rest of the thesis is structured as follows. Chapter 2 which is discussed about related work and it gives a theoretical foundation of the thesis. Chapter 3 describes about the research process and method. The next chapter which is chapter 4 discusses about the prototype design. Chapter 5 deals with the evaluation of the prototype which means the prototype has been tested by the users. The next chapter 6 describes about the user testing results and analysis of this result. In chapter 7, expected contribution, limitation and future work are examined.

## 2. RELATED WORK

This chapter includes the review of the current literature in international student participation in university development. The process of literature review gives a theoretical foundation of the topic. It also gives knowledge about how international students can get involve in university development.

### 2.1 International Students' Participation in University Development

International students' engagement depends on their background, region and type of institutions. Investigation was carried out by the council of europe and it was a step to encourage citizenship and democracy at 15 European Universities which also focused on students involvement in university development. This research also recognized by 48ESIB(European students Union) member states. The governing council of member of student union consider this survey in favour of enhancing student participation. students engagement in the governance of universities was mentioned in Menon's analysis (2003) and in this case the real studies was conducted by Jonson and Deem's (2003) which was importance of higher education in universities in 21st century. In that study students' gave different view and also students' representatives gave their opinion at an Australian university. To find out the best participative procedure different strategy have been developed and try to involve more end more students'.

To give space to the students' the Canadian university authority reviewing the role of senate in recent times(Jones et al. 2004). A survey was conducted by Kuruuzum, Asilkan and Bato (2005) in which they propose that students' should get involve in different student budget and physical asset and they should also involve in the development of the extra curricular activities.

From the modern studies it has been said that University is a place for academic learning as well as vocational and training program for the students and also a space for political learning and social transformation.The role of the university is not only to develop the students' skill but also to enhance ethic of the students.

It is very much important how the students can acquire social commitment, political training aware for political, cultural and social implications through training and practice at University. With the contact to the university management and participating in decision making process the students get a previleage to learn,discover and practice which boost up their skill gradually.

### 2.1.1 Digital Participation by Young People

The influence of digital media is increasing in all aspect of society and now a days it is said that digital participation is a sociocultural practice. From the study it is true that frameworks for participation not addressed young people as a sepcial category and it is happening both in the pre digital participation and also more recently for digital participation(e.g. Fish et al. 2011; Kelty et al. 2015). Young people are often called as "digital natives" although it sometimes overestimate their social and technical skills(Livingstone 2009).

In early 2000s the concept of "youth participation" was developed and in that times young people are mainly engaged in interactive,multimodal and digital media(Livingstone 2012, p.1). Different researcher has got an useful steam of research in the topic of "relationship between young people and digital technologies" (for example boyd, 2014; Buckingham, 2008; Ito, Gutiérrez, Livingstone, Penuel, Rhodes, Salen, & Watkins 2013).

The observation of the above researcher is that young people is not only the passive consumer of information but also they are active participants and also makers and 'doers' (Ito et al. 2013, p.6), who are living in an environment where digital skills are urgently required. As a result, researchers has found a social impact between young people and digital technologies which also changed social culture and norms(for example Araya & McGowan 2016; 2017, Livingstone & Sefton-Green 2016).To measure social impact both in complex and ripe area of the society further research should be done(Ito et al., 2013; Livingstone, Mascheroni & Staksrud, 2015).

Digital media are harldy said as a empowerment for young people(Erstad, 2012; Livingstone & Sefton-Green, 2016). Sometimes it is said that young people can change the way people live, interact with other, play, work, demand their need and all of this can be done through digital participation. On the other hand, young people can create social impact by engaging digital media tools that will chage the way people live,work,play and interact with other and this impact can be done both the public and private sector of a society which will definately improve the quality of life of a society(Burdge & Vanclay, 1995, p.59). As an example young people can influence on 'real world social change, health and growth of civic collective, jointly produced stories'(Ito et al., 2013, p.48). In addition, an environment has been created by the digital world where young people can enjoy autonomy to learn and shape their life(Ito et al., 2013).

The young people are clearly understand the concept 'self' and societal interaction and this understanding are mainly from digital participation(Buckingham, 2008; Robards & Bennett, 2014). Digital technologies has transformative power and the practitioners who has involved in youth project also acknowledged it. In Scotland an evident number of

implementation has already been done (for example, Young Scot, 2017; Time to Shine Digital, 2015; STEP, 2016). Practitioners face struggle to capture the social impact of digital technologies as it is common now a days (for example Buccieri & Molleson, 2015; Wilson, 2017). In 2015 a project was launched to evaluate and measure the participation of youth people and in that project Wilson (2017) highlighted the general challenges faced by the Carnegie Trust. Practitioners also do not expect outcomes in all of their project rather they want to learn (NotWithoutMe, 2017).

Digital technologies can contribute to youth empowerment or not is a debateable matter (for example Buccieri & Molleson, 2015; Livingstone, Mascheroni & Staksrud, 2015). In this regard more research is required (Buccieri & Molleson, 2015, p.251; Livingstone et al. 2015, p.14). The researchers want to research in traditional way and try to find out the social impact of technologies on young people (for example Hyder, 2017; Livingstone, Mascheroni & Staksrud 2015). Thus the digital participation of young people measured mainly with the method like interviews and surveys (Quinlan 2015; Stevens, Gilliard-Matthews, Dunaev, Woods & Brawner, 2016) and sometimes in case studies and observations (Ito et al. 2008; Livingstone & Sefton-Green 2016). Although there are relationship between this evaluation process and their outcomes with the youth participation but this evaluation has some limitation in respect of role, status, measurement metrics and scalability.

### **2.1.2 Young People Attitudes towards Digital Participation**

Internet has a widespread effect in the lives of young people as well as teens. Almost every aspect of their life is connected with internet whether it is communication or collecting information or education. In this digital era, they enter in the world of internet at a very early age knowingly or unknowingly. That's why it is considered by them as a way of social incorporation (Sendín et al., 2014). This is mostly for the sake of communication or in other words, for staying closure with their peers (García et al. 2013). Even if the young people and the teens know the risks of internet (Martínez Pastor et al. 2013), they are very confident about internet (Catalina-García et al., 2014).

The social networks and its exploration are the result of the changes which are pointed out by scientific research in order to set up a new concept of human civilization and citizenship that is poles apart from the traditional one. And this new digital approach is willingly received and praised by the young people (Hernández Merayo, 2011).

In this extent, the involvement of people is increased as a result of the introduction of divergent globalised relationship which is actually one of the positive outcome of literature augments (Arriazu and Fernández, 2013; Yuste 2015). This has also has raised

the probability of finding different unusual media of information sources and in order to encourage a variable environment that causes civic participation and development (Gil de Zúñiga et al., 2016) and to trigger the analytical sense (Rodríguez San Julián et al., 2010; Kim and Chen, 2015; Yamamoto et al., 2015) accompanied by a notable development which lessens the political conflicts among the ruling party and the citizens of both majority and minority classes (Xenos et al., 2014). A huge segment of the literature builds up in this case which include plenty of benefits such as: every individual's involvement because of the recent globalised association (Arriazu and Fernández, 2013; Yuste 2015), the probability to make new ways of gathering data as well as to encourage the critical perception (Rodríguez San Julián et al., 2010; Kim and Chen, 2015; Yamamoto et al., 2015); and public participation which also has an undeniable control over reducing the discrimination between the ruling party and citizens as well as small groups (Xenos et al., 2014) as a result of encouraging the surrounding that is conversational (Gil de Zúñiga et al., 2016). Similarly, Lane et al. (2017) think that, the more people use online social networking sites, the more they are involved in political conversation which basically inspires people to get involved in physical surroundings, as controversial topics make people involved in political discussions. In the current age, people share their own opinion and thoughts through social networking media continuously which is actually an expression of freedom of speech. This case is described by Ünal (2017), the digital platform that allows people to share their individual perspectives as well as their way of thinking also generate a sense of interest in political affairs and civic participation. Ji et al. (2017) has also explained this case that, through upholding individual political opinion, people can knowingly or unknowing get involved in the civic participation which results in a positive outcome in society. Though they are not physically connected to the process, their digital participation keeps themselves in touch with the political environment. Digital platform has been open to all, the positive benefit of this is mainly lies in generating a fresh era of political culture that requires more transparency which also provides more horizontality (Gil Moreno, 2016). This idea also works for facebook, a special correlation has been found out by Chan (2016) which is basically between the mass and their political as well as social activists who are considered to be their political representative. Because of the social media, these activists have a widespread influence on people. Chang also noticed that the uninterrupted outcomes of this civic participation of the digital users.

### **2.1.3 Youth Participation in Social and Political Activities**

Pasek et al. (2016) found out that, the tendency of general people has positive outcomes as they basically raise awareness about politics and in this regard, a vital role has been played by information consultation. However, some authors disagree this statements. Such as, Borge et al. (2012). He states that, the digital platform keeps people engaged in sharing political views but these media can't involve new people rather it only keeps engaged those people who are already engaged. According to him, this doesn't increase the number of social participants. There are many author such as Sampedro et al., 2008; Dader et al., 2011; Calvo et al., 2014; Dader et al., 2017, Dader et al. 2014, who have always suspected that the citizen are going to participate in a double direction. In this regard, Hargittai and Shaw (2013) think that, these digital participation will not abruptly change the conventional structure at any cost. In the end, a small amount of revolution is being observed but not in the conventional path of renovation participation. According to Bescansa and Jerez, any of these can not create a new opportunity to do politics. At this stage, according to Hernández et al. (2013) and 15-M movement it can be said that, even if the traditional ways of citizens' participation were suspected, the outcome of the recently developed technologies was really clear among those people who expressed a sense of interest in the modern ways of development. Anduiza et al. (2010) is also expressed similar point of view that, the people who directly or in other words physically contribute in the protests or any other type of expressions, carry an intense aptness to contribute in the digital world. Moreover, by giving online participation in political movements through social media or online petitions which is basically known as clicktivism, indirectly invites socio-political revolutions. At this point, Cornelissen et al. (2013) is agreed that, sometimes these indirect participations may create such opportunities that the path of true means of social changes is being opened. However, Boulianne (2015) has doubts in the youth participation through digital media because according to her, digital participation of the young generation does not increase their critical sense as social activists in digital platforms (Lazo, 2017). In point of fact, the broaden entrance of internet does not mean that more young people are involved in citizen contribution (Padilla de la Torre, 2004). There are some optimistic point of views about the efficiency of social networking media on civic participation. Such as: according to Holt et al. (2013), the civic responsibilities and integration can not be estimated by classic and conventional acts of democracy like protests, rallies, vote, speak out against something or even violence, because it is required to take into account the dealing into the user profile on the digital platforms or social networking media and taking part in online conversations.

However, the youth express more interest in sharing the political opinions in the digital platforms than the adults as the adults are less confident about the civic activity in the digital media. That's why Sampedro et al.(2013), the online activities are calculated in youth's participation. Therefore Bennet et al. (2008) describes about two groups in the society: the "dutiful citizen" and the "actualizing citizen" (AC) who have some differences in their socio-political roles, attitudes and contribution. According to Bennet, where the dutiful citizens are mainly intended to respond to the conventional model, the actualizing citizens (AC) have a tendency to form communal initiatives in the digital platform which is taken mainly by the youth. While there we can see a constructive connection between the use of social networking media and the socio-political contribution according to Skoric et al. (2016), there are several roles in online platform of democracy (Dahlberg, 2011), such as: the liberal-individualist position which is mainly depended on individual's perspectives which let people to gather information about politics and political opinions and to study them; the deliberative position, which considers online platform as a medium of stimulating public political views; the counterpublics position, which is considered as more constructive than the previous one because of combining itself with a dynamic revolution in which it give strength to some limited group of people in the conventional form of democracy; the autonomist Marxist position, which is considered to be more progressive attribute, actually recognize digital communication networks as a medium for personal managed contribution which practically eliminate the originated political scheme. In this case, Skoric et al. (2016) describes that the increasing use of digital media mostly has a kinship with civic involvement, social and political participation; even if the authors like: Robinson and Phillips (2016) has an arguement that this current involvement of people in social platform will not be continued entirely in the long run, but apart from people's online participation, the other activities whose goal is mainly to strengthen a constant involvement; as according to them, ideal citizen's activity is build up with not only long term activities but also shorth term activities. Because both of them have significant importance in the achievement of political as well as social value. So, at the end, this can be said that civic contribution is not merely an aspiration, rather it is a provocation which can influence people to uphold their individual fascinations as well as social ambience.

It is obvious that, the recently deveoped digital media contains a lot of opportunities in which the young generation are exploring and establishing various manners of their lives and livelihoods such as: daily life ideas, political views, opinions as well as polititical contributions (Jenkins et al. 2016), self interest related amalgamation (Ito et al. in press), social engagements etc. Nevertheless, the social media give opportunity to young people like "hanging out" and other complicated modes of online engagements (Ito et al. 2009)

which also include appreciable aftereffects of education as well as executive life (Ito et al. in press). This aspect of digital media actually contain age-related limitations. According to boyd (2015), Kligler-Vilenchik and Thorson (2016), sometime young people demonstrate their opinions in such a way which may be cacographic to grown-ups. This actually happens because young people sometimes express their opinions according to their insubstantial audiences and social benchmarks of their everyday companions.

#### **2.1.4 Digital Environment and Participatory Culture**

Digital environment influence on model of participation and also different channel of participation which creates a new environment (Benkler 2013; Deuze 2006; Kelty et al. 2015; Kligler-Vilenchik and Literat 2018; Kligler-Vilenchik and Thorson 2016). “participatory cultures” which has been defined by Jenkins and his colleagues and it is a civic engagement which has strong support for creating and sharing one’s creation. It is a informal mentorship in which members believe their contributions. Through the existing platforms and existing cultural products the Participatory cultures can be developed(e.g. popular culture texts) or they may be created as alternatives to these spaces (e.g. Coleman 2014).

Despite the above techniques to universalize the digital participation, there is acknowledgement that social position is a key factor to participate (boyd 2014). A board which is called “access rainbow” (Clark, Demont-Heinrich, and Webber 2005) and it patterns how the young people engage themselves in digital culture. It is a matter of reflection of the young people to reflect their physical access to technological resources but culture has a influence in participation (Livingstone and Sefton-Green 2016). While some young people participate in digital media they mainly consume it rather than creation (Ito et al. 2009). Many young people participate in digital media as well as they creates symbols, ideas, and metaphors of their own culture(Clark 2016; Jenkins et al. 2016). However, age-specific restrictions is an obstacle in youth participation.Young people are not able to engage themselves in politics because of their age and at the same time traditional politics does not directly engage youth(Loader 2007). New mechanisms can be provided by digital culture in traditional conceptions of civic participation, for example younge people express skepticism to the politics(Bennett, Freelon, and Wells 2010; Zuckerman 2014).Consumer politics, transnational activism, community volunteering is a new form of participatory politics and it has an great influence on the issues of publice concern(Kahne, Middaugh, and Allen 2015; Kligler-Vilenchik and Literat, 2018; Soep 2014). Social and institutional relationships has a impact of digital youth participation and this has been studied by many researchers.

United Nations' agenda 2030 which has been designed and formulated by UN and it has said that youth should play an active role as agenda setters and they should influence the common people of their surroundings and also play an active role in policy making. There are many ways to enable the young people to become agenda setters but the most effective way is the digital platform which is easy to spread to the common people. The gatekeepers of an agenda setter have the power to prevent some actors to participate and include or exclude an agenda (Meriläinen, 2014). It is known by the outside world that youth are using different digital services in Finland as the internet is available everywhere (Granholm, 2016). In agenda setting purposes digital services can help and it can play as a tool. In traditional ways media has an influence on policy formation, public opinion, voting behaviour and NGOs and some public groups also formulate agendas through the negotiation process (Lippman, 1922; Cohen, 1963; McCombs and Shaw, 1972; Stone and McCombs, 1981; Entman, 1993; McCombs, 1997; Meriläinen, 2014). There is a relation between newspaper and television news agendas which has been found in recent study (Cushion et al., 2018). Actually, theory always emphasizes the public and policy agendas and sometimes it also emphasizes the agendas of NGOs and social groups (Lippman, 1922; Lewin, 1947; Easton, 1965; Pettigrew, 1972; Bob, 2009; Carpenter, 2011; Meriläinen, 2014). The political elite always has the power to influence or update the policy which has been said by Walgrave and Van Aelst (2016). Traditional actors of a society no longer have the role of a gatekeeper and they are not able to control the policy-making processes (Meriläinen, 2014). In addition to this the above paper gives the description of classical agenda –setting and framing theory. Many young people try to be an agenda setter and sometime they become successful by using digital services alongside more traditional grassroots actions. Moreover some youth are very active in agenda setting and make an influence into the society (Meriläinen, 2014). Those young can be called as empowered youth.

### **2.1.5 Relationship Between Digital Services and Young People**

Digital services and youth engagement has a relationship and it can be described in many ways. Different factors that are related to digital participation such as personal and political identity (Collin, 2008), the user's socioeconomic background (Schlozman et al., 2010; Khan et al., 2014), social status of the user, educational background and these factors have an influence in every society. According to the opinion of Freelon et al. (2013), the web based platform for youth participation has more users than the manual one and it can be used from anywhere. Obstacles to online participation and engagement include the fragmented and dispersed nature of information that enables participation

(Grossklags et al., 2011) and insufficient ICT and information retrieval skills (Khan et al., 2014; Samsudin et al., 2017). Dispersed nature of information and fragmentation of information is one of the obstacle of online participation (Grossklags et al., 2011). Knowledge of ICT skills is also an obstacle in digital participation (Khan et al., 2014; Samsudin et al., 2017). According to the opinion of Granholm (2016) young people use digital service in different ways such as to find information, for entertainment, knowledge gathering, to seek acceptance and to join or be a part of the community. Although, small number of youths may not have the access of technology and some of them do not have the skill how to use it. so some opportunities must be created to use the services and both the marginalized and disadvantaged youths and educated youths are important for our society. We should keep in mind that youths are not homogenous in their usage and some of the youths choose not to use digital service at all (Granholm, 2016). The digital services that has been used by young people own interest and from their own starting point. One of the key issue is that young should use digital services to their own visions and to their own liking which may not have been influenced by the elite people. In social participation digital services may play a growing role by engaging young people. According to the study of Nacu et al. (2015) online service has a great use in multi directional and real-time social interactions and it can bring change to the common people of the society. In that study both the teachers and the students considered that the created learning network is a social setting and they were interested to post their work into that setting as well as interested to view others people work as well. In the teacher's point of view, they could provide more encouragement for example produce online questionnaires. After that study it had been suggested that young people like multimodal information representation and they also prefer visual and graphical content to support learning outcomes.

### **2.1.6 Various Obstacle to Digital Participation**

According to the study of Khan et al. (2014) the unequal access to technology and skill difference is an obstacle to digital participation. He also said that searching the information in correct way through the internet is also play a crucial role in determining who benefits from technology the most. According to the study of Khan et al.'s, users Facebook network demonstrates ones thinking and what he can do to the society. The use of digital media depends on various factors such as socio-economic background, ICT skills, availability of the internet and so on. According to the study of Schlozman et al. (2010) socioeconomic background has an influence to online service usage. In that study they

had showed a positive relation between socioeconomic status and online political engagement. The study also find out that young people are more interested in online than offline participation and social media have an effect in political participation. It also said that online participations are more personal and expressive than that of traditional forms of participation. It is also true that everyone does not use the digital platform in the same way. According to the approach of Samsudin and Hasan (2017) digital participation and engagement can be done through digital services and it can improve the digital literacy of youths. The study that had been conducted in Malaysia by them and it said that the majority of the young people use internet for basic activities, including communications and downloading and uploading materials. Some of the advanced activities like shopping online, searching materials for education, participating in civic and political discussion were less common. Attitudes towards the Internet has a great influence to the tendency to engage in online activities and that has been found in recent studies. According to the study Wagner et al. (1999) individual affiliations to digital participation depends on historical, cultural background and also the access of internet. The study of Pozzebon et al. (2016) discuss the decrease in civic participation through social representation framework theory. They also said that to improve digital participation web based platform for participation should be more user friendly. The study also discussed that those who had not previously participate would encourage civic involvement and a special budget also required to motivate them. To participate in civic and political life online activity serving as a gateway and it is said by Kahne et al. (2013). Online participation can be reduced by protest activities and other forms of political involvement and in this regard political leader can play an active role.

According to the study political participation relates to online political action and expression on the other hand online participation depends on one's individual interest.

Those who participate in his own interest can enhance civic engagement and they can also contribute to agenda setting and farming (Brewer, 2001; Schemer et al., 2012; Meriläinen, 2014). There is a relationship between political identity development and the internet and many digital services made it possible. This is internet and it can be seen as a possible platform that enable to realize the political identity and it also develop the identity as well. Identifying issues, learning, and integrating participation can be done through internet and it is an essential tool which makes information more accessible. According to the Collin's study online participations are more effective than that of old adult-centric forms of government and the participation is easy as well. Online participation is an autonomous process which has a demand in the society. Collin also said that online strategies for youths need to be designed by experienced people so that it can give the maximum result to the young generation.

### 2.1.7 Conflicts in Digital Participation

From the study it has been known that there are some conflicts regarding the participation in digital media. From the study of Middaugh et al. (2017), youth who are get involved in online political discussions or who get the news from digital media are more likely to encounter conflicts than the common people. Some of the people who also participate in online activity also like the political conflicts. Interest-driven communities in online are more engaged to conflicts than the friendship-driven communities and it has been found in recent studies. According to the study of Bennett et al. (2009) the concept of good citizenship should be re-evaluated because civic learning can be acquired outside formal setting. Young generations can learn civic education in online and it is an effective way of learning. Another problem of development of online civic environments is the insufficient material in online and it's also an obstacle in participation. According to the suggestion of Bennett et al.'s civic education settings should be changed and more interactive and online participatory media should be implemented. In recent quantitative research it has been found that young people have a more expansive conception of university and they are fully aware of the online participation (see Harris, Wyn, & Younes, 2007; Marsh, O'Toole, & Jones, 2007; Harris, 2013; Collin, 2015). Some of the obstacles to digital participation can be : availability of internet, seeking proper news, obstacle of communication, different digital media participation problem, political obstacle (Stanyer, 2005; Banaji & Buckingham, 2013). Young people are not a problem but a powerful agent and it has been said by united nations. United nations (Un) also reported on a topic called "Progress Study on Youth, Peace and Security" which reflected 4000 young people views and it was mandated by Council resolution 2250(2015). Its lead author was Graeme Simpson and said that 1.8 billion people who are young and age between 18 to 29 and they have a trust gap between their governments and civil society. As a result, violence is increasing in the world. Jayathma Wickramanayake, the Secretary-General's Envoy on Youth, said today was an opportunity for the Council to redress that mistrust. Jayathma Wickramanayake, who was the Secretary-General's Envoy on Youth said that this problem must be resolved. She also recalled meeting in Iraq, Somalia and Colombia to implement the resolution 2250(2015) and try to resolve this trust gap. She also said that young people are the key stakeholders for peacebuilding and their participation for the development of the society is necessary.

## 2.2 Summary

The young people are aware of the digital participation and they also aware about the conflicts in digital participation. From the literature review it also find that young people are also smart enough to participate in digital media means that they know how to use

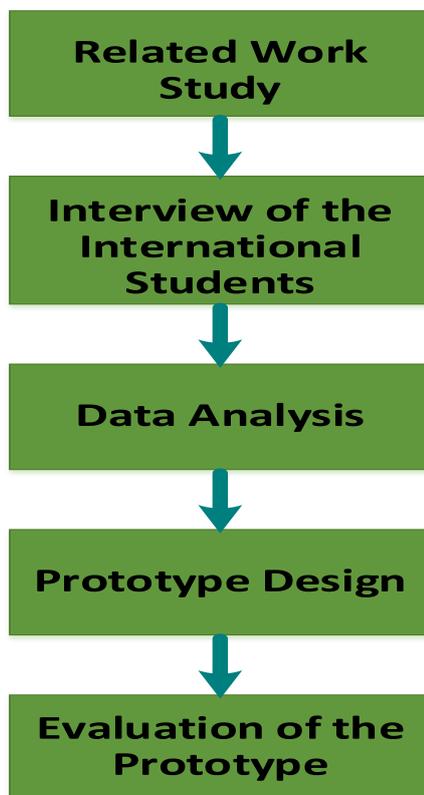
the digital media. Their way of participation may be different but they show their interest to participate in some digital service. They want to give their feedback through online. It also can be said that young people are the power of a country. Their involvement in any sector is highly recommended. In the university perspective it creates a relationship between the students and the university authority. As a result, the development of the university will be increased and the facilities of the students will also be increased.

### 3. RESEARCH PROCESS AND METHOD

This chapter describes the research process and method of the thesis. The main goal of the research is to design a software for the international students' participation in university development. Overall research process can be described as follows.

#### 3.1 Overall Research Process

The whole process of research can be described as following figure



*Figure 1. Research process of the thesis*

##### **Related Work Study**

To get an idea of the relevant topic, related works have been studied and it is mentioned in chapter 2. By studying this section, we can get an idea how the international students can actively get involved in university development activities. For this purpose, several research papers have been studied which has been discussed the international students' participation in university development. The papers are not only based on Europe but also throughout the world. By studying these paper, we can get an idea how we can implement our research more effectively and more easily.

### **Interview**

The next step of our thesis is to arrange interview. We have already done this. For this purpose, we had chosen eight international students from Tampere University and they are from different countries and different age groups. We had asked them ten different questions and these questions are related to food, outdoor activities, hobby club, winter activities, lab facilities, communication system and so on. Students gave their valuable opinion about these matter. Students personal information was stored anonymously and the whole interview was recorded. Different students had different opinions and with that opinions we got an idea how they can participate in those activities of the university.

### **Data Analysis**

After conducting the interview, we got the data set. Now it's time to analysis the data. For this purpose, we use the technique of qualitative research of data analysis. We used an excel sheet to perform this result. In this excel sheet all the questions-answers have been stored. Then for a specific question eight participants gave eight answers. For example, for question 1, we stored eight answers from eight participants in eight columns in an excel sheet. After reading/comparing this eight answers similar answer of one question is found out. This column marked as Similarities and Recommendations. This column helps us to design our prototype.

### **Prototype Design**

As our main goal is to design a software for international students' participation in university development. For this purpose, we have designed a prototype based on our data which has been analysed in data analysis part. This prototype has been analysed using the prototyping tools called invision and balsamik mock-up. The software we designed is a web service and it has several links like library, Restaurant, Sports, Winter events, Exam, Communication and Hobby Club. By clicking every link, a new page will be opened and the user will get a new user interface. Thus it can give the user a real time experience of using a software.

### **Evaluation**

After designing the prototype it's time to evaluate the prototype. We went to the user again and try to find out whether it meets the user requirements or not. We gave them User experience questionnaire form and user satisfaction form which has been designed according to the prototype and measure the pragmatic and hedonic quality of the prototype. Then the pragmatic and hedonic quality compared with the benchmark. It is a continuous process and if it does not fulfil the user requirements, the prototype needs to be changed.

## 3.2 Data Analysis Method

Data analysis is a process of inspecting, transforming and modelling data with the goal of discovering useful information. It has multiple facets and approaches. It plays a vital role not only in making decision more scientifically but also helps to design a system more efficiently. Data analysis has two familiar methods. One is called qualitative method and another is called quantitative method. Interviews and observations are forms of qualitative research while experiments and surveys are quantitative research. In our research approach, we used the qualitative research approach. Data integration is a precursor to data analysis and data analysis is closely linked to data visualization.

### 3.2.1 Qualitative Analysis

Qualitative data can be interview transcripts, video and audio recording, images and text documents. This data analysis can be divided into the following categories

1. **Content analysis.** The content analysis means verbal or behavioral data to classify and it can be tabulate data.
2. **Narrative analysis.** In this method different experience of each participant are taken into consideration. This method also reformulate the stories presented by each participant. In other words, narrative analysis is the revision of primary qualitative data by researcher.
3. **Discourse analysis.** This method involves all type of text and talk analysis which has been occurred in nature.
4. **Framework analysis.** This is an advance type of method that has different stages like coding, charting, mapping and interpretation.
5. **Grounded theory** This method starts with the analysis of a single case to formulate a theory. Then additional cases need to examined to contribute to the theory.

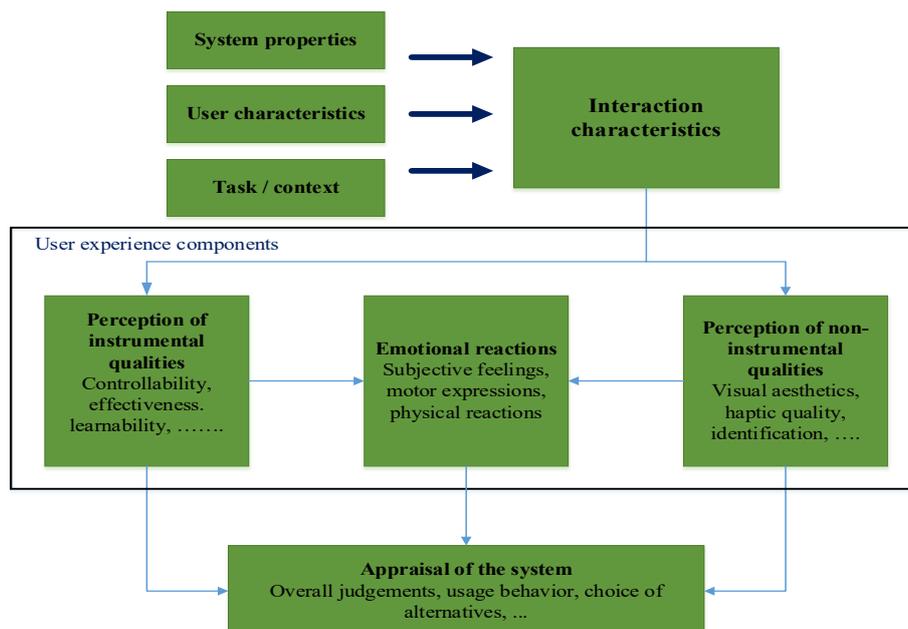
In our data analysis, we have followed the content analysis technique. Our contents were the interviewed data. We took eight interview from international students who study here in Finland. We asked them ten questions and they gave their opinion about those questions. At the time of interview, we recorded the whole process. Then we analysed the audio record of an individual interviewee data. In this regard, we used an excel sheet where first column represents the interview questions. The next column represents the answers of first interviewee and the following one is for the second and so on. Thus last

column indicates the similarity and recommendations. With that similarity and recommendations column we get an idea what the international students want. Based on this we designed a software prototype and later this prototype was evaluated by the users.

### 3.3 Evaluation Criteria of Prototype

The interaction between users and technology is the major concept of User experience (UX) and it reflects user opinion towards technology. The organization ISO who defines user experience as “person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service” (ISO, 2010). The concept of UX is abstract and dynamic but researchers have created some theories and models to make it measurable and understandable.

According to Hassenzahl (2008) model User experience (UX) has two dimensions and these are pragmatic and hedonic quality. Pragmatic quality means to achieve “do-goals” which is usually the utility and usability of a product. On the other hand, hedonic quality means to achieve “be-goals” which is to create motivation and stimulation for the user. The pragmatic quality of a product largely depends upon how easily the product can be used. On the other hand, hedonic quality reflects the best quality of visual look of the product. Pragmatic and hedonic quality of the product can be determined by the evaluation of the users. For measuring the pragmatic and hedonic quality, different evaluation technique has been applied. Some of the techniques are User experience questionnaire, User satisfaction form and so on. Thüring & Mahlke describes the components of User experience through a model. The model is described through the diagram in the following



**Figure 2.** Components of UX (CUE Model) (Thüring & Mahlke, 2007, p. 262)

According to Thüring & Mahlke (2007) who propose Components of User Experience (CUE) model (see Figure 2) and this model indicating that the system and user interaction can be affected by contextual components, system properties and user characteristics. Other factors like user's attitudes and even mood can play a role to use a system. CUE model also describes about two qualities which is instrumental quality and non-instrumental quality and it is quite similar to pragmatic and hedonic quality suggested by Hassenzahl (2008). To be more precise, instrumental aspects that have direct connections with technical attributes make the system user friendly by including effectiveness, controllability etc. To the system. On the contrary, the non-instrumental parameter mainly involves conceptual attributes such as conspicuous and creative aspects, tactual quality, recognition or assimilation etc. The third elements of impassioned acknowledgements of the users can be inspired by the conception of these two factors (Thüring & Mahlke 2007). The concept of these two aspects and impassioned feedbacks from the users collectively decide the outcomes of communication which also means user feedbacks and probability of future practice. In consonance with CUE model, UX can be found from consciousness and empathy of instinctive characteristics of the scheme in this bilateral procedure. Therefore, UX of a reciprocal as well as bilateral system can be standardized by instrumental aspects and non-instrumental aspects. From instrumental manners, the attributes of usability portray a compelling role in the entire bilateral procedure and resolve task fulfilment. As visual manifestation draws the user's concern in a great extent, aesthetics being a non-instrumental essence resolutely influence the user's belief of the system. This is the main reason that, visual aesthetics and system handling are considered to be the comprehensive aspects of UX assessment.

### **3.4 User Research Method**

Interview is relatively an easy way to gather data from the respondents. For this purpose, 8 interview were taken from different age groups. To get an idea from the international student, interviews were taken and students were selected from different parts of the world. The participation was voluntary and anonymous.

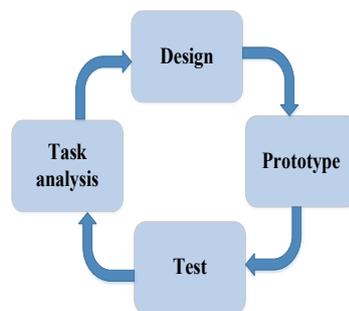
In the consent form the personal information were collected anonymously. To know the participants' intention individual background data of age and citizenship also stored into the table. Ten questions were asked to the participant to get an idea what the participant want. The questions were related to the different services and facilities that have been offered by the university. In addition, there is an open question where the participants can give their opinion for the development of the university. The participants can skip any of the question and can give open opinion to make the university better.

### 3.5 Design Method

After analysing the user requirements, design process is started with defining user scenarios and UX goals. This design process is implemented through the mock up and prototyping tools. In this thesis, the mock up is implemented through the Balsamiq mock up and prototype is implemented with a tools called InVision. This is an interactive web application prototype where the user gets an actual feel of a web application.

#### 3.5.1 Human-Centered Design (HCD)

The function of Human-Centered Design (HCD) is mainly the procedure that assures about the coordination with the demands and abilities of the people for whom they are meant to (Norman, 1990, p.9). The concept of the relation between the people and their demands and aspirations is intensified by HCD. The procedure of bilateral design process has been showed in the following diagram(Figure 3)



**Figure 3.** Interactive cycle of HCD (Norman, 1990, p.222)

In this interactive cycle design process highly depends on the user research. By taking the interviews, an initial idea is generated. Then the initial idea is generated into prototype. In this thesis, the prototype is an interactive one and then comes the testing part or the evaluation part. This prototype is being tested by the user. Then every task in the prototype is being analysed and changed if necessary. It's an iterative process and it can be changed until it fulfils the user requirements.

#### 3.5.2 Prototype Characterization

we have designed a web service prototype for the international students' participation in university development. The main characterization of this prototype is it has not only the pragmatic but also the hedonic quality. This concept can be illustrated as following description.

**Pragmatic quality:**

The users must find it easier to perform the tasks in a constructive and systematic technique (Usefulness and ease of use).

**Hedonic quality:**

The prototype design components should provide support in a way that the user may find it satisfying (Enjoyment).

For the pragmatic quality we have designed the prototype in a conventional web service. As a result, the application is easy to use and at the same time the prototype is helpful for the user. The user can easily understand what the application do. As a result, it is effective to the user as well. On the contrary, because of the hedonic quality we have designed the prototype different page for different colours. The page, button and links are consistent as well which also gives an attractive look of the prototype.

### 3.6 User Testing Method

After designing the prototype, it is time to test this with the user. The User Experience questionnaire form has been designed to measure the pragmatic and hedonic quality for the first evaluation (Appendix B). Then user satisfaction form has been designed (Appendix C) for second evaluation. The question has been set again to fulfil the pragmatic and hedonic quality. They can also give their open opinions in the comment section.

#### 3.6.1 User Experience Questionnaire (UEQ)

The overall user experience of a prototype can be understood while the participants performing their task. To measure the pragmatic and hedonic quality of the prototype the User Experience Questionnaire (UEQ) developed by Schrepp et.al (2017) is conducted (Appendix B).

UEQ is an effective way to measure the interactive prototype directly and quickly. In the questionnaire there are 26 items that has been grouped into 6 scales and each item has a pair of opposite terms:

**Attractiveness** (6 items): It has six items and these are unlikable / pleasing, attractive / unattractive, unpleasant / pleasant, friendly / unfriendly, good / bad, annoying / enjoyable.

**Perspicuity** (4 items): It has four items and these are complicated / easy, easy to learn / difficult to learn, not understandable / understandable, clear / confusing.

**Efficiency** (4 items): It has four items as well and these are inefficient / efficient, fast / slow, organized / cluttered, impractical / practical.

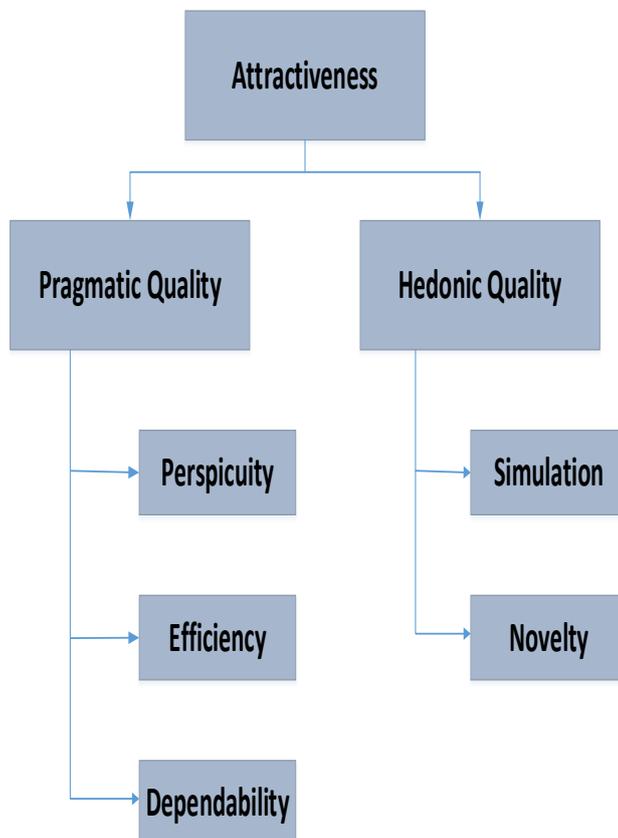
**Dependability** (4 items): It has also four items and these are secure / not secure, obstructive / supportive, meets expectations / does not meet expectations, unpredictable / predictable.

**Stimulation** (4 items): It has also four items and these are not interesting / interesting, motivating / demotivating, valuable / inferior, boring / exciting.

**Novelty** (4 items): Novelty also has four items and these are usual / leading edge, conservative / innovative, creative / dull, inventive / conventional.

The impression of a product can be determined by each scale and it is not independent the effect of each scale.

7-point Likert scale is used to rate each item. The range of the value is from -3 to +3 where -3 means totally meets the negative term and +3 means totally meets the positive term. The product quality and the 6 scales relationship can be presented in the figure 4



**Figure 4.** Scale structure of UEQ (Schrepp et.al., 2017, p.41)

From UEQ evaluation, data can be found and based on this a benchmark is created to judge the UX quality of the evaluated prototype. Although, benchmark has some limitation as it is done in non-distinguish types of evaluated product. The benchmark is explained as below (Schrepp et.al 2017):

Excellent: If the evaluated product is among the best 10% of results then it is called excellent.

Good: If 10% of the results in the benchmark are better than the evaluated product and 75% of the results are worse then it is called good.

Above average: If 25% of the results in the benchmark are better than the evaluated product and 50% of the results are worse then it is called above average.

Below average: If 50% of the results in the benchmark are better than the evaluated product and 25% of the results are worse then it is called below average.

Bad: If the evaluated product is among the worst 25% of results then it is called bad.

As user experience towards a product is highly subjective, UEQ gives efficient and simple method to measure the users' feelings. (Schrepp et.al 2017).

### **3.6.2 Prototype Inspection by Users and User Satisfaction Form**

After designing the prototype, it was inspected by the international students so that they can get a real time experience of using a web service that is designed for the development of the university. As it is a web service so it can be tested by using a web browser through desktop, laptop, tablet or Mobile. As the prototype is responsive and platform independent so the visual look is same in different platform.

After the real time inspection of the prototype a user satisfaction form was given. In the form the questions are designed to meet the pragmatic and hedonic quality of the product. Seven questions were planned and the user can mark from 1 to 5 to that seven questions. Then the user can give the overall marking as well. With that marking the overall quality of the prototype can be measured.

The students' feedback related to prototype is really impressing and the statement related to prototype can be described as follows

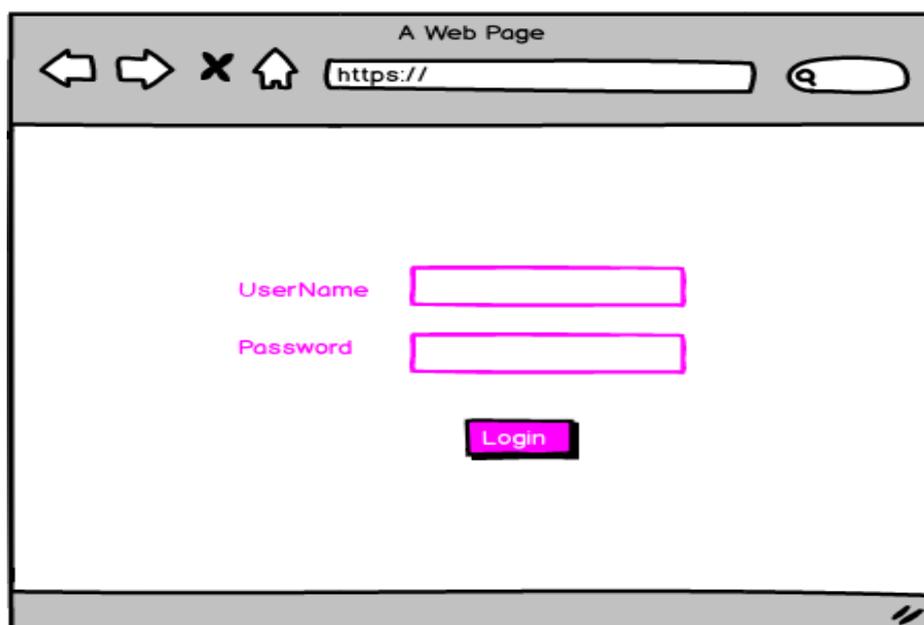
- The prototype gives a real feeling of using a web service.
- I feel satisfied when I can give feedback to the restaurant service of the university
- The login system attracts me most as user name is my last name and password is my pop password which is same to enter the intranet of the university.
- I feel satisfied that it creates a relationship between the students and university authority.
- I like communication channel of the prototype.

In addition, one statement from one of the student is that "it gives me fun and pleasure" which also gives general pleasurable impression.

## 4. PROTOTYPE DESIGN

After analysing the interview data, a prototype has been designed. Decision of the design of prototype according to the interview result. Majority of the students said that a web service prototype is convenient for them. So, a web service prototype has been designed. Students gave their opinion specific questions related to Library, Restaurant, sports, Winter Events, Exam, Communication, Hobby Club. Those items have been focused into the prototype. Different web pages related to these item has been designed by prototyping tools. Design decision for specific item has been determined according to interview result. For example, most of the participants said that they face problems in room booking system of the Library. So, for library a room booking system page has been designed and again evaluated by the students to determine whether it fulfil their needs or not. In restaurant section different restaurant use different web service to publish their menu but the students' want a single application so that student can easily check the menu. That's why a menu page in the restaurant section has been designed. So from the interview result different pages of library, Restaurant, Hobby club, sports, winter events, exam, communication has been designed in the prototype. Now different pages of the prototype have been described in the followings.

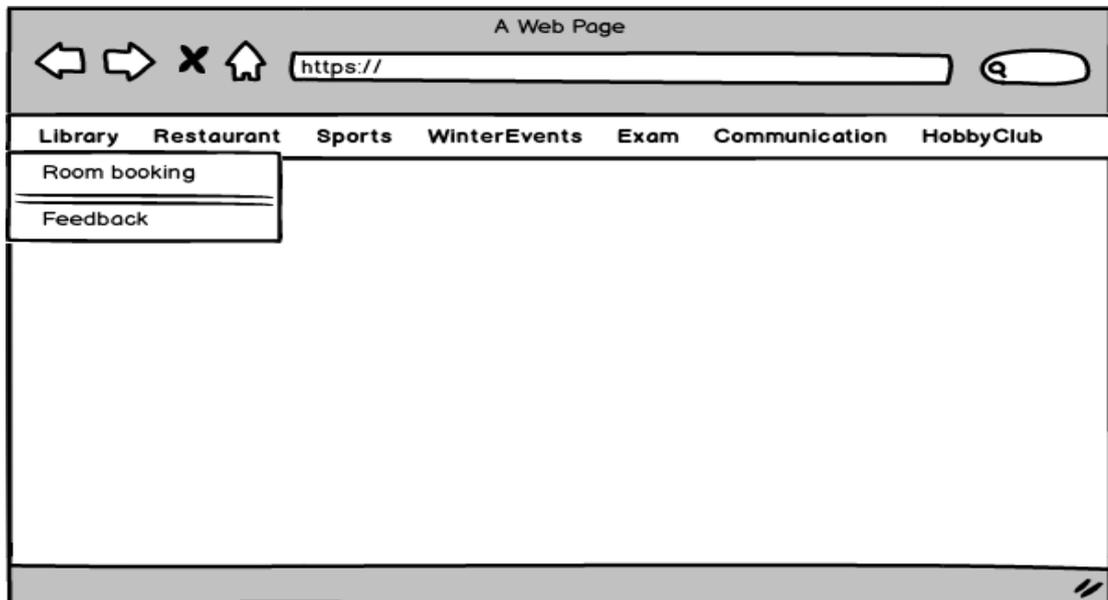
First of all, as it is a student participation system so it needs a login screen. The login screen has been designed with the Username and password in figure 5



The image shows a hand-drawn prototype of a login system. It is presented as a browser window titled "A Web Page". The browser's address bar contains "https://". Below the browser window, there are two input fields: "UserName" and "Password", both with pink borders. Below these fields is a pink "Login" button.

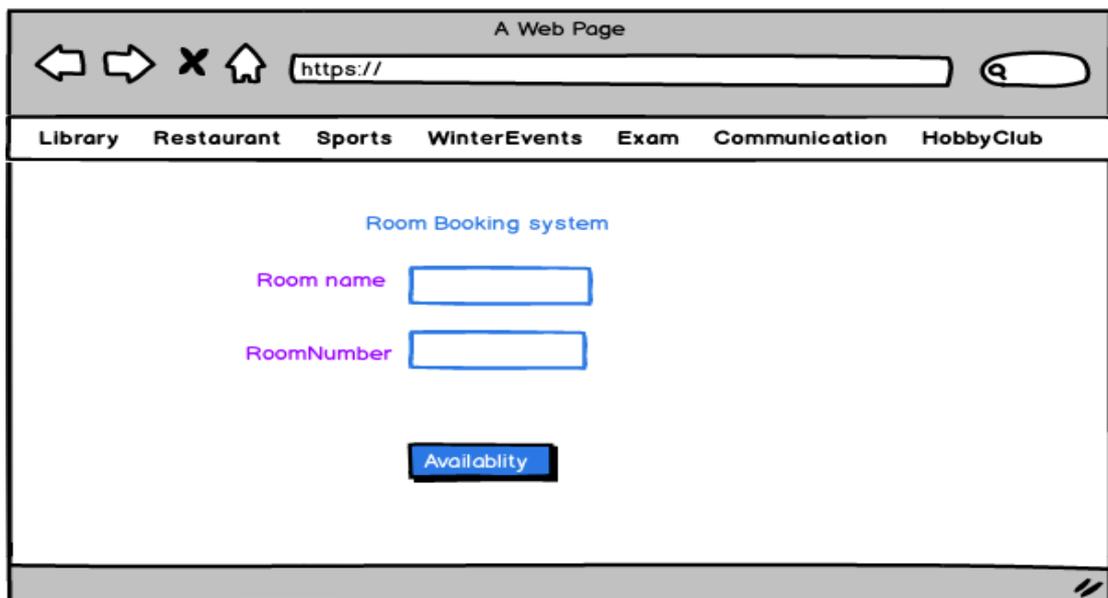
**Figure 5.** Login system of the prototype

With the use of Username and password one can enter into the real system. After entering into the system one can see the seven links of the system and these are library, Restaurant, Sports, Winter Events, Exam, Communication and Hobby Club. If anyone clicks the library link, then he can see the room booking and feedback option (Figure 6)

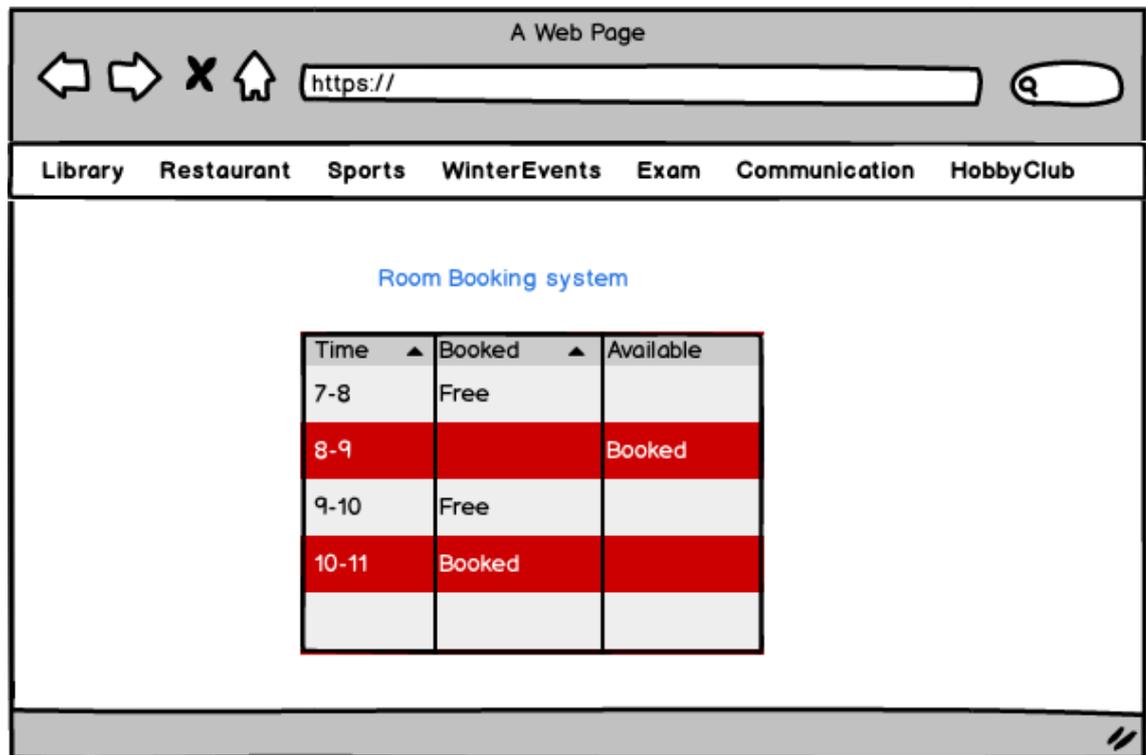


**Figure 6.** Library system of the prototype

In the room booking system one can give the room name and room number and after clicking the availability button it shows which room is booked and which one is free (figure 7,8)

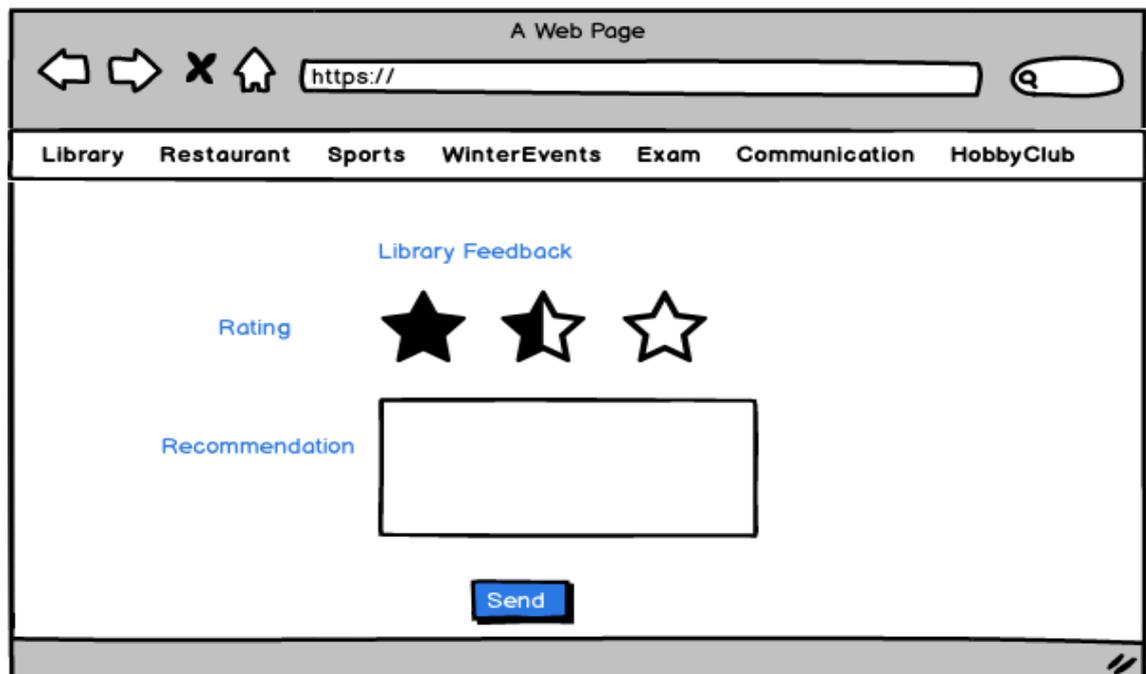


**Figure 7.** Room booking system of the library



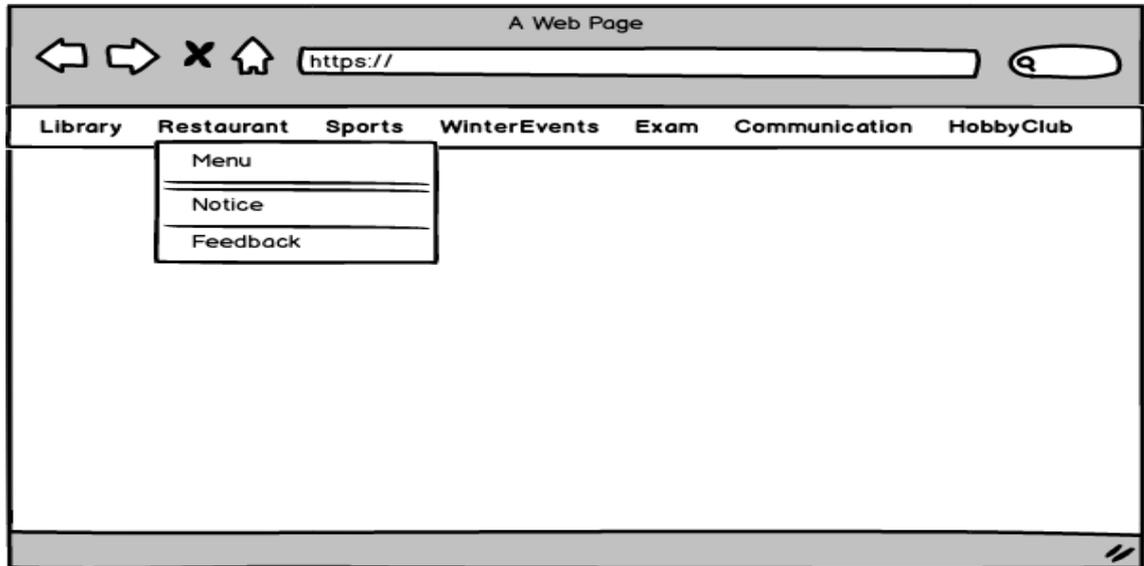
**Figure 8.** Room availability system of the Library

In the feedback system a user can give separate feedback to library, restaurant, sports, Winter Events, Exam, Communication and Hobby Club. In the feedback page one can give the rating and his valuable comments to the comment section (Figure 9)



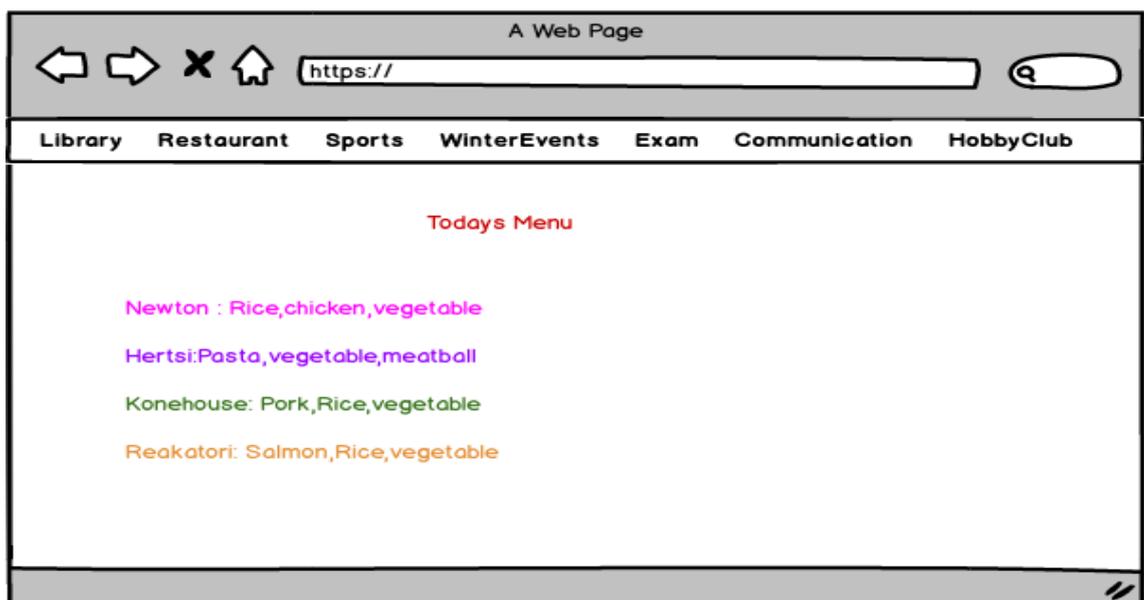
**Figure 9.** Feedback system of the Library

Then in the prototype next link or option is restaurant option. We all know that in the university students come from all over the world and their food habit is also different. So the food menu in the restaurant is important for the international students. Notice of the Restaurant link also gives valuable information to the student. So the restaurant link look like this (Figure 10)



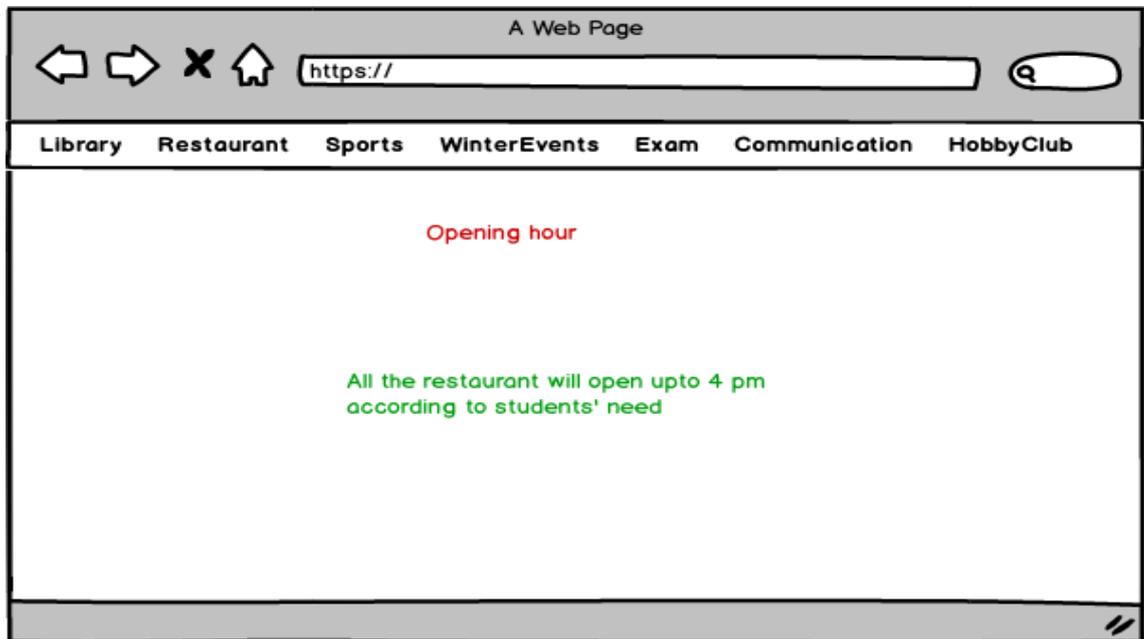
**Figure 10.** Restaurant menu of the prototype

In the menu option student can the information of different menu of different Restaurant of the university. So that student does not need to browse separate web site or application to check the menu. They can get the information in single application (figure 11).



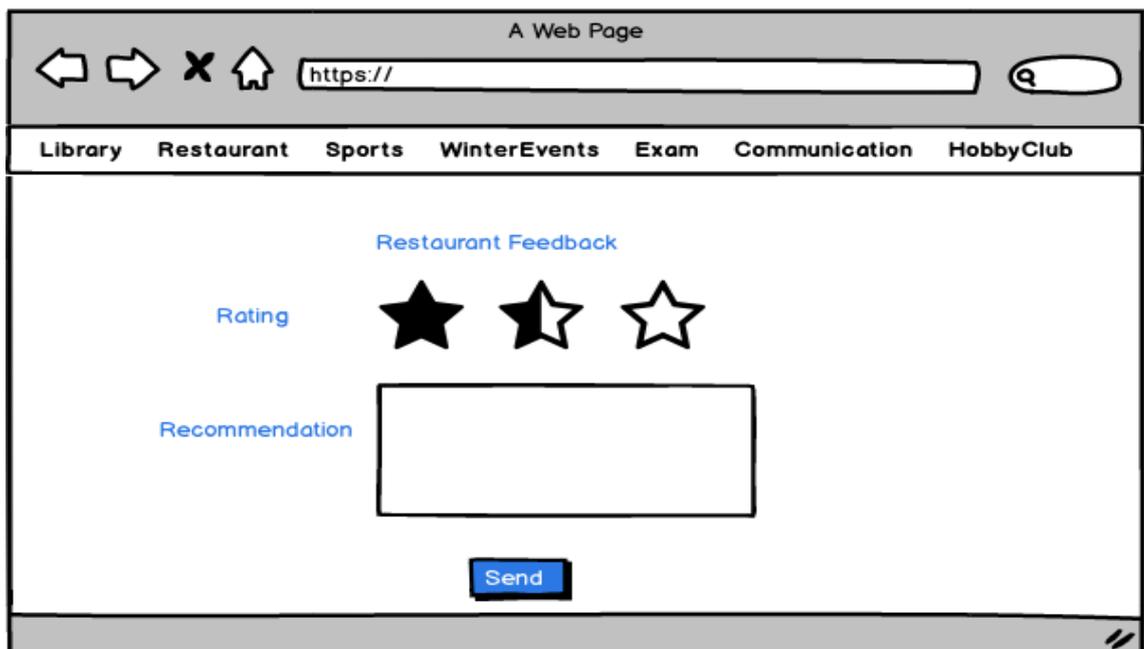
**Figure 11.** Restaurant menu page of the prototype

In the notice section of the Restaurant one can know what is the upcoming notice of the Restaurant. It's a web page with all information regarding to restaurant (Figure 12).



**Figure 12.** Notice page of the Restaurant in the prototype

The feedback page of the Restaurant is designed with the rating and a text area where one can give his comment. All the feedback pages are designed with the same layout because of consistency (Figure 13).



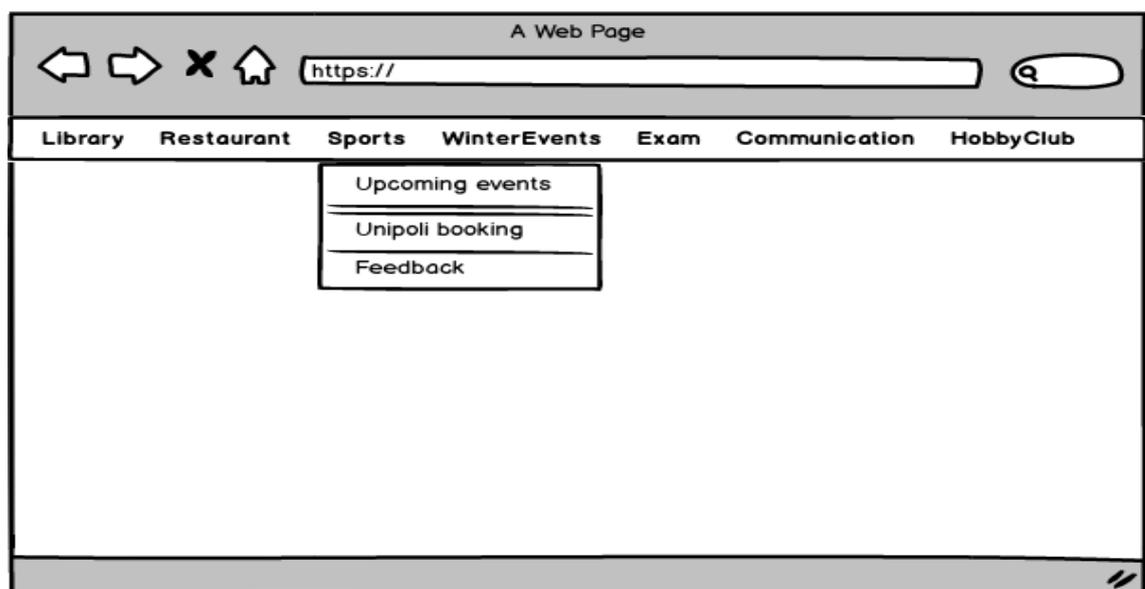
**Figure 13.** Restaurant feedback page of the prototype

When the user presses the send button then a confirmation message will be shown to the user and a separate page is designed for that in the prototype. The page looks like this (Figure 14)



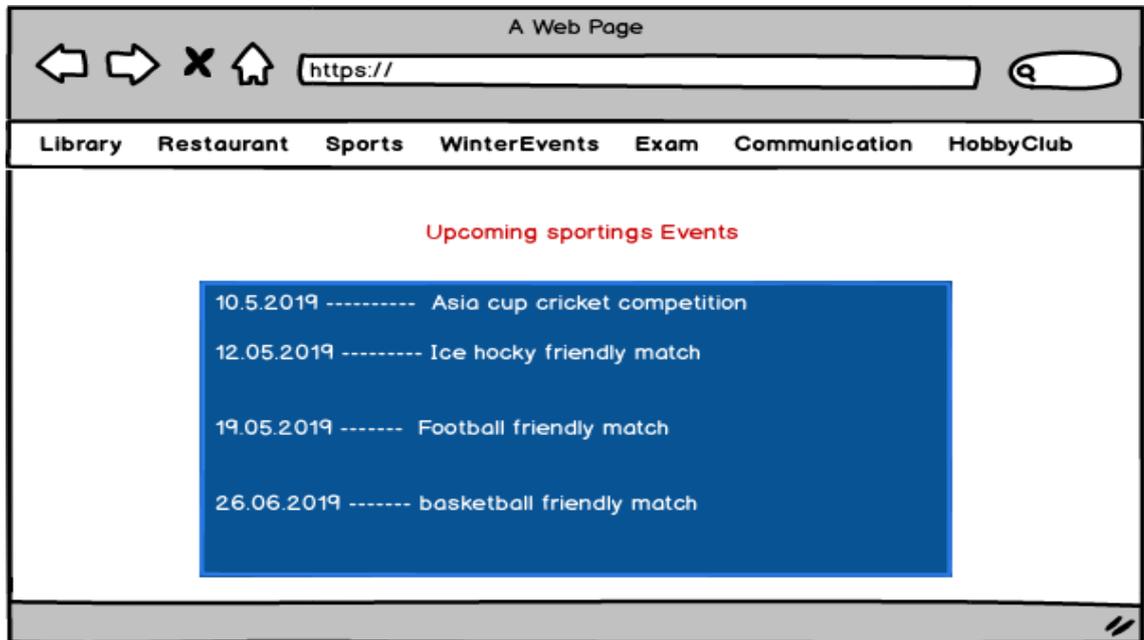
**Figure 14.** Feedback page of the prototype

Then the next option in the prototype is the Sports. From the interview section some of the student said that they do not get the proper information regarding sports. For this reason, "Upcoming Events" link has been designed. Sports centre booking is also an important issue. For that reason, booking option of the sports centre is also designed. So the sports page look like this (Figure 15)



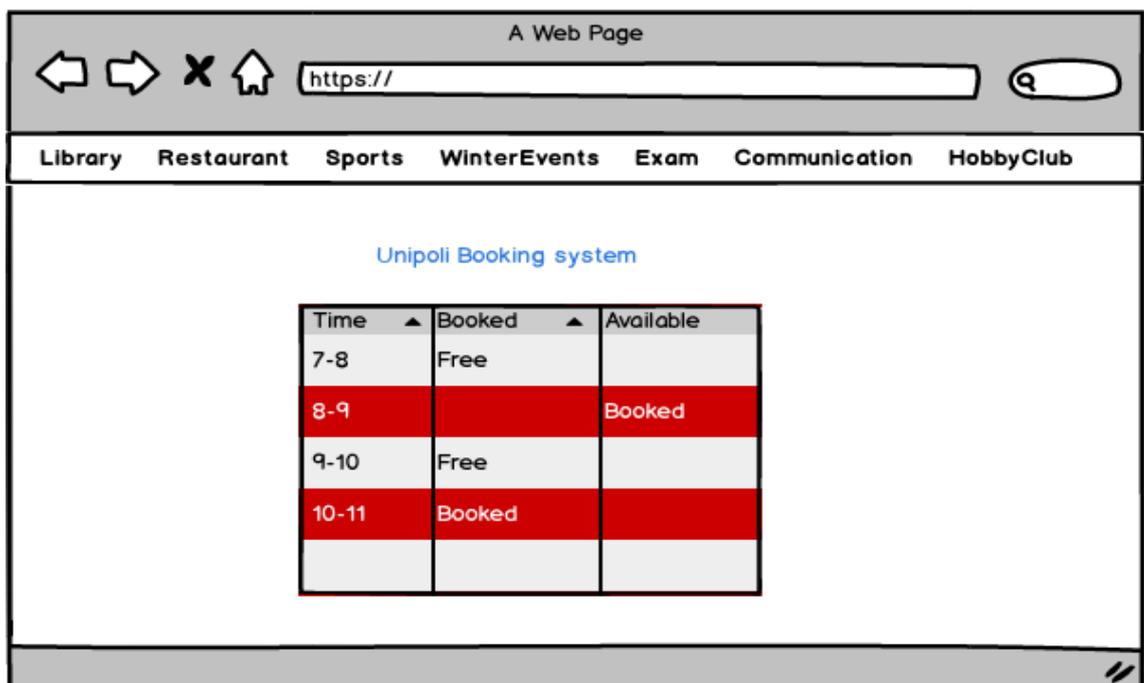
**Figure 15.** Sports menu of the prototype

In the upcoming events section one can know the upcoming sporting event in the university. So that he can join in that specific sporting event (Figure 16).



**Figure 16.** Upcoming sporting events page of the prototype

In the unipoli booking menu one can know that when the sports centre is booked and when it is free. So the page is designed as follows (Figure 17)



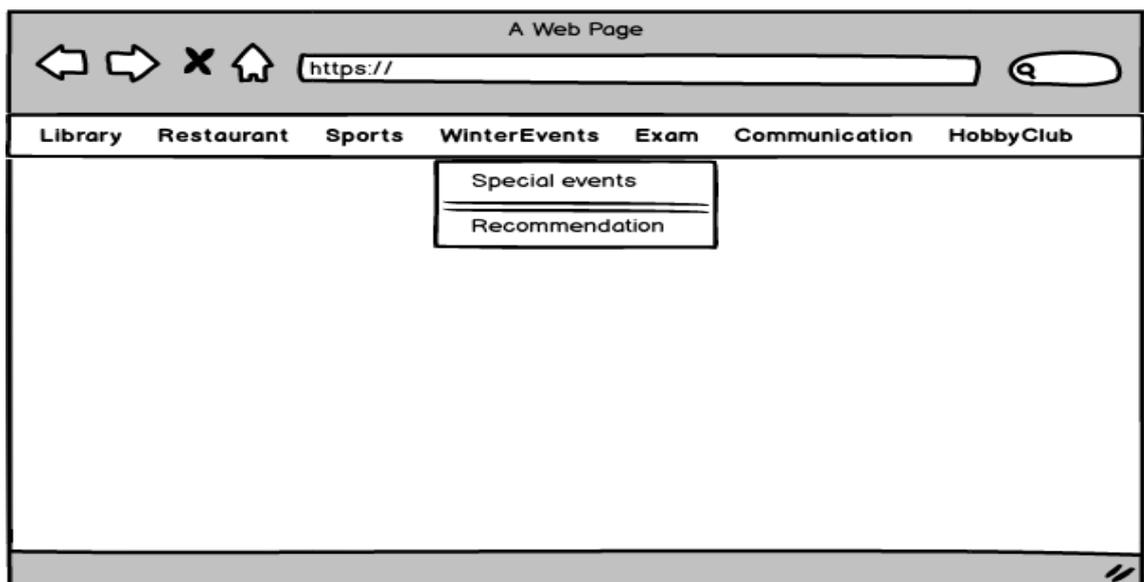
**Figure 17.** Sports centre booking page of the prototype

The feedback page is designed with the rating and comments section where student can give their valuable feedback (Figure 18)



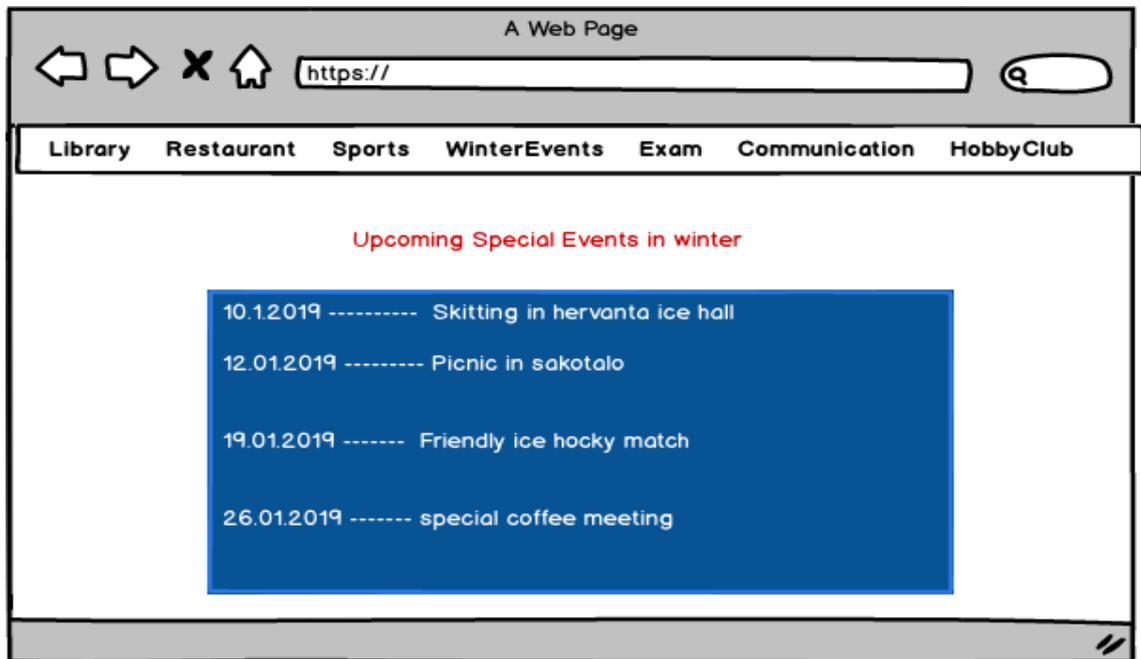
**Figure 18.** Sports Feedback page of the prototype

Then comes the winter activities of the university. Winter is one of the boring session here in Finland. In that time most of the time there is no day light and for this reason some extracurricular activities are necessary. In the interview the international student said that they want special activities for winter. So in the prototype a link for special activities is given (Figure 19)



**Figure 19.** Winter activities prototype page

In the special events page some information related to events in winter can be found. So the prototype of this page is designed as follows (Figure 20)



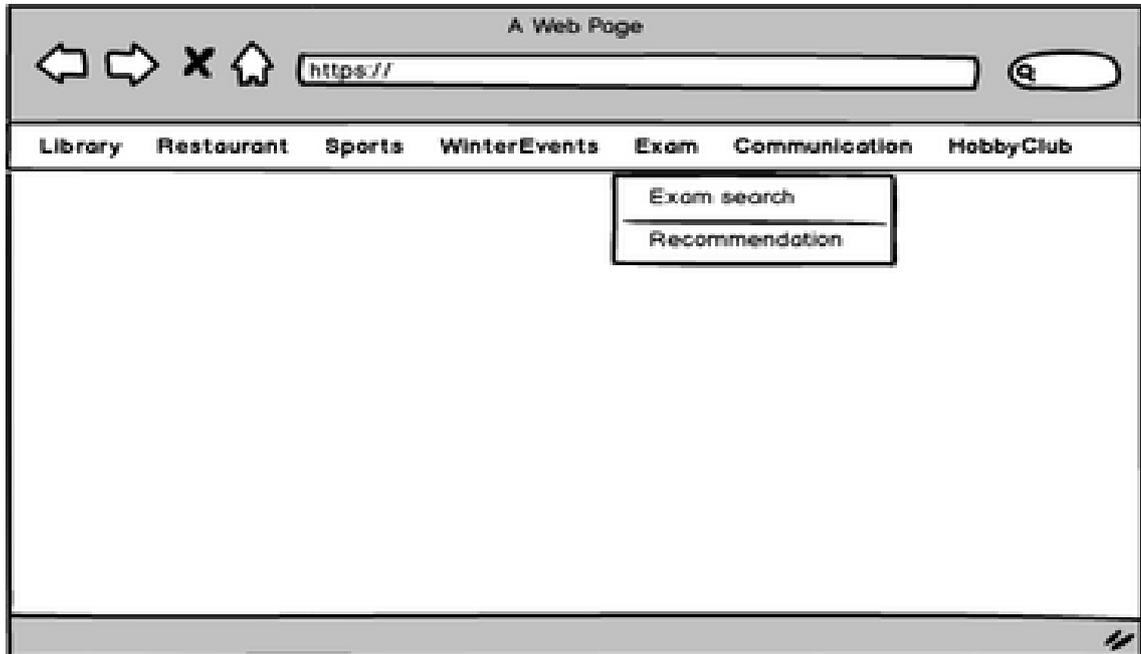
**Figure 20.** Special events in winter

In the feedback section international student can give feedback related to winter Events. They can write their demand in the comment section of the feedback form (Figure 21)



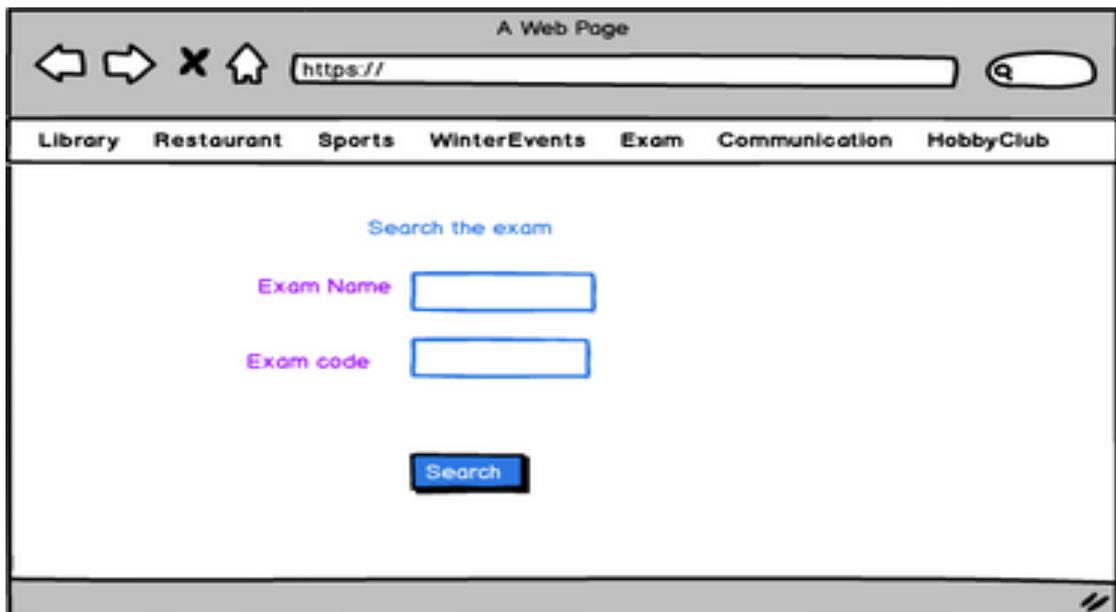
**Figure 21.** Feedback Form of the winter Events

Then the next menu is the Exam system of the University. Exam is an important part of the education system and information related to exam is also important. The exam menu consists of Exam search and recommendation link. It looks like as followings (Figure 22)



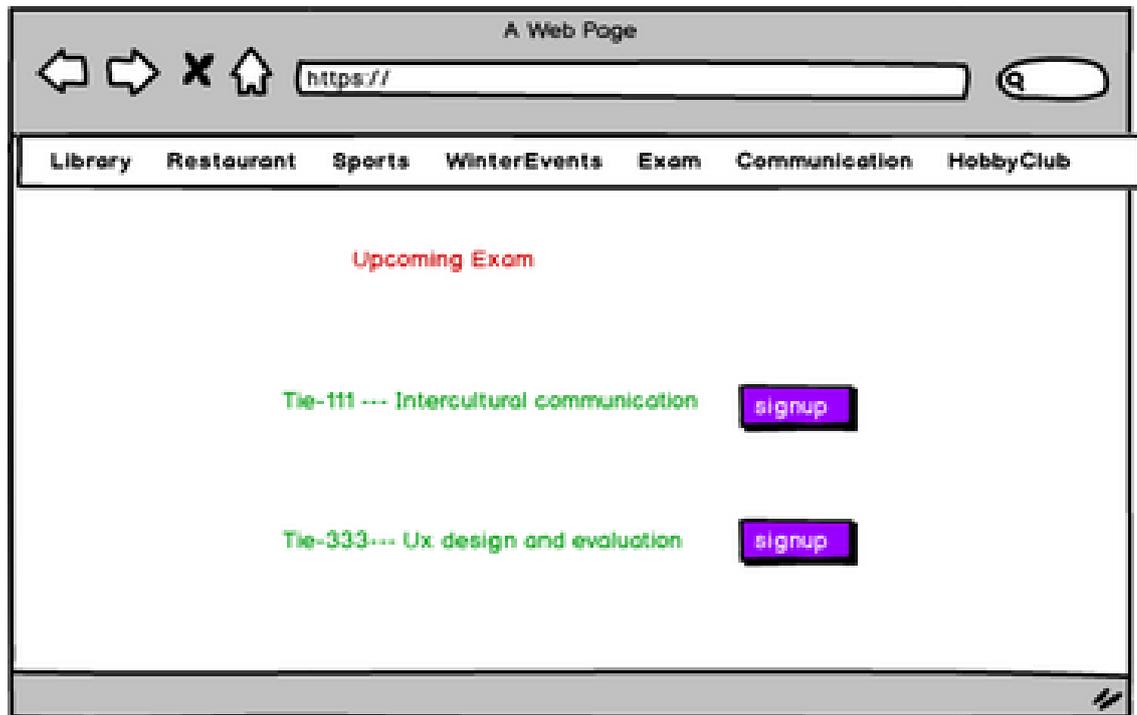
**Figure 22.** Exam system of the prototype

In the exam search option one can search the exam with exam name and exam code. The prototype of the exam search looks like this (Figure 23)



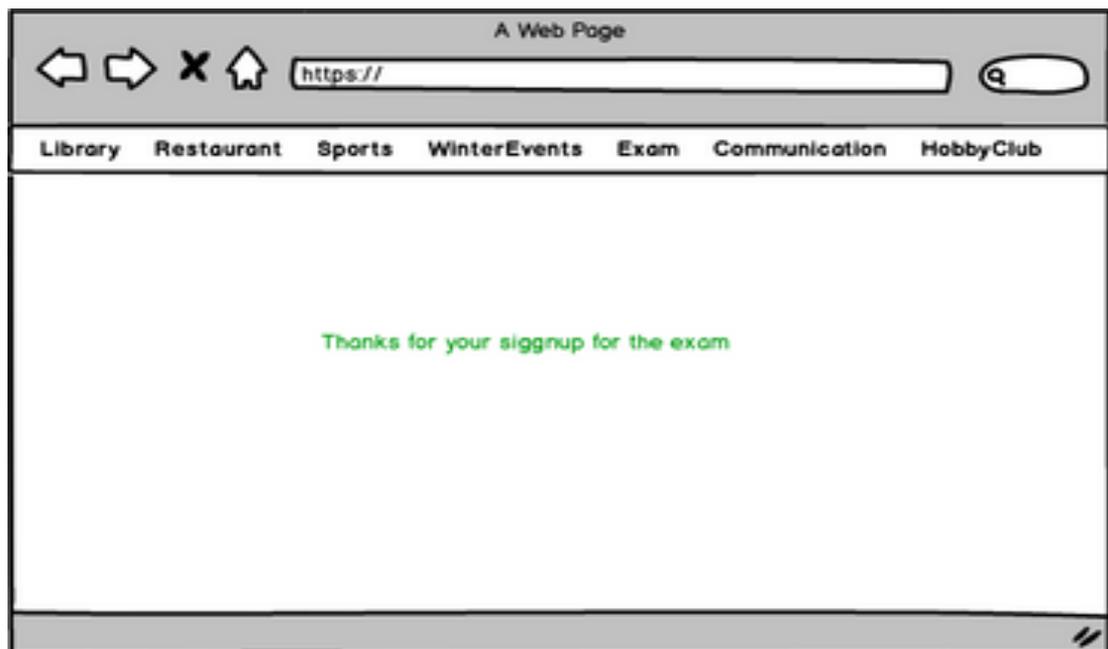
**Figure 23.** Exam search of the prototype

After that when the user clicks the search button then the upcoming exam will show in the prototype and there is an option for the sign up of the exam (Figure 24)



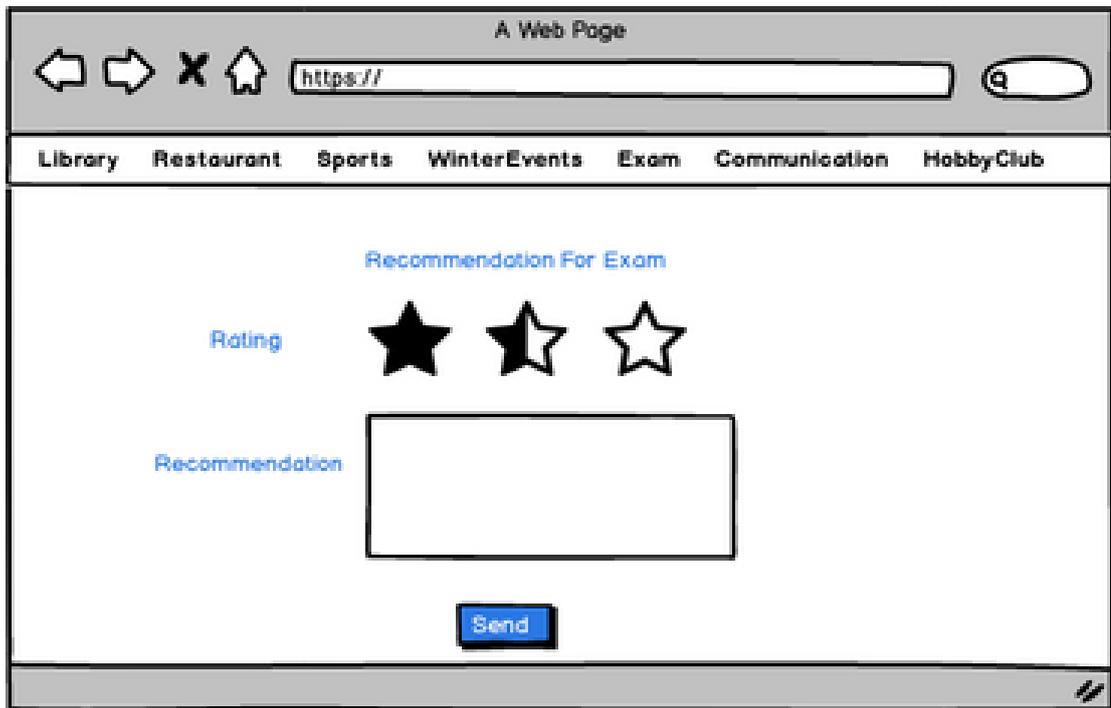
**Figure 24.** Upcoming exam show page of the prototype

User can sign up any of the exam by clicking the signup button. Then a confirmation message will be displayed to the user (Figure 25)



**Figure 25.** Exam signup confirmation page of the prototype

In the feedback system of the exam one can give the rating and recommendation related to exam. The prototype of the feedback system looks like this (Figure 26)



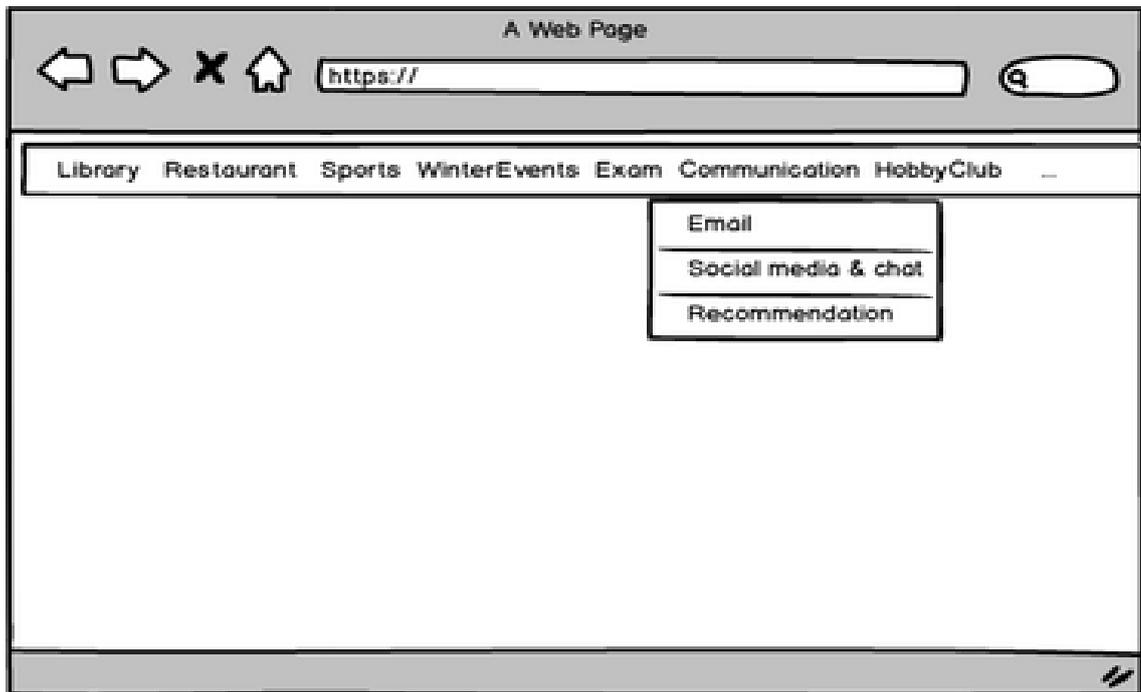
**Figure 26.** Feedback prototype page of the exam

After clicking the send button, a confirmation message will be shown to the user. The page in the prototype looks like this (Figure 27)



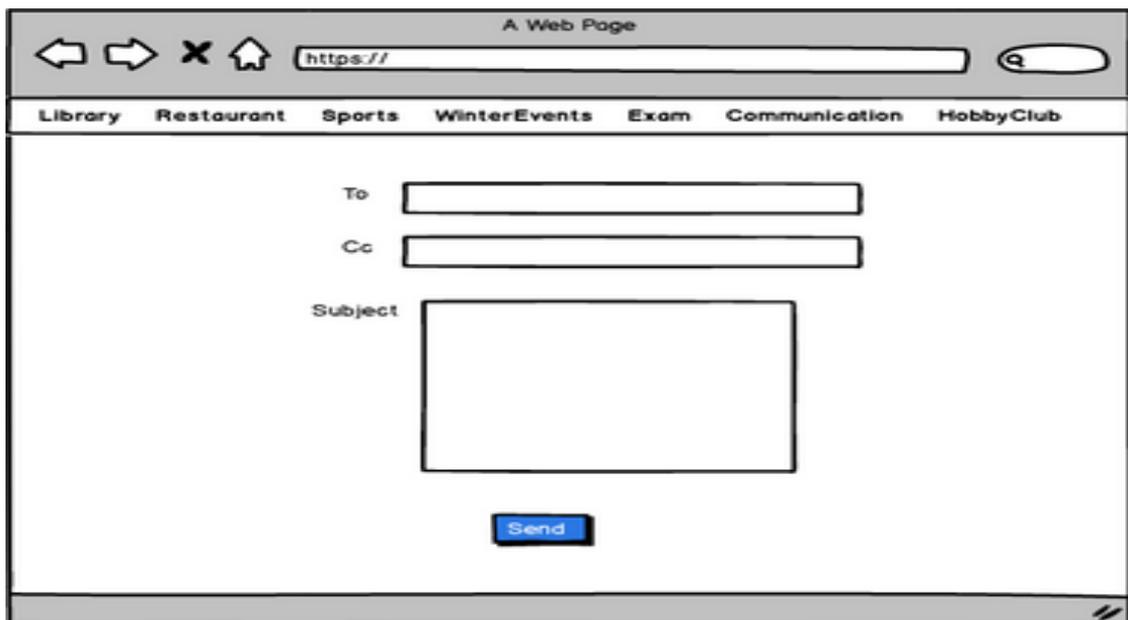
**Figure 27.** Confirmation message after sending feedback

In the communication section of the prototype contains Email, social media and chat and recommendation link. The prototype of this look like this (Figure 28)



**Figure 28.** Communication section of the prototype

After clicking the email link of the communication section an email form will be generated and with that one can send his necessary email. The prototype of this look like this (Figure 29).



**Figure 29.** Email page prototype of the system

Social media & chat option gives the link of the social media and gives the option to chat to the respective authority. The prototype of this look like this (Figure 30)



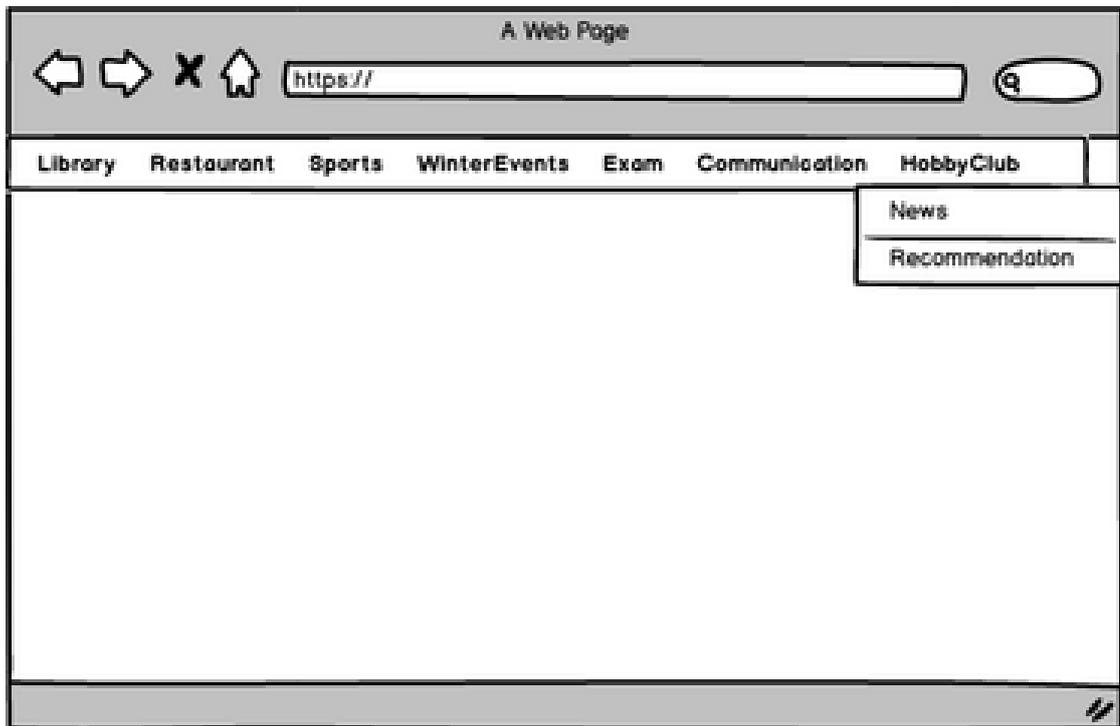
**Figure 30.** Social media & Chat page of the prototype

In the recommendation link of the communication section one can give the recommendation about the communication section. The prototype of this look like this (Figure 31)



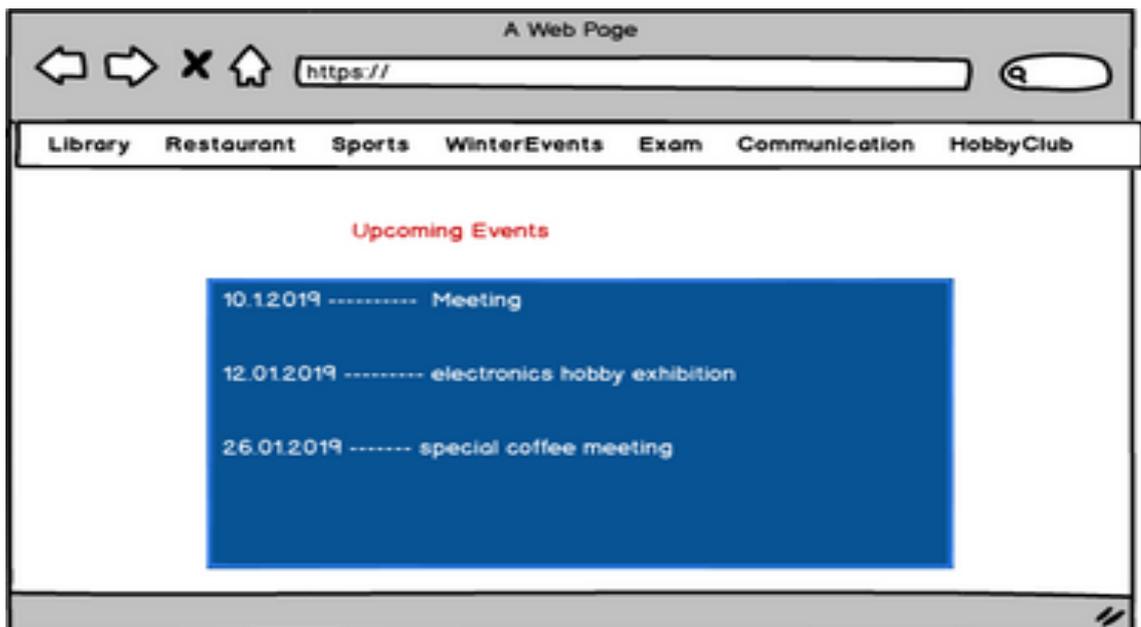
**Figure 31.** Recommendation for communication prototype

Then comes the last link of the prototype which Hobby Club. It has two option and these are News and Recommendation. The prototype of this look like this (Figure 32)



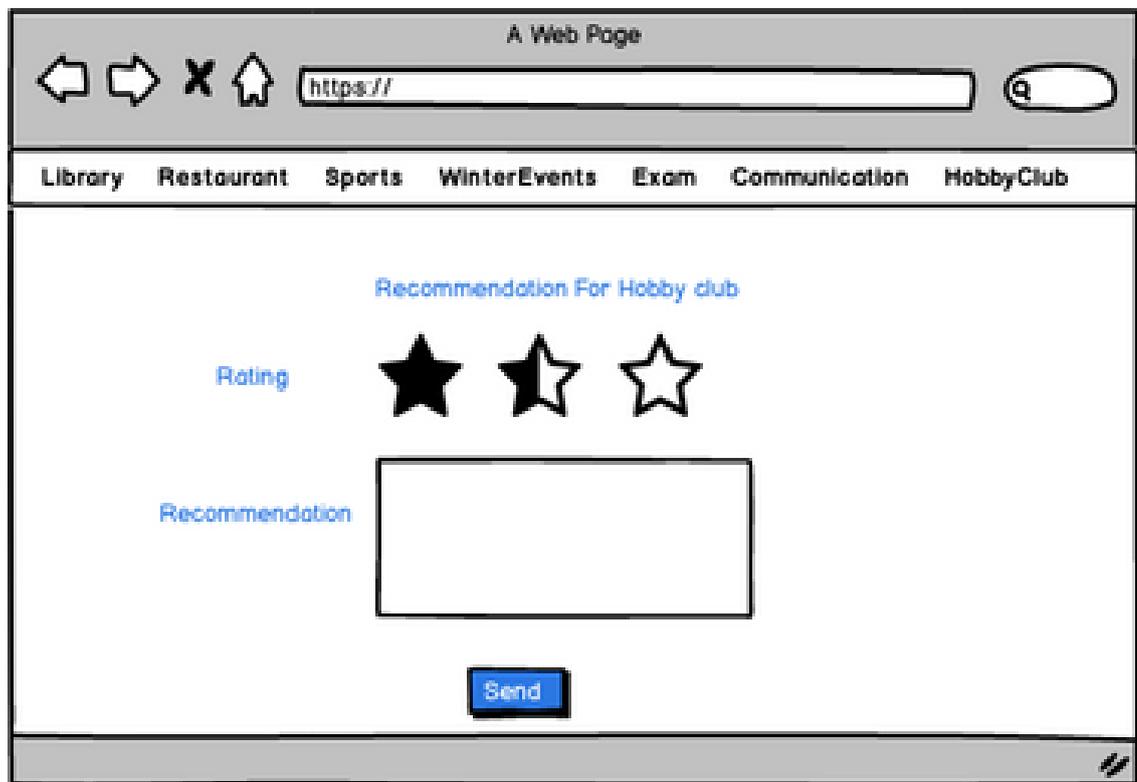
**Figure 32.** Hobby club option of the prototype

In the news section one can get the upcoming events of the hobby club. The prototype of this page is given below (Figure 33)



**Figure 33.** News section of Hobby club

Finally, in the recommendation section of the hobby club one can give his recommendation related to hobby. The prototype of this look like as following (Figure 34)



**Figure 34.** Recommendation system of the Hobby club

## 5. EVALUATION OF THE PROTOTYPE

After designing the prototype it was evaluated by the international students. The User Experience Questionnaire form was given to evaluate the prototype. The form is designed according to the pragmatic as well as hedonic quality of the prototype. In the form user can give mark from -3 to +3 range of the pragmatic and hedonic quality of the prototype (Appendix B). After getting the feedback from the user the score was compared to benchmark. If the score is satisfactory compared to benchmark then the prototype meets the minimum requirement and it does not need to be redesigned. But if it does not get the expected result then the prototype need to be redesigned.

The second form of evaluation was done by designing the User satisfaction form. The questions in this form is also designed to determine the pragmatic and hedonic quality of the product. But in this form the user can give an overall rating of the product. With that overall rating the quality of the product can be determined. As we know that pragmatic quality means the functionality of the prototype and hedonic quality means the visual appearance of the prototype. So question is set according to this pragmatic and hedonic quality. Question 2, 4 and 5 represents the pragmatic quality of the prototype and question 3 and 6 represent the hedonic quality of the prototype. Then the participant can give the overall rating of the prototype and that overall rating graph has been discussed in Figure 37. This overall result represents the quality of the prototype and with that result we get an idea whether the prototype meets the user requirement or not. The questions that has been designed for user satisfaction form are given below

Evaluate the following statements	Strongly disagree					Strongly agree
	1	2	3	4	5	
The service helps the students to participate in University development.	1	2	3	4	5	
It was hard to understand all the functionality In prototype	1	2	3	4	5	
The service was pleasant in the prototype	1	2	3	4	5	
I was able to find what I needed quickly in prototype	1	2	3	4	5	
The service included unfamiliar terms.	1	2	3	4	5	
The visual look and places of the elements was pleasing in prototype	1	2	3	4	5	
Prototype provides all your expected features.	1	2	3	4	5	

**Which overall grade would you give to the service prototype (on a scale from 1=poor to 5=very good)? \_\_\_\_\_**

The User satisfaction questionnaire form (Appendix C) was given after the prototype inspection of the user. User can give their marking from 1 to 5 with that form and then at last they can give the overall marking. With that User satisfaction form an overall idea can be gained whether the prototype meets the user requirement or not. As the structure of the prototype is a repetitive procedure which basically relies on the demands of the user. So if it fulfils the user requirement then prototype will be fixed but if it does not then it can be changed and again evaluated by the user.

## 6. USER TESTING RESULTS AND ANALYSIS

After designing the prototype, it was tested by the international students. Total 8 students participated in the testing process and gave their feedback who also gave their interview as well. As the prototype is a web service so it was tested by the users from different web browsers to check whether it meets the responsive criteria or not.

### 6.1 Participants

Total 8 participants from 18 to 30 were invited to evaluate the prototype and they all are of different parts of the world. Those participants were the same who gave the interview. In the interview a consent form was given where data was stored anonymously (Appendix A). All the participants are international students and they study in different educational institution in Tampere, Finland. After inspecting the prototype, the user experience questionnaire form and user satisfaction questionnaire form were given. With their marking it can be understood that whether the prototype meets the user requirement or not. Table 1 represents the participants age and citizenship.

Id	Age	Citizenship
P01	20	China
P02	23	Bangladesh
P03	25	South Korea
P04	18	India
P05	27	Srilanka
P06	21	Australia
P07	20	Mexico
P08	21	Nigeria

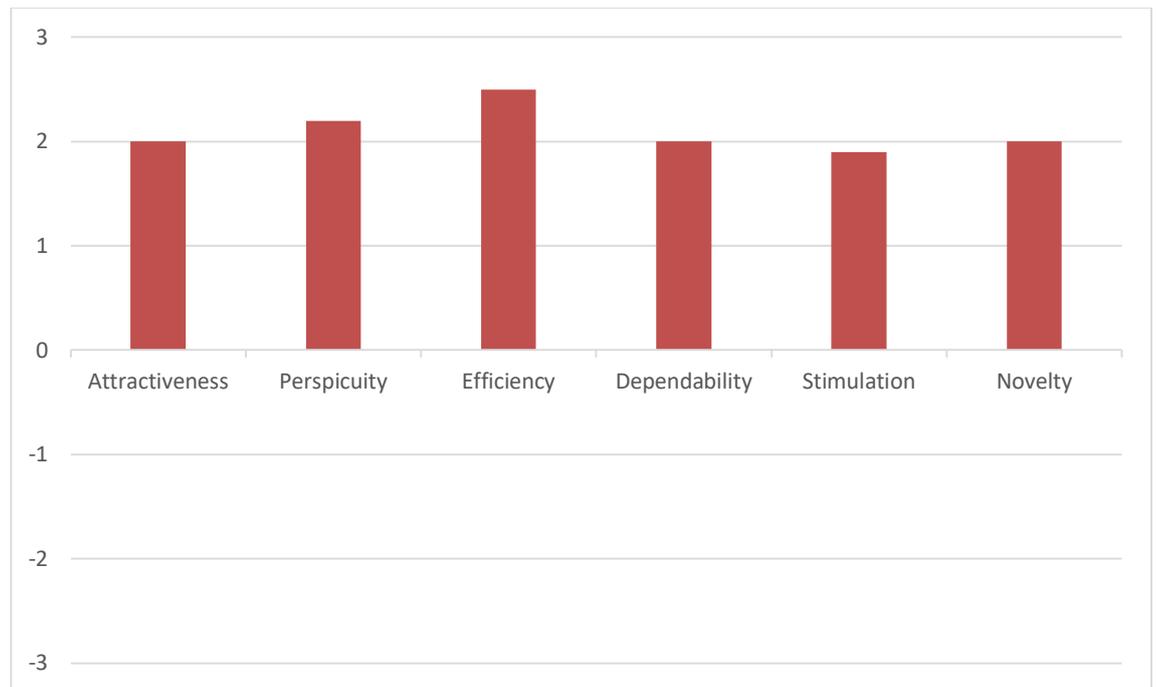
*Table 1. Participants Description*

### 6.2 UEQ Data Collection

In figure 35, The overall results of the data collected from 8 participants is presented and this data is collected through User Experience Questionnaire(UEQ) data analysis sheet.

The graph represents the average agreement of the participants with a value from -3 to +3. With the value of this six attributes we can calculate the value of pragmatic and hedonic quality of the product.

From the graph it is seen that the prototype has created a positive impression in all the six scales. In the evaluation, the value of attractiveness is 2 and it creates a good impression to the prototype. This means that the service is pleasurable to use and it also user friendly and attractive. The average of perspicuity, efficiency and dependability can be defined as pragmatic quality. The overall value of pragmatic quality of the Prototype is 2.23. Figure 35 describes the participants UEQ score.



**Figure 35.** Participants UEQ Score

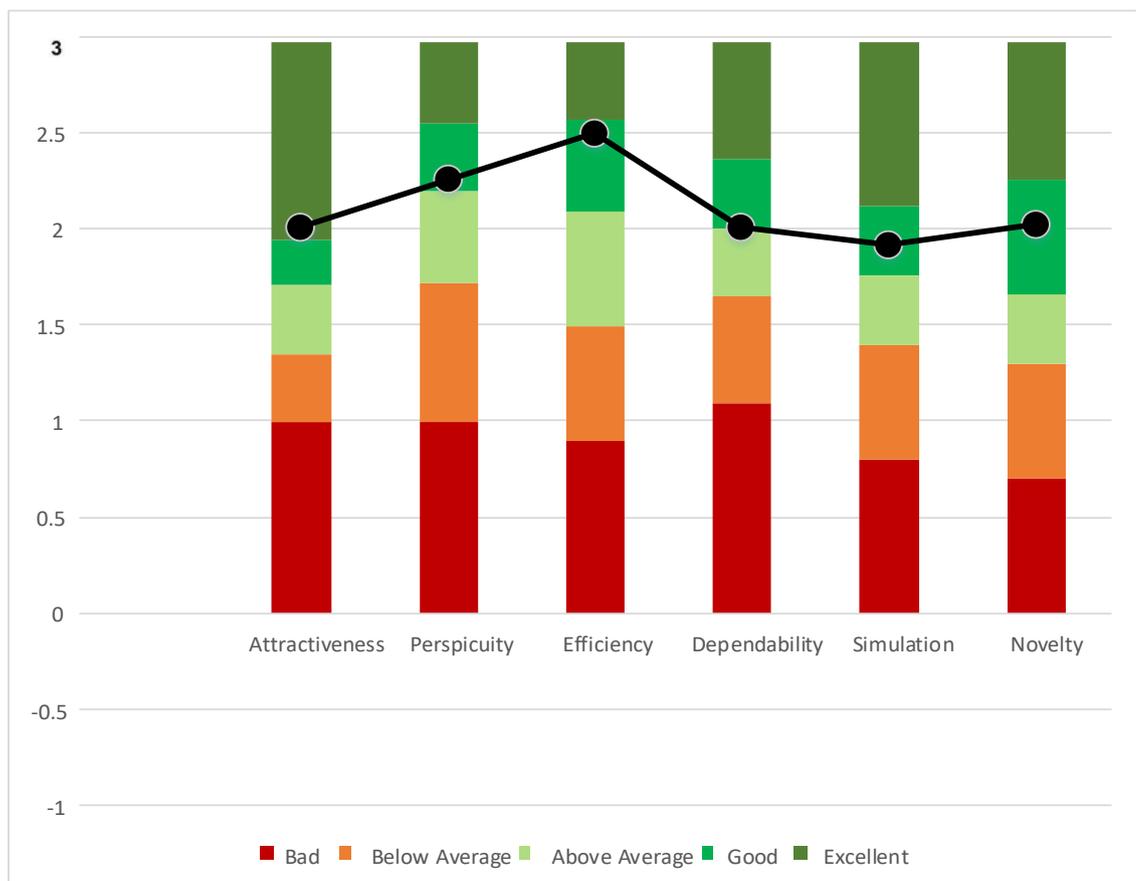
In the graph, it is seen that the perspicuity value is 2.2 which means that it is easy and understandable to use the service. Also dependability score of the prototype is 2 which denotes that it meets the expectation of the participants. Additionally, the efficiency rate of the prototype is 2.5 which is also high and means that the functionality of the prototype is really good. The attractiveness, pragmatic and hedonic quality has been discussed in Table 2

<b>Pragmatic And hedonic quality</b>	
<b>Attractiveness</b>	<b>2</b>
<b>Pragmatic quality</b>	<b>2.23</b>
<b>Hedonic Quality</b>	<b>1.95</b>

**Table 2.** The pragmatic and hedonic quality of the prototype

On the other hand, hedonic quality means the average of stimulation and novelty of the evaluated service. The overall observed hedonic quality of the prototype is (1.95), the prototype is creative and motivative to use.

According to the study of Schrepp et.al (2017) who provides a benchmark of UEQ evaluation results and it is mainly done in science studies and industry project. Figure 36 describes the comparison between our data set of UEQ and the benchmark. It is seen from the figure that all the scales that has been compared with benchmark are above average. The attractiveness value is 2 and it is rated as “excellent” compared to benchmark. The perspicuity, efficiency and dependability which is called pragmatic quality of the prototype is also comparable with other evaluated products. The hedonic quality which consists of simulation and novelty is also scored good compared to benchmark. So result from the participants in this six scale is quiet good compared to UEQ benchmark. On the other hand, the pragmatic quality which consists of the average perspicuity, efficiency and dependability score 2.23 which can be rated as good compared to benchmark. The hedonic quality which consists of the average of simulation and novelty score (1.95) can also be rated as good compared to benchmark. Figure 36 describes the participants UEQ scores against UEQ benchmark.



**Figure 36.** Results from the participants UEQ score against UEQ benchmark

Table 3 describes the result against User Experience Questionnaire(UEQ) benchmark

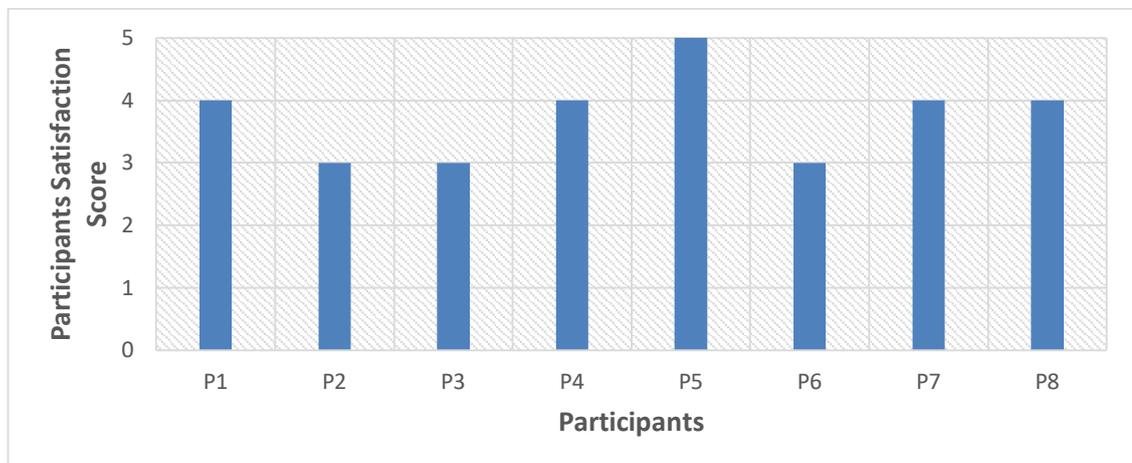
Scale	Mean	Comparison to benchmark
Attractiveness	2	Excellent
Perspicuity	2.2	Good
Efficiency	2.5	Good
Dependability	2	Good
Simulation	1.9	Good
Novelty	2	Good

**Table 3.** Explanation of result against UEQ benchmark

Although, the benchmark data sets are consisting of several types of products but the value of attractiveness, pragmatic, and hedonic quality of the prototype is high and it means that it meets the requirement of the participants. This also demonstrate that the prototype can reach in that mark that fulfil the user demand. Although one service cannot fulfil hundred percent demand of the user but if it fills the minimum requirement then the service can be rated as a good service. As the pragmatic and hedonic quality of the prototype is rated as good by the participants so it can be said that the prototype meets the user requirements.

### 6.3 User Satisfaction Form Data Analysis

In user satisfaction questionnaire form user can give their marking from 1 to 5 in seven questions (Appendix C). Then the user can give an overall marking of the tested prototype. This form was given to eight participants and they gave their marking. The overall marking data graph is as follows (Figure 37)



**Figure 37.** User satisfaction questionnaire overall marking graph

In the graph P1, P2..... represents the participants and overall score is plotted in Y axis. The maximum overall score is 5. Here P1 gave 4, P2 gave 3 and so on up to P8. Here, the average user satisfaction score is 3.75 and it means that the prototype meets the overall requirement of the user.

Here we also know that prototype design is a continuous process and if it does not meet the minimum requirements then it needs to be redesigned. So in this fact, if the prototype does not get the expected user satisfaction score then it needs to be redesigned and again needs to be evaluated by the user.

## 6.4 Positive Views of the Prototype

It is declared by some participants that the service gives contingency to the user to get the different kinds of information related to university from that platform. As a result, the user doesn't need to search different application to get the information related to restaurants, sports, winter activities etc. of the University. Some of the comments of the prototype are

"The service looks really attractive and it gives the necessary information related to university activities and students can give their valuable feedback to the university authority (p3)"

"The prototype is user friendly and it creates a relationship between the international students and the university (p5)"

Prototype in the user interface do not follow the conventional way of doing assignments. Hence, the prototype is described as user friendly and impressive.

"This prototype is convenient for the users. Not only the tasks are primitive but also the mechanism of the product is accessible(p4)".

Some participants like the idea of food menu of different restaurant in single page in the prototype. As the students need to search different web for this food menu.

Some participants reported that they enjoyed to use this type of web service prototype.

One of the participants comment as follows

"It seems I am using real time web application and can get the information what I need"

Some participants also gave some positive feedback about exam search option. As the upcoming exams comes one by one in the prototype so it is really helpful for students.

Some of the participants also reported that this service will help the university authority to increase their facility for the students. One of the comment of a participant is given below

“This product helps the international students to participate in university development and creates a friendly relationship between the international students and the university (p1)”.

One of the participant concern about the sports facility of the university as he is not aware of the Unipoli sports facility. His comments are as follows

“I really don’t have any idea about the Unipoli sports center of the University (p6)”

Another participant reported that the web service is a conventional web service but the students get the necessary information from that service. His comment about the service is as follows

“Although the service is a conventional web service but it gives plentiful information for the international students. (p8)”

Although most of the participants like the graphical user interface of the prototype. Some participants also reported that the live chat option is also an important part to communicate with the university authority.

Above all the feedback from the participants are really impressive and it creates a positive impression towards the prototype. Most of the participants give the positive comments to the prototype and their comments are really important as prototype is an iterative process and it can be changed according to the feedback from users.

## **6.5 Conclusion**

From the user testing result one can easily understand that whether the prototype reaches up to the mark or not. With the UEQ data sheet the pragmatic and hedonic quality of the prototype can also be measured. Then this pragmatic and hedonic quality of the prototype can be compared with the benchmark with UEQ. With that comparison the prototype can be rated as Bad, Below Average, Above average, Good and Excellent. So if the prototype does not reach the expected result it can be redesigned and again evaluated by the user. In our case the attractiveness, pragmatic and hedonic quality reach in that level that we do not need to redesign it. The attractiveness is rated as excellent and the pragmatic and hedonic quality is rated as good. As the pragmatic and hedonic quality of the prototype is above average so it can be said that it fulfils the requirements of the user.

## 7. DISCUSSION

The recognizable involvement and drawbacks of this thesis are examined and explained in chapter 7. The research questions that have been proposed in the beginning are also answered here. Even if the purpose of the research has been fulfilled, there were some certain and needless drawbacks. That's why the idea of research process and future tasks for development are bestowed.

### 7.1 Expected Implications

This thesis focuses on how the international students can take participate in university development and design of a software to reach this goal. The design of the software is a web service prototype which is designed based on the interview data. our first research question was "RQ1: How international students' can easily participate in university development?" Now we can say that the international student can easily participate in university development through a web service. From this service, students can give their feedback to the university authority and university authority can get an idea what the international students want. Then our next research question was RQ2: How an university can develop its facilities by taking feedback from the students? Now from our research we can understand that the development of the university largely depends upon the participation of the students. In our research we focused on the facilities of library, restaurant, sports, winter activity, exam system, hobbyclub of the university and if the students can give their feed back to this facilities then the service of this facilities will be increased. Then the next research question was " RQ3: What type of services international students want from the university?" From our research now we can say that the international students come from different parts of the world and they come here in Finland mainly for study purpose. They expect a better quality of education as well as better facilities in extra curricular activities and also expect better service in restaurant facility of the university.They also want to participate in the development process of the university and want to give recommendation in this type of facilities. Then the next research question was "RQ4: How the international students' demands can be transferred digitally to the university authority?" In this regard we can say that it can be transferred though mobile application or web application. In our case we choose the web application as in the interview most of the international students said that they preferred to give their feedback through web application. The web application is also platform

independent. So it can be used in mobile, laptop and desktop. It is easier for the international students to transfer their demand to the university authority.

The thesis also focuses on how the young people can actively take part in university development. Youth are the power of a nation and their engagement for the development of a country is urgently necessary. For the development of a nation the university development is must and for the university development, youth participation is must. This research also focuses on how easily youth can participate in university development digitally. In digital services youth can give their feedback through mobile or web application. In our research we choose the web application because of the user demand.

This research also focuses on the real time prototype where user can get the real feelings of a product. For this purpose a web application prototype has been designed and it was also tested by the user. Based on the user testing result the prototype can be changed and redesigned.

Above all, it can be said that young people have a positive attitude towards the development of university. This research helps the university authority to attract more international students and give an idea to the university authority what the international students want. The research also focuses on the continuous development of the university.

## **7.2 Limitation and Future Work**

Though the research fulfilled the aim and the total thesis writing processed without any difficulties, there are several insufficiencies that should be acknowledged to support an advance research outcome. Firstly, due to the time limitation, only eight participants were invited for interview. After designing the prototype, it was tested by the same participants who are international students. So due to limited number of participants this work can be said as the first attempt for the university development but it can be improved in future. Secondly the international students' participation in university development is a wide sense and in that matter we could only conduct our research in limited things like library, exam system, sports facility, winter activity, Restaurant facility etc.

The prototype is designed in a conventional way and it can be said that it is a conventional web service prototype. The prototype can be redesigned in near future according to the user needs. In the interview process more concrete questions can be asked to get the idea what the international students want. If it is redesigned in near future, then the prototype should be tested by more participants to get a stable and reliable result.

Despite the research in this thesis is completed but the international students' participation and university development is a continuous process. Continuous improvements can be done in international students' participation in university development with the help of this thesis.

## 8. CONCLUSION

The research of this thesis focuses on the youth participation especially international youth participation in university development. As they are participating in the development process of the university they can contribute to the development of the society. The thesis also gives an idea how the facilities of a university can be increased. It strengthens the relationship between the students and university authority.

University is a place where students come from various parts of the world and the international students expect some facility from the university. The university authority also wants a platform where student can give their feedback. So a software can solve this problem. In this thesis a software has been designed by the prototyping tools and then this prototype has been evaluated by the international students. As the user need changes time to time so the design of a software is a continuous process. Continuous modification is required in the design. This research can be said as the first step of this continuous process.

This research also focuses on how university can be changed through digital services. Young people involvement in digital services is also focused in this thesis. Above all the research of this thesis helps to participate the young people in university development.

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## **APPENDIX A: INTERVIEW QUESTIONS FOR INTERNATIONAL STUDENTS'**

### **Interview for design of an application for international students' participation in university development**

The interview is conducted for designing a new web service for the international students who can give their suggestions for the development of the university. You are asked different questions and if you want to avoid some questions feel free to do it. Your participation helps to design a prototype which will improve the facilities of the university. The work is done for the master's thesis work purpose.

1. What would be your preferred way to give feedback to the university?
2. Do you have any suggestions about the library facility of the university?
3. Do you have any suggestions to the restaurant facility of the university? Feel free to give this.
4. Do you have any recommendations for the sports facility that are currently available to the university?
5. What kind of activities related to winter should the university develop?
6. Do you have any suggestions to the exam system that is used to the university?
7. What about your opinion about the lab facilities of the university. You can give your suggestion without any hesitation.
8. Do you have any suggestions about the communication system of the university that is currently used?
9. Do you have any suggestions how the students can participate more actively in hobby club of the university?
10. Do you have any further recommendations or suggestions about other facilities of the university? Feel free to describe.

**Concent to record the interview**

we will ask the participant to answer different questions regarding to design an application for international students' participation in university development. By participating in this interview you will help us to my thesis work and also help to design a system regarding students' participation in university development.

The materials recorded during the test will be used to design a prototype of the system. You should feel free to answer the questions that will be given to you and you can also skip any of the questions. The entire interview will be recorded. The interview data will be used anonymously.

**By signing this form, you will accept the above terms.**

Date and place: \_\_\_\_\_

Signature: \_\_\_\_\_

Name : \_\_\_\_\_

Interview taken By : Debasish Basak

Email :debasish.basak@student.tut.fi



# APPENDIX C: USER SATISFACTION FORM FOR 2<sup>ND</sup> EVALUATION

Thesis

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## USER SATISFACTION QUESTIONNAIRE

Below there are some statements related to the prototype tested. Please select the option that best matches your level of disagreement and agreement with the statement.

Evaluate the following statements	Strongly disagree					Strongly agree
The service helps the students to participate in University development.	1	2	3	4	5	
It was hard to understand all the functionality In prototype	1	2	3	4	5	
The service was pleasant in the prototype	1	2	3	4	5	
I was able to find what I needed quickly in prototype	1	2	3	4	5	
The service included unfamiliar terms.	1	2	3	4	5	
The visual look and places of the elements was pleasing in prototype	1	2	3	4	5	
Prototype provides all your expected features.	1	2	3	4	5	

If You want to add something?

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Which overall grade would you give to the service prototype (on a scale from 1=poor to 5=very good)? \_\_\_\_\_

**Thank you! Your responses will be processed confidentially**

## APPENDIX D: PROTOTYPE OF THE SYSTEM

Full prototype of the system can be found in the following link

<https://projects.invisionapp.com/d/main?origin=v7#/console/17011538/352637258/preview?scrollOffset=0>

Password upon request