Improve Individual Study Space in JAMK Main library

How improvements can meet students’ preferences

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Abstract

The research investigated the study space planning in general, its impact on users and specified in the space particularly for individual study in library, with JAMK main library as the assigned premise. The goal was to examine how the applied improvements would meet the preferences of the current students at the mentioned institution.

The literature background covered sections which approaching from study space planning and its influences on users; types of environments that individuals would find themselves concentrated; and finalizing by the interior design which exemplifications from libraries worldwide regarding their space planning for individual users were specified as considerations to apply to the study case.

Quantitative research method was chosen with a survey as a form to execute the data analysis. The questionnaire was delivered through social networks of JAMK’s current students and the intramail system of the institution. 70 respondents participated in the survey, consisting of 55 degree and 15 exchange students. The inferential analysis was employed to interpret the collected data.

The results implied that there were great concerns on the research problem and the idea to improve the space for particularly individual study was to a great extent supportive. Insights about students’ perspectives towards current situations in the main library and their recommendations for improvement were also indicated. The research frame can be applied in the future on a regular basis as library users keep being different over time; hence, it is essential to familiarize with updated situations.
Keywords/tags (subjects)

Study space, individual study, library, JAMK, space, facilities

Miscellaneous

The survey is attached in the Appendices part
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1 Introduction

“Imperfect as they may be, libraries are cultural institutions and, as such, reflect the values not only of one’s profession, but also of the institutions and the society.” (Weise, 2004)

In the journal article of Weise, a citation from Weise and Tooey (1999) accentuated certain remarkable missions of the renovated library. Being such a multifunctional premise, a library is expected to serve as:

- a physical symbol of the search for knowledge
- a focal point for the campus and an intellectual commons
- a haven for study and research
- a place for groups engaged in collaborative work or learning
- an access point and distribution center for print and electronic information
- a teaching library to support trends in education, research, and service
- a functional and pleasant workplace for staff
- an attractive gateway to the campus and a signature building

However, a library could hardly obtain these achievements without receiving positive interaction from the patrons. Gorman M. (2000) acknowledged:

“Libraries are places that embody learning, culture, other important secular values and manifestations of the common good, and there is a need arising from our common humanity to visit such places.”

Hence, to become a functional library, it is important to pay sufficient attention to the segmented patrons. The issue is that there are many types of them and their requests or preferences may not remain the same. To name a few, some prefer the library to have group study rooms with 24/7 access, plus printing and electronic resources seamlessly accessible. Some would like quiet places whenever they visit the library so that they would have better concentration. In addition, in terms of getting socialized, some expect their library to have art galleries and host cultural events as well as exhi-
bitions. Besides, having natural light, comfortable furniture, cafes and access to food might be the extra attractions that could possibly make a library nearly perfect. (Demas, S. and Sherer, J. A., 2002.). However, to execute these different spaces plus offer those services with ease, such library is customarily supposed to be spacious enough, not to mention that it should normally have a number of floors to better separate the areas and manage each of them better. Let’s take the University of Chicago in the United States as an example. The library of the institution itself has five different floorplans consisting of Quiet Zone, Collaborative Zone, Cell Phone Zone and Meal Zone. (Find Your Zone, n.d.). Roughly over 150 computers are at the users’ disposal and there are over 15,000 students enrolled at the University at the time being.

The research question of the thesis is “How to improve the space for individual study in the library in order to meet users’ demands?”. Whereas numerous other international libraries are operating different types of spaces, why is it considerably important to have exclusively one type of space to aim at? To begin with, the official website of JAMK University of Applied Sciences (JAMK) displays the data that the institution has over 8,500 students. Although there are also libraries in the other three campuses of JAMK, the main campus, where the main library is located, is where most of the students have the courses. The main library has approximately 130 seats for reading and working purposes, plus 30 computers with internet access (Kirsi, 2015). According to the author’s observation and library experiences, the current issue is that people with group work, individual study and other non-library purposes may have been mixing their intended space. Most of the spaces are not clearly indicated what they should be for. For example, in the middle hall (GP04) there are eight computers found along with a couple of coaches. This is the place for group work, individual study and students’ breaks. Consequently, students who intend to do their assignments individually can find it fairly inconvenient while group work takes place at the same time. In reverse, groups remain in the library, which means they would probably make some noise. However, they may not mean to disturb others using the same space. As a last year student of JAMK, the author has spent a certain amount of time at the institution’s main library, added to having gotten the chances to know of and observing almost all the classrooms and open spaces outside the
library. Most of the time, some classrooms are vacant, also the labs and open spaces to accommodate students no matter what their visit purposes might be. Besides, in the main library, seats as well as computers are rather limited. On that account, to summarise the current issues, while the number of seats in the main library remains limited, other classrooms are relatively unoccupied. Hence, it could be more practical if all other activities apart from individual study take place outside the library in the areas mentioned earlier, so that the individuals can feel free to have their own space being able to better study inside the main library. Moreover, the library itself can likewise focus thoroughly on reforming the space for this segmented usage. To make this idea come true, this thesis also aims at helping the main library to understand the students’ needs and using the information through the literature review and the survey results to better serve them, while also growing as a institutional premise itself. To argue over the topic, specific aspects will be developed with the individual study space improvement as the core.

1. How does the study space affect the users and what would make a good study space?
2. Since individuals’ habits remain dissimilar, how would spaces have to be designed so that different users can fit in?
3. The roles of libraries in academic life as well as the perception of the users towards the libraries will be indicated. The functionality of the international libraries will also be analysed.
4. Different spaces in a regular library and the interior design. And as for the individual space, what should be available in terms of space and facilities.
2 Study space

According to the Oxford Dictionary (2015), “study” is defined as “the devotion of time and attention to acquiring knowledge on an academic subject”. Alternatively, the Vietnamese Dictionary (2004) proposed the definition for “study” as “the obtainment of knowledge and practice of competences”. As regards “space”, it is theoretically “the unlimited or incalculably great three-dimensional realm or expanse in which all material objects are located and all events occur” (Dictionary.com, 2015). Similarly, the French dictionary (LAROUSSE, n.d.) explained “space” (“espace” in French): “particular property of an object that occupies a certain area, a certain volume within the area of a necessarily greater volume than it which can be measured” (propriété particulière d’un objet qui fait que celui-ci occupe une certaine étendue, un certain volume au sein d’une étendue, d’un volume nécessairement plus grands que lui et qui peuvent être mesurés”). Hamirani, Z. (n.d., 1) mentioned that spaces have the power to impact cognitive and affective performances and also, changed spaces change practices. In order to actualize the changes in study space, key things in terms of design thinking have been led. Corcorran, M. S. (2014) stated the first thing is to build empathy for users, “to really get under the skin of the people who actually are in the situations doing the functions that they’re doing and put ourselves in their shoes”. Secondly, it is to define the opportunity before ideating. Then the prototype and test follow the process. According to Ludwig, L., and Starr, S. (2005), Mitchell (2005) pointed out that:

Spaces that work well over the long term are spaces that are built around very fundamental human needs like comfort, natural light, operable windows, good social ambience, nice sort of quality, views out the window…. because people don’t change very much, those things remain important.

To provide an extra extension concerning space, a related term “place” shall be mentioned through short definitions and key distinctions between space and place will be demonstrated. According to Grütter, J. K., (2007), space is not predetermined and fixed. It is identified by the elements, such as floor, ceiling, wall, material, surface and
openings. In another aspect, for instance in the phenomenology approach, there are elements included in the characteristics of space: dialectic of inside and outside, centrality, surrounding, territory and range. (Mahmoodinejhad, H. et al, 2009, 282–297). As a matter of fact, spaces have been formed by the place. Place means spatial location, which could be considered to be the result of the interaction among human behaviors, concepts and physical characteristics (ibid.). Place is likewise “space as it presents itself”. Benyon, D. mentioned the components that help identify place, which are: physical setting, activities afforded by the place and the meaning and affect attributed to the place (2014, 31).

As the study space was being explored, Bennett (2005) remarked that a study space can act as, first of all, a place provider offering different choices, ranging from individual to group study that reinforce the essential disciplines for learning (Oysten 2011, 168). Secondly, in a study space’s mix of social and academic functions, studying functions will be favored. Then, space also influences study outcomes by several physical characteristics, such as acoustics, superior lighting, heating and ventilation. Next, it stimulates a sense of community among students. (ibid.). Armstrong (2014, 9) concluded from his research that these elements put an impact on achievement and engagement of students if they are operating appropriately.

Armstrong (2011, 9) mentioned that the New Zealand Curriculum had discovered when the students can study best. It should be the students who initiate studying and find themselves actively involved in decision making. In addition, they collaborate and make connections within and across study space. According to that, to make the greatest of the students’ outcomes, the study spaces in the institutions are expected to enable educators to work cooperatively and anywhere. What’s more is that, students should be encouraged to learn independently in different sizes of groups and in a variety of methods. It is advised for them, likewise, to learn at different paces, simultaneously in one shared space. The important inclusion is that the study space is an ICT-rich environment and users should find it easy to access. Thus, to enhance those into reality, spaces should apply a number of features. To name a few, they should have flexible layouts with different furniture. Internal glazing and moveable walls, or even no walls are also recommendable. Furthermore, the study space should take
into consideration for investing on high quality acoustics, lighting, heating and ventilation, since those are vital elements that could influence the study activities. Besides, it is necessary for the space to be accessible to breakout areas, outdoor learning and social areas. In the meantime, ICT strength within the space is also a plus. (ibid.)

3 Individual study space

Individual study can take place in certain types of spaces. Taking into consideration that based on one’s study habits, the space can affect and bring good results (Landsberger, J., n.d.). For example, if one tends to study better with background noise and in a relaxed atmosphere, a coffee shop could be a stimulating community. As such, there would be no isolated movements to attract one’s attention (Hanna, H. M. et al., n.d.) School’s study lounge can also be convenient especially for studying alone. Or else, living room at home where one could find familiarity with comfortable seating and enough space. In addition, as Landsberger, J. mentioned, library is a premise that offers professional services, a quiet environment, wifi, and what’s more is that the view through the windows. (Landsberger, J., n.d.).

In Oysten’s research (2011, 168), Bennett (2005) reported that the space surrounding influences and is likely to foster the study. Capella University also emphasized that the study space can be an inspiring factor which stimulate one’s concentration and productivity. Two particular elements are concerning lighting and comfort. Essentially, it is significant for the space to have adequate lighting. Explanation for this has covered the fact that extreme lighting such as too dim or too bright is likely to cause a strain on the eyes, which may eventually lead to headache and fatigue. (Capella University , p. 1.). Likewise, concerning comfort, the state of being comfortable happens to be a vital issue to consider when creating a dedicated study space. For instance, a comfortable chair with good back support, or a desk with plenty of legroom. Whether one gets satisfactory on account of the space comfort, they will be productive. Studies have also shown that students who are in the space with such conditions are often well-performed in school. (Godiva, 2013.).

Similarly, as reported by Ramsey, C. and Witter, A. (2010), two key factors regarding how one gets influenced when being in the study space, which are location and at-
mosphere. Firstly, location is considered as an extremely important factor to conclude how successful the study will eventually get. For an effective study outcome, a location that one can get focused the most would be ideal. Options are countless. For example, one’s own room, library, study rooms or quiet lounges in residences or university buildings, empty lecture halls and classrooms, or even a coffee shop. The second factor is about the atmosphere. In this section, three sub elements are listed including lighting, noise distraction and temperature. Concerning lighting, preferences vary. Some prefer bright light in a large space, whereas the soft light of a lamp is usually a priority for some when it comes to lighting. For noise distraction, if one finds the silence most suitable to their study methods, suggestions for the space would be in school’s lounge or library, etc. where minimal interruptions are likely to be found. Otherwise, coffee shops with music background and different movements sound, or home space with TV turned on could be an option. Last, but absolutely not least, temperature remain vital to keep one sustain their study in a considerable amount of time. Low temperatures may feel harsh and distracting. On the other side, high temperatures may cause one to get lethargic. (ibid.)

4 Library

Libraries have a long history of roughly thousands years. One of the first libraries in the whole world was the Alexandria Library founded in the 3rd century BC. (Britannica, 2014)
Figure 1 Alexandria Library, Egypt in the 3rd century B.C. (Newitz, A., 2013)

Figure 2 Library Alexandria today (Egyptian Micro Solutions, 2011)

Figure 3 Interior of the Alexandria today (Frank & Oak, 2014)
In order to be better adapted to the changing conditions, the characteristics of libraries have been modified. In recent years, in the age of technology, modern libraries begun to applied information technology and communication applications to their structures (National Library of Vietnam, n.d.). Today libraries are no longer simply seen as repositories for books. They keep changing, expanding and being redesigned. Modern libraries have progressively provided different services as well as a multitude of media and also made a great effort to approach a more diverse audience. (Edwards, B. and Khan, A., 2009.). Freeman (2005, 3) established a viewpoint:

*The library is the only centralized location where new and emerging information technologies can be combined with traditional knowledge resources in a user-focused, service-rich environment that support today's social and educational patterns of studying, teaching, and research.*

The library has accordingly advanced itself with the concept of being a “third place”, which leads to the background of the current trends in the era of library redevelopment (Bailin, K. 2011, 342). The term “third place” was originated by sociologist Ray Oldenburg in 1989. In his book, he referred to “The great good place” indicating “third place” as any public place that happens to be outside the realms of home and work. Literally, libraries of all types can act as a third place. According to Bailin, K. (2001, 342), Lawsen (2004, 126) was supportive of this concept related to academic libraries:

*They each welcome members of their particular communities regardless of age and economic status and provide them with access to information, services and a responsive, usually safe, environment.*

Furthermore, Littleton and Rethlefsen (2008, 314) stated: “users flock to library buildings and spaces that are attractive, centrally located, technologically current, and arranged to meet the needs of groups as well as solitary users”. In theory, a library takes shape through 4 factors: premise, capital, users and librarians. As such, a library space is about creating and arranging a suitable space as to harmonize with the factors mentioned above. A single change of the factors is influential in changing the library space. (Phan, n.d.). Commonly, in terms of library premises, one tends to assume they
would consist of one or a few buildings with specialized equipment and essential facilities. This remains true until today. After the second half of the 20th century, there appeared another new form of library, which is called the digital library (also known as library without a roof or library without walls). In the past, the concentration in library design is was primarily on functional practices and secure security issues. Today, environmental aspects are being paid more attention to. (ibid.) The green library, also known as sustainable library, is built with environmental concerns in mind. Typically, it is part of the larger green building movement and aids to raise an awareness of environmental concerns through their collections, sustainable and environmentally friendly facilities, and public library programs. (Green library, 2014). During the last decades of the 20th century, people went to the library mainly to read (they are called readers). Nowadays, besides reading, they also utilize the benefits and services in the library. On that account, they are called users.

In general, there are four main types of libraries, which are National, Public, Academic and Professional and Special Libraries (table 1). Each type operates with much variability within the premise. Large scale libraries have a trend to offer a great deal of integration in terms of books and digital media, also to provide a wider range of support services such as computer training, language skills and networking skills. Furthermore, more extensive facilities for non-readers are also made convenient (café, exhibition areas and shop).

<table>
<thead>
<tr>
<th>Main types of library</th>
<th>Key features</th>
</tr>
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<tbody>
<tr>
<td>National Library</td>
<td>-National collections of books, journals, maps etc.</td>
</tr>
<tr>
<td></td>
<td>-Research focused</td>
</tr>
<tr>
<td></td>
<td>-Conservation element</td>
</tr>
<tr>
<td></td>
<td>-Specialist readership</td>
</tr>
<tr>
<td>Public Library</td>
<td>-Collections of books and CDs primarily for loan</td>
</tr>
<tr>
<td></td>
<td>-Place to meet and exchange</td>
</tr>
</tbody>
</table>
| **Academic Library** | - Wide range of material of local interest  
- Community base for local people  
- Study support for teaching and learning  
- Place where new knowledge is generated  
- Large specialist and research collections  
- Large IT areas  
- 24-hour access |
| **Professional and Special Libraries** | - Specialist collection of books and professional journals  
- Often contains rare or fragile non-paper material  
- Limited public access  
- Conservation element |

Table 2 Typical services provided

<table>
<thead>
<tr>
<th><strong>Typical services provided within a public or academic library</strong></th>
</tr>
</thead>
</table>
| - Access to and loan of books  
- Access to journals and newspapers  
- Use of workstations  
- Access to the internet  
- Electronic access to research journals  
- Guidance to sources of information  
- Community learning and visitor support  
- Café and refreshment area |
There are a number of international libraries listed as tourist destinations. For instance, the library of Birmingham, England is listed as one of the 10 most popular domestic attractions. The library was built in 2013 and attracted almost 2,500,000 visitors in 2014 (Gibbons & Brown, 2015).

Figure 4 Diagrammatic section of a modern university library (Brian Edwards)

Figure 5 Library of Birmingham, England (ArtFund, n.d.)
Another example is the Abbey library in St, Gallen, Eastern Switzerland (St. Gallen - Eastern Switzerland/ Liechtenstein). The library itself along with the cathedral constitutes The Abbey, which was declared a UNESCO World Heritage site in 1983.

Whitman, R. John (2008) indicated that the benefits of local library visits would enhance the opportunity to see and engage with the local population at the library, besides viewing its collections, such as works by local authors. “Conversely, a potential
outcome for the library and its community would be to impart to foreign visitors an even deeper and more complete and authentic appreciation” (ibid).

4.1 Roles of libraries

Edwards, B. and Khan, A. (2009) stated that the developing role of the libraries has led to great challenges for delivering library buildings and services. Particularly, towards university campus, the library plays an important part in identifying the core values of the institution and shaping the major spaces.

Students of all academic proficiency levels’ desires to visit the libraries are on the rise. Numerous experiences and essential tools are conjointly offered to them as the competitive edge, which may be helpful for their future references. Additionally, libraries are expected to enable users to advance their study experiences. (Freeman 2005, 17.). In the era of new technologies, libraries upgrade themselves ceaselessly in response to digital libraries and to the study and teaching improvements (ibid., 26). The library plays a significant role in advancing and enriching students’ educational experience.

Also, it can act as a dynamic resource, creating the community of intellectual and scholarly enterprise. According to the higher education and research organization of Québec, it was stated that in the library, various types of resources unite. In consideration of the matter that libraries are well-organized and structures, these resources help form the privileged opportunities to foster the students’ knowledge and competences. (Lecture à l’école, 2015). Furthermore, library aids to support the distinction between studying and socializing, stays in favor of learning function in the space’s mix of academic and social functions, offers ranges of places from individual to group study that meet different needs of students. Plus, libraries stimulate the community sense among students, which makes them felt and be seen as part of that community. (Freeman 2005, 17.). Besides, library can function as a social role. For example, students can gather and take use of the libraries in ways that they would not do if it were the residence hall, classroom or off campus location. On the library arrival, most students would like to feel part of a large community, one that provides with a great
sense of self and high purpose. (Freeman 2005, 5.). Freeman also acknowledged that its library’s function to operate primarily as a constituent and interdependent part of the total educational experiences of the institution (ibid., 6). As a matter of fact, libraries operate to offer users plenty of benefits. People visit libraries can fulfill their information needs from research and work in academic institutions. For instance, beside finding the data, they can get assistance from the expert center and attend extra courses outside of their regular classes. Libraries, what is more, support creative knowledge, dissemination and e-research. (Belder, D. K., 2013.). Zickuhr, K., Rainie, L., and Purcell, K (2013, 28) stated that libraries are valued places for educational purposes as well as for community. Libraries are mentioned as places that offer quietness, comfort and ensure security. Furthermore, they operate as a space for users to become multitaskers and involve in social activities and pleasurable various stimuli. It was emphasized that such suitable study space can help foster and encourage the spirits in students. The ultimate aim is to support students to sustain their engagement with academic tasks (Freeman 2005, 17).

4.2 Users’ perceptions towards their library usage

Although in this digital age, students are more accustomed to online information resources, such as e-books, electronic journals, libraries are still valued as places that have academic ambience surrounding for their work purposes and also as spaces that are for engagements with others. Students expect libraries to be flexible spaces when they visit throughout different cycles of semester. (Webster K. 2010, 11.). Moreover, Freeman (2005) added considerable standpoint regarding libraries’ values. He mentioned that the library can deepen the adventure and excitement of the academic experience, cultivate the community sense and accelerate the institution in the future. Remaining irreplaceable is what his outlook for the future of academic libraries. (9.). Each individual perceives the library in their own way. Julie Andrews, who is an academy award-winning actress, discussed in the National Library Week about the value of libraries.

_I do remember the joy of going to the library and finding just the book I was looking for. Library for was a place of peace and joy and such a new world of adventure opened up for me when I took a book out of my local_
In addition, Sullivan, D., a former principal of Charleston Catholic High school, emphasized the significances of libraries by sharing her opinions.

"Library is where people from all backgrounds have access to education, enrichment and entertainment. Each of us can borrow and other materials for free. There are craft classes and reading discussion groups, family film nights, special team events and meet-the-author opportunities. Our libraries hold seminars and topics general interests, sponsor book clubs and sales, and offer reading contests for all ages. They provide internet for young and old, ensuring no one is left behind in this digital age. Libraries connect us to a better world, filled with infinite possibilities. We all benefit from a well-educated public." (Loving My Library WV, 2014.)

### 4.3 Impacts of Finnish’s libraries

Owing to the matter that the case study is a library in Finland, a little comprehension about the impacts of Finnish libraries will be taken into consideration. The aim of this part is to show how Finnish libraries have been playing their roles towards domestic users. In particular, the library aims at bringing people together and functioning as a busy premise for cultural activities and learning whereas provoking pride and imagination. (Library Spaces Evoke Imagination, 2012).

Seppänen, A. (2012) stated that since the structure of higher education institutions in Finland has gotten tremendous achievements during the past couple of years, which resulted in the organizational development of the libraries. In 2010, a new group called joint libraries was formed by merging the libraries of universities, universities of applied sciences and those of research institutes. The objectives foreseen to be accomplished from the mergence are that the units are functionally stronger and attain better preconditions, so that they would have the ability to enhance the high level of
quality and effectiveness in terms of internationality. A few samples of libraries’ statistics and results of national customer survey were presented to show the significance of libraries domestically in the years 2008 and 2010. There were 13,484 respondents from public libraries and 19,325 from the libraries of institutions of the higher education. The outcomes of the questionnaire were to indicate that, firstly, libraries improved quality of life; plus, they helped make the study and research more effective. (socio-cultural context Finland as one of the biggest reading nations cooperatively)

![Diagram showing improvement in quality of work, studying, and life](image)

**Figure 8** Library services have improved the quality of work, studying, other operations and life

As can be seen from the figure 8 with scale 1 equals to “not at all” and 3 equals to “substantially”, the results reveal a strong signal that libraries usage makes the quality of work, study and life become better. Second of all, customers found the services at libraries satisfactory. The scale below from 1 to 5 indicates as 1 = very poorly and 5 = very well.
Thirdly, library expense is connected with the GDP. The growth in library expenses has been following the growth of GDP; hence, libraries’ share of the economy growth has been accordingly shared (Figure 10).

At last, however, library visits were changing from physical to virtual. A gradual decline from 2002-2011 in physical visits is displayed in figure 11. (ibid.). Based on this reality, the thesis is also implied to help the case library, which belongs to a university of applied sciences, to sustain its physical visits and have them risen.
In addition, to gain different perspectives on the development of Finnish libraries, the following information will be specified. Starting from the year 2012, the City of Helsinki commenced the open international architectural competition in terms of the design for a Central Library. The competition consists of 2 stages and aims at the contemporary library design. The purpose is to create a vibrant and functionally versatile meeting place, as well as energy-efficient and architecturally significant building. Taking the combination of personal cultivation, culture and entertainment into account, the Central library will be vibrant and functionally versatile meeting place, a house of literature in which, importantly, the segmentation is the users. Additionally, it will be comprised of physical spaces, technology, library collections, staff, cooperation partners and clients. There are certain characteristics that the designers should adhere to. For instance, the library building will be nearly zero-energy building, high-quality, eco-efficient and timeless. Then, it should bring out a functionally high-quality and technically and spatially flexible framework for cutting-edge and adaptable library operations. The competition is part of the World Design Capital Helsinki 2012 program and is at the international level, which targets as a selection procedure in the procurement of a designer for the building (architectural design and expert in energy technology). (Keskustakirjasto, n.d.). Berndtson, M. (n.d.) reported that the City of Helsinki is actively working so that the Central Library could be completed in the year 2017 which is Finland’s 100th anniversary of independence.
Figure 12 is the entry “The Heartbeat of Helsinki” by Henning Larsen Architects, which was awarded as the Honourable Mention.

Figure 12 “The Heartbeat of Helsinki”

### 4.4 Library space

Walton (2006, 4) stated that study space is likewise a factor that attracts visitors to the library. Sinikara (2012) mentioned that the library, simultaneously, offers both shared and private experiences. Users are different, in terms of academic demands. As a result, different spaces to better meet their needs are essential. Walton (2006, 4), in like manner, shared the same point of view that provision for different customized spaces are in high demand. In pedagogy aspect, students’ needs are also changing. Sinikara continued by categorizing the spaces such as ones for quiet and noisy work, private time, interaction, using digital and for printed material. Plus, the library itself also performs as a space for experiences and aesthetics, which assists to elevate the spirit of creativity as well as enjoyment. Furthermore, the library helps users to feel like home. (2012.). Wakaruk (2009, 16) declared that in order to adapt better, the library should concentrate on creating spaces that are as democratic, responsive and meaningful as possible.
A large number of libraries are transforming their spaces into new environments so that they can support the changing needs of the students. The key design concepts include a good layout, flexible and configurable study spaces, one information/service desk centered in an information/learning commons, extended hours, a library café, and a connection to the broader campus community. (ibid.) Another key concept is that the library should be a self-organizing place so that it can flexibly meet changing space needs (Freeman 2005, 4). Also, Edwards, B. and Khan, A. (2009) listed certain key design characteristics of libraries (Table 3)

Table 3 Key design characteristics (Edwards, B. and Khan, A., 2009)

<table>
<thead>
<tr>
<th>Key design characteristics of libraries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visible, recognizable and legible as a type</td>
</tr>
<tr>
<td>Adaptable to new information technology and physically extendable</td>
</tr>
<tr>
<td>Comfortable and disabled friendly</td>
</tr>
<tr>
<td>Inviting, safe and secure for users</td>
</tr>
<tr>
<td>Protection and security of the collection</td>
</tr>
</tbody>
</table>

Bailin, K. (2013) reviewed a university library’s survey, in which he mentioned that regarding the spatial design, the students’ most positive responses had concerned the flexibility of the library space, different areas for different needs, seat and signs. Other perspectives regarding the library environment quoted by Bailin, K. were from Littleton and Rethlefsen (2008), Opperman and Jamison (2008) and Shill and Tonner (2004). Users generally find the library building and spaces inside attractive owing to the features that it is centrally located, technologically current and adjustable to meet the demands of solitary visitors and groups. Libraries would gain more attention by their either new or renovated facility. It was also speculated that as students would make less use of the library facilities and the spaces if they were outdated and uncomfortable. Students value direct interaction with each other in a physical space. Lomas and Oblinger (2006) identified five characteristics which should be taken into ac-
count when renovating or designing the learning spaces. They are digital, mobile, independent, social and participatory. (343-344.)

Though some students prefer using new technologies, a remarkable majority of them still consider a traditional reading space more enjoyable, Demas (2005, 25) investigated the most popular types of users found at the libraries. These types were identified: reading and relaxing in a quiet area, individual study and group study. Others visit the libraries to get their e-mails checked and make use of the Internet, have a quick search for their assignments and projects and attend extra classes. Nevertheless, some come to the libraries for “non-library” reasons. For instance, they meet each other and socialize after school, participate in cultural events, take a tour around, visit exhibitions held in the libraries or simply have fun. (ibid.). Although there are separate areas for different types of users, self-management of the space is still considered to be an important factor, so that students will find it easier to comprehend which spaces are for group activities and which for solitary usages. (Bailin 2013d, 349).

4.5 Interior design

It was concluded by Edwards, B. and Khan, A. (2009) that demands for high technology and characteristics of multimedia result in separate zones being allocated for each. Generally, there is usually a zone equipped with computers, an area for journal or newspapers readers, library book stacks and a zone where desks and perhaps special study carrels could be placed. The separate zones may be distinctive functional areas but they are generally linked by connecting spaces. Such arrangement allows one area to carry out a different policy in terms of noise or security than another. Furthermore, internal change is permitted without disruption to the whole premise, and it also creates opportunities for different users to employ the library resources in different ways. Two key factors regarding the interior design are technical and aesthetic (table 5).
Table 4 Key factors to consider in interior design (Edwards, B. and Khan, A., 2009)

<table>
<thead>
<tr>
<th>Key factors to consider in interior design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical</strong></td>
</tr>
<tr>
<td>- are the floor loadings adequate for the collection</td>
</tr>
<tr>
<td>- is the writing layout suitable for future IT needs</td>
</tr>
<tr>
<td>- are the environmental conditions acceptable for the planned use</td>
</tr>
<tr>
<td>- is the collection secure from the fire or theft</td>
</tr>
<tr>
<td><strong>Aesthetic</strong></td>
</tr>
<tr>
<td>- is the building welcoming as well as functional</td>
</tr>
<tr>
<td>- are the routes and major spaces legible to the user</td>
</tr>
<tr>
<td>- is there space for reflection</td>
</tr>
<tr>
<td>- do readers have good access to daylight and views</td>
</tr>
</tbody>
</table>

Zoning the library without using fixed walls gives obvious flexibility. An option to consider when demarcating territory is to use the book stacks. They provide the basis for zoning areas into functional parts. The stacks are explained to provide acoustic protection and have significant environmental qualities (thermal mass provision). Vitally, they help to define routes through the library. Shelving is likewise essential since it adds to the smooth operation of a library. It is necessary to pay attention to where it should be located, as there are fixed parts such as columns, lifts, stairs, walls and doors. (Edwards, B. and Khan, A., 2009.).
5 Individual study space in library

The library is a building type where users often spend a great deal of time in private contemplation. For many students the bulk of their private study time is spent in libraries. (Edwards, B. and Khan, A., 2009.).

Since most of the individuals tend to prefer almost silent area so demand for individual study space is rather high. Also, restricting silence to certain special areas not only benefits the individual study, but also allows the remainder to become a place for sharing and jointly pursuing knowledge.

5.1 Space for individual study

Demas (2002, 29) valued the unique pleasure of being alone in a quiet place as one of the powerful attractions of libraries. A number of institutions make available private rooms for individual study, which those rooms are required to be booked in advance. The rooms can either be equipped with PCs in each, or basic IT facilities, such as wireless network access. The University of East Anglia, UK is an example. They allow students to book individual study rooms up to 7 days beforehand. Bookings are available for 4 time slots: 08.00-12.00; 12.00-16.00; 16.00-20.00 and 20.00-23.50. Only one slot may booked in advance per day. (Individual Study Rooms (bookable)).

Moreover, regarding individual study space, it has been operated that there could be both quiet and silent study areas. In some library premises, these areas are separated. For instance, quiet study area is located on one floor and silent study area on another floor. Hence, what is actually the main difference between the two? As a matter of fact, quiet study area allows whispered conversation only, which means no loud group meetings or phone/skype talks. And in silent study area, no noise (no talking, nothing) is permitted. The library of Northeastern University, USA also carries out these types of spaces and supports students with individual study purposes by providing the service “Text-the-library”. It indicates that students who take use of these spaces can e.g. simply ask a question concerning library use in general, or report a disturbance by sending a text message
at 66746, beginning the message with the word “husky” and then the message content including the exact location. The message will go to the librarians and the Help Desk. (Quiet & Silent Study Areas, 2015.). As a result, noise zoning becomes vital when it comes to separate zones. Figure 13 below will provide deeper insights on the gradation of tolerated noise in a typical academic library.

Figure 13 Noise zoning in a typical academic library (Edwards, B.)

5.2 Facilities for individual study

According to Webster, Jordan and Ziebell (2010, 10), students stay most of the time in the library to use silent spaces for study as well as computers. Webster continued by researching that those who come to the library for individual work prefer being in a sound-proof space with lockable facilities. Hence, students can store their own belongings, such as computers and study materials, etc., when they take a break. During busy periods like coming examinations, the number of students visits the library would rise. That is to say, space for individual study is demanding. (Webster K. 2010, 11). Furniture and partitions can be set up to facilitate individual work areas. The wall is one side, also network and power services are delivered from the channel mounted on this wall. In addition, moveable furniture such as shelves or tables with wheels are most highly valued in terms of easy mobility (Adamson & Bennett 2002, 438 – 440.).
In addition, individual study carrels were proven to be relatively sound proof. (Walton 2006, 7). Carrels are formed with a desk and a chair with lockers attached. In Harvard College, libraries place carrels on different levels within the premises and carrels are available on a first-come basis (President and fellows of Harvard College, 2015).

Figure 14 Carrels in Cabot Science Library in Harvard College (President and fellows of Harvard College, 2015).

Another example who applies the study carrels effectively is The College of Wooster that also has the culture of independent. (Demas 2003, 29). Students are obliged to make a request if they intend to use the carrels due to the limited number of them. (IS Carrel Application, 2012). However, some stated that carrels might not recommendable for individual purpose, since they do not provide good enough lighting (Bennett 2003, 17). It is rather individually dependable since some students tend to get more concentrating in complete silence, while some find themselves flexible to study with the buzz of background noise.

According to the research of Edwards, B and Khan, A (2009), whether individual is at tables or alone, it would require 2.5 m² per capita. The number would change to 3m² for a study carrel and 3-4 m² for a lounge chair. Thus, the useful average would be 3m² individual. Regarding library space for individual study, considerable inquiries are expected when analyzing the library
space in terms of facilities. Bourke, C. (2010, 101) reflected a number of questions as below.

1. *Can more study tables and or carrels be included in the existing space?*
2. *Can furniture and or shelving be moved or replaced to provide a more welcoming space?*
3. *Are there sufficient spaces with power points for laptop users?*
4. *Is there a reasonable number of internet enabled pcs for research and study as well as leisure use?* (ibid.)

Certain elements also put an impact on improving individual study space in the library. Steelcase affirmed that lighting and thermal comfort both influence such a high-quality environment for exceptional physical comfort (2009, 191). Lighting is vital not only for physical comfort but also for emotional well-being. Additionally, hidden light sources and dynamic contrasts of light and shade make a contribution to evoking moods and feelings throughout the space. (ibid.). Western Governors University (The Night Owl Blog, 2012) remarked that adequate and appropriate lighting is a must for a successful studying. A suggestion for lighting improvement is Shielded full-spectrum fluorescent lights. As they are said to help one become calmer, steadier and less distracted. Alternatively, natural light if it is clear and bright outside and one is sitting by large open window is considerably a splendid factor. Concerning the thermal comfort, it is advised to be set on constant level. Since whether one stays in a hot or humid place for a while, the situation can get unbearable. In like manner, if one gets too cold, that would be all he/she could have in mind. And such factor make the studying become suffering. (ibid.). Moreover, Steelcase also mentioned that the heating and ventilation system with antibacterial and ecological qualities aid boost the health and comfort (2009, 191).

### 5.3 Exemplifications

This part is going to present three examples of an individual study space on library premises around the world. First of all, being home to 11 library premises, Duke Uni-
University, USA offers the patrons a wide range of different space usages. Individual study space is one of the highlights of the libraries. As mentioned above, certain individuals stay better concentrated without any background noise. On the first level of the Perkins library, individuals, beside groups, can visit an open space equipped with large tables and floor-to-ceiling windows. In the second level stairwell entrance to the library, armchairs are placed in a comfortable environment, which makes an ideal space for both individual study and relaxing purposes.

Figure 15 Perkins Library (Duke University Libraries)

In the Lilly library, the basement accommodates 22 study carrels. Each is equipped with electric outlets and lighting. These provide a quiet and private space for individual study and are available on the first-come basis.

Figure 16 Lilly library – study carrels (Duke University Libraries)
Furthermore, in Texas Connection, the connecting hallway between 2 libraries offers seating for individual study and a scenic view of the campus from through wall-to-wall windows.

![Figure 17 The connecting hallway (Duke University Libraries)](image)

The second example is the main library of Chinese University of Hong Kong, which was introduced by Kelly, T. (2012). The library offers specific spaces for individuals. An open space with armchairs and rows of tables equipped with computers.

![Figure 18 Main library of Chinese University of Hong Kong (Kelly, 2012)](image)
Furthermore, study rooms with glazed partitions are also at the patrons’ disposal.

Additionally, apart from the open study areas, plenty of individual study areas are available throughout the library.
The space requires silence, so that it is suitable for those who concentrate best in a noiseless environment.

The third instance is the library of the International Space University in France. The library offers spaces, which are functional, efficient and accessible for users with different physical abilities, while paying great attention to environmental issues such as lighting. Regarding the zones for individual study purposes, there are quiet and silent zones for patrons to choose from. For the quiet zone, beside sofas and bean bags for reading and quiet discussion, individuals can find study tables with electric outlets and wireless connections. One should pay extra attention to the regulations in the area. For example, conversations should be in a low voice, cell-phone use with respect to other library users. Food and beverage are not permitted, except for drinks in closed bottles. (International Space University)

![Figure 21 Quiet zone (International Space University)](image)

Concerning the silent zone, individual tables and carrels are available with computers and laptops, electric outlets and wireless, plus a TV screen and a DVD player. One should notice that conversation is not permitted, cell-phones are on silent mode and no food and drink in the area. (International Space University.)
In short, one of the emphases regarding individual study spaces was the study carrel. In the Sterling library of Yale University in the UK, several policies are created so that the carrels are ensured to be well-used. Students can reserve the carrels, which is rewarded on the first-come, first-served basis. Reservations can be made by e-mail to the librarians or at the library office during business hours. At the Sterling library, carrels are mainly for patrons who do active research, as an alternative to carrying home loads of books and materials. For active carrel users, an e-mail will be sent to the users notice before the subscriptions end, allowing them to renew their subscriptions for another term. Books that users requested on the online library catalog will be directly delivered to their carrels within 2 business days. They also have access to a list of all the items which are stored in their carrel. The carrels are meant to store library materials, so if there is any personal belongings found or the carrels are not used for its intended purposes, users will be asked to give them up. (Yale University, 2015.).

Figure 22 Silent zone (International Space University)
There are 2 broad types of research methodologies, which are qualitative and quantitative research methods. To put it simply, words are used in the former to describe the results and in the latter numbers are used (Berry, J., 2005). Qualitative method is designed to gain an understanding, provide insights into the problem or have ideas developed. Moreover, qualitative method also helps to dive into the problem deeper. Normally, sampling size is rather small, and respondents are provided with fulfilled quota. (Wyse, E. S., 2011). Meanwhile, the definition of quantitative research method cited from Aliaga and Gunderson (2000) in a book chapter called “Introduction to quantitative research” was that: “Explaining phenomena by collecting numerical data that are analysed using mathematically based methods (in particular statistics)” (Introduction to quantitative research, 2010). Dr. Hohmann, U. (originally prepared by Berry, J. 2005) also reported that quantitative research method was developed in order to have natural phenomena studied. From the Marketing Donut site of the United Kingdom, it was emphasized that quantitative research performs as a measure of

6 Research implementation

Figure 23 Study carrel in Yale University library
(Yale University, 2015)
what and how many people would think or react in some circumstance and utilize statistical analysis to figure out the results (Sheldon, R., n.d.).

### 6.1 Quantitative research method

The research objective was to improve the individual study space within JAMK Main library, taking into account of users’ preferences as important references. Paying high attention to their demands, testing to verify what they think about the current situations in terms of space and furniture at the main library. Then, it is to examine how suitably the theories from secondary data can apply to their expectations. In consequence, quantitative method was chosen. Certain factors influenced this choosing are, first of all, Wyse, E. S. (2011) mentioned that quantitative method quantifies the problem by generating numerical data. It is a method to quantify responses, opinions and other defined variables. The results are generalized from a large pool of sample population. This detail is significant as the essence is to study how the respondents would react if those changes were practically implemented. Second of all, compared to qualitative method, the data collection from quantitative was stated to be considerably more structured. Furthermore, the data is also reported to turn out to be more objective and provide more accurate information. (ibid.). Besides, quantitative research is seen as a method to get to know people’s opinions structurally, in which hard facts and useful statistics are released to guide the researcher. By this way, such method was declared to be practical in improving one’s products and services. (What is quantitative research?, n.d.)

### 6.2 Survey

Quantitative research method includes various techniques to implement, e.g. surveys, laboratory experiments, formal methods such as econometrics and numerical methods such as mathematical modelling (Berry, J., 2005). Among those techniques, the author decided to conduct a survey on account of the following factors. According to National Science Foundation in the United States, (2002), surveys are considered to be a remarkably popular form of data collection. Importantly, when descriptive information from large groups is needed to be gathered, standardization plays a major
role. Surveys are also determined to be good tools to obtain information on a wide range of topics where there is little necessary in gaining in-depth probing of responses. There are multiple ways to construct surveys, yet only two components that can always occur: questions and responses. Despite the fact that quantitative method is, at times, found to be less accurate and valid since the respondents may not fully understand the questions and their recall of the question content is sometimes faulty. To prevent from these anticipated consequences, the author prepared the survey using unambiguous and least complicated words, which ensures that all the targeted respondents would make as little effort as possible to comprehend. (ibid.)

6.3 Sampling techniques

As the purpose of the survey is to gain information in students’ perspectives about individual study space and furniture improvements, it is at its best to have the survey distribution aiming at respondents who are currently studying at JAMK University of Applied Science (to which the case library belongs). The questionnaire was mostly sent through social media (groups of JAMK exchange and degree students on Facebook). Besides, mails containing the surveys to students’ groups via the institution’s Outlook system were also delivered. This was considered to be a suitable way to best gain the results as it can reach a large number of respondents who are entitled as the institution’s students.

To collect data, sampling and self-selection techniques were applied. In terms of sampling, convenience sampling was defined as the process in which the researcher uses the subjects that are available to take part in the study. (Crossman, A., n.d.) Convenience sampling was implemented owing to its accessibility, ease, speed and cost effectiveness (Cited by Cohen, D. & Crabtree, B., 2006). Self-selection sampling was likewise used in the quantitative component of the thesis. This technique is executed in 2 steps: (1) publicizing the survey purposes and (2) checking how relevant the future respondents are so as to invite or reject them. Self-selection sampling is beneficial in this case since it helps to increase the response rate. (Public Voice, 2014). There are two requirements that the author aimed at the respondents. First thing is that they have to be students at JAMK (irrespective of degree or exchange students). Secondly,
those people must be currently studying at JAMK so that the answers’ reliability about current main library can be ensured. Therefore, the combination of convenience and self-selection sampling techniques to execute the data for the quantitative method is considered to be appropriate.

The questionnaire was created on Webropol, the online survey and analysis system, which was selected by JAMK University of Applied Sciences for survey development. The survey was open for one week. The time frame resulted in obtaining 70 respondents, in which there were 55 degree and 15 exchange students participating.

### 6.4 Data analysis

The definition of data analysis via Business Dictionary (n.d.) is:

> The process of evaluating data using analytical and logical reasoning to examine each component of the data provided. This form of analysis is just one of the many steps that must be completed when conducting a research experiment. Data from various sources is gathered, reviewed, and then analyzed to form some sort of finding or conclusion.

Analyzing the data in a proper way will lead to obtaining the most from it and hence, aiding to make the right decisions. (ibid.) The data analysis procedure can be divided into two types: descriptive and inferential analysis. A descriptive analysis is a way to describe, show or summarize the basic features in the collected data. (Laerd Statistics, n.d.). An inferential analysis enables the researcher to make inferences about the population or the hypothesis. This type is valuable when it is inconvenient or not possible to investigate each individual or the entire population (Anglim, J., 2013). Regarding the thesis case, an inferential analysis was chosen as part of JAMK students participated in the survey, and the survey description will lead to some conclusions and suggestions, partly based on the theoretical background.
7 Results

The results were categorized into 4 components: background of respondents, current situations in JAMK main library, possible improvements in terms of furniture & related objects and recommendations by respondents.

7.1 Background of respondents

All the respondents were selected among those currently following the program at JAMK. As such, their perspectives towards the research problem could be ensured to have a certain level of authenticity and reliability. The survey was responded by 70 students, in which there were 15 exchange and 55 degree students. (Figure 24)

Figure 24 The number of degree and exchange students participated in the survey

Figure 25 shows that there was seemingly a balanced number of students regarding their academic year. The numbers of the participating first, second and last year students were 14, 15, 20 and 21 respectively. This point might be able to enhance the issue in different aspects, as some may visit the JAMK main library for their first times, some may have experienced the library during their previous academic year(s).
Figure 24 Which academic year are you?

Concerning the frequency of the visits by percentage, there is was a majority of the respondents who went to the main library once or twice per week (43%), which was followed by the group with 3-4 visits per week (31%) (Figure 26). Thus, almost all the respondents have adequate experiences of the main library, which implied that the information was provided in a more valid way.

Figure 25 How often do you visit the main library?
An individual can use the library for different purposes. When asked about the reasons for visiting the main library, as one could select many options, the findings showed that the visits for individual study were almost twice the number of those group works (approximately 68% and 35%). Borrowing books/study materials and using library facilities took the lead with about 72% of students per each reason. Besides, a large proportion of respondents valued the quiet atmosphere in the main library as nearly 45% of them visited the library to read. Also, there is a smaller part went to the main library as non-library users, which indicated them taking a rest between or before classes (27%). Another related reason which made up a minority (almost 6%) is catching with friends in the library (Figure 27).

![Chart showing reasons for using the main library]

**Figure 26 What are your reason(s) for using the main library?**

Regarding those whose purpose was individual study (68%), more than half of them (53%) visited the library once or twice per week and 21% more than 3-4 times per week. (Figure 28)
7.2 Current situations

The survey also had the participants to rate their disagree-to-agree level on certain aspects concerning the current situations in JAMK Main library, i.e. the comfort of tables and chairs in different areas and the availability of some appliances in the library, e.g. electrical outlets and installed computers/laptops. Starting from downstairs where there were tables and chairs, 41% of people agree as finding these furniture very comfortable when staying for long hours, while 7% agreed stronger. There is also a considerable part that did not have strongly biased opinion (40% Neutral). However, 11% were not comfortable for the concerned matter. (Figure 29)
Figure 28 The tables and chairs downstairs in the main library are very comfortable when staying for long hours

Another area where tables equipped with laptops is upstairs. Though a remarkable amount of responses (34 %) that they found comfortable when staying for long hours with 10 % strongly agreed, still 36 % were neutral. More importantly, compared to the area downstairs mentioned above, more respondents disagreed (19%) and also strongly disagreed (1%) with the argument that those furniture were comfortable.
As stated in the literature review, the atmosphere and level of comfort in a certain amount of time can lead to how concentrating and effective one can get. Most of the respondents (43 %) agreed and 10 % strongly agreed with that statement. Meanwhile, 20 % found the statement not convincing. (Figure 31)

Figure 29 The tables and chairs upstairs in the main library are very comfortable when staying for long hours

Figure 30 The atmosphere and furniture (tables, chairs, couches) in the library help me get very concentrated and study effectively
The theory background added electrical outlets as important part in a library. Many of the responses found it more convenient if there were more of those in the JAMK main library (36 % agree and 31 % strongly agree). Also, 10 % disagreed with the suggestion.

Figure 31 It would be more convenient if there were more electrical outlets in the library.

Concerning the number of laptops/computers for users, most of the students found it essential to have more of those (39 % strongly agreed and 37 % agreed). Also, 10 % thought there was no need by rating disagree.
Figure 32 I think there is a lack of computers/ laptops for users in the main library

Regarding lighting in the main library, it was divided into 2 aspects: lighting amount and lighting brightness. In both, the largest part rated as normal, while a little more than 10 % of users shared that there was a lack of lighting in terms of its amount; plus, the brightness was rated as dim (less than 10%) and bright (more than Normal: less than 10 %). Remarkably, the open text revealed the specific area for those characteristics was the space upstairs. (Figure 34 & 35)

*The space upstairs where there are rows of tables with laptops, especially in the wintertime when the daytime is much shorter.” (lack of lighting)*

*The space upstairs (lack of lighting)*

*Upstairs if the weather is poor (dim)*

*Computer areas (bright)*

There was also a suggestion referring to this issue:

*I think adaptive lighting would be a massive improvement.*
Concerning the temperature, more than 80% thought it was normal. A minority rated as warm and the other as cold. (Figure 36)
Now that the author wanted to make the feedback on these issues more credible, filtering users on weekly basis (once or twice and three to four times per week) was executed.

Figure 36 The number of students visited JAMK Main library once or twice and more than 3-4 times per week

Figure 37 shows that there was a total of 52 students who visited the main library weekly (n=22+30=52), in which 30 of them had one or two visits and 22 more than 3 times per week.
Figure 37 The tables and chairs downstairs in the main library are very comfortable when staying for long hours (applied for visitors on weekly basis)

Most of respondents found the comfort in the tables and chairs in the area downstairs (figure 38: n= 11+14 =25). However, in the area upstairs, there was an equal number of students disagreed with the statement that the furniture was comfortable (figure 39), which led to the decrease in those who found them comfortable (n=6+10=16)
Figure 38 The tables and chairs upstairs in the main library are very comfortable when staying for long hours (applied for visitors on weekly basis).

Figure 39 The atmosphere and furniture (tables, chairs, couches) in the library help me get very concentrated and study effectively (applied for visitors on weekly basis).

A majority of users agreed that the atmosphere and the furniture supported their concentration and effective study (figure 41: n= 10+15= 25).
Figure 40 It would be more convenient if there were more electrical outlets in the library. (applied for visitors on weekly basis)

Figure 41 reveals the large proportion of frequent users (n = 8+10 = 18) thought it was necessary to have more electrical outlets in the library. Also, the largest number of frequent users (out of 52) rated from "agree" to "strongly agree" that they believed the number of computers/ laptops at the time being was insufficient. (figure 42: n= 8+10+8+14 =40).
I think there is a lack of computers/laptops for users in the main library (applied for visitors on weekly basis).

Otherwise, the matters regarding the lighting and temperature, these types of users (weekly library visit) were mostly considered as “normal” (figures 43, 44 & 45).

Figure 42 Lighting amount
Figure 43 Lighting brightness

Figure 44 Temperature
7.3 Possible improvements in terms of furniture and related objects

The theoretical background suggested specialized furniture for individual study. For instance, shared tables and study carrels with or without installed computers/ laptops, armchairs, bean bags and lamps. To ensure each respondent comprehended what the furniture or object is like, each option, in the questionnaire design, was enclosed with a picture. The furniture (shared tables and separate carrel) with installed computers/ laptops was more favorable than that without installed computers/ laptops. More than 60 % chose to have computers/ laptops on a separate study carrel, followed by almost 40 % without computers on the carrel. Shared tables with installed computers/ laptops were also in favor by almost 45 % of students, followed by more than 25 % without computers on the shared tables. Armchairs, a lamp per individual or two bean bags were also mentioned as supporting individual study purposes, with almost 40 %, almost 35 % and more than 25 % of respondents choosing respectively. (Figure 46).

![Figure 45](image-url)

Figure 45 When it comes to individual study, what types of furniture and objects listed below would you think are necessary? You can choose more than 1 option.
Apart from this, a comment stated that:

*I really think the library needs to maximize the study floor space, even be remodeled.*

Figure 46 In which type of environment would you get most concentrated?

According to figure 47, there were 43 out of 70 respondents considering most concentrated when there is complete silence. The rest preferred some background noise, such as keyboard tapping or people talking. Some also got along with the ideas of "slow calm music", or "as long as people are not just disturbing people on purpose", "if these people are not too loud is better than total silence".

Almost at the end of the survey, the author got votes from the respondents about how supportive they were if the main library invested in improving the space for only individual study purposes. Figure 48 shows that the proposal received 50 votes out of 70 in terms of (strong) agreeance (n = 32 + 18)
As many of international libraries, which have a number of floors and large space, carry out different spaces within their library, such as group study and individual study. And since our JAMK main library is limited in terms of space, would you be supportive of the idea that...

Another aspect was that among those 50 students mentioned above, there were almost ¾ of them who would rather be in “complete silence” atmosphere encouraging JAMK to improve the space for individual study purposes. This point will be further dealt with in the Discussion part.

The number of people who preferred “complete silence” background supported for investing on individual study space (n= 21 + 13 = 34)
7.4 Recommendations by respondents

Remarkably, the idea of library improvement was received quite a certain number of concerns. The question was: “In your opinion, what could be improved in terms of space and furniture in the main library? Also, please feel free to share if you might have follow-up comments from the questions above.”. Total respondents were 36 and many of them shared the same idea.

Based on the common features of some comments, the open text was categorized into 3 sections: shortage of computers, space expansion & furniture addition and other thoughts & recommendations.

7.4.1 Shortage of computers

Almost 20 students claimed that it would be better if there were more computers. Some mentioned as they needed the computers, besides for study, also for printing and scanning purposes.

More tables for individual learning

Sometimes all computers are taken and I have to go home for studying.

It would be better if there would have more computer when we need to print and also another printer. There is often lots of people at the same time.

Some of them emphasized a detail from the literature review, which were shared tables with installed computers.

More computers, the working spaces can be group tables like now, just more of those.

Respondents also commented on the technical issues of the computers, printer and scanner.

Some of the computer take long booting time.

Sometimes there is a problem with printing and scanning.
The laptops in the loft are slow, and many times I’ve been scared that they would crash.

7.4.2 Space expansion and furniture addition

Many declared that the current space for individual study was insufficient. 7 people said that more spaces would be better.

I think that there should be more space for self-study.

More room needed, it’s always too crowded.

A minor part suggested having extra space for group work in addition to that for individual.

The library should have separate spaces for group working.

Maybe more specific areas for groups, where they can discuss and make noise and then there should be a place where you can work in complete silence and focus.

More space they could create open space for people to hold their group discussion.

Likewise, the addition of furniture concerning tables and chairs was requested.

More tables and chairs would be beneficial.

More chairs, space would be better.

More tables for individual learning. I think it would be better to expand the library in terms of space.

7.4.3 Other thoughts and recommendation

Students’ thoughts about some current factors in JAMK main library and their recommendations were summarized in figures 50 & 51.
Figure 49 Students’ thoughts

- I think spaces should be more accurate and divided. Now for example the voices downstairs can all be heard upstairs, where is supposed to be quiet, individual study.
- I prefer the Main Library rather than the Lubokko library because it is more individual study-friendly.
- It would be perfect if the individual study space on the second floor is placed in a separate room where noise and chit chat are completely banned!
- No talking upstairs
- In terms of furniture I think it is a bit crowded, and during particular times of the day it is hard to find spots if you want to use the library for your group meetings.

Figure 50 Students’ recommendations

- I think it could be interesting to have a small room with chairs and table (without computers) to study individually or in small groups.
- More opening hours
- Filling up the space on the second floor (above the shelves in the ground floor)
- JAWF can construct another floor!
- The chairs may be equipped with mattress!
- Separate the couch at the back of the main library to some other areas with the computer desks areas. Sometimes people gather there to gossip rather than study.
- In my opinion they could at least modify the seats to enable someone study for a long time without getting numb!
8 Discussion and recommendations

The research question was: “How to improve the space for individual study in JAMK main library that can meet the preferences of users?” The highlights of the literature review comprised of the characteristics of study space in general and how they impact on users, what makes individual study space and interior design in terms of typical space and facilities for particularly individual study. A questionnaire was delivered to current students at JAMK and received 70 participations from 55 degree and 15 exchange students. Convenience and self-selection sampling techniques were employed to execute the data. Afterwards the author utilized inferential analysis to interpret the collected data.

The findings showed that, besides borrowing books and taking use of main library’s facilities, e.g. printer or scanner, studying individually was ranked in one of the second places in terms of reason for visiting JAMK main library. This implied that the survey participants might have had some concerns towards the research topic; hence, their opinions in the results could be highly considerable. Concerning what students thought about the current situations at JAMK main library, it appeared that although there was a small number of students being not comfortable with the current furniture (tables and chairs), a larger part was comfortable and enjoyed the atmosphere as it encouraged them to study effectively. To the same extent, a few respondents suggested that to improve the comfort when one stays for long time in the library, the chairs could be modified in some way, e.g. with mattress. Most importantly, the majority of users reckoned that the number of computers/ laptops in JAMK main library was insufficient and they also expected to have more electrical outlets within the place. Currently, there are 30 computers and laptops in the main library, which the result implied that for more than once, the number of visitors exceeded that of the computers in the library. This could perhaps be the influential factor for some people to bring their own laptops when they want to find a spot to study inside the premise. Thus, the need for extra electrical outlets can be understandable. Concerning the temperature and lighting elements, they were mostly regarded as in normal condition. With respect to the students’ preferences in terms of furniture for individual study, it occurred that many of them preferred those
which had computers/ laptops installed. Taking the lead in the ranking was separate study carrel with installed computers/ laptops, followed by shared tables also with installed computers/ laptops. Remarkably, as mentioned earlier that for most students, individual study was the reason for their library visit. This might have turned out to the plurality that supported JAMK main library to improve the space for particularly individual study purposes. Among those who were in favour of this support, a large part of them chose complete silence over background noise when it came to their ideal study environment. This could be inferred that their preferred individual study space would be situated separately from other areas, such as groupwork space if there is one. Couple of students also suggested JAMK to construct another floor or fill up the space above the book shelves, so that the space upstairs can be expanded. As such, there will be more space to place additional computers and furniture as demanded. Since students left feedback that people discussed in this space which was supposed to be quiet, and also the noise travelled from downstairs, this space should be considered to be soundproofing and clearly indicated for a certain usage, e.g. quiet study. An alternative suggestion is that since some prefer silence, some enjoy the background while studying, the current space in the main library could be separated as following: expanding the space upstairs for quiet study and the space where the couches with computers are can be designed for another usage, which group work could be taken into consideration. Like that, the situation is likely to be improved and benefit different types of users. In the space downstairs, students who either want to study on their own yet with some background noise or do group work would both be satisfied. Correspondingly, those who study upstairs where noise is not allowed would concentrate better.
9 Conclusion

The purpose of the research was to examine how the JAMK main library improves the individual study space to meet the students’ needs. The students’ perspectives and their experiences were studied through the survey to better understand their thoughts on current situations and their preferences. In conclusion, the research questions were addressed and the objectives were achieved. The research provides insights into different aspects from the study space in general and to the library study space in particular.

9.1 Future research

The research built a foundation in terms of essential facilities and furniture in the library in general as well as in an individual study space in particular. The students’ needs were also identified. However, this may only be true of the present situation as the survey was conducted once only with current students participating in it. Since JAMK has four library premises, similar researches could be conducted to examine how the current situations in terms of space and facilities meet the users’ demands. If the JAMK libraries aim at being customer-oriented, this type of research is quite likely to be practically beneficial. To a greater extent, other university of applied sciences may find it interesting to apply a similar research as a tool for their library development.

9.2 Reliability and validity

Reliability means that the same research method gathers data and brings consistent results (KnowThis.com, n.d.). In a given setting, a measure is reliable if it is repeated at different times and the findings have a minimal variation (Statistics & Research Methodology, n.d.). However, it is perceived by the author that if the same research is conducted at a different time, the results are likely to be changed. The reason is because the users of the case premise remain dissimilar over time. Hence, their opinions towards the phenomenon can become different.
Validity in this research means that the survey succeeded in measuring what it was designed for. There are two basic types: external and content validity. External validity is the extent to which the findings can be generalized from the sample. It is important to notice that the sample chosen should be appropriate and representative for the total population (ibid.). The survey is regarded as externally valid can aid to obtain the degree to which the sample is representative of the whole population. In this research, the survey was only delivered to current students at JAMK, irrespective of what type of students they were, degree or exchange students. Another point is that the questionnaire design is only comprehensible to those who had visited the main library. Thus, the self-selection technique helped to filter the whole population of the institution to only current ones. Furthermore, the questionnaire content was only aimed at experienced students. As a result, it can be concluded that the research has external validity. Content validity implies how appropriate the survey content is, i.e. the questionnaire design supported to reach the research objectives (ibid.). In fact, all the information in the survey was developed from the literature review under the condition that they would fit in if they were to apply in the case premise. Thus, as the main library currently has limited space, the questionnaire was mainly about the respondents’ opinions of the current furniture and their potential changes.
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Appendices

SURVEY – EXECUTE VIA WEBROPOL SYSTEM

Improve individual study space in JAMK Main library

Hi,

I am a Facility Management student writing my thesis about "Improving individual study space in JAMK Main library". The survey is to gain more understanding of students’ expectations, in terms of space and furniture improvement for individual study purposes in the main library. Its outcomes may help JAMK main library to serve their customers better.

Please note that questions with * are mandatory.

All collected information is treated confidentially and only used for research purposes. It shall take roughly 5 minutes to complete.

For further inquiries, please contact me at g1179@student.jamk.fi

1. Are you...? *
   - [ ] Degree student
   - [ ] Exchange student

2. Are you...? *
   - [ ] First year student
   - [ ] Second year student
   - [ ] Third year student
   - [ ] Forth year student

3. How often do you visit JAMK Main library? *
   - [ ] More than 3-4 times per week
   - [ ] Once or twice per week
   - [ ] Rarely
   - [ ] Never

4. What are your reason(s) for using the main library? *
   - [ ] To have group work
   - [ ] To study individually
   - [ ] To have a quiet atmosphere to read
   - [ ] To borrow books/ study materials
   - [ ] To use library facilities (printer, scanner, quick search on computers)
   - [ ] To take a rest between and/ or before classes
   - [ ] To catch up with friends

Others, please specify

5. From this question on, the subject is regarding individual study focus. If you have chosen “study individually” in question 4, how often do you visit the main library for that particular reason?
   - [ ] More than 3-4 times per week
   - [ ] Once or twice per week
   - [ ] Rarely

6. Do you agree or disagree with the statement? *
   - [ ] Strongly
disagree Disagree Neutral Agree
Strongly
agree

The tables and chairs *downstairs* in the main library are very comfortable when staying for long hours

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The tables and chairs *upstairs* in the main library are very comfortable when staying for long hours

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The atmosphere and furniture (tables, chairs, couches) in the library help me get very concentrated and study effectively

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It would be more convenient if there were more electrical outlets in the library

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I think there is a lack of computers/ laptops for users in the main library

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7. Concerning the amount of lighting, which one do you think is true? (If possible, please point out the specific area if you select “Lack of lighting”, “Too much”). For instance, the space upstairs where there are rows of tables with laptops) *

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8. Concerning the lighting brightness in the main library, which one do you think is true? (If possible, please point out the specific area if you select other options rather than “Normal”) *

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<td>Too dim</td>
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10. When it comes to individual study, what types of furniture and objects listed below would you think are necessary? (You can select more than 1 option) *

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<td>Armchairs</td>
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<td>A lamp per one individual or two, which is put on each shared table or study carrel</td>
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11. In which type of environment you would get most concentrated? *

- Where there is some background noise, such as keyboard tapping, people talking, etc.
- Where there is complete silence
- Others, please specify

12. As many of international libraries, which have a number of floors and large space, carry out different spaces within their library, such as group study and individual study. And since our JAMK main library is limited in terms of space, would you be supportive of the idea that...

- Not at all
- Almost unsupportive
- Neutral
- Supportive
- Totally supportive

13. Let’s end with this question. In your opinion, what could be improved in terms of space and furniture in the main library? Also, please feel free to share if you might have follow-up comments from the questions above.

200 characters remaining