

## **Exploring the possibilities with shared spreadsheets in gathering and analyzing information on the usage of study rooms in a university library**

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**Abstract:** In autumn 2018, a team within the University Library decided to advance the usage of different methods inspired by the perspectives within the field of “UX” to study the use of the learning spaces in the library. A special project concerned the students’ use of group study rooms. Here the library employed a method where student mentors working for the library gathered basic statistical data through observations. The student mentors measured the usage of the study rooms, seats used, technology used in the rooms, sound levels etcetera at several time points each day. The information was continuously registered in a shared Google sheet that also worked as the basic tool for the analysis. The results of the study gave important guidance for the development of the study rooms and the learning environment in general. More importantly, the use of Google and the shared process of collecting and analyzing information was seen as a rewarding learning experience by the student mentors and the involved library staff.

**Keywords:** quantitative method, usage, spreadsheet, open collaboration, library, user experience, UX, learning environment, study room

### **1. Introduction**

The Mid Sweden university library is an academic library with learning spaces designed for learning and scholarship. The library building on campus in Sundsvall serves approximately 7000 students and is designed to support students’ interaction with the library collections, information technology and the library services they may require during study and research activities. The library is also a social space where students spend time to interact with other students.

Traditionally, libraries have used the gate count to track the overall use of the library building. Statistical data from systems for room reservation as well as data from services such as circulation has also been used to measure usage. These types of data are important to show how the building itself is being used over time but it gives little information on how people are using the different spaces within the library. Neither do gate counts give information on the visitors

experiences from being in the library, nor if a person has entered the building to use the library at all (Thompson 2015).

In 2018, a team within the Mid Sweden university library decided to advance the usage of different methods to get more qualitative insights about the library users' experiences from being in the library. Inspired by the perspectives within the field of UX ("User Experience") the team gathered information mainly by (qualitative) observations on users' behaviors and patterns of movement, complemented with questionnaires and by the library users' comments on "wall of reflections".

Adding to this, a special project concerned the students' use of the group study rooms that are spread on 4 floors within the library building. Here the library employed a combined qualitative and quantitative method where basic statistical data was gathered and registered in a shared Google spreadsheet by the engagement of student mentors (i.e. senior students giving support to fellow students) employed by the library. During a couple of weeks in October, the student mentors measured the usage of the study rooms, seats used, technology used in the rooms, estimated the noise level etcetera at several time points each day.

The aim of this paper is to present some of the primary results of this study and some of the lessons learned working with the student mentors and Google Sheets.

## **2. Learning spaces and the library – a theoretical point of departure**

Libraries and library buildings have evolved over thousands of years. According to Freeman (2005) the evolution of library space can be described as changes over three paradigms: a Reader centered paradigm followed by a Book centered paradigm and lately a Learner centered paradigm. European libraries during the Enlightenment were designed to inspire "the spiritual and intellectual contemplation" (ibid.:1) for scholars, but over time turned toward a more utilitarian approach in the design and use of library buildings and space. The growing collections and the needs of the staff came into primary focus, and was often a priority before student's needs. The arrival of IT in the 1970's sparked new thinking allowing for the convergence between function and form in space planning. This supported the development of learner-centered library environments. IT also meant that many in the early days believed that the digital information on the Internet gradually would replace books, leading to "deserted libraries" (Demas 2005). This belief can in turn be seen as a key to understanding the "libraries as space movement" that followed (Bonnanda and Donahuea 2010:226).

At the same time, librarians has a long history of teaching. The teaching efforts have not been diminished by the arrival of IT, rather information provision and instruction has integrated with research and IT assistance. New and different teaching moments have evolved for library staff. However, as the new teaching and learning pedagogies in higher education have been influenced by social constructivist learning theories the libraries also have shifted away from a teaching culture and toward a culture of learning (Turner, Welch and Reynolds 2013). The concept of learning spaces therefore puts emphasis less on library staff teaching and more on library design concepts and changing pedagogies which enable “discovery that provides students with ‘knowledge making’ experiences transferable to lifelong learning” (Somerville and Harlan 2008:3). In providing a range of formal and informal learning spaces within the library environment, these varied spaces accommodate and support the differing needs and preferences of different communities of learners for whom flexible and self-directed learning can be promoted. Such people-centered or learner-centered approach requires academic libraries to

“treat students as intentional learners rather than as customers, view the library building as one of the chief places on campus where students take responsibility for and control over their own learning; and employ library staff to enact the learning mission of the university through being educators” (Bennett 2009:191). Also, academic libraries often serve as a point of access or linkage between buildings on campus which also motivate students to utilize the library learning spaces (Cunningham and Tabur 2012). This means that the use of the physical library space continues to change and grow “as place”.

To conclude, in line with a perspective of a learner-centered library service, the design of learning spaces not only should be creative and stimulate different types of research and learning activities, they also need to be continually assessed and developed where needed. Inefficient space design and planning can give rise to underutilized or crowded spaces with potential consequences for the students learning outcomes (Cha and Kim 2015). In this context, group rooms are often one of the heaviest used spaces for academic purposes (Ruleman and Kaiser 2017). In planning and utilizing these places, the library must have a clear vision of what is required and what the needs are (McDonald, 2002; Farmer 2016).

### **3. Project Design and Methodology Overview**

A number of different methodologies have developed over the last decades to study the usage of different spaces within the library. Many of these try to remedy the inadequate data collected from gate counts. During the latest years the “User Experience – UX” has formed with a strong base in ethnographic methodologies (c.f. Priestner and Borg 2016; Priestner 2017; Priestner 2018) where research based on observations has taken a central part.

The benefits of observations are that they record actual user presence and behaviors at specific points in time and space, unlike user-reported methods such as interviews or surveys, or even staff-reported observations, which can be anecdotal and may be less accurate (Beck and Manuel 2008). Observations are, however, relatively time-consuming and therefore costly.

In the project, we decided to use student mentors to be responsible for the data collection. This was in line with the “philosophy” of learning spaces and the learner-centric view, as presented above. Students should take responsibility for, and control over, their own learning which also can be seen as an argument for using students in such tasks as research to develop the use of study group rooms. We also wanted to record the data without having to invest time and resources to train the student mentors in using some particular statistical software. Rather we wanted to use a tool that was readily available to the students. Since every student at Mid Sweden university as well as each member of the staff have access to Google Apps, we chose to use Google Sheets.

The use of Google in collecting data on library use is not new. Some of the documented cases of Google use in library settings include the application of Google Forms and Google Sheets in the collection and analysis of gate counts (Laskowski 2016); Google Forms has been used by library staff to record changes in the usage of rooms and spaces during the day (Lindsay 2016) as well as undertaking online forms for surveys of the library users characteristics (Burn et al. 2016). However, the employment of student mentors as researchers using Google Sheets does not seem to be a widely used approach.

The data collection was conducted during two weeks in October 2018. Two sessions with observations have been carried out each workday by the student mentors. Each group room in the library has been observed. Firstly, when the mentors started their daily work hours (am), and secondly, at the end of their work session (pm). For each room the student mentors have taken notes according to a form and in some cases asked supplementary questions to students in the group rooms and noted any “out-of-the-ordinary” remarks. After the observations, the student mentors have entered the data into a shared Google Sheet for analysis.

#### **4. Some results from the survey**

The study showed that the pressure on the group rooms is slightly lower in the mornings compared to the afternoons, but is generally high. A total of 491 students were noted as users of the group rooms during the mornings compared to 549 students during the afternoons. This represented a booking of 84% of the rooms during morning and 86,8% during afternoons.

However, when counting the ratio of the seats used in every room it showed that only 46,3% of the seats were used during mornings and 51,2% were used during

afternoons. The occupancy of the group rooms was thus fairly high, while each chair in every group room rarely was occupied. Apparently the number of seats in the rooms was mismatched with the size of the student work groups.

	AM	PM	N
<b>Study rooms</b>	<b>84%</b>	<b>86,8%</b>	<b>25</b>
<b>Seats</b>	<b>46,3%</b>	<b>51,2%</b>	<b>106</b>

The study did not propose any specific action to rectify this, however, the need to continually follow up on the usage of the group rooms was identified. The library need to consider not only the amount of group rooms or amount of seats, but also whether the composition of group rooms and the number of places in them is the most optimal. In other words, is there a need for more group rooms with fewer seats, and do the students usually work in pairs or most often in groups of 3 or 4? This can possibly change over time.

A related question concerned the occupation of group rooms for single work which could be a problem if too many students booked group rooms for self-study and the rooms because of this would be blocked for group work. The survey showed that this was no big matter with about 11% of the group rooms being occupied by only one student at a time. The result also showed that it was rooms with fewer seats that more often was occupied by only one student rather than blocking larger group rooms with more seats.

A concern among library staff was that some areas in the library were noisier because of the group rooms. The study could not show whether this was a fact or not, since no objective means of measuring and comparing sound levels were used. However, the study showed that the student mentors did not experience the sound levels directly outside of the observed group rooms to be disturbing. They also registered that the doors of the group rooms generally were kept closed by the occupiers. In the few observed cases where the doors were found to be open, and when asked why the doors were not kept closed, the occupiers' typical response was "that they were waiting for a joining group member", or simply "had forgot".

Lastly, one important lesson learned from the study concerned the use of technology and tools for learning in the group rooms. The survey showed that the students to a large extent used their own laptops even though stationary computers were available in many group rooms. The students also used paper and pens, while tablets were a less common tool to work with. In many occurrences, different tools were used simultaneously. The study showed that the wall-mounted monitors that were available in most of the group rooms were used to a lesser extent compared to the whiteboards available in the rooms. Because of this, a couple of rooms that were missing whiteboards (but had wall-mounted monitors) also have been equipped with whiteboards after the study.

## **5. Experiences from the project**

The general view on the project among the concerned library staff was that it was a constructive way of using Google on the one hand and the student mentors on the other hand. The study was considered resource effective and rewarding. Since the results of the study also lead to some tangible results with changes in the equipment in some of the group rooms (such as whiteboards), as well as a better over-all knowledge on the use of the group rooms, the practical use of this kind of study was evident.

The student mentors themselves also commented on working with the project. They found the project to be both a learning experience and inspiring. They experienced the method used as fitting with the general purpose of the study.

“I learned that it is always a good idea to collect opinions directly from those who use the service, in this case the students who sit in the rooms. Observation on site helps a lot.” [1]

“The method for collecting information was rewarding to work with and I will use the method in my own studies.” [2]

“I think this way, i.e. observations, fit well for the exact goal of this study.” [3]

The student mentors also commented on the use of Google. They found the process to register the data in a Google Sheet to be rather unproblematic, or as one student mentor summarized it “quite easy, fast and useful” [1]. The main problem was rather the two steps of first using pen and paper when walking by the group rooms and observing, and then transcribing the information into the Google Sheet. Here the student mentors suggested that a tablet would have been easier to use.

“The common Google spreadsheet was of great help: saving all information in one place and then analyzing it and presenting conclusions. The downside is that we first wrote on paper and then we registered inside the Google spreadsheet, this could possibly be done directly with [a] tablet.” [1]

“I thought it was smooth with a common Google sheet. It was easy to use however it sometimes took a lot of time to first walk around with pen and paper and record everything and then insert all the data in the Google sheet.” [2]

“On the second issue, the joint Google Doc: fairly good. It was quick and easy to fill in data and to compare results then.” [3]

The project also made the student mentors attentive to some methodological difficulties and ethical considerations. The transparent process with working with the shared Google Sheet was on the one hand appreciated. They could

follow how the data that they registered also changed the accumulated (end) results as the sheet was set up to continually calculate and show the cumulated results on a separate tab. On the other hand these visually noticeable and continually changing results also made the student mentors aware of the potential risks with wrongfully entered data, or the possibility to manipulate the data. The student mentors were eager to help correct such potential threats to the study's legitimacy by suggesting that "in order to avoid the impact of the result, it is better to "lock", i.e. limit accessibility to already filled sheets in the document." [3]

In addition, the student mentors expressed some methodological considerations based on the tasks involved in observing the group rooms.

"It was sometimes difficult to estimate the sound volume. It was also difficult to decide whether to ask questions to those who sat in the group rooms or not, since I did not want to disturb. Otherwise, I think everything worked well." [2]

"However, there is a disadvantage that [observations] is more or less subjective, e.g. one [individual] can perceive the sound as high but other not." [3]

"It was exciting to carry out the group room study. The students also look forward to sharing experiences and opinions, but it may sometimes seem a little strange to observe them while they were studying. It distracted them a little, I think." [3]

## **6. Conclusion**

The general consensus about the project is that it was rewarding. The students felt they could contribute to the knowledge about the learning spaces in a fruitful and concrete way. They also found the use of Google Sheet to be a transparent and interesting way to follow the results during the research process. The study raised methodological questions such as concerns about the risks with unlocked sheets and how to objectively assess sound levels. The study even made the student mentors aware of some of the potential influence the observer might have on the observed students. These are, generally speaking, positive learning experiences, which are beneficial for the students' methodological awareness or methodological reflexivity.

Using Google Sheet was a resource efficient way to collect, register and analyze the use of group rooms together with the student mentors since the software has a comparably low learning threshold. The use of Google can be advanced by investing in tablets for the registration process. However, the statistical knowledge needed to program the formulae for the spreadsheets also need to be strengthened among the library staff to develop and expand the use of Google Sheets for future projects and studies.

### Acknowledgements

The author wish to thank student mentors Irina Dimitrova, Mohammed Rezai and Rosen Tenov for contributing to the study. Also, the project was initially discussed together with librarian Gertrud Ivarsson, responsible for a parallel group room study at the Mid Sweden university library in campus Östersund.

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