



Research Article

Identifying and Classifying User Typologies Within a United Kingdom Hospital Library Setting: A Case Study

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Abstract

Objective – To identify available health library user typology classifications and, if none were suitable, to create our own classification system. This is to inform effective future library user engagement and service development due to changes in working styles, information sources and technology.

Methods – No relevant existing user typology classification systems were identified; therefore, we were required to create our own typology classification system. The team used mixed methods research, which included literature analysis, mass observation, visualization tools, and anthropological research. In this case study, we mapped data across eleven library sites within NHS Greater Glasgow and Clyde Library Network, a United Kingdom (U.K.) hospital library service.

Results – The findings from each of the NHS Greater Glasgow and Clyde Library Network's eleven library sites resulted in six user typology categories: e-Ninjas, Social Scholars, Peace Seekers, Classic Clickers, Page Turners and Knowledge Tappers.

Each physical library site has different profiles for each user typology. The predominant typology across the whole service is the e-Ninjas (28%) with typology characteristics of being technically shrewd, IT literate and agile – using the library space as a touch down base for learning and working.

Conclusions – We identified six distinct user types who utilize hospital library services with distinct attributes based on different combinations of library activity and medium of information exchange. The typologies are used to identify the proportional share and specific requirements, within the library, of each user type to provide tailored services and resources to meet their different needs.

Introduction

Several factors contribute to different types of users accessing hospital library services. Whilst some users continue to utilize the library for what could be considered traditional reasons (book borrowing and book based studying) changing work patterns and space restrictions mean that U.K. hospital libraries are also being used for non-traditional purposes (work, online study and leisure). In addition, different learning styles and technological competencies mean that library users now prefer to access information through a variety of media such as smart devices.

Health and hospital libraries are unique within the library sector with a very time-limited user base due to clinical demands. The users are primarily busy clinicians and nurses who have patient care responsibilities, who demand instant access to information and who have no available workstations within their workplace (Thomas & Preston, 2016) A large proportion of our users can be students or student doctors who appear to be using mobile technologies on the wards (Chamberlain, Elcock & Puligari, 2015). To satisfy the demands of these different users and engage with their current and future service needs, a short-life working party was set up within the National Health Service Greater Glasgow and Clyde (NHSGGC) Library

Network. Service provision within NHSGCC libraries has been based on assumptions that professional role predicts style of library use e.g. busy nurses would focus on paper textbooks rather than electronic resources, with no further investigation to corroborate these assumptions. However, more recent day-to-day anecdotal observations led us to suspect that this was no longer the case and that library use is based on characteristics other than professional role.

We chose to investigate if any relevant user typology classification scheme already existed that could be used, or adapted, by hospital libraries to identify the distinct differing classes of user that we encounter. The definition of typology namely “classification of human behaviour characteristics according to type” (“Typology”, 2007) was used to focus our project.

From the literature review, we identified that there are no existing typologies that match our particular needs to classify our users. Existing typologies originating from other sectors did not apply to our unique status as a provider of library services to busy clinicians, nurses, students and student doctors. As a result of identifying this gap within the research literature, we created a unique user typology classification scheme specifically for NHSGCC hospital libraries, but that could be used by other health and hospital libraries. We used mixed methods research to uncover relevant typologies and explored methods of visualizing our results.

Literature Review

To gain a better understanding and knowledge of NHSGCC library users we undertook a literature analysis, based on themes, to identify the literature. Within the thematic literature analysis we looked for information on the following themes: changing library space and environments, what typologies have been used before, physical typologies, virtual or online typologies, health library specific typologies,

methods of identifying the typologies and recommendations for use from these typologies. The literature review identified that library environments are changing and that one way to identify our users’ current requirements is to place our users into a classification scheme. Following the analysis of the literature, we excluded out-of-hours, virtual and non-users from our project as out of scope.

We searched the following sources: EMBASE, Emerald, Health Management Online, HMIC, LISTA, MEDLINE and PsycINFO, and online library catalogues: OLIB and Shelcat for English language literature published since 2008. The major search terms included the following: library*, knowledge, information, typolog*, behavio*, characterist* and millennial* (Appendix One). We kept up to date with any literature found during our project and added it into our knowledge base.

Changing Library Environments

Analyzing the changing library environment is identified as a theme by Holder and Lange (2014), Talvé (2011) and Todd (2009). Holder and Lange (2014) state how they used mixed methods to identify space use and user satisfaction in Canada. They used observation, as a technique, eleven times and showed individual versus group study preferences and how this fed into service development within the library physical environment.

Talvé (2011) plots the changing use of libraries across the decades and identifies the future of the library environment in Australia. She identifies that “the more virtual we become, the more we seek tactile, earthy, soft nesting spaces”. She notes that “people like to be with other people in neutral spaces” and the library has a physical role in this. She goes on to suggest that libraries are “places for collaboration” where library users gather together to solve issues creatively.

Also in Australia Todd (2009) identifies that different library areas suit different types, for example “introverts” may prefer seating that faces into the wall and “extroverts” may prefer wide open comfortable seating. She made use of surveys and observations and discovered discrepancies between what students planned to do and what they actually did. For example, 32% of students planned to work on individual assignments, but under observation only 25% were observed doing this. This study identified that using observation and surveys improved library performance. The use of typologies in this article led us to acknowledge that we required to audit our own users to identify their use for library service development.

Libraries are evolving, matching user learning styles to physical and virtual library space. Our study acknowledged that we needed a tool to measure the classification of library users within a U.K. hospital library environment to inform suitable changes to the library environment to match our users’ working styles, medium of exchange and activities.

Library Typologies

Several general non-library specific typologies were identified by Greene and Myerson (2011), who noted that the world is changing to become more focused on the economy of knowledge. These typologies were identified via ethnographic study, interview and visual tools around how people used their office space. This London study suggested several typology classifications including anchors and connectors. Greene and Myerson noted generational typologies such as Generation X, Millennials and Baby Boomers. These typologies have a 20-year age span therefore we discounted these typologies as too broad for the purpose of our study, e.g. Baby Boomers will be retired or nearing retirement.

Library specific typologies were identified by Bilandzic and Foth (2013) and Zickuhr, Purcell and Rainie (2014). Within a wide-ranging study

of American public libraries, Zickuhr et al. (2014) identified typologies including “library lovers” and “distant admirers”. Bilandzic and Foth (2013) analyzed library use within a learning context in Australia; using ethnographic techniques several typologies were identified e.g. “learning freak Fred” and “what can I do here Sophia”. These typologies are close to what we were looking to identify within the NHSGGC library hospital context, but were rejected early on because the library context within this paper did not fit our own research context as it is from a “digital cultural centre” context. Our literature review did not identify any health library specific typologies.

We therefore discarded the use of existing library typologies within our research topic. The use of existing typologies would have been time saving and would have created comparable results to study within published papers. In reality we did not feel that the typologies presented to us within the literature could be transferred to the one situation with NHSGGC hospital libraries because our study is aimed at classifying users within the physical use of space only, and in a professional NHS health service hospital setting. We expected our small data sample size would not cover more than two generations. This meant that we rejected the use of known typologies due to the differences in scale and limited transferability of results from our U.K. hospital setting compared to the large-scale users and resources of public library or higher education library settings.

Virtual and Online Typologies

Virtual or online typologies were identified by Lawrence and Weber (2012), Brandtzaeg and Heim (2011) and Nicholas, Rowlands, Clark and Williams (2011). In a study in the United States of America, Lawrence and Weber (2012), observed higher education students late at night - and generated amusement from students about the “diligence” of the librarians observing them out of hours. However, this is in a higher education setting which would result in high

footfall, particularly at exam times, and would not be comparable to the NHS Greater and Glasgow out of hours setting. Within NHSGCC libraries there is out of hours use, particularly for on-call staff, rather than students. This study also concentrated more on use of the library and activities rather than typologies.

Brandtzaeg and Heim (2011) from Norway identified online social networking typologies such as “sporadics” and “lurkers” using an online questionnaire, whilst Nicholas et al. (2011) identified web information seeking behaviour in the United Kingdom. They classified the behaviours into various animal typologies such as “web hedgehog” and “web ostrich”.

Due to the relatively low numbers of out of hours library users within the NHSGCC context and the challenges of identifying virtual typologies, the typologies identified in these papers were rejected as methods for our research. There is a noted potential to study these at a future date if resources such as new technologies e.g. tracking via mobile apps became cheaper and more widely available.

Typology Methodologies

Typology methodologies are discussed by Urquhart (2015), Kline (2013), Gajendragadkar et al. (2013) and Lawrence and Weber (2012). Observation can be a very useful research tool and Urquhart (2015) noted that as yet “little research discussed observation as a major part of the research methodology”, whilst suggesting that it can be a time and labour intensive process. She notes that modern digital tools such as “phones and digital recorders” make observation a relatively easier method to use than in the past.

Kline (2013) interviewed David Green from the ERIAL (Ethnographic Research in Illinois Academic Libraries) project (ERIAL, 2015), and he confirms that even a relatively tiny study can identify a lot about your library users. The

negative side of this is that it can take a great deal of staff time to run such a study. He also identifies that using ethnography puts librarians into the “users’ world” thus motivating change, and this matched the service improvement goals of our project.

Gajendragadkar et al. (2013) undertook a covert observational study in an NHS hospital setting proving that such ethnographic techniques could be used within an NHS setting. Similarly, Lawrence and Weber (2012) noted that their research took in a variety of styles “written surveys, interviews, observation, mapping and statistics” and this encouraged us to proceed with mixed methods research within our own project.

Online tools such as blogs and social media (#UKAnthrolib, 2014 and Lanclos, 2015) are used to identify anthropological and ethnographic methods within library settings and these tools informed our small-scale project.

Ethnography has historically been linked to both anthropology and sociology. Reeves, Peller, Goldman and Kitto (2013) in their paper on ethnography, within educational research, state that “the ethnographer goes into the field to study a cultural group”. They also go on to note that small groups have been studied and documented since the early twentieth century. Our study aimed to identify a small group, namely U.K. hospital library users, and this fits in with the ethnographic methodology.

Brewer (2000) states “ethnography is not one particular method of data collection but a style of research” and its ability to mix and match research methods such as observation, personal diaries and interviews gives credence to the fact that ethnography has become an evolving and increasingly used tool within libraries within the last ten years as can be seen from the popularity of the UX (user experience) in Libraries concept (UXLIBS, 2016).

Typologies Use in Practice

The literature also identified recommendations for how typology classifications could be used. Bilandzic and Foth (2013) suggest that new mobile device technologies allow a more fluid and non-owned space. This resonated with our project as this matches the increased number of agile workers using library space within NHSGCC. Their research is not directly replicable with our users as the observation took place over five months within a large library and we were unable to devote similar timescales to our project.

Difficulties in finding out what non-users think and do in the library were identified in the United Kingdom by Booth (2008). He categorised people into typologies such as “non-seekers” or “confident collectors”. He described how typologies can help influence the design for library space around the various different wants and demands of users. This specifically fits in with the demands and requirements for service improvements due to changes of working styles, technologies and information resources within NHSGCC. We rejected this typology because the research is not set in a U.K. hospital library setting.

We identified that NHSGCC libraries have been evolving with the change of use both traditionally and technologically and from solitary to group learning to virtual. We identified that we need to observe user typologies that, once diagnosed, can be used as a tool to develop library services. We searched the literature and identified that typologies have been classified within the library and digital contexts but that the previous research did not drill down specifically enough for the purposes of our research within the U.K. hospital library context.

Methods

The short life working group did not identify a relevant user typology classification tool within

the literature, suitable for a U.K. hospital library setting, therefore we created our own typology classification system. The team used mixed methods research including literature analysis, mass observation, visualization tools and ethnographic research. We tabulated data across eleven library sites within the NHSGCC Library Network.

Initial scoping of Methods

Initial discussions using Smart board® technology enabled the working group to model, and have interactive discussions, around the definitions of users’ activities and how to collect the data.

Analysis of the literature noted that mixed methods research methodology such as observation is frequently used with typology work (Bilandzic & Foth, 2013). Observation includes the use of qualitative and quantitative data. We decided, using this evidence, to create an observational method that would suit our small-scale library setting but that would be generic enough to be used in any hospital library.

At this stage, we devised an initial prototype three-dimensional activity axis grid (Figure 1) based on our knowledge of NHS U.K. hospital libraries, and the review of literature around changing library environments (Holder & Lange, 2014). We came up with a three-dimensional cube, with gridlines, as we identified three important dimensions of knowledge behaviour.

The first dimension is the method of use, namely “traditional” use (e.g. reading a book) or “virtual” (e.g. searching a database), giving the potential for “mixed” use (e.g. reading a book whilst utilising a laptop). Our second dimension is whether the activity is undertaken alone (solitary) or within a group.

The third dimension is the activity itself within the library setting which, we identified, could

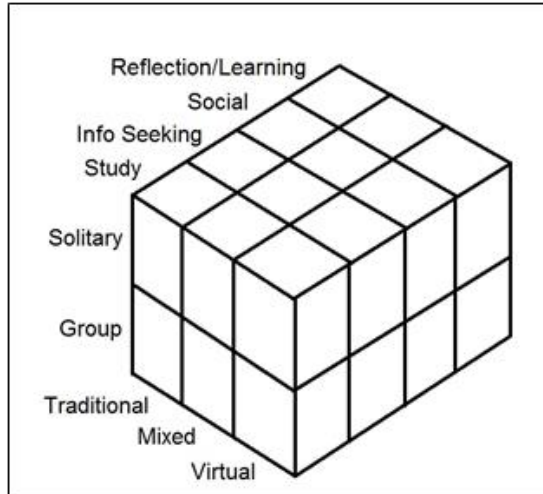


Figure 1
Prototype three-dimensional activity axis grid.

consist of study (e.g. reading a textbook), information seeking (e.g. asking library staff for help with finding an electronic journal article), or reflection/learning (e.g. writing up an audit).

Test Observation

Observation includes the use of qualitative (e.g. asking library users what space they use within the library for what purpose) and quantitative data (e.g. numbers of people sitting at a particular seat within the library over a given period). Urquart (2015) defines this type of observation as “simple observation” which enables you to watch what is happening but not intervene or change the activity. We felt that simple observation would avoid the need to request ethics approval, and cause less disruption to our end-users as frequent interruptions to question them would have disrupted their library activity and studies.

In October 2013, the group tested an initial observational tool on five NHSGGC library sites. One hundred individual bits of test data were collected. After collection, we discussed our methods and any problems that had arisen, such as being unsure which box to tick for various activities. This test also identified that our data collection did not capture the three-dimensional

activity that we had sought to identify with the help of our prototype three-dimensional activity axis grid (Figure 1).

Using these data we redesigned the observation sheets several times, utilising test data, until we finalized our mass observation grid design (Figure 2).

Following on from our prototype three-dimensional activity axis grid (Figure 1), we refined the observation grid (Figure 2) into two separate grids each featuring an axis of medium of information exchange versus an axis of library activity. This created a two-dimensional approach but across two separate facets of use, in theory the three axes we originally worked to (Figure 1). The first facet focused on solitary behaviour (individual people working alone) and the second facet on groups (two or more people working together). This captured all the data we required but created a more logical measurement.

We defined the activities into learning, study, information seeking, working and social (Figure 3). We also identified and defined the resources utilized within the library space as interpersonal, book/paper, bring your own device, PC/IT equipment and library staff.

Live Mass Observation

The live observation ran over one week in March 2014 on eleven sites within NHSGGC. The observation took the form of a paper grid (Figure 2), which was marked up by local library staff doing the observation at each location. The library sites varied from larger multi-disciplinary NHS libraries with large footfall to smaller NHS libraries with part-time staffing and limited space.

Library staff observed all use and footfall activity within the library setting – and marked one score mark on the grid for every new activity versus medium of activity. If users changed what they were doing, or whom they

User Typologies Observation week 17th – 21st March

Individuals						Groups					
	Interpersonal	Book/Paper	Bring your own Device	PC or IT equipment	Library Staff		Interpersonal	Book/Paper	Bring your own Device	PC or IT equipment	Library Staff
Social						Social					
Work						Work					
Study						Study					
Learning						Learning					
Information seeking						Information seeking					

Figure 2
Blank observation grid.

Instructions	Example activities					
	Interpersonal	Book/Paper	Bring your Own Device	PC or IT Equipment	Library Staff	
<p>Instructions Discreetly observe what activities library visitors (including students) are undertaking and what media they are using. Record each activity by placing a mark in the corresponding square. Telephone and email enquiries are not to be recorded.</p> <p>Multiple activities should be recorded for each solitary person or group. E.g. if a person undertakes lots of different activities during a single visit record them all. If a person comes in every day to do the same activity then record it each time.</p> <p>Who Solitary – individual working alone Group – Two or more people working together</p> <p>Activity Learning – Acquiring knowledge through training, teaching or practice. E.g. Learnpro, PC, work training, library training, library induction. Can include books</p> <p>Study – Acquiring knowledge through spending time reading traditional resources. E.g. books, journal, PC, with coffee, leaving personal items e.g. jackets and bags around etc.</p> <p>Information seeking – Short visit to ask library staff a specific question to address a gap in knowledge e.g. enquiries, book or reference text.</p> <p>Working – using physical space and equipment for work activity e.g. rotas, bring your own device (BYOD), PC, meetings preparation, phone, patient records.</p> <p>Social – Non-work related activity, chat, lunch/break, work chat, PC/unsocial – hiding, skiving, sleeping.</p> <p>Resources Interpersonal – People (not library staff) as a resource and library telephone.</p> <p>Book/paper – Books and paper</p> <p>Bring your own device – Smartphones, tablets etc.</p> <p>PC/IT equipment – PCs and related equipment such as Multi Function Devices, photocopiers and scanners – but not phones.</p> <p>Library staff - All library staff in all locations</p>	Social	Magazines Newspapers Leisure reading	Social media Texting	Hotmail etc. Social media Holiday printing	Chatting with library staff	
	Work	Work related paperwork	Working with their own laptop, tablet etc	Doing NHS work at a library PC (NOT TELEPHONE)	Asking library staff for help with a work related problem	
	Study	Studying with books, journals, lecture notes etc.	Studying with their own laptop, tablet etc	Studying at a library PC	Asking library staff for help with a study related problem	
	Learning	Teaching a group e.g. Trakcare Nursing calculations HSCW workbooks	Learning with their own laptop, tablet etc	Learning at a library PC e.g. literature search training, Learnpro	Asking library staff for help with a learning related problem	
	Info Seeking	Groups accessing the books, PCs etc. for a specific answer	Info seeking with their own laptop, tablet etc	Using a library PC to answer a question e.g. internet search	PC login, book issues, joining and all basic interactions and enquiries	

Figure 3
Observation grid guide.

were doing it with, this was noted on the grid as a simple score. The record of activity could be fluid e.g. one person could enter the library and take part in different activities with different resources. This did mean that the observation was open to a certain level of subjectivity and therefore the working group offered an online WebEx® conference to all library site staff to attempt to minimize potential inconsistencies, and to explain the observation methods and techniques.

To ensure consistency amongst all library sites participating in the live observation we created an observation grid guide (Figure 3) that identified the initial classification of users' use of physical library space that we were aiming to identify. These instructions and examples of activities and resources formed the backbone of the observation. This was backed up with the working group acting as mentors during the week, who were able to intervene if there were any questions whilst the observation was ongoing.

As NHS library sites can be busy at different times, due to clinical requirements, plus one library was moving location during this time, we were not prescriptive about when sites would observe their users, just that they would observe within the timeframe of that week. We also knew that as sites are different sizes we would get different sample sizes from each site. Therefore, we allowed library sites the freedom to choose their sampling times and amounts, which in retrospect may have affected our study sample size for some sites.

Visualization

Once the data were returned from the eleven library sites, the working group recorded, analyzed and tested the results of these data. The review of the literature had identified that visualization of the data is the key to analyzing separate classes of data (Urquhart, 2015).

We analyzed the test data using Microsoft Excel® charts to enable visualization. A promising output at this stage was their surface contour charts. Our initial thoughts were to produce some form of three-dimensional visualization, as it was hoped that distinct typologies would jump out as peaks or hot spots. The surface contour chart (Figure 4) created the three-dimensional element we had used with our prototype three-dimensional activity axis grid (Figure 1). Ultimately, this approach failed as the imagery failed to produce the clear results for which we had hoped. Whilst the surface contour option (Figure 4) enabled us to pinpoint accurately the specific cross sectional areas of high activity of our library users, the contour chart did not provide a suitable visualization of the axis between activity and resources that we were seeking. The surface charts did help towards us identifying the categorizations that we were interested in establishing to enhance data analysis, at the intersections.

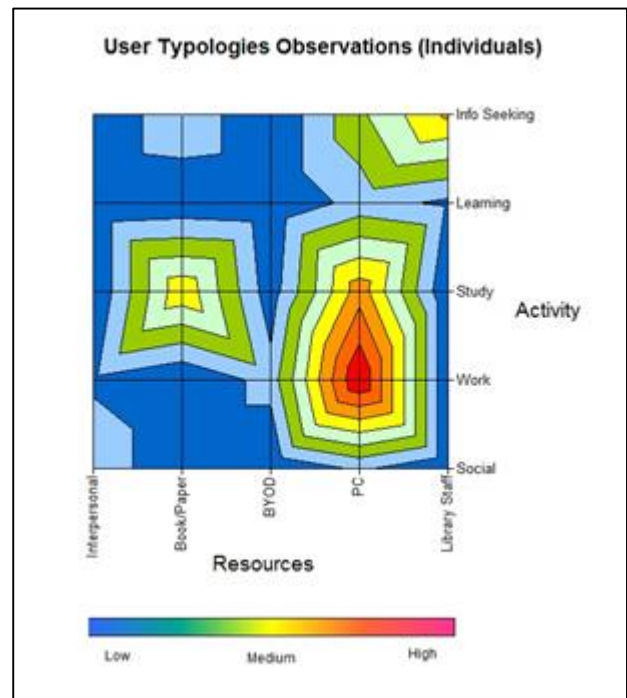


Figure 4
Surface contour map.

We tested the Microsoft Visio® software package (Figure 5) which shows an alternative visualization of the data. This visualization software was rejected because it offered no relevant graphical interpretation suitable for our needs as it did not show the axis of information exchange versus an axis of library activity in enough detail.

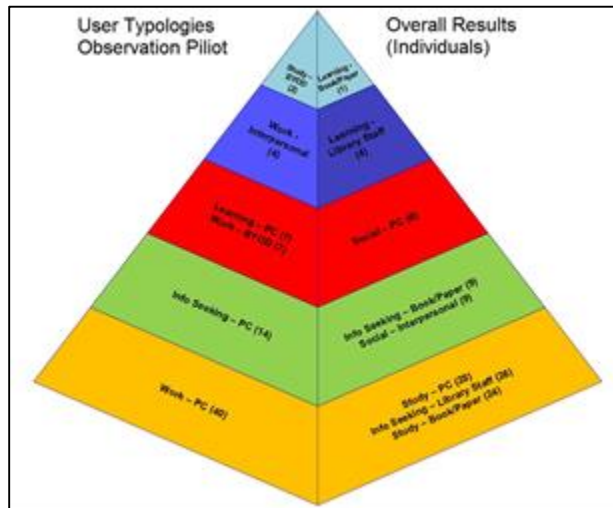


Figure 5
Microsoft VISIO® visualization.

We re-analyzed the data and identified that to create typologies relevant to the UK hospital library setting we needed to match the intersection of the observed activity along one axis with the observed medium along the other. During this re-analysis it was identified (Figure 6) that the chosen composite data of activity type (traditional or non-traditional) intersecting with medium of information exchange (traditional, technical or human) gave us the closest match to the number of user typologies found in other papers e.g. Bilandzic and Foth (2013) and Brandtzaeg and Heim (2011) who classified into five typologies. Given the relatively small amount of data collected in our project, we decided that six user typologies was the maximum number of classification types into which the data could be split. We therefore annotated our observational grid and mapped

the data, where they intersected, to our six typologies (Figure 7).

We focused our typologies research on the medium of information exchange, plus the actual library activity, rather than actual professional health service staff or undergraduate students. We did this to ensure that we captured actual activity of library users rather than assuming that because you were e.g. a doctor that you would automatically have the same user typology as all other doctors. The same applied to us identifying and classifying use by undergraduate students on placement, as from the literature (Nicholas et al., 2011), we had already noted that not all users within the same generation used resources in the same way e.g. we are aware in our day to day library role of undergraduate students who prefer physical books and older doctors who prefer to use e-books for their work. We were interested in what our users used the library for, how this use is changing and not in who they were professionally.

Results

Collation of the results of the two axes, firstly of traditional or non-traditional activity intersecting with, secondly, traditional, technical or human medium of information exchange led to the six user typology definitions: Page Turners, Classic Clickers, Knowledge Tappers, Peace Seekers, e-Ninjas and Social Scholars (Figure 6).

Individual and group results were generated for each library site and for the NHSGGC Library Network as a whole. We found that user typologies were consistent across all eleven Library Network sites, as we provide the same services to the same users, the only difference usually being the size and scale of the library resources, library space and library users on site. Overall results were collated and e-Ninjas made up 28% of the individual user typologies identified during this project (Figure 7).







		Medium of information exchange		
		Traditional (eg books)	Technological (eg Internet)	Human (eg Library staff)
Library activity	Traditional (eg study)	 Page turners	 Classic clickers	 Knowledge tappers
	Non Traditional (eg work)	 Peace seekers	 eNinjas	 Social scholars

Figure 6
User typology grid.

User Typologies Observation						Location _____	Date _____				
Individuals						Groups					
	Interpersonal	Book/Paper	Bring your own Device	PC or IT equipment	Library Staff		Interpersonal	Book/Paper	Bring your own Device	PC or IT equipment	Library Staff
Social	Social Scholar	Peace Seeker	eNinja	eNinja	Social Scholar	Social	Social Scholar	Peace Seeker	eNinja	eNinja	Social Scholar
Work	Social Scholar	Peace Seeker	eNinja	eNinja	Social Scholar	Work	Social Scholar	Peace Seeker	eNinja	eNinja	Social Scholar
Study	Knowledge Tapper	Page Turner	Classic Clicker	Classic Clicker	Knowledge Tapper	Study	Knowledge Tapper	Page Turner	Classic Clicker	Classic Clicker	Knowledge Tapper
Learning	Knowledge Tapper	Page Turner	Classic Clicker	Classic Clicker	Knowledge Tapper	Learning	Knowledge Tapper	Page Turner	Classic Clicker	Classic Clicker	Knowledge Tapper
Information seeking	Knowledge Tapper	Page Turner	Classic Clicker	Classic Clicker	Knowledge Tapper	Information seeking	Knowledge Tapper	Page Turner	Classic Clicker	Classic Clicker	Knowledge Tapper

Figure 7
Mapping of observation grid data to user typologies categories.

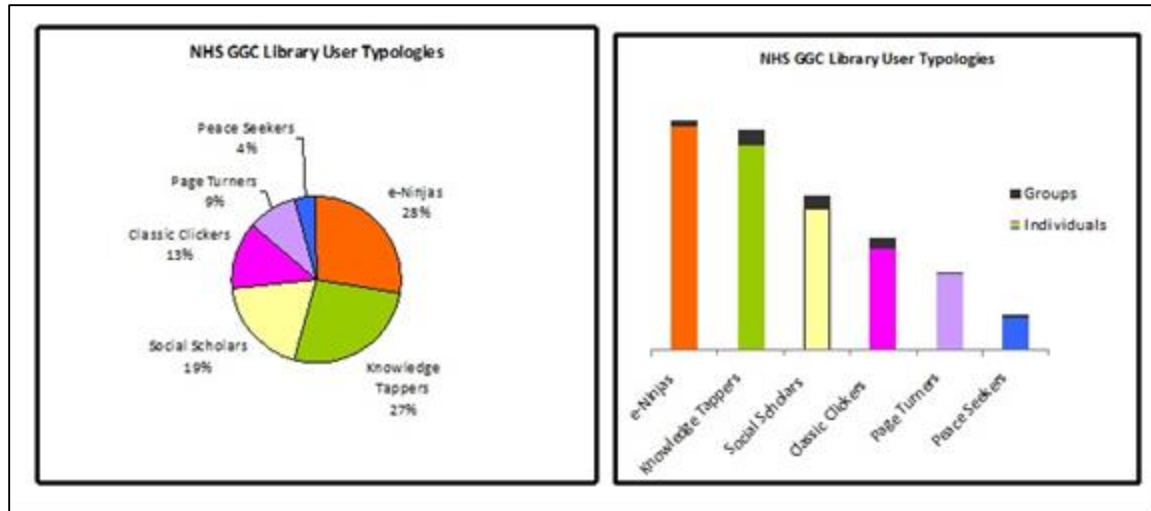


Figure 8
Mass observation results.

The e-Ninja typology is most prevalent across the Library Network (28%) (Figure 8), which reflects the move within NHS GGC organizational culture to agile working. This type brings their own device into the library and tends to be technologically competent. They use the library space as a buffer zone between work and personal space.

The second most popular typology, at 27%, is the Knowledge Tapper, who have excellent interpersonal skills; they rely on knowledge from library staff and can be seen as organizational knowledge brokers. The Knowledge Tapper requires a space to communicate.

An interesting typology, at 19% of those observed, are the Social Scholars, who are also the typology most likely to operate in a group. This is due to their characteristics of being more non-traditional users. They see the library space as somewhere to learn from other people in a more informal manner than previously seen within NHS GGC library space. They see the library as a third place.

A steady number of users were identified as Classic Clickers (13%). This is the type of person

who comes into the library space just to use the PCs. They use the PCs to learn and work, and use library staff for minor technical IT issues. We felt that, over time, these users may become e-Ninjas with encouragement.

Page Turners were observed less frequently (at 9%) within the library space. This typology is traditional users, those who come into the space and enjoy learning from books and paper. They come into the library to browse the stock, will sometimes sit and study, but often take their books and papers to their home or workplace.

The lowest number of user typologies observed within the library setting is the Peace Seeker, at just 4% of all observations, and this is a library user who is looking for quiet and silence to work. They are a solitary worker and see the library as a neutral space that does not hold the distractions of work or home. Peace Seekers need to concentrate and use the library as reflective space.

Quick Quiz

Once we had identified our typologies, we wanted to test our hypothesis about how we had classified library users. The working group

created a quick fun quiz using Questback (www.questback.com/uk) to allow users to find out what typology they might be. We emailed out this link to Library Network users and we got a return of over 350 user results. The results fundamentally differed from our observation (Figure 9). The reasons for this could include the fact that it was an online quiz and therefore attracted a different typology. It may also mean that virtual or online users, whom we did not capture in our physical library observations, participated in the survey as it was emailed out to all Library Network members. It may also have meant our questions in the quiz needed recalibrating. This is an interesting adjunct to the main research and allowed us to question the validity of the main results of our research.

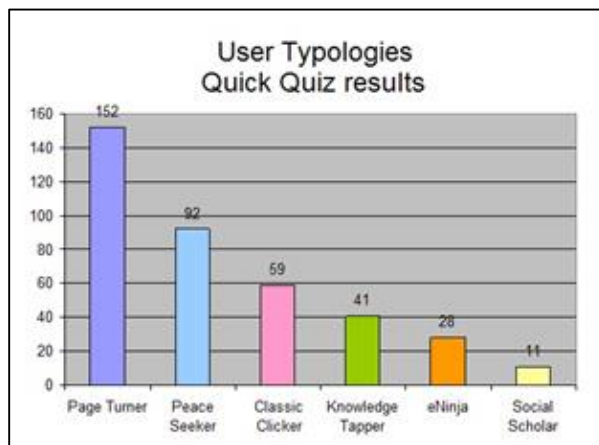


Figure 9
User typologies quiz results.

Discussion

Within NHSGGC, each physical library site is shown to have different proportions and profiles for each of our uniquely identified health library user typologies. Although typology methodologies were discovered in the literature review we felt that none of these would fit the specific requirements of our project, e.g. web

technology typologies would not reflect our users' physical footfall. We recognised through our observation that users can have multiple typologies and that these can change over time.

Many recent articles have focused more on virtual typologies, which we felt would be hard to capture, within our NHSGGC context given our limited project timescale. We also rejected Millennials and Generation X style typologies at this stage, as they are wider generational typologies and too broad for the purposes of this case study.

The results of our typologies research in 2014 enabled us to forecast changing typology use for a new library site that opened in 2015. Through utilizing the data from this project, we identified that a new-build U.K. hospital library would require more space for e-Ninjas and group learning types such as Social Scholars, than Page Turners or Peace Seekers. We input this research into the architect plans and enabled zoning more space for e-Ninjas (agile, fluid laptop users) e.g. creating adaptable power points and Wi-Fi across the library to enable rapid access to information. We required three separate rooms within the library space, which are used flexibly to suit different typologies at different times. One of the spaces is bookable as a group space for e.g. Social Scholars, but when the room is not booked it creates more individual silent study space for typologies such as the Page Turners and Peace Seekers.

We utilized the typologies as a promotional tool when this new U.K. hospital library opened. We used six specially designed bookmarks and posters (Figures 10 and 11), one for each typology, with information about that specific typology and identified what library services could be best suited to them. The bookmarks grabbed attention and encouraged dialogue between library staff and users.

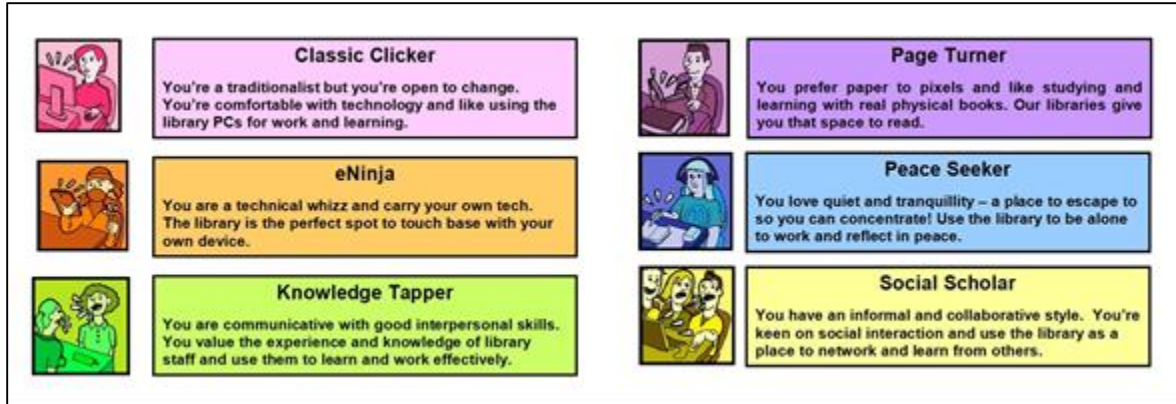


Figure 10
User typology definitions for bookmarks.

Future Work

The project took a lot longer to scope, plan and action than anticipated. The mass observation was run over one week. There is potential to run it again in the future to see if the proportions of typologies within the library network change as library environments develop.

We hope this study has added to the literature on user classification tools within libraries. Informal feedback from other health sector library staff has been positive. They recognized these typologies within their own user base and indicated that they are keen to use this classification system in their own libraries. Ideas that could be explored in the future, that were beyond the scope of this project, include the potential to capture more closely multiple typologies of individuals or groups over time. Virtual and out of hours typologies were also beyond the scope of the current project but would be an interesting project to pursue in the future.

Conclusions

Currently there is a lack of studies relating specifically to user typologies within the UK hospital library sector. Our case study enabled



Figure 11
Bookmarks and poster.

us to create a bespoke user typology classification system that, when used in conjunction with a programme of structured observation, could be utilized by other U.K. hospital libraries to gain an understanding of how their users utilize physical library services and space. Consequently, user engagement and service development could be more effective as services, resources and physical design will be based on health-specific user typologies.

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Appendix

Search Terms Used to Identify Relevant Articles

librar* and (typolog* or behav* or characteris*)

((information or knowledge) adj/N1 seeking)

librar* and ((information or knowledge) adj/N1 seeking)

((information or knowledge) seeking) and (typolog* or behav* or characteri* or style*)

(librar* N1 behav*) N1 use*

librar* and typolog*

librar* adj3 space

library* adj3 chang*

librar* adj3 enviro*

user adj3 behav\$

user\$ adj3 typ\$

user\$ adj3 group\$

millennial*1

google generation
generation x¹
generation y¹
digital native*
i-generation
i-gen
generation-I
gen-i
net generation
net gen

MeSH Terms:

exp Libraries/
exp Information Theory/
exp Information Seeking Behavior/

Key

¹ Term used alone and also in combined with and (librar* or typolog* or behav* or characteri*)
adj= adjacent
N1= within one word
\$ or *= truncation
exp= explode