What makes an informal learning space? : a case study from Sheffield Hallam University

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User Experience in Libraries

Modern library services can be incredibly complex. Much more so than their forebears, modern librarians must grapple daily with questions of how best to implement innovative new services, while also maintaining and updating the old. The efforts undertaken are immense, but how best to evaluate their success?

In this groundbreaking new book from Routledge, library practitioners, anthropologists, and design experts combine to advocate a new focus on User Experience (or 'UX') research methods. Through a combination of theoretical discussion and applied case studies, they argue that this ethnographic and human-centred design approach enables library professionals to gather rich evidence-based insights into what is really going on in their libraries, allowing them to look beyond what library users say they do to what they actually do.

Edited by the team behind the international UX in Libraries conference, *User Experience in Libraries* will ignite new interest in a rapidly emerging and game-changing area of research. Clearly written and passionately argued, it is essential reading for all library professionals and students of Library and Information Science. It will also be welcomed by anthropologists and design professionals working in related fields.

Andy Priestner manages Cambridge University's pioneering FutureLib innovation programme, employing user experience and design thinking to develop new library services across the university. He is the founder of the UX in Libraries Conference and provides training and consultancy on the subject to institutions across Europe.

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User Experience in Libraries

Applying Ethnography and Human-Centred Design

Edited by
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Preface and acknowledgements

We came up with the idea of this book at the 2014 LILAC conference, by which point we had already started to promote the inaugural UX in Libraries conference planned for the following year. There was some trepidation at the thought of putting together a book as well as the conference given how groundbreaking and interactive we were planning the latter to be – to say nothing of our respective day jobs. As soon as we started talking about such a tome, we realised how valuable it would be to gather together great stories about UX in libraries – stories which would advocate for more ethnography and design thinking, encourage discussion and debate, and help kick-start library UX projects, big and small. Whether we have achieved our aim or not we will have to wait and see, but the contributors to this volume remain convinced that in today's highly complex library and information world we must adopt user experience research methods to observe, listen to and question our users if we are to understand them more fully and offer services that they need.

We are hugely grateful to all of our contributors, not only for their mindful chapters, but also for their patience – suffice to say we embarked on this book in different jobs to the ones we have now. Thanks also to Dymphna Evans for readily agreeing to publish the book and immediately recognising the need for it in the library literature. One person whose name should probably be on the cover alongside ours is Marisa Priestner, who proved indispensable as eagle-eyed second proofer, queen of reference checking and manuscript preparation – thank you!

Matt's acknowledgements

I'd like to thank those I've worked with in all walks of my professional life. Thanks to Andy for being a genuine friend, supporter and collaborator. Above all, thanks to my family; Rachel, Dylan and Oz. You are, as they say, the best.

Andy's acknowledgements

I'd like to thank Bryony Ramsden who I hold directly responsible for igniting my ethnography flame, and Donna 'force of nature' Lanclos for fanning it. Grateful thanks also to everyone who made UXLibs such a success, especially Georgina

Cronin who shared most of the pain. I'd also like to thank her and Ange Fitzpatrick for starting the UX journey with me, for singing with me in the office and for otters. As for Matt – back atcha fella!

Matt Borg
Andy Priestner

Contributors

Andy Priestner (editor) is a freelance trainer and consultant specialising in user experience, social media, storytelling, marketing, communications and team-building, working with libraries (academic and public), universities and the private sector in the UK and mainland Europe. He originated the UX in Libraries conference after embarking on several ethnographic research projects at Cambridge University's Judge Business School, where he was Head of Information & Library Services between 2007 and 2015. His interest and expertise in user experience has most recently led to his appointment as manager of Cambridge University Library's FutureLib innovation programme, which employs ethnography and human-centred design to explore and deliver innovative new services and products across Cambridge's many libraries. This is his second co-edited academic volume; the first, with Elizabeth Tilley, was *Personalising Library Services in Higher Education* (Ashgate, 2012). Andy was President of the European Business Schools Librarians Group (2014–2015) and Chair of the Business Librarians Association (2006–2010). He is a trained LEGO Serious Play facilitator and blogs regularly as 'Constructivist'.

Matt Borg (editor) is a librarian, trainer, geek and troublemaker. For over 14 years he worked in academic libraries in a variety of roles. At Sheffield Hallam University he was an academic librarian, where he coded and designed the library website and was a lecturer in the Business School on information management. He also co-created the Information and Creativity in Libraries conference (I2C2). His passion for UX enabled him to initiate a research-based approach to user engagement at Sheffield Hallam, focusing on interaction with library tools. This led to a number of talks and keynotes on the topic, and an invitation to collaborate with Andy by joining the organising committee for the UX in Libraries conference. In September 2014 he moved to ProQuest Workflow Solutions. He works with libraries across Europe on library technologies including discovery systems and library services platforms. Previous academic publications include chapters on responsive web design for libraries ('Best of Both Worlds' in *M-libraries 4: From Margin to Mainstream*, Facet, 2013) and information literacy and discovery systems (*The Road to Information Literacy: Librarians as Facilitators of Learning*, IFLA, 2012). Matt is also a part-time freelance

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Penny Andrews is a writer, performer, para-athlete and librarian. She'd call herself a polymath, but that would imply a greater objective level of success at these things, when she's probably better known for deconstructing popular culture and engaging in professional debate via social media. She managed not to swear or stutter that one time she performed on BBC Radio 4. *Doctor Who* is one of Penny's special interests (she's autistic, so that implies a very special level of interest), but she can often be persuaded to talk about libraries, Open Access to research, accessibility and other slightly less cultish topics.

Andrew D. Asher is the Assessment Librarian at Indiana University Bloomington, where he leads the libraries' qualitative and quantitative assessment programs and conducts research on the information practices of students and faculty. His most recent projects have examined how 'discovery' search tools influence undergraduates' research processes, how students locate, evaluate, and utilise information on research assignments, and how university researchers manage and preserve their research data. From 2008–2010, Andrew was the Lead Research Anthropologist for the Ethnographic Research in Illinois Academic Libraries (ERIAL) Project (http://www.erialproject.org/), a two-year study of student research processes at five Illinois universities and the largest ethnographic study of libraries undertaken to date. An ethnographer and anthropologist by vocation, Andrew holds a PhD in sociocultural anthropology from the University of Illinois at Urbana-Champaign, and has written and presented widely on using ethnography in academic libraries, including the co-edited volume, *College Libraries and Student Cultures* (ALA Editions, 2012). He is also currently writing a methodological handbook for librarians on developing and implementing anthropological and other qualitative research methods in libraries.

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Carrie Donovan is Head of Teaching & Learning for the Indiana University Libraries, where she works with students, faculty and instructors to connect the libraries to student learning. Carrie's contribution to information literacy and learning assessment is made evident through her publications and presentations

on the topic, as well as her engagement in professional organisations. She currently serves as a facilitator and curriculum designer for the Association of College & Research Libraries' Assessment in Action initiative. At IU, Carrie advocates for information literacy assessment across the curriculum to ensure the libraries' centrality to disciplinary discourse and student learning. Carrie's own research areas of interest include the review and reward of librarians' teaching, student-centred learning for library instruction, and critical information literacy. Carrie received her Master of Library Science degree from Indiana University.

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Nicola Grayson has worked in academic libraries since 2005. In 2012 she secured a post at the Alan Gilbert Learning Commons which is part of the University of Manchester Library. Nicola is currently a part of the Learning Development Team, responsible for developing the award-winning 'My Learning Essentials' Open Training Programme. She focuses on academic skills and broader student support in her work, designing and delivering workshops, and is also responsible for the library's team of 'Student Rovers' and their research. In 2015 Nicola completed her doctorate in the subject area of philosophy and her research centred heavily on the communication of ideas in the works of Immanuel Kant. In her current position she contributes to key library and strategic projects and works generally to promote and sustain student skills support at the University of Manchester.

Paul-Jervis Heath leads the design studio at Modern Human, a design practice and innovation consultancy. He and his team of researchers, designers and technologists apply human-centred design to imagine future services and meaningful digital products. He is a designer and innovation consultant with 17 years' experience of helping companies make fundamental changes to their business by combining design thinking with business strategy and cutting-edge technology. He has led design on a wide variety of projects including in-car information systems for driverless cars, smart home appliances, future libraries and retail stores of the future, as well as many multichannel services and digital products. Paul works closely with the University of Cambridge on their FutureLib programme, which explores the future of academic libraries at the institution. He continues to be involved in designing future libraries around the changing needs of their patrons through a variety of design and strategy projects.

Helen Jamieson is Customer Services Manager within Learning Services at Edge Hill University, Lancashire, UK. Her current role involves overall responsibility for the libraries' learning spaces as well as managing and developing all

physical and virtual enquiry services. Helen has worked in higher education libraries for nearly 20 years. Her roles have been varied and have included managing services for distance learners and delivering learner support. Recent management roles have focused more on operational and strategic responsibilities in relation to learning spaces and service provision. A particular interest for Helen is the area of customer service and she is the service lead for the Customer Service Excellence award.

Rosie Jones has worked in academic libraries since 2001. In 2011 she moved into a specialist role, project-managing the development and implementation of the award-winning Alan Gilbert Learning Commons at the University of Manchester Library. After the success of this project her remit grew to planning, initiating and managing a wider range of complex library projects covering all library spaces and any plans for library management of a learning and study space. She is now Associate Director of Library Services at Liverpool John Moores University, where she continues to develop her expertise in this area through the new Copperas Hill development, an ambitious project to create a community for learning and knowledge in the heart of Liverpool city centre.

Donna M. Lanclos is an anthropologist working with ethnographic methods and analysis to inform and change policy in higher education, in particular in and around libraries, learning spaces, and teaching and learning practices. She is Associate Professor for Anthropological Research at the J. Murrey Atkins Library at UNC Charlotte. Her research includes how students and staff engage with the nature of information and knowledge, how ethnography and anthropology can be used as tools in academic development and can influence policy and practice in higher education, physical and virtual spaces in academia, and how technology impacts learning, teaching and research. She collaborates with librarians, engineers, anthropologists, sociologists, education technology professionals, architects and designers. Donna has conducted anthropological research on academic practice in libraries not only at UNC Charlotte, but also University College, London. She collaborates with colleagues in the US and the UK, investigating the nature of learning landscapes and academic taskscapes, so as to better contextualize the behaviors that take place and problems that erupt in library spaces. She has conducted workshops for professional development at Imperial College, Kingston University, NUI Galway, Parsons the New School (NYC) and Carnegie Mellon University. Details about this work and other projects can be found at http://www.donnalanclos.com.

Helen Murphy is Assistant Librarian at the English Faculty Library, University of Cambridge, where she co-runs the library's ever-expanding teaching programme and takes a leading role in new initiatives, especially those that involve fabricating spurious excuses for the rest of the staff to do fancy dress. She likes talking to students and academics, fixing broken things, her cats, watching *Murder, She Wrote*, and avoiding writing biographies like this one. UX appeals to her because it's about making libraries better for the always complex and

often brilliant human beings who might use them and because – until now at least – it hasn't involved writing any biographies at all.

Bryony Ramsden is a Subject Librarian at the University of Huddersfield, and has worked in libraries since the late 1990s. She was research assistant on the first phase of the 'Library Impact Data Project' (https://library3.hud.ac.uk/blogs/lidp/) which proved a correlation between library use and level of degree attained. She has also worked as a research assistant on an internally funded library project investigating post-occupancy informal learning space use. The results of the project led to her current research for her PhD on user behaviour in academic libraries, which utilises ethnographic methods to collect the data from a number of universities.

Matthew Reidsma is the Web Services Librarian at Grand Valley State University in Allendale, Michigan. He is the co-founder and Editor-in-Chief of *Weave: Journal of Library User Experience*, a peer-reviewed, open access journal for Library User Experience professionals. He is the author of *Responsive Web Design for Libraries* published by ALA TechSource, and the forthcoming *Customizing Library Vendor Tools for Better UX* from Libraries Unlimited. He speaks about library websites, user experience, and usability around the world. *Library Journal* named him a 'Mover and Shaker' in 2013, which led to many unfortunate dance-related jokes in the Reidsma household. He writes about libraries and technology at http://matthewreidsma.com.

Elizabeth (Libby) Tilley has successfully managed both a science library and an arts library at the University of Cambridge and has been regarded, in both places, as an expert in the subject. This expertise has come about by being embedded in the life of the discipline, observing what students and researchers 'do', and subsequently leading and adapting library services to better suit user need. A PGCE from an earlier life, librarianship qualifications, and being a Fellow of the Higher Education Academy have contributed to her focus on teaching in addressing the user experience. She currently also manages the School of Arts and Humanities libraries at Cambridge. However, tea@three at the English Library remains her self-confessed number-one opportunity for building relationships with students. A recipient of tea and cake commented recently: 'Thank you for being such a good listener and discussant; I really appreciate your sense of humour and taste in cakes.' It's clearly all about the stories.

Bea Turpin, Deborah Harrop, Edward Oyston, Maurice Teasdale and John McNamara were all colleagues at Sheffield Hallam University and members of the learning centres redevelopment project team. This team, along with others, was responsible for the redevelopment project which radically changed and updated the way learning centre spaces function and feel. The team was also responsible for developing the evidence-based approach which underpinned the project. Edward and Maurice led the project, provided the strategic vision and, working with John in the Estates department, ensured the project's successful implementation. Bea and Deborah led the research into learners' preferences.

David Jenkin, Design Director at Alexi Marmot Associates (AMA), worked in a collaborative way with the SHU team to develop the learning centres. He is a highly experienced architect known for his design and planning of interior space. His skill is as an enabler, matching the complex and changing requirements of users to the building design, recognising the need to be pragmatic whilst maintaining a vision for possible future needs.

Margaret Westbury is the Librarian for Wolfson College, University of Cambridge. She has worked in a variety of libraries and library services during her career, including the Bill & Melinda Gates Foundation, the University of California at San Diego, and Jones International University (a 100% online university) in various capacities, most of them technology related. She has a passion for UX, using social media and creating usable library spaces, and is keen to find ways to make the academic libraries relevant for twenty-first-century researchers. She is currently working on a PhD in technology-enhanced learning which explores the implications of new educational technologies on library services and spaces.

14 What makes an informal learning space?

A case study from Sheffield Hallam University

Bea Turpin, Deborah Harrop, Edward Oyston, Maurice Teasdale, David Jenkin and John McNamara

This case study will explore what makes an informal learning space. To do this we will consider the evidence-based practice at Sheffield Hallam University and the 5-year redevelopment project which transformed learning centre spaces. Redevelopment projects are expensive, long-term investments, and you need to maximise the chance of meeting current and future student needs and expectations. The research underpinning this case study explored learner preferences within informal learning spaces. In the course of this chapter we will focus on the following aspects: (1) the development of a robust research methodology and the creation of a typology of learning space preference attributes; and (2) the translation and implementation of research outcomes into practical design solutions which support the preferences of learners and enhance the user experience.

There is no universally agreed definition of informal learning spaces, so we elected to define them as 'non-discipline specific spaces frequented by both staff and students for self-directed learning activities'. These spaces can be within and outside library spaces.

Sheffield Hallam University is based across two campuses. The larger campus is located in the heart of Sheffield city centre, and the smaller campus is in the leafy suburbs and is predominately a one-faculty campus. Both campuses offer near equitable provision in terms of the types of informal learning spaces provided, including learning centres, open access PC laboratories, catering outlets, cafés, atrium spaces and hallway spaces. The architecture differs significantly between the campuses, and both present benefits and challenges in equal measure.

All of the different types of on-campus informal learning spaces were part of our research which commenced in late 2008 and, due to its scale, continued in tandem with the early phases of the redevelopment project.

Research methodology

The catalyst for this robust, evidence-based research stemmed from a Learning Centre department working group which looked at how the learning centres were being used by students. This group comprised staff from the Learning Centre

department, wider support services, including IT, and representation from the Students' Union. Investigation was also undertaken by way of visits to other higher education institutions and feedback obtained from an ongoing learner engagement strategy. In addition, the appointed architects, Alexi Marmot Associates (AMA), had prior experience in learning spaces research (AMA Alexi Marmot Associates in association with Haa Design, 2006; JISC, 2006), and so this was utilised and considered a meaningful factor when awarding the redevelopment contracts.

Data collection

The aim of our research was to investigate what makes successful higher education informal learning spaces. Our objectives are summarised as follows:

> to determine learners' behaviours, attitudes and preferences in relation to where, what, when, how and why they use informal learning spaces; and to enable evidence-based decisions in the redevelopment of the learning centres and contribute to informal learning space design internally and externally.

The research used mixed mode methods, was longitudinal and broken down into two distinct phases. In brief, Phase I included all Sheffield Hallam University learning centre spaces, while Phase II looked at a stratified random sample of non-learning centre, informal spaces. Both phases used identical methods and were piloted.

The quantitative data, collected in the form of non-participant observational sweeps, with predefined criteria recorded using a 'five-bar gate' tally, sought to establish who, what, where and when, in relation to learners' behaviours and activities in informal learning spaces. In Phase I, the observational sweeps were undertaken on three different dates during a 4-month period. Phase II was undertaken 1 year later and one date was selected. On each date, the sweeps were carried out at four intervals throughout the day. The dates for the observational sweeps were randomly selected within the 4-month period, which was chosen to cover peak assignment hand-in dates and examination periods.

This research was followed up with qualitative data collection exercises which included coordinate mapping (learners drawing on a map where they had been or planned to go that day) or photographic mapping (learners taking photographs of preferred spaces based on a list of questions). Both exercises concluded with a 5- to 10-minute semi-structured interview which was recorded. The qualitative research focused on why learners exhibited and held particular informal learning space behaviours and attitudes, and in doing so sought to 'illuminate the people behind the numbers and put faces on the statistics' (Patton, 2002, p. 10). Phase I generated 80 interviews (20 interviews per qualitative exercise at each campus). Phase II generated 160 interviews (20 interviews per qualitative exercise, repeated twice at each campus). Combined, this generated 240 interviews.

Data collection was undertaken by ourselves and other colleagues from Sheffield Hallam University. (Some examples of the data collection templates used can be found on the UX in Libraries website – see http://uxlib.org.)

In addition, we undertook a broad literature search to try to identify possible theoretical frameworks which underpin informal learning space design and evaluation.

Data analysis

The quantitative data was transposed into Microsoft Excel and used to calculate the maximum and mean usage of spaces and aspects such as percentage occupancy; percentage of learners working in pairs; percentage working in groups; and size of group. The results were also used to create a series of colour-coded maps. The qualitative data was coded using a thematic, emergent coding scheme, as described by Robson (2011, pp. 474–6). From the data, there surfaced a number of themes which were important to our learners and therefore our spaces. Using this data, we generated a typology (a system of classification) of learning space preference attributes. The typology comprises nine attributes which are not hierarchical. The typology is designed to inform evaluation and decision-making activities relating to informal learning space design in higher education. These attributes, and a brief description of each, are as follows:

- Destination – where learners go to study;
- Identity – the ethos of a space and how a learner feels it should be used;
- Conversation – spaces for collaboration and interpersonal communication;
- Community – support and a sense of common purpose which can be found in shared learning spaces;
- Retreat – privacy and sound levels;
- Timely – just in time and on demand, planned study, short and long stay;
- Human factors – ergonomics of study spaces and their physical attributes;
- Resources – access, what and how resources are used;
- Refreshments – food and drink.

For further details about the typology, see Harrop and Turpin (2013).

Rationale for methodology

Our decision to use quantitative non-participant observational sweeps was informed by Roberts and Weaver's (2007) research which evaluated the Learning Gateway at the University of Cumbria by exploring the interactions between learners and their environments, and which sought to capture learners' current and future learning preferences.

The coordinate and photographic mapping exercises were designed to elucidate why learners exhibited and held particular informal learning space behaviours and attitudes, but were intended to be complementary and yield different types of

responses. Our evaluation of Phase I revealed the qualitative 'why' aspect to be the most complex question, and prompted us to repeat the qualitative exercises twice in Phase II. This adaptive approach is referred to by Robson (2002, p. 87) as a 'flexible element' in a research strategy.

The use of semi-structured interviews in both qualitative exercises was purposeful as we felt that this approach enabled participants to have more latitude in response, whilst at the same time retaining focus.

The photographic mapping exercise was adapted from a study undertaken by Nancy Fried Foster and Susan Gibbons at the University of Rochester in the US (2007). In particular we selected it because Briden's (2007) evaluation revealed anecdotal evidence that the approach increased participation as learners found the method more engaging. However, Briden also identified the time lapse between learners taking photographs and the follow-up interview as problematic. Consequently, at Sheffield Hallam University, photographs and interviews followed on immediately from one another and we accompanied the learner throughout the data collection exercise. This approach had the added advantage of ensuring learners did not take photographs of other learners without their permission. Overall, the photographic mapping succeeded in providing a type of visual sociology as it enabled participants to 'move from the concrete (represented by the literal objects in the image) to the socially abstract (what the objects in the photo mean to the individual being interviewed)' (Harper, 1984, p. 21).

The same study at the University of Rochester also used a near identical 'mapping exercise' (Clark, 2007), where learners were given maps of the campus and asked to record where they went on one given weekday. This information was then supplemented by interviews. To maximise the reliability of responses, learners were only asked to comment on their movements on the day of the research. The strategy was amended at Sheffield Hallam University to reduce the quantity of descriptive data and shift the focus towards why learners were exhibiting particular behaviours and attitudes.

Presenting the findings from our research was challenging, as was working within time frames that allowed them to be easily fed into the redevelopment of the learning centres. Of particular use was a 2008 study by Sheffield Hallam University to evaluate a newly built learning centre space on level 4 of the Adsetts Learning Centre, using what were called 'research diaries'. A key lesson from the authors' evaluation of their own research was that the use of verbatim student comments provided a 'powerful contribution to ongoing institutional initiatives' (Aspden and Thorpe, 2009, p. 1). In the context of our research, photographs and maps could easily be shared with colleagues to offer a visual snapshot of learners' behaviours and attitudes. The option to readily integrate this information, alongside verbatim student comments, was pivotal to our decision to use the typology described earlier.

Using a typology to present the findings enabled a collection of attributes to be associated with learners' informal learning space preferences. It also allowed in-depth analysis and discussion of each attribute whilst still responding to the research aim as a whole. Presently, we have identified one example (Beagle, 2004) of research on informal learning spaces where a typology is used as a means to distinguish a

learning commons from an information commons. Walton (2006) and Watson (2007) use similar approaches, although their findings are organised into themes.

Once we had decided on our research methods, a research protocol was submitted to the Learning Centre department working group which looks at how the learning centres are being used by students. Ethical approval was not required as our research did not collect information of a personal or sensitive nature. Digital signage and posters were displayed to make learners aware of the quantitative data collection, and participants in the qualitative exercises were asked to complete a consent form. All data collected was anonymised, and personal information from the consent forms was kept confidential and separated from the research data.

Critique of methodology

The decision to use three data collection methods, with each having large sample sizes, maximised opportunity for data triangulation and sought to achieve reliability and validity. A consequence of this was the challenging quantity of data gathered from the research. The volume of work could have been mitigated through extension of our research team; however there was concern that a larger team may not be as effectual and the same depth of understanding of the data may not have resulted.

The five-bar gate tally, which was used as the instrument for the quantitative data collection, was problematic because we were unable to tie spaces to the specific activities being undertaken at them. The research did not collect data during overnight periods, so if learners' preferences varied pre-10 a.m. and post-7 p.m. sweeps and they did not report these preferences in the qualitative data collection exercises, then this information would not have been recorded. During data collection exercises, we felt we were readily identified by learners as staff from the Learning Centre department. This was despite not needing to interact with participants during the quantitative data collection and not identifying ourselves or making participants aware of the context of the study until the qualitative exercises had been completed. During the coordinate mapping exercise, the learner was accompanied throughout the data collection exercise and the data was entered onto the maps on the learner's behalf, as the maps were internal documents and not felt to be user friendly. It would have been possible to reduce the risk of the 'Hawthorne effect' (Payne and Payne, 2004, p. 108) – individuals modifying or improving an aspect of their behaviour in response to their awareness of being observed – by recruiting a data collection team not containing Sheffield Hallam University staff. However, this would not have been financially viable. We also felt that involvement in data collection made staff feel closer to the project and more able to assimilate the findings.

As a case study, the findings are generalisable to learners at Sheffield Hallam University during the time frames of the data collection. Whilst it is impossible to assert that our findings are generalisable, or externally valid, outside of the context of Sheffield Hallam University, our research adopts Denscombe's (2003, p. 43) stance that 'the extent to which findings from the case study can be generalised to other examples in the class depends on how far the case study is similar to others

of its type.' In this respect, generalisability could have been attained, as research published about other higher education institutions' informal learning spaces cite elements comparable to our findings (e.g. Herbert, 1998; Elliot Burns, 2005; Walton, 2006; Foster and Gibbons, 2007; Watson, 2007; Bryant, Matthews and Walton, 2009; Dugdale, 2009; Lippman, 2010; Matthews, Andrews and Adams, 2011). Bassey (1981, p. 85) suggests 'relatability', as opposed to generalisability, is of greater merit when reflecting on the research design and methods involved in a case study. He goes on to say it is more important that an individual is able to relate to an external case study and interpret the findings for their own decision-making purposes, rather than simply using research able to claim generalisability. Advocating Bassey's stance, our research at Sheffield Hallam University is valuable and is intended to strengthen dialogue with others involved in educational and learning spaces research; but the applicability of the findings should be interpreted at a localised level. Bassey concludes that any findings with relatability extend the boundaries of knowledge and are therefore valid for educational research.

The learning centres redevelopment project

The project scope

The learning centres at Sheffield Hallam University provide access to physical and electronic library resources, learning spaces for a range of study activities, IT facilities and support for both library and IT services. Both locations include café facilities, and food and drink are allowed throughout the buildings. All learning centre physical spaces were in the scope of the redevelopment except where stated later.

The award-winning, purpose-built Adsetts Learning Centre is a seven-storey building located in the city centre. It provides six levels of open-plan learning spaces and a central atrium running through the middle of the building. The entrance is on Level 4. Levels 2 through to 6 house the main printed library stock, student learning spaces and support services. These were the areas in the scope of the redevelopment project. Level 1 (comprising the stack), the Level 4 café area and Level 7 (staff spaces) were not included.

The Collegiate Learning Centre is a smaller two-storey building, offering a series of interconnected spaces which pull together new buildings and repurposed environments. Both of the levels were part of the redevelopment project. The staff workspaces were excluded.

The project also involved the reorganisation of printed materials and redevelopment of the help desks.

The project brief

The original learning centre model developed at Sheffield Hallam University was driven by an educational philosophy which recognised that students learn best

when they are actively engaged in learning and that they are more likely to succeed when they have the maximum number of choices as to how they engage in learning. The breadth of opportunities provided for individual and collaborative learning and the integrated approach to services and resource provision were what made these learning centres distinctive when they were introduced in 1996. Their approach was sector-leading and had largely stood the test of time since then, but the purpose of the redevelopment project was to refresh and update the concept, to accommodate evolving learning styles and preferences, as well as developments in information provision, within refurbished and reconfigured buildings. Furthermore, as the number of formal and informal learning spaces across campus was increasing, there was a recognition that the distinctive role of learning centres needed to fit into a broader, coherent learning landscape. Above all, the project aimed to ensure that the learning centres stayed true to the original brief described by Bulpitt (1996) of creating a building that conveys the excitement of learning and discovery to students.

As this project was a refurbishment of existing buildings, working sympathetically within the current architectural designs was essential, although there was some scope to make limited structural changes. The project also provided an opportunity to maintain and improve the environmental control systems.

The project: a phased approach

The redevelopment was carried out over 4 years. The majority of the building work took place in the quieter summer months, whereas the planning and design work was undertaken during term time. Work started in 2010 with the conversion of a relatively small area that was previously a staff workspace in the Adsetts Learning Centre into new learning spaces for students. This work also provided the opportunity to introduce a new automated book return facility and a redesigned and extended help desk. The project was completed in 2013 with the opening of the newly redeveloped spaces at the Collegiate Learning Centre. The phases of the project are shown in Figure 14.1.

The phased approach enabled the learning centre services and materials to remain available throughout the project. Additional funding and resources were required to move materials from areas being developed to open areas and to provide alternative facilities when these were required. As far as possible, work was undertaken outside of opening hours or at quiet times to mitigate disturbance. This was feasible at this time because opening hours were more restricted during vacations. Today the learning centres are open 24 hours a day, 365 days a year.

Having several phases proved to be fortuitous in providing opportunities to learn from and build on the ideas implemented previously and to develop the project in a dynamic way. It also enabled a deeper understanding of the results of the research and allowed time for refinement and reflection.

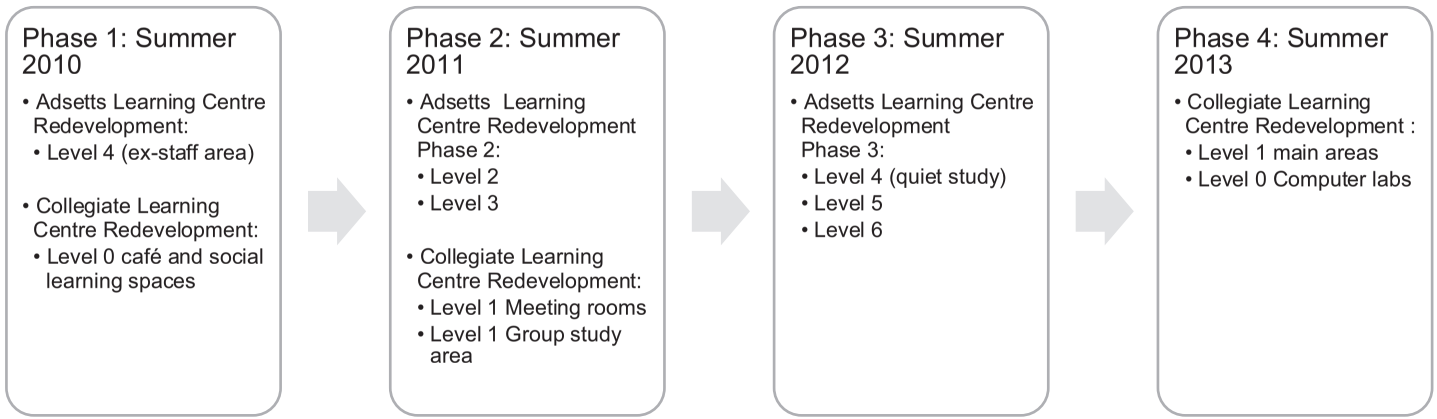

Figure 14.1 Phases of learning centre redevelopment

Translating learners' needs into design

The challenge at Sheffield Hallam University was to weave the findings from the learning spaces research into the Learning Centres Redevelopment Project, along with the knowledge, experience and expertise of staff from AMA, the Learning Centre department and the Estates department.

The designs for the learning centres evolved using a collaborative and dynamic process and allowed many facets to be considered. There were two key areas to consider: first, how to make the overall environment of the existing learning centre buildings better suited to the students' learning experience; and second, how to use the learning spaces research and experience of those involved in the redevelopment project to devise new layouts and spaces within these buildings.

Improving the overall environment

At both learning centres, the approach was to return to the original building concept and to make more of the design features of the spaces. For example, in the Adsetts Learning Centre, opening up the atrium allowed daylight to penetrate further into the floors, while keeping enclosed rooms to the edges kept the central areas free from restricted views. Improved circulation routes and aspects across the levels resulted in the building being more navigable and welcoming, and was a return to a clear planning arrangement associated with the original intent of the Adsetts Learning Centre.

Improving the quality of light was a prime consideration as the design process developed. A simple but important change was to paint the learning centre ceilings white and install new low-energy light fittings to realise the full height and scale of the spaces, giving the feeling of bigger, simpler and more pleasant environments. This was supported by new controls for the lighting and the environmental systems.

Although there was much debate about how big the printed collections might be in the future; currently access to the books remains important, so we decided to locate the collections in the same place on each floor. This ensured easy access and localised study facilities. The floor loading was already sufficient to allow the books to be located almost anywhere, and the design of the new lighting supported this concept while allowing for replanning in the future without major changes being necessary.

Fundamental to all of the planning and design ideas was that the layouts and services would not only suit the needs of the students now, but also seek to design for the future. However, planning spaces suitable for an unknown longer-term future is immensely hard, so we were particularly mindful of designing layouts which could be recalibrated relatively easily, minimising the need for large-scale works in the near future.

Planning and designing spaces at building, discrete space and workspace level

The project considered the desired overall look and feel for the buildings, then how discrete spaces could be created, and finally the design of each desk or study

workspace. This layered approach to planning and designing spaces and how it was supported by our research evidence is described next.

Learning spaces at the building level

The design of the learning centres' study spaces needed to ensure that continued provision was made for learners to engage in different activities and to offer a range of attractive environments meeting different preferences. How to provide these different environments and the proportion of space allocated to each were key decisions in the design process. Another overarching principle was to maintain or increase the number of study spaces. The circulation spaces and footprint of the printed stock were also considered, and a balance was reached that allowed for easy movement around the building and access to printed resources while ensuring the desired number of spaces.

Learners expressed a preference for a variety of different learning spaces depending on the task they were undertaking and the environment they found supportive. One key aspect was individual or collaborative study and the related issues of sound and feel. Learners expressed preferences for quiet and silent individual study environments; spaces for individual study in a more vibrant environment which included stimulating background 'buzz' or opportunities for people-watching; and spaces which supported varying degrees of collaborative work. The quantitative arm of our research provided data on the numbers of learners studying individually, in pairs and in groups of different sizes. Learners were also observed undertaking individual work alongside colleagues and friends, which we termed 'working alongside'. The redeveloped spaces were therefore designed to support individual study in silent, quiet and vibrant environments and learners working alongside colleagues, working in pairs and working in groups of various sizes. The research data also highlighted the spaces prior to the redevelopment that were heavily utilised and those which were underutilised. Alongside evidence from space booking statistics, this data contributed to decisions about the proportion of space allocated to each of the different types of environment.

In both learning centres, bookable spaces and open access spaces are now provided, supporting learner preferences for planned study, on-demand study and studying for long periods. Quick access areas near the entrances and printers support the need for short-stay, just-in-time learning activities. The proportion of bookable spaces and open access spaces varies depending on the type of space and the expected levels of demand. For example, meeting rooms are in very high demand, so the majority of these are bookable. In contrast, while some individual silent study spaces are available to book, many are open access.

Having decided on the types of environments required and the proportion of each, the areas of the buildings in which these could be most effectively located were considered.

Discrete spaces within buildings

The experience of our learning centre staff was that it was difficult, if not impossible, to provide a functioning quiet or silent area that was not clearly separated from the

collaborative spaces and circulation areas. Prior to the redevelopment project, quiet and silent spaces, particularly in the open-plan Adsetts Learning Centre, were not separated from other spaces and were therefore ineffective, and so improving this situation was one of the aims of the project. The open-plan nature of the Adsetts Learning Centre also resulted in large spaces with no clear identity, where there was little privacy, sound travelled, and circulation routes were unclear. Whilst wanting to keep the spaces as open as possible and provide good lines of sight and natural light, our solution to all these issues was to create discrete spaces, thus providing effective, functioning and attractive areas for the different types of spaces within the buildings. This was supported by our research which indicated that spaces should have a clear identity, a purpose conveyed by the design, and should live up to learner expectations.

The different levels of the buildings were an obvious option for creating discrete spaces. In the Collegiate Learning Centre, floor levels are divided into smaller areas and rooms, offering a ready-made option in most cases. The open-plan nature of the Adsetts Learning Centre presented more of a challenge. To address this, ceiling-height glass walls were used to create discrete spaces for silent areas, quiet areas and group meeting rooms, and to differentiate the main bookable areas from open access areas. Lower height half walls (160 cm high) now break up what were previously large open-plan areas. These also double as whiteboards and places to mount large LCD screens for use by groups of learners. Wooden acoustic walls perform a similar function, providing a barrier to sound and creating discrete learning spaces and, in one instance, a room housing a special collection of print materials. These also provide an attractive design feature; in one location it includes a video wall displaying student work and in another, built-in display cabinets for exhibiting art. Figure 14.2 shows an outline plan of Level 2 of the Adsetts Learning

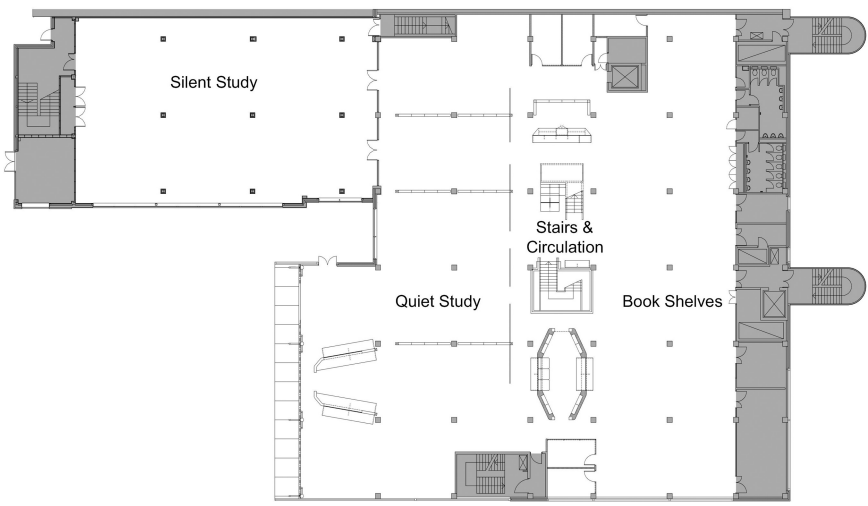

Figure 14.2 Adsetts Learning Centre Level 2 learning spaces showing the additional walls and half walls

Note: Previously walled areas around the perimeters are shaded.

Centre. New ceiling-height glass walls separate the silent study spaces from the quiet area and protect them from the stairs and circulation routes. Half walls and acoustic walls are also used to differentiate spaces and create smaller areas with a more defined feel.

In addition, mobile transparent screens are offered in some areas and further enable learners to create their own discrete spaces.

Desks and study spaces: supporting a range of preferences

One of the key findings from our research was that learners have their own list of preferences and requirements. This applies at the desk and study space level as well as at the more macro level of where to study and preferred environment. To cater for these preferences, a variety of study spaces supporting different activities and preferences are provided. While offering these choices, the look and feel of the overall design has been maintained by using consistent styles of furniture and colour palettes. Examples of study spaces are shown in Figure 14.3 which depicts the furniture layout in part of Level 5 in the Adsetts Learning Centre. This illustrates different shapes, sizes and orientations of tables and desks in an area designed for learners working in small groups or alongside colleagues. Where individual spaces are co-located in a collaborative environment, a range of spaces suitable for working together or in proximity is available. For group work, booths and round tables of various sizes are available to accommodate groups of different sizes.

Further variety in the spaces is provided through chairs of different designs: formal task chairs; relaxed, softer seating; and chairs with and without arms. The vast majority of these desks and chairs are the standard height for a workstation. There is a small number of low-level coffee tables with accompanying seating in waiting and meeting areas on Level 4. This type of furniture was seen to be underutilised in the research findings, and therefore very limited numbers were included in the redevelopment project.

One of the outcomes of our research was that in spite of the explosion in mobile devices, many learners still expressed a preference for using a fixed PC. The quantitative research corroborated this, showing that spaces with PCs were heavily utilised. The number of spaces with PCs was therefore maintained and in fact slightly increased as part of the project. However, it was clear that laptops and other mobile devices were also being used and were likely to increase in popularity, so spaces without fixed PCs were also provided. These spaces could be used by learners preferring to work with their own devices or with Learning Centre laptops. Some learners expressed a preference for working with papers and books and for space to spread out, and were observed working with a large number of papers or creating large pieces of work such as posters. The desks and tables without PCs also cater to those wishing to undertake this type of activity.

In spaces designed for group work, some are equipped with a PC and a large wall-mounted LCD screen, while others have two fixed PCs. Our research showed that, prior to redevelopment, spaces without power were very underutilised, and

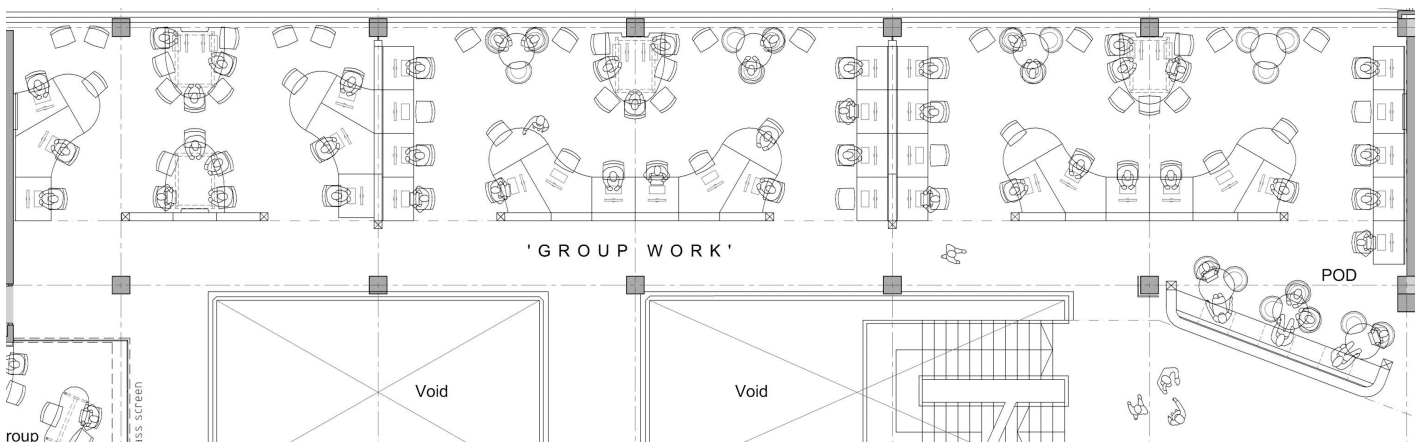

Figure 14.3 Furniture plan of part of Level 5 of the Adsetts Learning Centre

so now every space has easy access to a power socket which is either mounted on the desk or located on an adjacent wall or power pole. Desktop power is provided on desks both with and without fixed IT equipment, thus supporting learners wishing to use a PC in conjunction with mobile devices, as well as allowing for the removal of the fixed IT equipment if mobile devices become the preferred choice in the future.

Many learners expressed a preference for not being disturbed, not disturbing others and not being overlooked. While this preference partly related to sound levels, it also related to privacy. Different levels of privacy are achieved through desks and study places situated behind walls or screens in discrete areas and in locations ranging from out-of-the-way corners to higher traffic areas. Between study spaces, desk-mounted screens of heights between 20 cm and 70 cm also provide different levels of privacy. There are some spaces without desk-mounted screens to facilitate and encourage collaboration. Personal safety was also a key consideration, and so whilst more private spaces were provided, care was taken to ensure that they were visible from the main circulation areas – something judged to be particularly important at night when the buildings are less populated.

The design aimed to provide comfortable, functional and attractive study spaces that did not appear too densely populated and offered sufficient space for learners' needs. The space allocation was one of the key factors in achieving this. Our research demonstrated that learners often use IT and other resources in conjunction, and refreshments and personal belongings are also evident in their learning spaces. During the observational sweeps, it was noted that existing individual desks were too small for all of these possessions to be accommodated comfortably, and so such desks are now a minimum of 110 cm wide and are in many cases wider, providing a more generous allocation without reducing the number of learning spaces. In addition, fixed PCs, where present, are mounted underneath the desks to liberate more space on the desktops. Apportioning a similar allowance for each person in a group work setting would however create tables that would be too big to facilitate collaboration. This principle was therefore only applied to spaces intended for individual study.

Another key preference that the project sought to address was that natural light and ambient, well-lit spaces were important to many learners. The layout of workspaces was therefore designed to make use of natural light, to provide views across the space and to the outside, and to avoid blocking light from windows and other light sources. Brightness was also considered in the furniture selection, and resulted in the purchase of white desks and tables, light-coloured desk-mounted screens between desks, and chairs with mesh backs that allow light through. New internal walls were painted white to reflect light or constructed from glass to allow light to permeate deeper into the spaces. The overall brightness of the learning centres was enhanced through using accent colours of green, orange and blue, reflected in feature walls, large signage and the soft furniture. (Photographs and commentary illustrating the aforementioned aspects of the project can be found on the UX in Libraries website – see http://uxlib.org.)

Typology checklist

In constructing our typology of learning space preference attributes, we aimed to contribute to the dialogue about learning spaces by suggesting that when designing such informal spaces our nine non-hierarchical attributes should be considered. It was also clear that it would be useful to extend the practical usability of the typology by adding a checklist. In part this was driven by the questions we asked ourselves during the design process and recognition that communicating the findings was challenging, and that this may be a way to facilitate this. It is envisaged that the typology and checklist could be used to support future redevelopment projects at Sheffield Hallam University. Furthermore, it is hoped that this tool could be used at other higher education institutions; however, at present it is not known if they are truly transferable. The checklist is presented in Table 14.1.

Table 14.1 Typology checklist

Attribute	*Checklist*
Destination where learners go to study	• What will be the purpose of the space? • Which learning preferences will it support? • How will the space fit with other spaces available to the learner? • Is the space in a convenient location for the proposed purpose?
Identity the ethos of a space and how a learner feels it should be used	• How should the space 'feel'? • Does the space need multiple identities for different learners, times of the year, etc.? • How will the feel and purpose of the space be communicated? • How will the identity of the space be maintained? • Will learners be able to create their own space, for example by reconfiguring the furniture?
Conversation spaces for collaboration and interpersonal communication	• Is the space for collaborative learning? • How will collaborative learning be encouraged and facilitated by the space? • How will interpersonal communication be encouraged? • How will the space accommodate different group sizes?
Community support and a sense of common purpose which can be found in shared learning spaces	• How will social interactions be encouraged? • How will the space enable learners to support one another and/or take a break together? • How will the space have a sense of common purpose and offer a shared motivational environment? • Will the space engender 'working alongside'?
Retreat privacy and sound levels	• How will privacy be taken into consideration, for example not being overlooked or overheard? • Do personal spaces need to be clearly delineated? • How will learners avoid disturbing others or being disturbed?

(*Continued*)

Table 14.1 (Continued)

Attribute	*Checklist*
Timely just in time and on demand	• How will the space support learners undertaking quick tasks, for example printing out an assignment near to a deadline? • How will the space support learners studying for extended periods? • Do learners need to plan to use the space in advance, for example through booking, and/or will there be open access provision?
Human Factors ergonomics of study spaces and their physical attributes	• How will ergonomic and physical factors be considered? Factors include lighting/natural light, outdoor spaces, temperature, sound, desk sizes, seating and accessibility.
Resources access, what and how resources are used	• What fixed technology needs to be provided – PCs, Macs, software, printers, large screens, etc.? • Will laptops and other mobile devices be provided and infrastructure available to support these and/or learners' own devices? • Will it be possible to use fixed devices, mobile devices and other resources in tandem? • Will support from staff be provided? • Is access to print resources required?
Refreshments food and drink	• What types of food and drink will be available for purchase through any outlet and/or self-service vending? • Will food and drink be welcomed everywhere? • Should any catering space support learning and how will it do this?

Conclusion

The research which informed the redevelopment of the learning centres at Sheffield Hallam University was derived from a multifaceted, lengthy data collection and analysis process. In choosing this route, our intention was to provide a strong evidence base which sought to be methodologically robust whilst also offering insights which could be translated into practical learning space design. In this case study, we have explained how we have applied the findings and resultant typology within the context of the redevelopment of the learning centres. The research findings were crucial in providing valuable information to inform the redevelopment project and the creation of the typology of learning space preference attributes enabled us to achieve the aim and objectives of the research.

Moving forward, our learners' behaviours, attitudes and preferences will evolve and our buildings need to stay in step with this. In response, Sheffield Hallam University has introduced learning spaces groups focusing on research, implementation and strategic University vision. These groups are considering the interrelationship of spaces across the University and the blurring of informal and formal spaces. A

team approach involving research, planning, design, estates and management will help ensure the University gets the facilities it needs, and the learners the spaces they deserve. Our approach is to be on the side of both the users and the building. To get them both working well together over time, using an evidence-based approach, is critical to bringing these long-term benefits to the University and its students.

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