

Research in Practice Guide



Foreword



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The RIBA recognises the vital role that knowledge – created through research – plays in the design and construction of the better buildings, communities and the environment that the RIBA champions. That is why becoming the hub for knowledge, innovation, research and debate on the built environment is a key element of the RIBA's strategy to the end of 2016.

The word “research” usually brings to mind the research that is done in universities and research organisations across the country. Research funding within the EU and around the world is actually increasing, despite the recent economic turmoil – with the many funding calls actively seeking projects linked to industry, knowledge transfer and applied research – and this presents one of “the opportunities for architects [which] have never been greater” as noted in 2011 by RIBA Building Futures.

There is another, largely un-vaunted, area of architectural research with which architects are already intimately connected: design research. Design research is at the very heart of what it means to be an architect, with practitioners solving problems and creating new knowledge through the process of design; new insights that are then embodied in the built form.

This document has been developed to support Research and Development in the RIBA Plan of Work 2013 and to give architects in practice a guide to undertaking research as part of a design project or as a unique research project in itself.

I hope that this guide will influence more architects in practice to develop and exploit their research skills within construction projects and join the thousands of design practices receiving funding for research and development.

Introduction

The RIBA Research in Practice Guide was developed as part of a project that looked into the state of housing research undertaken by architecture practices. This project titled 'Home Improvements' began with a survey and series of interviews with practitioners who suggested that architects consider research to be integral to their business. However it was clear that there are conflicting understandings of research, in particular about what exactly constitutes research and how it aligns with other everyday activities in practice.

This guide is meant to be read with the RIBA Plan of Work, giving architects practical guidance on how to understand and further exploit the research they already do. Its purpose is to help broaden architects' research horizons, building useful and rewarding programmes of work and strengthening relationships with the wider research community.

To avoid confusion about how research and development fits into architectural activities, and where it might fit into a practice's fee structure it is highlighted in the RIBA Plan of Work 2013 within the key support tasks taskbar. It states that during Stage 2 (Concept Design) Research and Development needs are undertaken, in Stage 3 (Developed Design) they are concluded and then the outputs are reviewed in Stage 7 (In Use) e.g. post occupancy evaluation, which may be a research project of its own.

How to use this guide

This document defines the two types of research that are undertaken by architects:

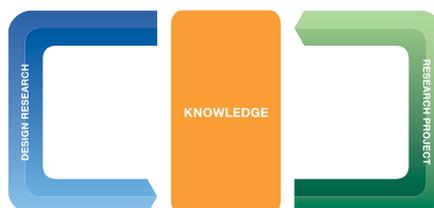
- **Design Research**, which is undertaken to solve a design aspect of a live project. All architects do this during the course of their design work, to a greater or lesser extent, but they don't necessarily recognise the activity as a research process. Once a decision has been made that further knowledge is required to progress a design aspect of a project, the first stage of design research (Problem Definition) begins.
- **Research Project**, which is a dedicated research project dealing with a particular subject matter, undertaken outside of a live project to progress the field of knowledge in a specific area. The first stage in a research project (Research Aims) details the activities necessary to define a research question, this may involve establishing a collaborative team and identifying funding possibilities.

All research projects grow out of a gap in the body of existing knowledge and as they are undertaken, whether design research or dedicated research projects, they begin to fill that gap.

This guide shows both types of research having their own paths which intersect with insight sharing and knowledge management activities, common to both. Design research can thus inform dedicated research projects and vice versa.

Italic text is used for terms that appear in the references at the end of the document where links to more information can be found.

The example outputs refer to practices that appear in Home Improvements: Housing Research in Practice which can be found at www.architecture.com/research



DESIGN RESEARCH

KNOWLEDGE

RESEARCH PROJECT

	Problem Definition	Understanding Precedents	Development and Testing	Sharing Insights	Knowledge Management	Research Aims	Investigation	Analysis
Purpose	To define the problem within the project that the design research is to answer, and to establish the boundaries of the research thereby optimising activity planning.	To analyse design precedents (built or unbuilt) to inform the design process.	To develop design solutions and investigate how well they address the problem.	To disseminate findings and ensure current and future projects benefit from knowledge gained (to ensure the design research has impact).	To ensure knowledge (from your own research and others) directly benefits everyday practice and future research projects.	To define the purpose and scope of the research project, and to secure resources/funding.	To determine how the research will be undertaken to get the most from the information/data to be collected.	To interpret the information collected during the investigation (to answer the research questions) and to develop focused findings.
Activities	<p>Agree a definition of the problem and what will constitute a successful design. This might arise in Preparation and Brief (RIBA Plan of Work stage 1) or during Concept Design (stage 2).</p> <p>Define what metrics will be used to measure success and how they will be assessed in Developed Design (stage 3) and during In Use (stage 7) e.g. through post occupancy evaluation. Metrics can be qualitative e.g. a description of the atmosphere of a space and quantitative e.g. a target air infiltration rate.</p>	<p>Search for relevant design precedents (in your own work or of others), e.g. via your office library and archives or using the RIBA library and collections.</p> <p>Assess how well these previous design solutions and projects relate to the design problem; e.g. are the buildings of similar area, use, construction? Do they have aspects that significantly differ?</p> <p>Select relevant design solutions from the design precedents.</p>	<p>Iteratively develop and test design solutions (based on precedents and original invention) against the measures of success.</p> <p>Activities may include sketching, comparing material/product properties, diagram analysis and building physical/virtual models to test against issues e.g. acoustics, energy use, lighting, materials, occupant behaviour, ventilation, site and waste.</p> <p>Identify further research questions as they arise (to inform design iterations and work post completion).</p> <p>Systematically document the testing & development process.</p>	<p>Decide how to share the findings. Funding conditions may require results to be shared in an academic journal, while commercially sensitive work might not be shared outside the practice.</p> <p>Identify the key audience for each output, e.g. project team, practice, academia, client, general public, and develop content in an appropriate format.</p> <p>Protect new intellectual property if appropriate, e.g. through copyright. <i>Creative Commons</i> gives a simple overview of the different types of copyright to use.</p>	<p>Identify what areas of research are relevant to you and your practice:</p> <ul style="list-style-type: none"> – What do you need to keep copies of? – What can be accessed via databases? – What can be signposted to, e.g. RIBA publications? – What is unimportant or easily accessed? – What are the cost implications? <p>Decide how to categorise the information that you store so that it is easily accessible, e.g. <i>Uniclass</i> to categorise product catalogues.</p> <p>Decide who accesses what; your research reports might be for internal use only or shared with others.</p>	<p>Draft research questions, aims and benefits (for you, your practice and society). A clear definition is vital to successful funding applications and research.</p> <p>Determine whether the research aims have been addressed by existing research, e.g. via a literature review.</p> <p>Establish partnerships to access necessary skills and experience. This may be a funding condition. Universities have expertise in this area. The <i>SCHOSA Review of Research</i> and <i>The Lambert Toolkit</i> are useful resources.</p> <p>Apply for funding, ensuring the project is tailored to the call and evidence of research experience is included.</p>	<p>Decide how the investigation will be carried out and ensure methods minimise biases to the results. How you intend to analyse data will impact on how it is collected.</p> <p>Identify and address any ethical issues that relate to the investigation.</p> <p>Identify the right tools for data management. Simple tools can be best for small data sets. <i>MANTRA</i> provides (free) clear and coherent courses and checklists on data management.</p> <p>Systematically conduct and record investigations.</p>	<p>Systematically analyse the information collected to answer the research questions.</p> <p>Activities may include:</p> <ul style="list-style-type: none"> – Graphical methods, e.g. to assess the results of air-tightness testing. – Statistical methods, e.g. to assess the significance of survey results. – Interview analysis, e.g. to develop theories about user experience via Grounded Theory Methodology. – Historic and cultural analyses. <p>Compare your findings to existing knowledge/studies to explain (unexpected) results and how they agree/differ, and why.</p>
Example Outputs <small>(For case studies refer to Home Improvements: Housing Research in Practice.)</small>	<p>These stages are integral to design research. Outputs may include, but are not limited to, parts of the brief, a literature review and a matrix of existing design projects/research.</p> <p><i>See Urban Splash Case Study.</i></p>		<p>Drawings, models and photographic surveys are all methods of recording the process of testing and developing design ideas.</p> <p><i>See Pitman Tozer Case Study.</i></p>	<p>Articles, Blogs, Exhibitions, Drawings, Films, Lectures, Papers, Reports and websites are all forms of dissemination.</p> <p>Outputs from testing and development might also be used to share insights but may require interpretative commentary.</p> <p><i>See Levitt Bernstein and Architype Case Studies.</i></p>	<p>A knowledge management resource should collect the outputs from Sharing Insights to be used as future precedents, e.g. an intranet or office library or a website for publicly available knowledge. This ensures knowledge isn't lost if staff change.</p> <p><i>See PRP Case Study.</i></p>	<p>A short report setting out:</p> <ul style="list-style-type: none"> – Why the project is needed? – What the research questions and aims are? – The findings of an initial literature review. <p><i>See Proctor and Matthews Case Study.</i></p>	<p>A study looking for specific correlations requires a method that measures specific variables, e.g. footfall patterns. A study looking to better understand residents views might use data from surveys, interviews or focus groups.</p> <p><i>For quantitative methods see Levitt Bernstein Case Study.</i></p> <p><i>For qualitative methods see FAT Case Study.</i></p>	<p>Analysis frequently takes the form of a written report, but annotated drawings, diagrams and models might also be outputs. Presentations can also be used to communicate findings.</p> <p><i>See FAT Case Study.</i></p>

Funding Sources

There are a variety of funding possibilities for both design research and dedicated research projects. When considering applying for funding University experts have the knowledge and experience to support you in your application. The following list will provide a first point of call to those new to funding.

The RIBA offers small amounts of funding for research. There is no set topic for funding and applications are assessed on the relevance of the projects and how achievable they are.
www.architecture.com/EducationAndCareers/PrizesScholarshipsandBursaries/Supportforresearch/SupportforResearch.aspx#.Ui7xZtKkrQq

If your business is liable to pay corporation tax and you are involved in innovating and improving products, performance and construction techniques, then you might be eligible for tax relief. According to HM Revenue & Customs guidelines, research and development takes place when a project – or a component of a larger project – seeks to achieve an advance in science or technology.
www.architecture.com/Files/RIBAProfessionalServices/ResearchAndDevelopment/RIBATaxCreditScheme-AGuideForArchitects.pdf

The UK Business Finance Supporter is a tool to identify appropriate and current funding sources and grants for UK business.
www.gov.uk/business-finance-support-finder

The TSB (Technology Strategy Board) is focused on supporting innovation in industry in a wide range of areas. Funding is typically gained through competition.
www.innovateuk.org

Knowledge Transfer Partnerships can be part funded by a government grant. The partnership involves a business working with an academic institution to generate new insights that can be immediately embedded into the business.
www.ktponline.org.uk

Scottish Enterprise Research and Development Grants can provide assistance to support industrial research and experimental development.
www.scottish-enterprise.com/fund-your-business/innovation-and-rd-grants.aspx

Research Councils UK (RCUK) are responsible for investing public money in research in the UK to advance knowledge and generate new ideas which lead to a productive economy, healthy society and contribute to a sustainable world. There are 7 different UK research councils that are part of RCUK including the Arts and Humanities Research Council.
www.rcuk.ac.uk
www.ahrc.ac.uk

Research councils often look for research experience. Collaborating with other practices and industry can help here. One example of this is PRP and Levitt Bernstein, who, together with HCA delivered an extensive literature review of existing regulations and guidelines for non-mainstream housing, which provides a substantial resource throughout housing practice.
www.prparchitects.co.uk/our-work/research/research-publications/2012/non-mainstream-housing-design-guidance.html

References

The Future for Architects, RIBA Building Futures

www.buildingfutures.org.uk/assets/downloads/The_Future_for_Architects_Full_Report_2.pdf

RIBA Plan of Work 2013

www.ribaplanofwork.com

Creative Commons

www.creativecommons.org

<http://www.ipo.gov.uk/copy.htm>

Uniclass

www.cpic.org.uk

SCHOSA: Standing Conference of Heads of Schools of Architecture

<http://www.schosa.org.uk>

SCHOSA Research Review

www.architecture.com/research

Lambert Toolkit

www.ipo.gov.uk/ipresearch-lambert.pdf

MANTRA

<http://datalib.edina.ac.uk/mantra/>

Home Improvements: Housing Research in Practice

www.shef.ac.uk/architecture/research

www.architecture.com/research

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