A project by

Irish Architecture Foundation

ARCHITECTS IN SCHOOLS

This book belongs to



# **CONTENTS**

02	Welcome	
••••••		
04	The Design Process	
06	EXPLORE	
10	RESEARCH	
16	DESIGN	
22	PRESENT	
26	REFLECT	
••••••		
20	Resources	
30	Careers	
31		
32	Glossary	
34	Acknowledgments	
Certificate of Participation		

# **WELCOME**

Welcome to your Architects in Schools 'Student Handbook'. You will be using this resource to explore your ideas, develop your designs and so much more!

This handbook is supplemented by a website, with additional guidelines and resources to help you during your project.

# Architects in Schools website mydesignjournal.ie/students

# Architecture is important

The buildings and spaces we use every day affect our lives and it is your right as a citizen to have a say about the design of the built environment. By participating in this project, you too can have a voice in the design process.

# **Architects in Schools**

Architects in Schools is an architecture project designed for secondary school students. This year your school is taking part! An architect will visit your school to facilitate 12 hours of design workshops. You will be guided through the design process and you will have the opportunity to explore your own ideas about architecture and the built environment. If your school is not part of the initiative, your teacher will guide you through the process.

# Share your ideas

The website is a place to share your ideas about architecture. You can also find out about other design projects happening in schools nationwide. To post on the website, email us with images of your work and a project description.

## email us

education@architecturefoundation.ie

# Irish Architecture Foundation

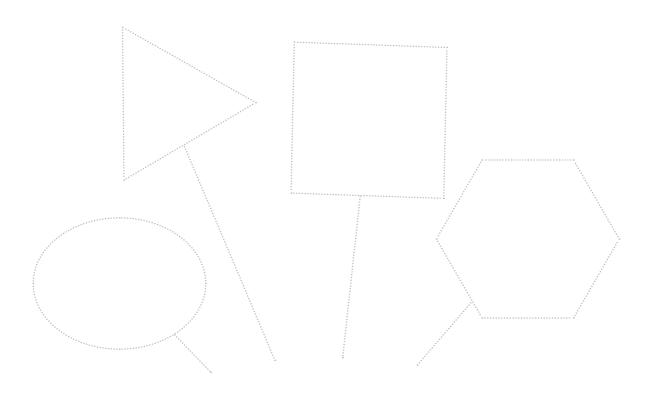
The Irish Architecture Foundation encourages people of all ages to engage with their built environment, to inspire new ways of thinking about architecture. We run many public events including workshops, exhibitions and talks. Opportunities for young people, including this initiative, are an important part of our programme.

# Irish Architecture Foundation website

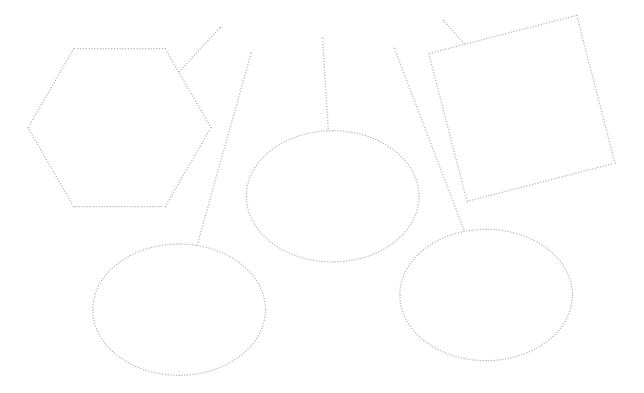
architecturefoundation.ie

'Architecture is a visual art, and the buildings speak for themselves.'

Julia Morgan, Architect



# **ARCHITECTURE IS**



# THE DESIGN PROCESS

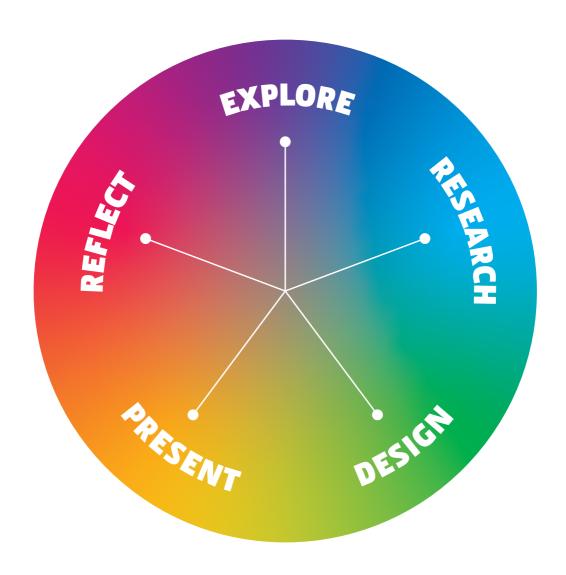
Welcome to the Design Process. You will be guided through this process while working on your own design project. You will need to complete all the stages, however they may not always run in this order. It is natural to move back and forth between the stages, and even repeat them, as you explore your design ideas.

'Architecture is by definition a very collaborative process.'
Joshua Prince-Ramus, Architect

The Design Process can be applied to many different design challenges, from cars to shoes to websites and so much more! You can use what you learn here for other design projects in the future.

# What can I design?

That part is entirely up to you! You could design a room, a building, a public space or an installation. You could redesign your school or propose a new use for an empty building in your local area. Your design might not be a building! You will be working within a group, collaborating, innovating and exploring design ideas with your fellow students.



# **EXPLORE**

Be inspired by architecture and design

# **RESEARCH**

Asking questions – what? who? where?

# **DESIGN**

Imagining, developing and creating your ideas

# **PRESENT**

Discussing your ideas and getting feedback

# REFLECT

What did I learn?



# **EXPLORE**

# BE INSPIRED BY ARCHITECTURE AND DESIGN

- . This section introduces you to some aspects of architecture
- before you get started on
- . y.our o.wn design.project.

# **BE INSPIRED**

# Activity A VIRTUAL TOUR

Take a virtual tour to explore Irish and global architecture.

This short exercise will give you a glimpse of some of the innovative and inspiring work done by architects in Ireland and around the world.

You will be introduced to diverse architectural styles and building types. Your own design project may not be based on the buildings you choose, however they may inspire you. The online resources will help you to get started, with examples of well-known architects and their work.

# Choose 3 buildings

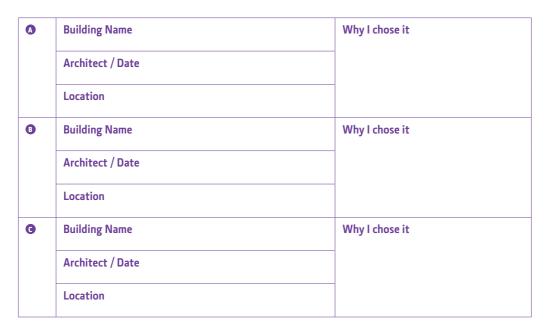
- An inspiring or amazing building, a place you'd like to visit
- A building that uses unusual materials or construction methods
- A sustainable / green building

### Discuss

Discuss your choices with your class. Think about why you chose these buildings. This will help you to start expressing your own ideas and opinions about architecture. You could prepare a group slideshow or collage to present your buildings.

# Materials / Resources

Computer, Internet, Printer



# **SPACE STUDY**

# Activity A FAMILIAR SPACE

Conduct a study of a space you are familiar with.

As you observe, record and discuss your chosen space, you will increase your spatial awareness and become a stronger visual learner.

# Choose your space

Choose a familiar space that you have a strong opinion about.

It may inspire you or not.

It could be a room, a part of a building or a public space – indoors or outdoors.

It could be a space you are closely connected with now (home, school, library) or somewhere you remember well.

# My space is

# Why I chose it

# Observe your space

Visit your space and spend time there.

Consider factors such as light, atmosphere, scale, materials, colours and circulation.

# **Record your space**

Use a variety of creative methods to record your space. Do a sketch with notes to convey the atmosphere of your space, working from life or from memory. Take photographs, create a collage or make sound or video recordings.

# Ask questions

What inspires you about this space? Or not? Would you change anything about the space?

What activities happen in the space? Is it busy or quiet? Bright or dark?

### **Discuss**

Share your impressions about your space with the class and find out what spaces other students are inspired by.

# Materials / Resources

Sketchbook, a range of drawing materials, camera/phone.

# Online Resources – Explore



mydesignjournal.ie/students/space-study
Starting points

mydesignjournal.ie/students/be-inspired Search tools, weblinks, architectural styles and terms, architect's profiles



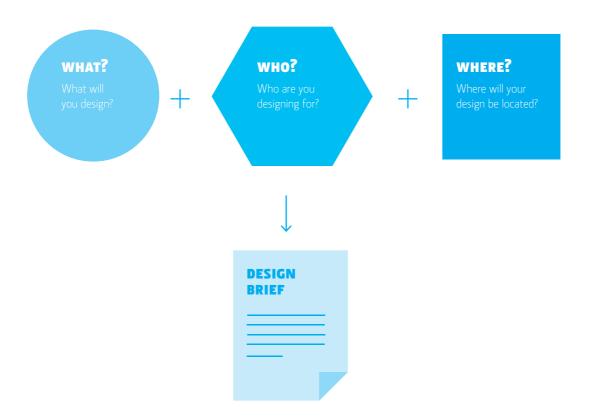
# RESEARCH

# ASKING.... QUESTIONS WHAT? WHO? WHERE?

- In this section you will conduct active research and ask questions that will lead you to writing the Design Brief for your project.
- The brief is a set of design requirements. It will give you clarity as you move through the design process.

# THE DESIGN BRIEF CRITERIA

Every design project has a purpose – what? Is designed for someone to use – who? And is located on a site – where?





# WHO?

# What will you design?

Are there any design issues or problems that need to be resolved in your school or local area?

Do any new facilities need to be provided in your community?

What activities could happen in the space you will design?

What are the possible functions of the space you will design? How will it be used?

Will it be a temporary or permanent space?



# Online Resources - Research



mydesignjournal.ie/category/blog Current project examples

mydesignjournal.ie/students/design-idea

mydesignjournal.ie/students/user-survey About public user surveys, how to's

# Who are you designing for?

Think about who you are designing your space for (the end-user). Have you met with any community groups during work experience or on class trips? Alternatively, you could design for your fellow students or the wider school community. Other ideas include designing for a local business, a youth club or a city or county council.

Interview your end-user. Why do they need a new space? If they have an existing space, do they need to change it? Observe how they currently use their space.

Based on your research, you could create a fictional character as your end-user.



# Where will your design be located?

# Site and context

This section is about the location or site for your proposed design. Architects design in context. This means that instead of designing in isolation, an architect responds to the conditions of the site and the surrounding area. The orientation, topography, natural and built features and other characteristics of the site directly inform the design. An architect also considers the potential impact of the proposed design on the site environment. When you start designing you will respond to the site you choose.

# **Choosing your site**

Types of sites include rural sites, urban sites, public spaces, a site on your school grounds, an under-utilised site in your local area or the re-use of an existing building. It can be helpful to choose a site near your school so that you can visit it easily. Consider why you are choosing your site.

'Architecture is about hope, about change – it makes life more exciting.'

Lars Lerup, Architect

# Site maps

Collect maps of your site, including Ordnance Survey (OS) maps, Google Earth screenshots and historic maps.

# Visiting your site

Observe: When you visit your site, look at characteristics including - Materials, Topography, Orientation, Natural Features, Built Features and Circulation.

#### Record

Record and map what you observe using sketches, photographs, collages, video and sound recordings. Trace over the OS Maps of your site and make a note of your impressions.



# Online Resources - Research



mydesignjournal.ie/students/ map-your-space

types of maps, sourcing maps, use of maps, how to's, websites

mydesignjournal.ie/students/investigate notes on observation, fact sheets on materials

# **DESIGN BRIEF**

# You can summarise your research here

WHAT What will you design? Thinking about the type of space and the activities that will happen there
WHO
Who are you designing for? Thinking about the people who will use the space
WHERE
Where will your design be located? Thinking about location, site and context

The information you gathered during the **RESEARCH** stage informs your Design Brief. Now you can start the **DESIGN** stage with this information to guide you.



# 

- •
- •
- .

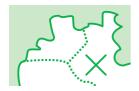
- •
- •

# **DESIGN** IMAGINING, **DEVELOPING AND CREATI YOUR IDEAS** In this section you will explore your design concepts and ideas through drawing and model-making.

# **DESIGN PRINCIPLES**

# Design terms to consider when you start designing

**CONTEXT** 



**SCALE** 



**FORM** 



**LIGHT** 



**MATERIALITY** 



**STRUCTURE** 



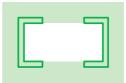
**CIRCULATION** 



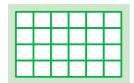
**ENCLOSURE** 



**SPACE** 



**REPETITION** 



**PROPORTION** 



**SYMMETRY** 



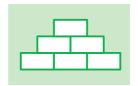
**RHYTHM** 



**AXIS** 



**HIERARCHY** 



# **CONCEPT DESIGN**

# Now that you have completed the **RESEARCH** stage, it's time to start designing!

A concept is a main idea or starting point for your design. You might explore many different concepts, later choosing one to move forward with. Your concept will continue to evolve and develop as you progress through the design process. Don't be afraid to let it go and start again, that's all part of designing!

# **Online Resources - Design**



mydesignjournal.ie/students/design-idea

mydesignjournal.ie/students/2d-drawing

Drawing definitions, scale, sketches, collage, perspective, plan, section

mydesignjournal.ie/students/3d-model

Context model, concept model, building model, photographing your model

# Activity GENERATE IDEAS

It's best to work fast and freely with an open mind. Use your imagination and be flexible. Nothing is fixed at this stage! Use drawings and models as communication tools within your group.

# What will your design look like?

- What are your initial responses to the site?
- Try out some freehand concept sketches to experiment with form and structure
- Quick concept models can also help you to explore and communicate your ideas
- Ask for feedback on your ideas

# Allocate tasks within your group:

- Concept sketches
- Concept models

# Materials / Resources

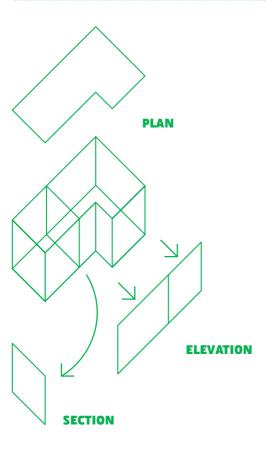
A1 or A2 paper, card, range of drawing and model-making materials

# **2D DRAWING**

# Developing your ideas through drawing

# The next step is to develop your concept design ideas through drawing.

Refer to your **RESEARCH** to help you focus on the site and the user requirements in more detail. As you design, you will be guided by both your **DESIGN BRIEF** and by your own creative responses to it.



# Why draw?

Architects use different types of drawings to work out their designs, from freehand sketches to orthographic drawings and CAD (Computer Aided Design) drawings. Drawings are a very useful part of the design process as you can start to see the design taking shape.

# Activity **DRAW YOUR DESIGN**

# Orthographic drawings

An orthographic drawing is a 2-dimensional representation of a 3-dimensional object or structure. Plans, Sections and Elevations are different types of orthographic drawings, drawn to scale. Clear examples of these drawings are available on the website.

### Scale

Architects work with scaled drawings. A drawing that is scaled 1:100 means that 1 metre on paper = 100 metres in real space. Refer to the website for more information.

# Allocate tasks within your group

- Site plan (1:1000 1:500
- Floor plans (1:100, 1:50)
- Sections (1:100, 1:50)
- Elevations (1:100, 1:50
- Perspective sketch (not to scale)

# Materials / Resources

Tracing paper, cartridge paper, pencils, erasers, charcoal, pastels, scale ruler, set square. OS maps of the site.

# 3D MODEL

# Developing your ideas through model-making

# Why make models?

Modelling your idea will help you to think about the spaces, structure and form of your design. Architects often design through models as it helps them to think in 3D and to consider plan, section, elevations and perspective all at once!

'Architecture is an untapped source of magnificent stories waiting to be imagined, visualised, and built.' Matthew Hofmann, Architect

# Activity **MODELLING YOUR DESIGN**

# Getting started

what works best for your design idea. There about materials and safety on the website. Photograph your models as you go along.

# Allocate tasks within your group

Context model – showing your idea within

# Materials / Resources

mounting board, A1 and A2 card, balsa wood, lollipop sticks, barbeque skewers,

Computers: Minecraft and SketchUp can

# **PRESENT**

# YOUR WORK AND GETTING FEEDBACK

Share your design ideas with your class, school and local community.

# **PRESENT**

# Why present your project?

Presenting your project gives you the opportunity to share and discuss your ideas. Asking for feedback and learning from it is a very important part of the design process. The 'Crit' is integral to the education of an architect. It involves regular presentations of work in progress, and constructive critique is given by design tutors and classmates.

# How will you present your project?

As well as interim presentations after each session to get feedback, you can also plan a final presentation:

School based presentations: class exhibition, school blog, website or newsletter.

Local presentation or exhibition: display at a library, community centre or shopping centre. You could present to your end-user if relevant.

Architects in Schools website: Post a contribution on the website by emailing us images and a project description.

# Activity PREPARE YOUR PRESENTATION

# How will you tell the story of your design?

- Explain the reasons why you made your design decisions – refer to your DESIGN BRIFF (Who What and Where?)
- Be selective about the work you present
   what specific drawings / models / photographs best communicate your ideas?
- Make your presentation visual and engaging – include CONCEPT DESIGN, 2D DRAWINGS and 3D MODELS. You could also include a sample board, sketches, collage, video or photographs.
- Prepare a short verbal presentation about your design project. Start by explaining your main concept or idea and also refer to the DESIGN PRINCIPLES
- Make sure to get feedback on your design. It may help you to improve your design and you can learn from it.

### Materials / Resources

Models, photos of models and work in progress, original drawings, design brief, display boards, computer with Powerpoint, projector.

# **Online Resources – Present**



mydesignjournal.ie/students/ present-discuss

How to present your work, examples of exhibitions/presentations, websites

'Architecture is a way of seeing, thinking and questioning our world and our place in it.'

Thom Mayne, Architect

'Architecture is about improving conditions: environmental, social and sometimes also political.'

Arjen Oosterman, Architectural Historian



# REFLECT

# WHAT DID I LEARN?

Reflect on your design project and on your participation

in this initiative. · · ·

# REFLECT

# Why reflect?

Reflecting on your work is an important part of the design process. You can think about what worked well, what you would do differently next time, and what you could carry forward to your next design project.

# Reflecting on the design process

What would you change or improve about your design after getting feedback?

What inspired you most during the design process?

Which stage of the design process did you enjoy most / find most challenging?

What would you do differently in the future?

# Online Resources - Reflect



mydesignjournal.ie/students/ brief-10-reflect

Your thoughts on the project

# Reflecting on my overall experience

Has your participation in this initiative changed the way you think about architecture and design?

How did you work collaboratively as part of a group?

What new skills did you develop?

# Materials / Resources

Paper, pencils, post-its, markers. computer with Powerpoint, projector.

'Architecture is really about well-being. I think that people want to feel good in a space... On the one hand it's about shelter, but it's also about pleasure.'

Zaha Hadid, Architect

Reflecting on the design process			
5 5 1			
Reflecting on my overall experience			
σου συναστικό συ			

# **RESOURCES**

# Books

Architecture: A Very Short Introduction

by Andrew Ballantyne

Publisher: Oxford University Press. Oxford. 2002.

Architecture Form, Space and Order (4th Edition)

by Francis Ching

Publisher: John Wiley and Sons. New York. 2014.

Studio Craft and Technique: The Architecture Student's Handbook by Miriam Delaney and Anne Gorman Publisher: University College Dublin. 2011.

**Architectural Drawing** 

by David Dernie

Publisher: Laurence King Publishing. London. 2010.

Architectural Modelmaking

by Nick Dunn

Publisher: Laurence King Publishing. London. 2010.

101 Things I Learned in Architecture School

by Matthew Frederick

Publisher: MIT Press. Cambridge, London: 2007.

Architecture, A Visual History

by Jonathan Glancy

Publisher: DK, London, 2017

The Portfolio: An Architecture Student's Handbook

by Igor Marjanovic, Katerina Ray and Lesley Lokko

Publisher: Elsevier, Burlington, 2003

# Websites

My Architecture Design Journal

mydesignjournal.ie

Irish Architecture Foundation

architecturefoundation.ie

The Royal Institute of the Architects of Ireland

riai.ie

Architectural Association of Ireland

architecturalassociation.ie

Archiseek

archiseek.com

Dezeen

dezeen.com

Arch Daily

archdaily.com

Open House Worldwide

openhouseworldwide.org

Inhabitat

inhabitat.com

Life of an Architect

lifeofanarchitect.com

Designboom

designboom.com



# **CAREERS**

You have participated in a DESIGN PROCESS which involved innovation, creativity and the development of your critical thinking skills. This experience will be relevant to you in any career you choose, not only in the architecture and design areas.

A career in architecture is challenging, diverse, creative, logical and so much more. There are many ways to practice architecture. In addition to designing buildings an architect can also work in areas including conservation, curating, lecturing, researching and sustainable design. If you are interested in finding out more, you can attend college open days and undertake work experience in an architectural practice.

Architecture is a collaborative process. Related careers in the construction industry include Architectural Technology, Quantity Surveying, Engineering (Structural, Mechanical, Electrical), Building, Interior Design, Project Management and Urban Planning.

# Which Leaving Cert subjects are useful?

Art, Physics, Classical Studies, Geography, Applied Maths, Design and Communication Graphics, Construction Studies, Technology.

# **Becoming an Architect**

Becoming an Architect - Royal Institute of the Architects of Ireland

riai.ie/education/careers/becoming\_an\_architect

# Where can I study?

List of all courses in Ireland

qualifax.ie

There are many relevant \*NFQ Level 5 courses that can lead to entry onto a NFQ Level 8 Architecture degree course.

\*National Framework of Qualifications

# **Recognised Architecture Degrees**

You can study Architecture at the following educational institutions to obtain a qualification accredited by the Royal Institute of the Architects of Ireland (RIAI) and prescribed in Irish law. It takes five years to qualify. After two years of working as an Architect you can take a Professional Practice exam to be eligible for the Register for Architects in Ireland and Membership of the RIAI.

For up to date information on the application process and specific entrance requirements, please contact the individual institution.

# **University College Dublin**

# School of Architecture

3 year Bachelor of Science (Architectural Science)(Hons) followed by a 2 year Masters in Architecture (M.Arch) ucd.ie

# **Technological University Dublin**

# **Dublin School of Architecture**

5 year Bachelor of Architecture Degree (B.Arch.)

tudublin.ie

# Waterford Institute of Technology

# Department of Architecture

5 year Bachelor of Architecture Degree (B.Arch.)

wit.ie

# **University of Limerick**

School of Architecture, University of Limerick (SAUL) 5 year Bachelor of Architecture Degree (B.Arch.)

saul.ie

# University College Cork / Cork Institute of Technology

# Cork Centre for Architectural Education (CCAE)

4 year Bachelor of Science (Hons) in Architecture followed by a 1 year M.Arch.

ucc.ie

# **GLOSSARY**

# Useful terms and definitions used in everyday architectural practice

Architecture includes the art and science of planning, designing and constructing buildings. Architecture can be practiced in many ways and the end result might not always be a building! Architectural works, in the material form of buildings, are often perceived as cultural symbols and as works of art. Historical civilizations are often identified with their surviving architectural achievements.

**Architect** a person who specialises in the design and construction of buildings for clients.

Axis is a linear relationship between spaces.

**Built Environment** refers to the constructed world around us, ranging from small villages to large urban spaces.

**CAD** computer aided design – design and drawing on computers that can be stored on hard drives, printed, or sent by email to clients, engineers and builders.

**Circulation** refers to how people move around a site or a building. When designing, architects carefully consider the position of entrances, staircases and links between spaces.

Collaboration is working together to achieve a goal

**Context** is very important in architectural design. It means the location and other conditions which influence the design. The characteristics of a site have an important bearing upon the design prepared by the architect.

**Design** is a creative process that involves exploration, research and innovation.

**Enclosure** is a space created by elements (e.g. walls, columns, roof etc.) surrounding it.

**End-user** is the person or people who will use a designed product, system or building.

**Elevation** a true, 2-dimensional drawing of the side (façade) of a building, interior or exterior.

Engineer designs materials, structures and systems while considering the limitations imposed by practicality, safety and cost.

Exterior outer shell of a building.

Form is the 3-dimensional shape or configuration of an object (e.g. a building). It is the materials and structure that enclose the space within.

**Function** is the purpose of a design (e.g. what is a building or space used for?)

**Hierarchy** refers to the relative importance of related spaces.

**Innovation** is the development of new solutions. It means change, experimentation and new ideas.

Interior inner spaces of a building.

Light creates atmosphere in a space. Natural light optimises how we perceive textures, materials, colours and the form of a space.

Materiality refers to the material quality of a space and how materials are used in the design of the space (concrete, timber, brick etc.)

**Perspective** the representation of a 3-dimensional space in a 2-dimensional drawing. Types of perspective include 1-point, 2-point and 3-point. Objects appear smaller and closer together the further away they are.

Plan a section cut through a building horizontally usually just above windowsill height, showing the 2-dimensional layout of a building (arrangement of rooms, doors, walls, structure, furniture, etc.). Architects use plans when designing to arrange spaces for the best use of movement, light, view, sun control, furniture placement, etc.

**Proportion** refers to how the elements of a design composition relate to each other and to the whole, and the visual effect of this relationship.

**Retrofit** refers to the addition of new technology or features to older buildings.

**Renewable Energy** is energy that comes from resources which are continually replenished such as sunlight, wind, rain, tides, waves and geothermal heat.

**Repetition** is the recurrence of design elements (e.g. a collonnade of pillars).

**Rhythm** is a pattern of related design elements (e.g. the pattern of windows on an elevation).

Scale refers to the relationship between the real size of something and its size on a map, drawing or model. Architects design and draw in scale.

**Section** two dimensional (2D) drawing of a building, vertically cut at a nominated point. The section usually shows a 'slice' through the main upright view of a building.

**Site** refers to the location or setting of a building. How the architect responds to the characteristics of the site will inform the design. The site plan shows the overall layout of a site.

**Structure** refers to what holds up a building or structure (e.g. columns, beams, walls, arches, frame).

**Symmetry** is a balanced arrangement of design elements. Asymmetrical balance is also important in architectural design.

Sustainable Architecture / Green Design seeks to minimise the negative environmental impact of buildings by enhancing efficiency and moderation in the use of materials and energy. The aim of sustainability is to ensure that our actions and decisions today do not harm future generations.

2D / 3D Space two-dimensional space / threedimensional space. Space exists between objects and within / around a form.

# **ACKNOWLEDGEMENTS**

Architects in Schools 'Student Handbook' and 'Facilitator Handbook' are published by the Irish Architecture Foundation, 2019.

#### Author

Blaithin Ouinn, Architect-Artist-Educator

Qualifications: Bachelor of Architecture (University College Dublin, 1995); Bachelor of Arts (1st Hons) Visual Arts Practice (Institute of Art, Design and Technology, 2010); Masters Degree, Visual Arts Education (National College of Art and Design, 2013).

# With special thanks to

Aideen McCole, Education Curator, Irish Architecture Foundation

Ruth Connolly and Aisling Clancy, Real Nation

Susie Lynam, Designer and Educator

Maya McClelland, Secondary School Student

The 4th and 5th Year Students (2018–19), Presentation College Bray, Co. Wicklow

Mike Conway, Teacher, Presentation College Bray, Co.Wicklow

# **Research and Development**

The 2019 publications of the 'Student Handbook' and 'Facilitator Handbook' are based on a consultation process which included the following:

Focus Group (Architects and Teachers), Real Nation, March 2019

Working Group Feedback (Students), Presentation College Bray, March 2019

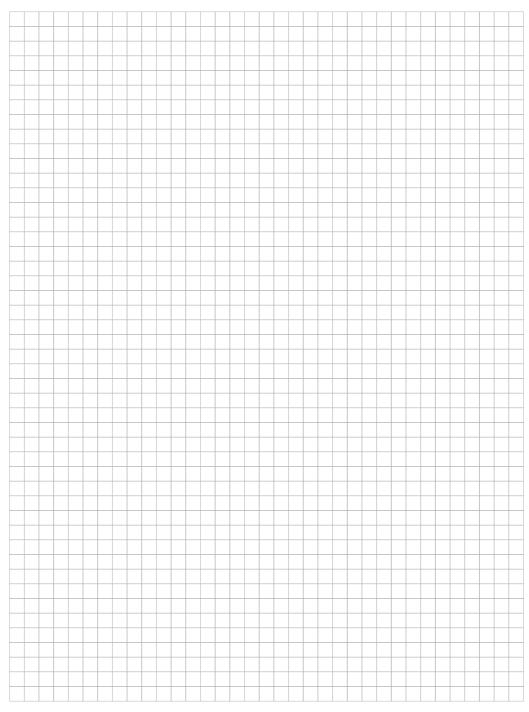
Online Surveys (Teachers, Architects and Students), Irish Architecture Foundation, June 2019

Note: The 2019 publications are based on the 2013 publications 'Teacher's Handbook' and 'My Architecture Design Journal' co-authored by Rachel McAree and Simone Murray. These publications involved an extensive research process including consultation with architects, teachers, students and education professionals, with input from IAF Architects in Schools Working Group (Aoife Banim, Patsey Bodkin, James Bourke, Noel Brady, Lorraine Comer, Eamonn Greville, Margaret Keenan, Simone Murray, Eileen O'Connor, Noel O'Neill), and Dr. Rosie Parnell, Dr. Cara Courage, Victoria Thornton, Fingal County Council Arts Office, National College of Art and Design, Association of Teachers' Education Centres in Ireland.

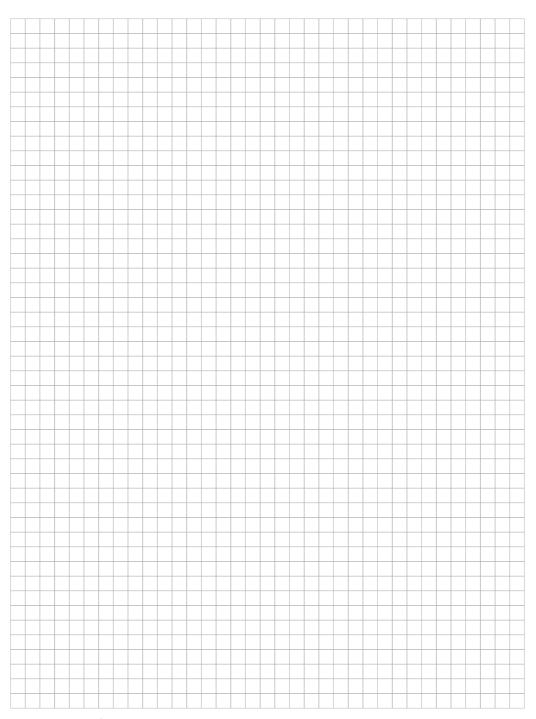
### **Funders**

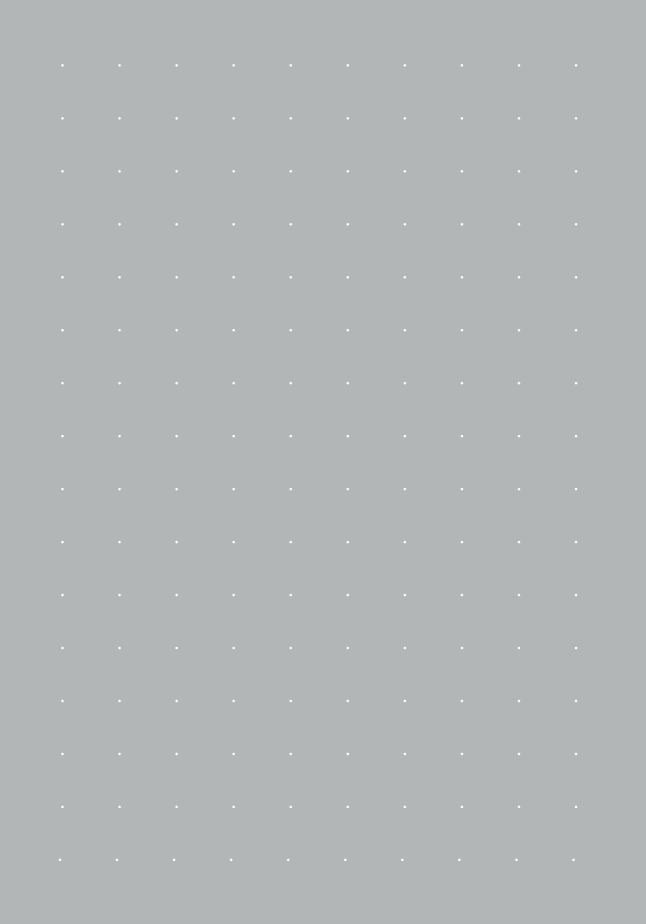
Architects in Schools is supported by the Arts Council of Ireland, the Department of Culture Heritage and the Gaeltacht, and the Department of Education and Skills.

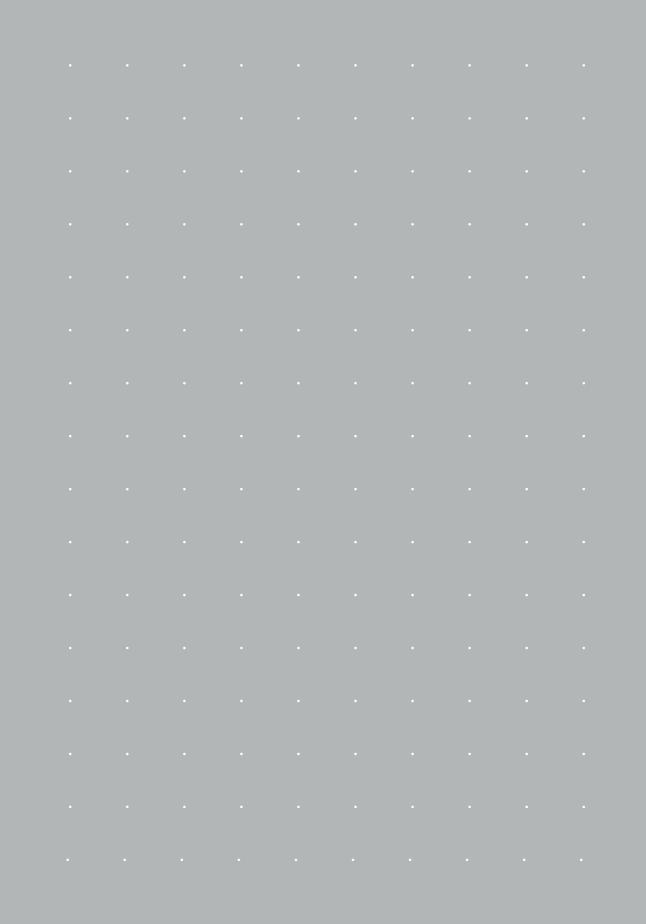
# **SKETCHES** + **NOTES**



# **SKETCHES + NOTES**







# CERTIFICATE OF PARTICIPATION

This certificate is awarded to

for participating in Architects in Schools, a project by the Irish Architecture Foundation

**SIGNED** (Teacher / Architect)

DATE









Irish Architecture Foundation architecture