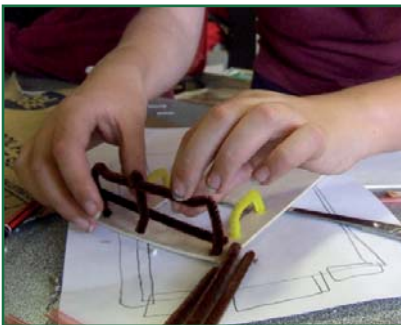




PROJECT RESOURCE



Eco-Cubby is a partnership between City of Melbourne and Regional Arts Victoria



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This Eco-Cubby Project Resource was developed by Kelly Boucher with additional content and assistance provided by Emily Atkins, Chris Barnett, Julian Tuckett and Ralph Webster.

INTRODUCTION TO ECO-CUBBY

Eco-Cubby aims to raise awareness and bring sustainability issues and thinking into communities. The project provides the opportunity for young people to work with their community in the design of a cubby house embracing concepts of sustainable living – function, materials, shelter, enclosure, and resources.

Eco-Cubby can be delivered in a number of different ways – as part of the Annual Program, as an Exhibition, Workshop and Event, or through use of these Eco-Cubby Project Resources.

ANNUAL PROGRAM

A year-long project administered by the Eco-Cubby Project Coordinator, this program has specific objectives with outcomes exhibited in Melbourne and across the State.

Children engage with their architect in project brainstorming regarding the environmental impact of housing and Eco-Cubby design. Architects assist students' designs to be translated to a scale model. Documentation in the form of photos, work samples, and comments are shared through the Eco-Cubby blog where participants observe each other's processes and activities.

Schools and communities can build their Eco-Cubby designs and see them functioning as active play, teaching and creative arts constructions. Although this potential Eco-Cubby outcome is an exciting aspect of the project, it is the thought process, design and modelling that are the ongoing focus.

WORKSHOPS, EVENTS AND ACTIVITIES

Eco-Cubby can be a flexible, short-term project, responding to the needs and requirements of your community.

This may include an exhibition of previous Eco-Cubby work, demonstrating the sustainable practices of young people in different areas of Victoria, or a one-day workshop where participants learn about sustainable design and create their own Eco-Cubby model.

ECO-CUBBY OBJECTIVES

The Eco-Cubby program aims to:

- improve community understanding and appreciation of the environment and sustainable living principles
- increase children's awareness and knowledge about sustainability, and encourage them to take action to ensure the health of their environment
- provide an interactive educational experience with cross-curricular outcomes in: numeracy; literacy; design, creativity and technology; civics and citizenship; personal learning; interpersonal development; thinking; the arts; humanities; and, information communication technology
- encourage creative thinking, team work and collaboration between project participants
- support participants in forging connections with like-minded schools and communities across metropolitan and regional Victoria
- build sustainable partnerships between architects, schools and local communities

The City of Melbourne, as a council, oversees Melbourne's city centre and several inner suburbs. As a capital-city council, it also speaks on behalf of Melbourne in local, national and international forums.

ARTPLAY

The City of Melbourne's ArtPlay is a civic studio where families and children can be creative and express themselves in ArtPlay's open and supportive environment.

Melbourne's celebrated culture of innovation, inventiveness and communication are reflected in the openness, playfulness and inquisitive nature of creativity.

Our mission at ArtPlay is to involve children and their families in artistic, interactive and creative projects. Through workshops with professional artists, ArtPlay aims to improve educational and arts opportunities for children.

ArtPlay was established with the goals of the City of Melbourne in mind:

- to support increased and higher quality cultural citizenship
- to create a child friendly city with enhanced opportunities for people of all backgrounds
- to support children in becoming creative cultural citizens of the world
- to document and research our projects
- to assess the value of the centre's creative endeavours

COUNCIL HOUSE 2 (CH2)

CH2 is a visionary building leading the way in ecologically sustainable design and facility management.

In 2004, the City of Melbourne was faced with an accommodation dilemma. Staff were housed in dated office buildings which although centrally located to the Town Hall, were nearing the end of their life-span. Rather than relocate staff to alternative offices, Council embarked on an ambitious plan to construct a new office building, Council House 2 (CH2), that would meet its spatial requirements and lead the way in the development of an holistic green environment.

CH2 has been designed to not only conserve energy and water, but the quality of the internal environment of building has also been designed to improve the wellbeing of its occupants. CH2 demonstrates a new approach to workplace design, creating a model for others to learn from and follow.

A number of projects across Melbourne have been born out of the CH2 experience including: The Bowls Club in Flagstaff Gardens, East Melbourne Library and the 'Venny' Adventure Playground in Kensington.

Eco-Cubby is a project that provides an extension of the City's Council House 2 sustainable community across the State – aiming to educate young people and communities about sustainable design.

REGIONAL ARTS VICTORIA

Regional Arts Victoria is the peak Victorian agency resourcing and supporting contemporary and innovative regional cultural practice. In the more than 40 years since its establishment, RAV has demonstrated a long-term commitment to the concept that art practice is critical to building capacity and self-determination in communities. It is proud of its reputation as a contemporary, inventive and responsive organisation working with vision, passion and a strong understanding of the challenges and aspirations of the communities that form its regional constituency.

Regional Arts Victoria initiates, facilitates and celebrates the arts in regional Victoria through Creative Communities Victoria, arts2GO, Arts Across Victoria and Regional Arts Development Officers.

We do this by:

- Working with artists and regional communities to create high-quality art.
- Playing a major role in developing regional arts networks, tours, projects, programs, skills development, and funding.
- Providing leadership and support to our networks in regional Victoria.
- Celebrating the diversity of cultural experience in regional Victoria.
- Collaborating with partners in business, local, state and federal government, sponsors and education organisations.
- Striving for excellence through benchmarking and continuous improvement processes.

ARTS2GO

arts2GO is Regional Arts Victoria's program for children and young people. Each year we take a variety of arts experiences on the road across Victoria, from Mallacoota to Murrayville and Heywood to Corryong, reaching over 25,000 young people.

arts2GO provides young people across Victoria with the opportunity to experience, engage with and participate in high-quality live performing and visual arts. Current research highlights the positive impact of young people's involvement in the arts including increased motivation, self-confidence and creative thinking, student engagement and improved school attendance. arts2GO's incursion program is an inspiring, contemporary, and educational way to promote the value of the arts to young people in your community.

RAV is committed to making performances affordable and accessible for all Victorian schools and communities, regardless of size, distance or disadvantage. To do this, program staff source philanthropic support for Primary and Secondary Schools' Subsidy Programs to ensure schools have direct access to additional funding support if they believe their school community or student cohort to be unduly disadvantaged.

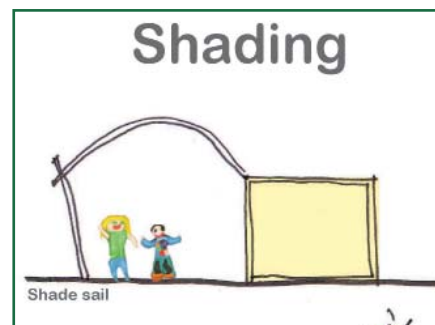
HOW TO USE THIS RESOURCE

This resource is intended to be a guide only, offering suggestions and starting points to kickstart your adventure into the Eco-Cubby Project. Teachers are encouraged to undertake their own research and develop the project to fit in with their school program, year levels and relevant curriculum.

As the Eco-Cubby project develops, the resource is also expected to grow. It is hoped that teachers will add to the resource, give their feedback and insights into activities and methods that worked in the context of their particular school environment. A number of insights and activities from 2009 and 2010 participants make up part of this updated resource.



Architect Charlotte Lindsay working with students at Mansfield Primary School



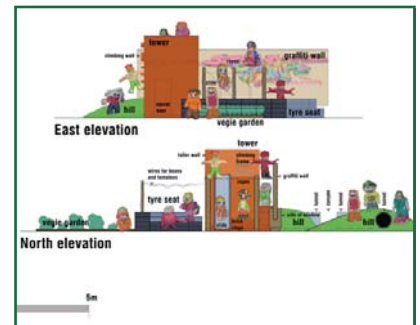
PROJECT MANIFESTO

Solutions grow from place:

Ecological design begins with an intimate knowledge of a particular place. Therefore, it is small-scale and direct, responsive to both the local conditions and local people. If we are sensitive to the nuances of place, we can inhabit without destroying.

Van der Ryn, S. & Cowen, S. Ecological Design (Washington, Island Press, 1996), pg 57.

Eco-Cubby is about the relationship between humans and the natural world: the way in which we make our physical environment. As humans, our use of buildings has a major impact on the planet. The environments we create for ourselves have a significant impact on the way we live in and experience the world. An important goal of the Eco-Cubby project is to make students aware of their role in the creation of our environments and the ramifications of the design decisions we make as individuals and as a community.



A SUSTAINABLE PROJECT

The way we live today as a modern western society is generally considered unsustainable. Building design, construction and operation have a significant impact on the natural environment and its resources. Principles of sustainable architecture are effective means of reducing this impact. The employment of the techniques of sustainable design in a real project will highlight the impact that specific choices have on the resultant building and our environment.

A REAL PROJECT

Participation in the making of our built environment is a powerful learning technique. The processes involved in the design and construction of a scale model will prompt students to consider their roles, responsibilities and contribution to the developing of a collective environment. The significant scale of the project encourages students to realise their own capacity to shape the physical spaces in which they inhabit.

(The following VELs information has been taken directly from the Victorian Curriculum and Assessment Authority (VCAA) website: www.vcaa.vic.gov.au)

BUILDING THE FUTURE

The Victorian Essential Learning Standards, (VELS) propose that students need to develop a set of knowledge, skills and behaviours which will prepare them for success in a world which is complex, rapidly changing, rich in information and communications technology, demanding high-order knowledge and understanding and increasingly global in its outlook and influences. To succeed in that world, all students need to develop the capacities to:

- Manage themselves as individuals and in relation to others
- Understand the world in which they live; and
- Act effectively in that world.

Students will need to create a future which:

- Is sustainable - developing an understanding of the interaction between social, economic and environmental systems and how to manage them.
- Is innovative - developing the skills to solve new problems using a range of different approaches to create unique solutions.
- Builds strong communities - by building common purposes and values and by promoting mutual responsibility and trust in a diverse socio-cultural community.

Each of these purposes is embedded within the three core strands of the VELs, and incorporated into specific standards.

VELs is striving for:

- Powerful, effective learning
- Deep Understanding
- Essential learning, connecting strongly with communities & practice beyond the classroom

Eco-Cubby should provide a combination of theory and philosophy with hands-on manipulation of materials to develop student enquiry and creative problem solving skills such as; defining and analysing problems, generating innovative ideas, developing and evaluating possible solutions, as well as working out plans for the implementation of preferable solutions.

While this education resource focuses on VELs level 3 and 4, information may be adapted for different levels to cover other curriculum requirements. The information and links provided offer a resource for further teacher enquiry and research into the broad and exciting area of sustainability, architecture and the built environment.

Eco-Cubby provides an excellent platform for addressing many areas of the curriculum and gives an exciting opportunity for innovative cross-curricular planning and community engagement.

Curriculum areas with potential to link with the Eco-Cubby Project include:

- The Arts - creating and making, exploring and responding
- Humanities, Geography - geographical knowledge and understanding
- Mathematics - space, measurement, working mathematically
- Science - Science knowledge and understanding, science at work
- Design, Creativity, Technology - Analysing, evaluating, investigating and designing
- ICT Information and communication technology - ICT for Creating
- Thinking - Reasoning, processing and inquiry
- Interpersonal Development - working in teams
- Civics and Citizenship - community engagement

More specifically, Eco-Cubby has the potential to address the following:

Domain	Dimension	Learning Standards
The Arts	Creating and Making	Level 3 - Identify techniques and aspects of other people's works that inform their own arts making Level 4 - Apply a range of skills, techniques and processes to create works that explore the potential of ideas
	Exploring and Responding	Level 3 - Discuss the use of specific skills, techniques and processes Level 4 - Identify and describe the purposes for which arts works are created in different contexts
Humanities	Geographical Knowledge and Understanding	Level 3 - Describe how aspects of places in their local area have changed over time and describe the physical characteristics of their local area Level 4 - Compare the way humans have used and affected the Australian environment
Mathematics	Space	Level 3 - Recognise and describe orientation of lines, shapes and their component parts. Use and compare ways of locating and identifying places on maps and diagrams. Level 4 - Identify the properties of lines and shapes and use sketches of shapes to represent the surrounding environment
	Measurement	Level 3 - Estimate and measure length, area and mass. Interpret linear and circular scales of measurement. Level 4 - Accurately measure the characteristics of length, area, volume,
	Working Mathematically	Level 3 - Describe and explain why some shapes tessellate and have different forms of symmetry Level 4 - Design algorithms as models of mathematical processes, including shapes

Domain	Dimension	Learning Standards
Science	Science Knowledge and Understanding	Level 3 - Describe natural physical and biological conditions, and human influences in the environment Level 4 - Explain the relationships that exist between systems and the environment
	Science at Work	Level 3 - Explain how scientific knowledge is used to deal with social issues or problems Level 4 - Analyse a range of science-related local issues and describe the relevance of science to their own and other's lives.
Design, Creativity and Technology	Investigating and Designing	Level 3 - Generate ideas based on a design brief and identify common materials and explain their characteristics and properties Level 4 - Research, collect data and generate ideas in response to design brief and describe products' function
	Producing	Level 3 - Choose appropriate tools and plan basic production steps Level 4 - Work safely with a variety of materials and components, paying attention to quality and function
	Analysing and Evaluating	Level 3 - Test, evaluate and revise designs Level 4 - Reflect on designs using evaluation criteria. Describe the impact products have on people and the environment
Information and Communication Technology	ICT for Creating	Level 3 - Load or access, navigate and interact with multimedia resources and create multimedia products
Thinking	Reasoning, Processing and Inquiry	Level 3 - Apply thinking strategies to organise information and concepts in a variety of contexts, including problem-solving activities Level 4 - Use the information they collect to develop concepts, solve problems or inform decision making.
	Creativity	Level 3 - Apply creative ideas in practical ways and test the possibilities of ideas they generate Level 4 - Generate imaginative solutions when solving problems
Interpersonal Development	Working in Teams	Level 3 - Cooperate for agreed purposes, taking roles and following guidelines. Level 4 - Work effectively in different teams and take on a variety of roles.
Civics and Citizenship	Civic Knowledge and Understanding	Level 3 - Explain why their participation in actions that care for the environment is important

PROGRAM OVERVIEW

FUNCTIONAL OBJECTIVES

- To design a cubby house
- To engage with site, landscape and surroundings

ROLE OF THE PROJECT COORDINATOR

The Project Coordinator is the main contact point for teachers and architects. The Project Coordinator will visit each school at least once over the period of the project. It is expected that schools and architects maintain contact with the Project Coordinator for the duration of the program in order to maintain clear communication and to ensure timelines are kept up to date. The Project Coordinator also acts as a support person, to help with any problems or difficulties that may arise.

THE ROLE OF THE ARCHITECT

Students will be involved in discussion with your school's architect regarding the environmental impact of housing, project brainstorming, and Eco-Cubby design. This will occur between terms 1-3, as is suitable to your school planning and curriculum. During stage one of the project each Architect, acting as an "expert resource", will support the teacher through a series of class workshops.

The workshops should cover three main phases:

1. Introduction to the principles of sustainable building and living.
2. Design exercises exploring and applying these principles
3. Schematic design for the proposed Eco-Cubby.

The exact manner in which these phases are run will be up to teachers and their architect to decide. A variety of learning activities, such as discussion, drawing, model making and teamwork are encouraged as part of the program. Students work with their architect to workshop how a practical and buildable Eco-Cubby design would consider:

- Function
- Shelter
- Materials
- Enclosure
- Resource use in operation

More information on architects and their role as a specialist is detailed on [Page 13](#).

MEETING AND DISCUSSION BETWEEN TEACHER AND ARCHITECT

The initial meeting between the architect and teacher will detail the timeframe and role the architect will play in the concept and design phase.



DOCUMENTATION AND MODELLING

Architects will assist students' designs to be translated into a 1:10 (or smaller) scale model (not to exceed 700mm x 700mm x 500mm). The Project Coordinator will document the process and it is asked that the school support this process by taking photos and/or videos throughout the design and model construction phases.

At the beginning of Term 4 the Project Coordinator will collect the models, drawings and process documentation for public exhibition. Further detail of such requirements will be supplied to participants as needed.

BUILDING OF THE ECO-CUBBY

Schools and communities can build their Eco-Cubby designs and see them functioning as active play, teaching and creative arts constructions. Although this potential Eco-Cubby outcome is an exciting aspect of the project, it is the thought process, design and modelling that are the ongoing focus.

**** NB: Eco-Cubby Project cannot fund the actual building of the final cubby designs. ****

HINTS FOR ARCHITECTS

Architects will be faced with groups of up to 30 students during the Eco-Cubby project and, even with the support of the classroom teacher, this can sometimes prove somewhat daunting for professionals who are not used to working in this capacity. Below are some strategies that may assist you in your navigation of the project based on the experiences of architects in previous years.

Every classroom has its own rhythm and routine, sometimes very subtle and difficult to perceive. Before you begin the project, ensure that part of your meeting with the classroom teacher involves discussion of the following points:

- **Classroom and School Rules** - Although these tend to be similar across most schools, it is a good idea to make yourself aware of them, particularly the smaller rules. This is not so that you can take over administration of these rules, but so that you are aware of expectations on students and can ensure that you are not inadvertently asking them to break rules! Your classroom teacher will know where the flexibility on certain issues lies and will advise you during the planning process.
- **Markers** - For your own sanity and preparation, it is important that you are aware of any bells or announcements that may inform the running of your activity. These can sometimes be a little baffling, particularly when music is used through the loudspeaker as a 'pre-cursor' to the bell! Knowing when these things will occur means that your interaction with students can then be planned with minimum interruption.
- **Common Signals** - Most classrooms have common signals or gestures that teachers use to start or end activities. These vary from the old 'hands on heads' classic to clapping patterns or the 'hands up' technique. Talk to the classroom teacher about when, if at all, it would be appropriate for you to use these signals, as they can help you integrate more smoothly into the rhythm of the classroom if used well.



- **Flagged Students** - Make sure that you are aware of any students with additional needs, whether these be academic, social or behavioural. Whilst it is not your responsibility to differentiate work or information for them, it is definitely worth knowing who they are so that you are not 'caught out' by any difficult situations. Talk to your classroom teacher about how they would prefer you interacted with these students. Most of the time, the answer will be 'as normal', but in some cases there are scenarios or behaviours that need to be avoided.
- **Manner** - If you are not familiar with a class, it can be incredibly difficult to know how to begin interaction with them. If possible, spend one lesson observing the classroom teacher and how they speak to students, how students interact with them and generally note the 'vibe' of the room. Make sure that you note down any questions you may have for the teacher. This is also often a good way for students to get used to your presence in their classroom.
- **Language** - As a general rule, students understand more complex language than you may expect. Technical and architect specific language aside, you can generally use most words that you normally would in general conversation, gauging by any blank looks where you may need to clarify. It is generally better to begin complicated and simplify than the other way around, as it shows students that you respect their intelligence and believe that they are clever enough to cope with adult language. The effect this can have on morale during the project can be quite profound. This is another aspect to listen for when observing your classroom teacher.



Remember, none of these tips should take the place of your classroom teacher's support, but they may be helpful to keep in mind to make your time within the school as productive and enjoyable as possible!

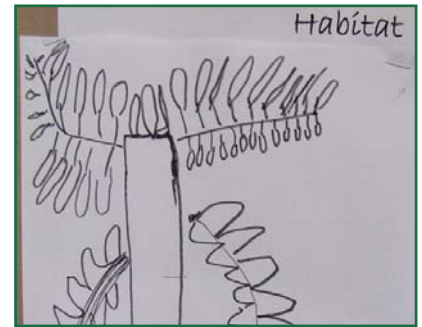
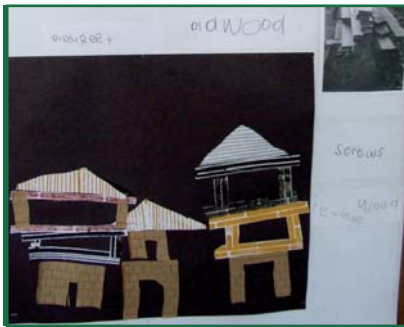
HINTS FOR TEACHERS

Although you are very much used to shaping a group of up to 30 wriggly students into a dynamic and harmonious learning collective, your architect is most likely not. Your architect is unlikely to have had any teacher training at all and may not have a great deal of experience working with children. This is not to say that the rapport they build and the rich learning they inspire will not be fantastic, but there are a few ways that you can support them to ensure that your class, the architect and yourself all get the best experience possible!

Before you begin the project, ensure that part of your meeting with the architect involves discussion of the following points:

- **Classroom and School Rules** - Think about any idiosyncratic rules that govern your class. For example, some teachers employ the use of a 'talking stick' which is passed around during class discussions and others have very specific rules surrounding the use of scissors or glue. In order to ensure that your architect does not find themselves in the centre of a rule-breaking frenzy, try to think of any rules of this type that they may not be prepared for, and ensure that they are aware of them before their first session.
- **Markers** - Think about the placement of markers in your school day (see 'Hints for Architects'). Consider the different ways that your students react to these markers and assist your architect to prepare with these in mind.
- **Planning** - Although your architect is certainly not expected to have a formal lesson plan, it may be a good idea to collaborate with them on the timing and scope of activities, as this can be one of the most difficult aspects facing those working with children for the first time. It is very easy to underestimate the time an activity will take or to miscalculate an activity when you are not used to it, as you can surely remember from your pre-service days!
- **Common Signals** - (see 'Hints for Architects') If your classroom uses these signals, think about what extent you want your architect to engage with them on this level. It may well be that you decide it is easier for you to start and stop activities in order to keep some sense of continuity, or perhaps you are happy for the architect to integrate into your class rhythms. It is entirely up to you and depends on what you feel will work for your individual class,





- **Flagged Students** - Most classes have a student who has some form of additional needs. Whilst you certainly do not want to place a stigma on students, it is important that architects are aware of any 'out of the ordinary' behaviours or obstacles they may encounter and that a strategy for dealing with this is agreed upon. *Architects should never be asked to administer consequences or deal with any classroom management issue.* There should, however, be some form of understanding of how and at what point you will step in if certain behaviours are displayed.
- **Observation** - If possible, it is a great idea to have your architect sit in on a lesson prior to their first fully interactive session with the students. This does not have to be entirely passive, and a short introduction may even be appropriate. The architect may even walk around and talk to students about their work and what they think about certain aspects. It is a good way of 'easing them in' and allowing them to see the workings of your class before they fully interact with it.
- **Delineation** - The architect can sometimes find themselves drawn into a teacher-like role with students, who expect them to be just like another teacher. It is often useful to come up with an agreed way that you can be alerted or 'step-in' if need be. An example of this would be where a student began discussing their difficult home-life with an architect or began making inappropriate comments during group work.

Remember, your architect is there as an expert addition to your classroom. The best way to ensure a harmonious working relationship is through open and consistent communication!

WHAT DOES AN ARCHITECT DO?

The following is paraphrased from The Australia Institute of Architects (www.architecture.com.au)

An architect is trained and licensed in the planning and designing of buildings and participates in supervising their construction.

Architects have the qualifications, professional training, vision and experience to manage the entire architectural design and construction process. More than a designer, an architect works with clients on all of their building requirements.

An architect will help people set a building budget, guide them through the town planning process, obtain competitive quotes for the work, manage consultants like surveyors and engineers, monitor the budget and administer the construction contract. Critically, the architect will inspect the work right through the construction period to ensure the quality and safety is up to scratch.

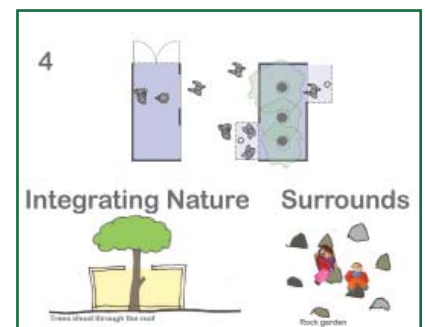
To become an architect you need to:

- complete Year 12
- complete a 5 year architecture course at university
- complete 2 years work experience after you graduate
- register with the Architects Registration Board in your state/territory

Skills architects need include:

- Imaginative and creative thinking skills
- An ability to analyse and critically assess problems
- An ability to see the big picture as well as giving attention to the smallest detail
- An ability to communicate effectively
- An understanding of history, cultural and environmental concerns

See also Australian Institute of Architects 'Your House' resource (Introduction Topic)
<http://www.architecture.com.au/i-cms?page=1.13261.13292.13302.192>



Architects will commonly complete what is called a *SWOT Analysis*

SWOT - Strengths Weaknesses Opportunities Threats

Strengths	Existing characteristics that give the site a clear advantage over others <i>eg: flat landscape for easier building</i>
Weaknesses	Existing characteristics that put the site at a clear disadvantage over others <i>eg: shadow of large school gym blocks out most of the sunlight</i>
Opportunities	External factors that could benefit the site <i>eg: views of the parkland across the road from the school</i>
Threats	External factors that could cause issues <i>eg: close proximity to the school's smelly landfill skip</i>

Think about:

Physical restraints:

- Orientation
- Trees / streetscape
- Contour lines
- Streams / waterways
- Biodiversity on-site
- Roads / foot paths
- Transport
- Noise
- Smells

Opportunities:

- Views / vistas
- Views of the site
- Focus point

Regulatory:

- Zoning / ability to build on the site
- Soil structure
- Sediment control



Activity 1 - Getting to Know Your Site

Students should spend time outside the classroom, in the school grounds exploring the buildings and their relation to the school as a whole site.

Part A: outside the classroom

Find an area outside with a good view of the school and invite students to talk about what they see and how they feel about the school buildings. In their visual diaries ask students to make a sketch or line drawing of the buildings.

While they are sketching ask them to think about the different shapes that make up the building and their relationship to the space around them. Discuss feelings of being outside, looking at the aspects of building / surrounds. Point out elements such as views and vistas.

Go on a walk to explore the school buildings and the grounds. Spend time looking at:

- Details of the buildings
- Materials used
- Texture of materials
- Colour, shapes, contours
- Orientation of the buildings – which parts are in the sun / shade

Students should use their visual diaries to document what they observe:

- Collect and draw plants / vegetation
- Write about how it feels to be in a certain part of the grounds
- Draw window frames / cornices
- Garden-beds, footpaths
- Look for patterns and shapes everywhere
- Make rubbings (frottage) of different surfaces / textures

Part B: back in the classroom

Using the images and observational sketches from their visual diaries, students create a 'bigger picture' of their school's built environment. They may recreate their original panorama sketches into a collage using the frottages / rubbings they have collected. Or create an abstract pattern using the different shapes and lines observed within the buildings.

TIP: As the project develops, it would be a good idea to create a dedicated area in the classroom to display children's artwork, design ideas, models and objects.

See also Australian Institute of Architects 'Your House' Resource (Topic 5: Impact of the Built Environment)

<http://www.architecture.com.au/i-cms?page=1.13261.13292.13302.192>

A. Functional Brief:

The functional brief for the cubbies has not been closely defined so as to allow schools maximum flexibility in determining what form of structure may be of most value to them. The cubby structures should, however, be of a scale that at a minimum enables them to be actively used by four students at one time.

Specifications

- What is the function of the building?
- What is the skill base available? (utilising existing opportunities available through the schools contacts with the community)
- Materials availability - Is there an abundance of a specific material locally and how can that be utilised?
- Budget - Can we get additional funds from anywhere?

B. Performance Brief:

The performance brief is personal to each school culture and determines the standards and cultural concerns that are important to the school community

Specifications

- What is the feeling / experience of the building
- Is there diversity of the space? (using rooms for other things)
- How can we work with what is available on-site? eg: trees, rocks etc
- What is the value of the site? Take advantage of the natural conditions



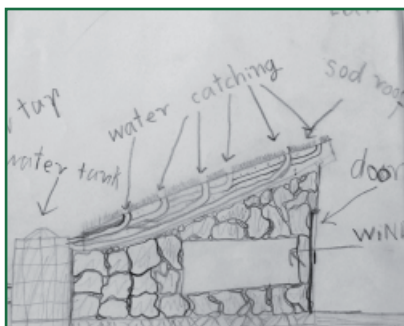
C. Sustainability Brief (considerations):

In considering what aspects of sustainability a cubby on the school grounds may interact with, design teams are encouraged to consider the following issues in the generation of cubby designs. Thinking should not be limited to these issues and the design teams should explore any other aspects of sustainability that are considered relevant.

Functional Value

It goes without saying that the play and educational outcomes are the main focus of the project, so consideration should be given to your school's individual learning priorities.

- Learning by making - What is the value of this education process?
- Educational demonstration - What aspects of built environment sustainability issues do we wish to demonstrate?
- Educational communication - What emphasis do we place on the touring exhibition aspect of the project?
- Play - What is the long-term value of creating play structures? What is the importance of ensuring the cubbies are fun to play in and are used?
- Social gathering - Is it important to create spaces for small groups to gather?
- Regenerative functions - How can the Eco-Cubby project help OUR environment? (ie: capture water, clean water, irrigate landscape and restore biodiversity)



Cubby Use

The functional play and educational outcomes resulting from the cubbies construction should be discussed in relation to the resulting environmental impacts.

- Why build a cubby? - Do we need it? Discuss consumption of resources.
- Are there other systems the cubbies can be productive in? ie: bicycle parking, bio-diversity / garden program, water harvesting, etc
- Are we informed about the resources we are about to use?
- How long do we expect the cubby to last?

Shelter

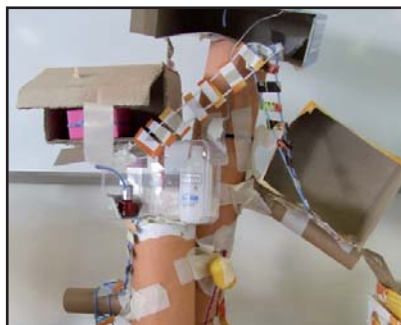
Pragmatic concerns about the effects of the natural world make up a large part of how a cubby is experienced.

- Rain - Are we concerned about keeping it out? Should the cubby be rain-proof?
- Sun - What shade will it provide in summer? How can the warmth of the sun be enjoyed in winter?
- Wind - How will wind affect the cubby and how can it be controlled?
- Glare - Are people going to want to read in the cubby? How does glare affect our eyes?
- Extreme temperatures - Will any spaces created get too hot to occupy at times when it will be used?
- Noise - Will any noise sources make it hard to talk in the cubby? Will interior noise bounce around? Will noises echo in the space? Is this a good or a bad thing?

Enclosure

The way students expect to feel physically when inside the cubby should be discussed

- Staying comfortable - How do we feel 'comfort'? Think about radiated heat, humidity, etc
- Keeping drafts out - Do we need to seal the cubby?
- Keeping the heat and cold out - insulation: Think of windows as holes in the 'esky' of the building fabric.
- Capturing the sun's warmth - Explore the concept of solar passive heating
- Storing the sun's warmth - Explore the concept of thermal mass
- Staying cool - Explore the concept of passive cooling strategies
- Daylight - How do we let the sun in? What about the heat in summer?
- Air quality - Do we have potential issues with pollutants or off gassing?
- Ventilation - How can we get fresh air?
- Acoustics - What happens to sounds? From outside? Created inside?



Materials

Consideration should be given to materials and how they work within a sustainable brief.

- Resource extraction - Where are the materials you use going to come from?
- On-site resources - How can we use existing soil, rocks, trees etc?
- Pollution from manufacture - Do the materials produce pollution in their manufacture? Carbon emissions are a new form of pollution we have just learnt about.
- Cradle to grave - Where will the material used in the cubby end up?
- Cradle to cradle - At the end of the cubby's life, will materials be able to be used as a resource in another process or system?
- Recycled materials - Can materials be recycled? Directly, or reprocessed?
- Waste streams - Where else will materials end up? Think about the fact that materials generally can't just 'go away'.



Resource Use

The cubby's lifecycle and environmental impact could be discussed in the context of it not being connected to any electricity or water systems. While not being directly related to the design phases of the cubbies, design teams may wish to discuss how our houses use resources in the following ways:

- Energy - artificial lighting (lightbulbs)
- Energy - active heating (powered heaters)
- Energy - active cooling (powered coolers)
- Energy - active ventilation (powered vents / air conditioning)
- Water - potable use (drinking water)
- Water - non-potable use (grey water)

A concept design uses the site analysis and the briefing processes to come up with a basic concept.

Think About:

- How to drill down to the absolute basics of the plan (walls, floor, roof)
- How to account for senses (touch, smell, sound)
- How elements of the concept can be represented in 2D (ie: plan / drawing)
- How the concept can be represented in 3D (ie: sculpting / modelling)

Activity 2 - Mapping the Classroom

Table-top maps are a good way to introduce the idea of aerial perspective. Children often see the world from their level, up or from the ground upwards. Due to this, their maps often have a pictorial or landscape view. The following activity can help younger children begin to understand the aerial perspective that most maps offer.

1. Start by mapping an environment your students are familiar with, such as the classroom. Use a table and large enough piece of paper so that all children can gather around and see.
2. Ask, "How would our room look to us if we stood in the doorway?" A simple pictorial map showing two or three walls of the classroom will usually result.
3. To move your students beyond pictorial maps, ask: "Our picture map is a good one, but what's missing? Can we see what's behind that desk? Let's make a map that shows us everything. Where would we need to be to see everything all at once?" Children usually respond that we'd have to move up high. Ask, "What would our room look like if we were on the ceiling?"
4. Fill in the additional details. "Where should the doors go? The windows? Why should we put them there? Where are you on the map?"
5. Following this, ask students to work in groups to create an aerial map of their cubby concept, based on discussions about the site analysis and brief.

Inspired by Garrett, Mary. Orienteering and Map Games for Teachers. 1996, United States Orienteering Federation, Forest Park, GA



DESIGN DEVELOPMENT

The design development phase involves assessing and refining the concept design in order to come up with a final plan. It can be seen as a critical review of the process thus far.

- What works / doesn't work?
- Can anything be done differently?
- Choosing materials: comparing / contrasting / availability / environmentally friendly / recyclable / sustainable sources

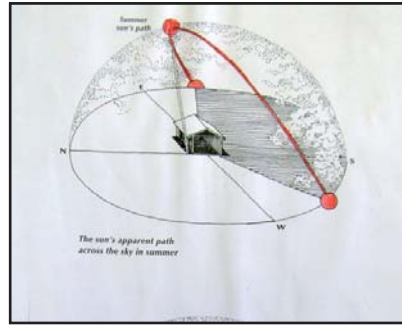


Materials Research and Specification

It is important that students understand the materials they propose to work with and their effect on the environment.

Think About:

- Pre-Building Phase: Manufacture
Where have materials come from? What processes were used to make them?
Does the company that makes them fix / offset environmental damage caused?
- Building Phase: Use
Are all materials being used effectively? Do we have only what we really need?
- Post-Building Phase: Disposal
Will there be any wastage / offcuts? What will we do with any waste?



Activity 3 - Building Materials

Investigate and research a variety of different materials used in construction and design. Using physical examples as a starting point (provided by teacher /architect or sourced from students home) students can research and investigate materials including:

- how they are made
- where they come from in relation to above categories of manufacture
- use and disposal.

Based on their research and findings, students can then create a resource for the classroom in the form of a book or large folder including:

- image
- description
- source (animal, vegetable, mineral, synthetic)
- how material is made / produced

Be sure to include materials that are available in the schools local area ie: stone clay / timber etc

Students may then wish to compare and contrast sustainable and 'new' materials with traditional / unsustainable products

Greenhouse Gas Emissions

If cubbies are not connected to power, the consideration of energy issues will relate more to the levels of passive thermal comfort the cubbies may achieve.

Energy issues could be discussed in the context of 'if the cubby had lighting, heating and cooling like a house, how much energy would it use and what design strategies could be used to minimise it?'

Passive design = designing for the climate

Think About:

- Orientation
- Shade
- Passive Solar Heating
- Passive Cooling
- Insulation
- Thermal Mass
- Glazing
- Skylights
- Heating and Cooling
- Renewable Energy

Water Use and Collection

If cubbies are not connected to water systems, the consideration of the latter will be limited to rainwater catchment. As with energy, water issues could be discussed in the context of 'If the cubby was a house, how much water would it use and what design strategies could be used to minimise that use?'

Think About:

- Reducing water demand
- Rainwater Harvesting
- Wastewater treatment and re-use (grey water)
- Storm water - water quality



Activity 4 - Orientation, Heating and Cooling

Demonstrate the concept of orientation with students by creating a simple model of a house out of a small box, cutting out a large window in one wall. Orientate the house to the north and, using a lamp to symbolise the sun's direction in summer and winter, direct light into the house.

Discuss:

- the difference between the two positions in terms of where light hits the cubby
- the implications the sunlight may have (ie: going directly through the windows and causing glare, for example)

Now add wide eaves to the model using extra cardboard to create an over hang over the window. With the lamp, demonstrate where the light falls again in winter and summer.

The students should see a clear change in where the light falls in the house in summer and winter – noting that the summer sun does not penetrate in to the house because it is shaded by the eaves and that winter sun is lower in the sky and can penetrate through the windows to warm the house.

Discuss the following:

- How will you prevent unwanted summer sun from entering the windows? Are eaves enough?
- How will you prevent heat loss through the windows during winter?
- Identify special features that could be considered / included when designing the cubby.

Use examples such as:

- deciduous trees / vines on a trellis (to provide shade in summer and light in winter)
- double glazing of windows
- window coverings/blinds

See Also Our Cool School worksheet - Solar Experiment

<http://www.ourcoolschool.org/our-environment/>



The construction of your model is perhaps the most open of the phases of your Eco-Cubby. Your choices around materials, processes, methods and complexity will depend on your students and their level of study and skill, as well as the particular expertise contributed by your architect.

General areas to consider when thinking about construction are:

- Space and materials
- Dimensions, forms and relationships
- Rhythm, movement and composition
- Light and colour
- Immediate environment and cultural heritage

Activity 5 - Playing with Scale

The importance of understanding scale should not be underestimated. Students need to have a good understanding of scale in order to understand maps, read plans and develop models.

A good starting point would be to get students familiar with maps.

- Show students a map of Victoria and identify where you are.
- A map of your area / suburb, again identifying where you are.
- A plan of the school – where is the classroom in relation to other spaces.

To develop a sense of place and scale start by creating measured drawings and models of playground equipment.

- Have students make observational drawings of their playground equipment
- Measure each part thoroughly (eg. The height of the slide from the ground, the length of the rope ladder etc)

Using the playground equipment or some large familiar objects to begin with will allow students to interact with familiar structures in a different way.

- Explain the concept of scale (eg: the concept that students need to reduce or enlarge the size of the objects to make a smaller or larger version.)
- Divide each measurement by 10 to get something that is 10 times smaller than the original measurement and so on (eg: 250cm divided by 10 = 25cm etc).

In order to develop designs that are realistic, students could create a 1:20 scale model of themselves out of plasticine. This is a good way for children to grasp the concept of proportion and help to develop designs in relation to the human body. ie: how does the body fit into the spaces? What is the height of the door, wall, path in relation to the figure etc?

A scale model of the site could also be created to help visualise where on site and in relation to other buildings would the cubby be situated. This is also a good way to develop an understanding of orientation.

Photography

Photographic documentation is an important part of this project. Schools are strongly encouraged to document each stage of their design process throughout the year. Not only will each class develop an important archive of visual images, they will be important in the presentation of project outcomes. Get students used to regular photography of their work and processes from the very beginning, rather than only during Project Coordinator or architect visits.

Information and Communication Technology (ICT)

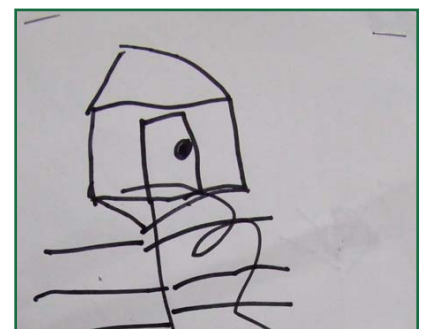
Teachers can incorporate ICT into their learning plans using the following suggestions:

- Create a visual glossary - archive of visual images to aid in understanding of design concepts. This could be presented in a powerpoint format and added to over the term.
- Create a class blog to document the project or contribute regularly to the official Eco-Cubby blog by submitting content to the Project Coordinator or commenting on other school's entries.
- Make contact with another Eco-Cubby school (present or past) and have students share ideas and concepts with students in a different area via email or Skype.
- Film certain aspects and ask students to edit together and create a 'promo' video. Besides being incredibly fun, this also solidifies concepts and learning through transformation.

Visual Diaries / Journals

Documentation and drawing are an important part of the design process. Architecture and planning involve different types of drawing and documentation, whether it be free hand or computer aided, expressing ideas through a visual medium is essential.

Throughout this project, students should be encouraged to keep a visual journal (A4 size is good) to document their research, investigations and design ideas both in class and at home. Elements of these could also be added to a larger whole class journal.



BIBLIOGRAPHY AND LINKS

BIBLIOGRAPHY

Sobel, D. (1998) *Mapmaking with Children: Sense of Place*. Education for the Elementary Years, Heinemann Publishing, Portsmouth, NH.

Van der Ryn, S & Cowen, S (1996) *Ecological Design*. Island Press, Washington. ISBN 1-55963-3891

LINKS

Organisations

- <http://www.melbourne.vic.gov.au> - Eco-Cubby provides an extension of the City's Council House 2 sustainable community across the State.
- <http://www.rav.net.au> - Regional Arts Victoria (RAV) is the peak regional arts organisation in Victoria and one of the State Government's twelve major cultural organisations.
- <http://www.architecture.com.au> - The Australian Institute of Architects aims to advance the interests of members, their professional standards and contemporary practice and expand and advocate the value of architects and architecture to the sustainable growth of our community, economy and culture.
- <http://www.slf.org.au> - The Sustainable Living Foundation (SLF) is a community based not-for-profit organisation committed to creating major platforms to help accelerate the uptake of sustainable living.

Resources / Useful Websites

- <http://www.architecture.com.au/i-cms?page=1.23.57> - YOUR HOUSE teacher resource kit from the Australian Institute of Architects website education page. The page also includes links to other 'architecture and children' websites.
- <http://vels.vcaa.vic.edu.au/about/overview.html> - Victorian Curriculum and Assessment Authority website
- <http://www.yourhome.gov.au> - Your Home is a collaborative project of the Australian government and the building and design industry. This site is an excellent resource full consumer and technical guide materials and tools developed to encourage the design, construction or renovation of homes to be comfortable, healthy and more environmentally sustainable.
(not to be confused with the YOUR HOUSE education resource from the Australian Institute of Architects website above)
- <http://sustainability.ceres.org.au> - CERES (the Centre for Education and Research in Environmental Strategies) is an internationally recognised model of a sustainable society located in Melbourne.

- <http://www.dse.vic.gov.au/thesustainables/index.htm> - Department of Sustainability and the Environment – ‘The Sustainables’ home challenge.
- http://www.resourcesmart.vic.gov.au/for_educators_3351.html - ResourceSmart Schools links to a wide range of sustainability programs available to Victorian schools.
- <http://www.coolmelbourne.org> - Cool Melbourne explains climate change and important environmental issues in plain English. We promote the great green stories happening in Melbourne.
- <http://www.ourcoolschool.org> - An initiative of Cool Melbourne, this website provides age specific information for students from grade one up to year ten. The activities are all easily downloadable and are linked to the VELS under the headings of Science and Civics and Citizenship
- <http://www.ecolinc.vic.edu.au/virtualtour.php#> - Interesting virtual tour demonstrating sustainable design principles
- <http://www.powerhousemuseum.com/education/ecologic/bigfoot/bigfoot2007/>
- <http://www.epa.vic.gov.au/ecologicalfootprint/calculators/default.asp>
‘Ecological footprint’ calculators - these are two of many on the web - they are an easy way to illustrate resource consumption to students
- <http://www.buildingconnections.co.uk/curriculum/c-index.htm> - Excellent UK website packed with information, materials and activities for teachers and pupils on architecture and the built environment.
- <http://www.teachernet.gov.uk/sustainableschools/> - Sustainable schools teacher resources and classroom activities from the UK
- <http://www.riai.ie/education/shapingspace.html> - Education resource from the Royal Institute of the Architects of Ireland website
- <http://uiabee.riai.ie/> - The UIA (International Union of Architects) Built Environment network aims to help Architects and Teachers everywhere show young people what makes good Architecture and a Sustainable environment
- <http://www.yesmag.ca/projects/geodesic.html> - Instructions to build a geodesic dome from newspaper

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Remember: most answers can be found by perusing our fantastic website!

www.eco-cubby.com

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