**Technology – Lighting up the Night**

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| **Year (s)** 3/4 | **Situation/Big Question: Can we create a simple electronic circuit (system) that we can use as a night light? Is an electronic circuit a system?** | **Duration**2-3 weeks |
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| **Key Competencies:**  | **Values:** |
| Thinking; Using Language, symbols and text, Managing self; Relating to others; Participating and Contributing | Excellence; Innovation; Inquiry and Curiosity; Equity; Community and Participation; Ecological sustainability; Integrity; Respect |

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| **Level: 1** | **Achievement Objectives – Technological Practice**  |
| **Planning for Practice (PP)** Describe the outcome they are developing and identify the attributes it should have, taking account of the need or opportunity and the resources available. **Brief Development (BD)** Outline a general plan to support the development of an outcome, identifying appropriate steps and resources.**Outcome development and evaluation (ODE)** Investigate a context to communicate potential outcomes. Evaluate these against attributes; select and develop an outcome in keeping with the identified attributes. |
| **Achievement Objectives – Technological Knowledge**  |
|  **Technological modelling (TM)**Understand that functional models are used to represent reality and test design concepts and that prototypes are used to test Technological Outcomes**Technological products (TP)** Understand that technological products are made from materials that have performance properties.**Technological systems (TS)**Understand that technological systems have inputs, controlled transformations, and outputs. |
| **Achievement Objectives – Nature of Technology**  |
| **Characteristics of technology (CT)**Understand that technology is purposeful intervention through design**Characteristics of technological outcomes (CTO)** Understand that Technological Outcomes are products or systems developed by people and have a physical nature and a functional nature  |



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|  | **Teaching and Learning Experiences**(bullet point list of experiences) | **Learning Outcomes**(Assessment Focus) |
| Introduction Revision and recap on previous learning about systems. * What is a system?
* Why do we have/need systems?
* What types of systems are there? E.g. natural, technological etc.
* What is an input, output and transformation?
* Do we have any questions about systems?
* Re-read Sneetches and use the resource from Paul to guide discussion around systems.

Research – Exploring electronic systems. * What are they?
* When do we use them?
* Look at a torch – take apart and discuss the components – inputs, outputs etc
* Hands on with brainbox creating a simple system.
* What are the components? Bulb, wire, switch and battery.
* Make a simple light circuit with bulbs and batteries.

Discuss the inputs, outputs and controlled transformations.Brief and Specifications * Discuss what lighting children use at night?
* Link in with sustainability and using less electricity.
* How do you make a simple electronic circuit?
* Develop a brief together as a class.
* Develop specifications as a class.

Planning – * children to come up with design ideas/concepts.
* Question – what are night lights? Why do we need them? What components are in them, what materials?
* Look at some examples both commercial and some others made by older students.
* Use play dough to make a model and use coloured pegs to mark where LED’s are going
* Draw the birds eye view and side view
* Annotate on the plan so that we know what colours children want

Developing a model -* Children make a model out of clay
* Use vacuum former to make the nightlight
* Trace and cut a base using corflute
* Paint their nightlights with quality paints (dulux)
* Stations set up in class for this. Need 1 adult per station
* Children assemble as much of their circuit as they can – split pins and solder the battery casing on.
* Adults may need to help with some soldering

Final Stages – * Apply second coat of paint and then add vivid details
* Cut out battery slot on base corflute and mark where circuit is going
* Drill holes for LED lights – children should be able to do with adult support
* Assembly – adult and child work together using glue gun. Children can put in LED’s and keep checking that that circuit is working

 Evaluation – * Evaluate their night light against specifications
* Can children explain the system they have created with reference to input, output and transformation?
* Evaluation sheet – children to put the photos of the different stages and describe what happens at each stage.
 | **Students will:****TP**communicate the outcome to be produced**TK**• identify the components of a technological system and how they are connected • identify the input/s and output/s of particular technological systems • Identify that a system transforms an input to an output.**NoT**identify technological outcomes in a group of technological and non- technological objects and systems |
| **Key Resources**Angela Miller – lecturer at University of Otago College of Education was able to support me in my teaching and own professional understanding for this unit.Brain box – 9 kits borrowed from UOCECircuits |
| **Thinking Strategy/Tool** |
| **E-Learning Tools**Class wiki with circuit links <http://love2learnnz.wikispaces.com/inquiry2013> |
| **Te Reo/Tikanga** |
| **Community Links** |