JISC Developing Digital Literacies programme
Case studies template (non-mandatory)

It is a good idea to use a template to standardise the writing up of case studies, mini-projects, and other examples of digital literacy development. The template does not have to be identical to this one, but using this or similar will ensure that key issues are captured and that case studies are easier to cross-reference and search across the programme.

Item	Prompts These might be given to case study authors to ensure consistency, or might be notes to the team. Adapt these to suit the needs of your project.
Title	Interactive and Digital Sculpture
Subject area	Fine Art and Systems Engineering
Scope and context	**Kate Allen, Nic Hollinworth** **Context** Interactive sensory objects made for and by people with learning disabilities is a three year AHRC funded research project which explores the potential of newly developed easy-to-use electronics in making the experience of members of the user-group more vital and meaningful when accessing heritage sites. The project consists of a series of workshops that are fundamentally experimental and exploratory in character. We would like to share some of our research with students from the art dept giving them a series of practical hands-on workshops as an introduction to interactive and digitally-enhanced sculpture/installation. **Scope** Through a series of hands-on workshops we will introduce students to simple electronics using 'squishy circuits' to activate light, sounds or movement. Encourage the students to experiment with various interactive materials such as conductive fabrics and threads, embedded circuits and shape memory wire which can be made to change shape by applying a current (possibly controlled using Arduino or similar). We will explore different ways of obtaining input from the environment and introduce students to a variety of basic sensors, which respond with some form of movement, light or sound. Art students will be given the option to sign up for the 12 available workshop places. Introductory practical Workshops 2-5 from Feb 6th. Follow up group tutorial to discuss work for exhibition in last week of term. Group tutorial of work and opening of exhibition.
Rationale and aims	Introduce art students to the potential of using interactive technologies in sculpture and installation enhance artworks and installations with the potential to make them responsive to people or the environment.

Digital literacies addressed	The aim is to introduce art students to the potential of using interactive technologies in sculpture and installation, and to enhance artworks and installations with the potential to make them responsive to people or the environment. This addresses current trends and issues in contemporary art such as installation, participation and interactivity. Many recent exhibitions employ micro controllers, sensors etc this workshop gave the students a valuable insight into the practical issues of making these artworks and also gave them the potential to imagine new uses when working with this equipment.
Overview	Students were introduced to technology through Squishy Circuits (see http://courseweb.stthomas.edu/apthomas/SquishyCircuits/)which was used as a vehicle to exploring simple electronic circuits within an arts context. The 3 workshops that followed focused on introducing some basic elements in using an Arduino microcontroller, such as basic program construction and uploading, attaching input and output devices and the construction of some simple sensors using conductive fabric and resistive plastic. Although the workshops were primarily aimed at getting students to use Arduinos, the students were encouraged to explore and experiment with the devices and see how the microcontrollers could be integrated into their own artworks.
Digital resources and know-how used	Each student who attended the workshop was given an Arduino Uno and a small breadboard for carrying out simple experiments with the device. Some additional resources, such as sensors and basic electronic components, were allocated on demand as and when students required them. Further components needed (e.g. components required for students' own projects), were purchased by the students themselves.
	An understanding and experience of using microcontrollers (in this case Arduino) is a necessary pre-requisite for staff intending to hold workshops of this nature. However, it was assumed that students had no initial experience of using microcontrollers (or any other electronic knowledge or experience) and the workshops were pitched at the level of complete beginner. It was assumed that all participants had access to their own laptop computer and were sufficiently experienced at using basic applications (word processor, browser, etc).
	Help was available outside of the scheduled workshops either as face to face or via email for students.

Benefits and impacts	The aim of the workshops was to introduce art students to technology with a view to them exploring ideas further and possibly integrating it into their own works. As there were only 3 workshops devoted to using Arduino, we did not expect any level of 'mastery' in applying technology. Despite this, two of the students (with no prior experience) managed to develop their ideas further and integrate them into their own work in time for the end of year show June this year.
	Students turned up to workshop each week (in fact it attracted more students) and showed a great deal of enthusiasm, and were not discouraged by the need to have to learn rudimentary electronics, nor by the necessity to learn some basic programming.
	A group project for one of the workshops was to create a simple touch synthesizer, and one of the students commented:
	"I felt very inspired by this and I want to try and incorporate an element of light-to-sound sensitivity in my own work."
	Another student wrote on our blog
	"The ideas ran at 100 miles an hour of how to use this new technology and for next time we have been asked to download the software for a small Arduino device that can be used to program actions. Very practical and exciting."
	One of the participants was successful in her UROP application to work on the Sensory Objects project over the summer; her experience with microcontrollers was a factor in her application being successful.
Conclusions or lessons learned	Start workshops early on in the academic year, so that students have sufficient time to learn about the technologies that are available and how they could be put to use in their own work.
Links and further information	Links to the blog for the workshop and Sensory Objects blog:
	http://introductiontointeractivesculpture.blogspot.co.uk/
	http://www.sensoryobjects.com/
	Also, resources for Arduino and for making sensors:
	http://www.arduino.cc/
	http://www.kobakant.at/DIY/
	There are too many videos to list with respect to Arduino. A search on YouTube will reveal hundreds of useful tutorials.
Further opportunities	In response to our workshops we were invited by Professor Gavin Brooks to apply for further funding from a 'one off' T&L fund. We have been awarded £1500 so we can continue the workshops next year, we will start at the beginning of the next academic year. We aim to start earlier so that we can offer more workshops to students and cover more ground, particularly by going into greater depth and having time to explore student suggestions and ideas further.
Contact details for further information	k.allen@reading.ac.uk
	n.d.hollinworth@reading.ac.uk