

# Developing a PIC TEACHING AID --

## My Story

**Rob Warren – a new TEP associate shares some of his work in developing a unique PIC teaching aid**

With PIC technology teaching becoming standard practice in many classrooms today, the options of systems available and strategies to teach it can be confusing for many teachers. This is especially the case when trying to introduce it for the first time. This is exactly the problem the Technology Department were faced with at the school I attended during the school based placement of my BSc (Hons) Design and Technology Education degree.

With various systems available and different practical tools for teaching it the staff were unsure of which kit to buy to get them started. At the same time as my placement I was also starting my final assessed piece of work entitled 'Design for a Client' and this is where the project began.

I have always believed that any classroom teaching materials should be instantly engaging for students and teachers alike. I feel it is important that they are appealing and easy to use as well as being reliable, robust and above all affordable such that all young people can benefit from the technology.

After evaluating current products and talking to various teachers and students alike I began to formulate a PIC teaching aid which encompassed all of the above. At the same time I was also introduced to TEP who I have to thank for all the resources provided in producing a unit which could be used for table top learning, and which was laid out in a way to aid pupils understanding. One advantage for pupils was the avoidance of a 'kit' approach or having to 'build' a finished product.

I initially began by looking at the design from a systems approach where pupils can recognise inputs, processes and outputs, and this influenced the overall layout of my project. I wanted it to be functional so that PIC chips could be easily changed and overlays placed in the centre to again aid pupils learning, with the overall system being modular. This was achieved by the addition of an A4 removable central section with ZIF (zero insertion force) sockets underneath. This setup means different chips can be placed in the unit for different projects, and A4 overlays can be added. A simple example of this could be a traffic light whereby the overlay shows that a switch is the input, and then 3 different LED modules can be placed to show the outputs. The programming is carried out by pupils and 'flashed' into the chip.



Main view of project

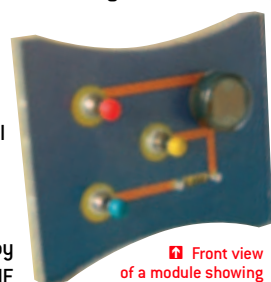
The final part of my design brief was to fulfil the need for the unit to be robust and for teachers being able to adapt it to suit their needs. This was my reasoning behind the design of the input / output modules which are comprised of acrylic top covers, a circuit designed using PCB wizard and a PCB underneath all held together with the use of banana plugs. This not only makes the system easy to reproduce for many schools, but also makes it compatible with other pieces of hardware with similar connectors.

Finally the project was produced using live-edge orange acrylic for the main chassis and clear acrylic for the overlays on the centre and the module tops.

Initial evaluations of the project by both staff and pupils have been extremely positive. Pupils have found it easy to use and have all initially been taken aback by the look of the unit, as it really catches their eye. Other colleagues have commented on how easy it is to use and adapt. Like any initial project their have been some problems, such as case strength and ease of removal of the modules, but I am currently working on stage 2 of the design, with several modifications and improvements.

If you would like to develop your own PIC teaching aids you can find the drawings and construction notes under the News and Views Support tab on the TEP website.

Rob would be pleased to hear from anyone wishing to construct their own and can be contacted at: [rmwarren@gmail.com](mailto:rmwarren@gmail.com)



Front view of a module showing the appearance pupils see, how it can be removed due to its shape and how the components are mounted.



Project with centre removed to show position of PIC chips

Image of a module showing the 3 main components from the side: acrylic top, PCB wizard inlay, PCB, all held together with banana connectors threaded into the acrylic top

