Mobile Phone Holder

Design Task

Design and make a mobile phone holder which can sit on top of a bedside locker.

1. Introduction
This project is a mobile phone holder which will display the mobile phone in an inclined position.
The key focus areas of this project are:

1. Using surface development in the realisation of a project
2. The development of marking out skills
3. Using a model to aid in the process of design and the planning of the sequence of manufacture.

2. Year Group/Term
This project would be suitable for the end of the first term in first year.

3. Syllabus Topics & Learning Outcomes
The project covers elements of the following syllabus areas:

Design: Using a model to test a design and plan the sequence of manufacture

Communication: Making a two dimensional drawing of an object which will be folded to create a three dimensional object

Materials: Developing skills in marking out, cutting, finishing of acrylic and the bending of metal

Structures: Applying the concept of centre of gravity to determine the stability of the project.
Aims
- To introduce the students to the folding of flat materials to create three dimensional objects
- To engage students in the modification of a design to meet their own specific requirements.

Learning Outcomes
Students should be able to:
- Determine appropriate dimensions for a given design of mobile phone holder to accommodate a mobile phone of their choice
- Draw the surface development of the mobile phone holder to scale of 1:1. Communicate design ideas through the execution, reading and interpretation of simple sketches and working drawings
- Use a card model of the surface development of the mobile phone holder to determine the sequence of folding of the mobile phone holder
- Use the card model of the phone holder to determine its centre of gravity.

4. Prerequisite Knowledge
Students should have marked out cut, edge finished and line bended acrylic

5. Specific Equipment/tools required
Strip Heater, try square, fine felt marker, 300mm ruler, hacksaw, medium grade flat file 2mm drill bit. Scissors or craft knife, cutting mat, wooden straight edge.

6. Materials required:
170 X 95 X 3mm acrylic, 80 X 2 dia. brass brazing rod, 170 X 95mm card (cereal box or mounting board), paper/card glue, superglue gel.
Appendix 1 includes a detailed material list.

7. Suggested methodology
There are a number of approaches to this project depending on the ability of the students and the time available.

Option 1
Present students with the design solution. Students determine the key dimensions of a mobile phone of their choice and customise the dimensions of the given design solution (within a material area of 170 X 95). Students build model and test prior to manufacture.

Option 2
Present students with design solution which omits the metal support for the mobile phone. Engage the students in the development of a range of solutions for this omission.
**Option 3** (most difficult, most time required)
Present the brief to groups of four students. Students develop a design, make a model and test. Each student then manufactures the solution developed by his/her group.

*Note*: A material size of 250 X 95mm will facilitate a wider range of design solutions.

8. **Procedure/instructions/ information.**
See attached drawings for construction/assembly details

9. **Health & Safety**
The Technology room Health & Safety rules and regulations apply.
Hazards specific to this project include the following:
- Hot surfaces associated with the use of the strip heater. The risk of burns can be mitigated by the use of suitable gloves
- Potential bonding of body tissue due to the use of Super Glue Gel. The attention of students should be drawn to this hazard and disposable gloves used to reduce risk
- Possible cutting from metal swarf on the end of brazing rods. Students’ attention should be drawn to this hazard and the mitigation of the risk by removing the swarf with a file immediately after cutting.

10. **Alternatives**

*Simpler Solutions*
- Use a 15 x 50mm acrylic piece glued into position using tensol cement in place of the metal support.

*More challenging solutions*
- Develop a base for the holder connecting the acrylic to it using screws.

11. **Assessment/Evaluation**
- Students should be encouraged to test and evaluate their final product and complete an assessment sheet (Appendix VIII).
- Students could also be given one section of the Junior Certificate portfolio to complete during construction of project. This allows them an opportunity to practice elements of this third year requirement (Suggestion – Drawing for Manufacture, Appendix VI).
- Students could be asked to consider how the product could best be manufactured and to propose an order of manufacture. This should be reviewed by the student when the project is completed and any significant changes considered necessary recorded and explained (Appendix VI)
- The functionality, quality and finish of the final product could be assessed by the class teacher or using student peer review.
12. Suggested Resource Material

Useful Websites:  
www.t4.ie  
www.technologystudent.com  
www.flying-pig.co.uk  
www.mutr.co.uk

Appendix 1

Suggested Materials List

<table>
<thead>
<tr>
<th>Material</th>
<th>Length(mm)</th>
<th>Width(mm)</th>
<th>Thick.(mm)</th>
<th>No. Req.</th>
<th>Part Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrylic</td>
<td>170</td>
<td>95</td>
<td>3</td>
<td>1</td>
<td>Holder</td>
</tr>
<tr>
<td>Brass Brazing rod</td>
<td>70</td>
<td>2 dia.</td>
<td>-</td>
<td>1</td>
<td>Phone Support</td>
</tr>
</tbody>
</table>

Also required:  
Super Glue Gel  
Card for Modelling
Appendix 2
Isometric Sketch
Appendix 3
Working Drawing