

# Technological Education Rubrics

## Fabrication / Build Skills – Product Construction and Performance

Your Name: \_\_\_\_\_

Self-Assessment Value: \_\_\_\_ / \_\_\_\_

Peer Assessment By: \_\_\_\_\_

Peer-Assessment Value: \_\_\_\_ / \_\_\_\_

### 1 Post-Production Self and Peer Assessment

Once you have completed the design and fabrication of a product, you need to “test” (ie assess / evaluate) both your product and your learning. Student work -- your product and your process -- will be assessed and evaluated according to rubrics / marking schemes such as those provided below and elsewhere in the pickup folder.

Your task now is to self-assess your work – just as though you were on-the-job in the real world. Use the applicable rubrics below. If you think you need another rubric to properly assess your work... then create your own! You may use the ready-made rubrics below as a guide. Designing your own rubrics – setting out requirements for your own learning – is where the real learning begins. Self-assess your work before you ask a colleague to peer-assess your work.

With respect to building a product in the shop, the two over-riding questions are:

#### 1. Did you build exactly what you said you would build?

- a. Get out your detailed Requirements document and your final design drawings for your product. Compare your finished product to your requirements doc and design drawings.

#### 2. Did you learn what you needed and wanted to learn?

- a. Get out the Curriculum document and the teacher’s list(s) of Expectations for this project AND your own list of additional requirements for your learning. Did you achieve your learning goals?

### 2 Rubrics – Fabrication / Build Process

Expectation (Out of 20 Marks)	Level 1 (Up to 12 Marks)	Level 2 (13 to 14 Marks)	Level 3 (15 to 16 Marks)	Level 4 (17 to 20 Marks)
<b>Performance: Product Safety, Function and Ergonomics</b>	Parts have burrs or sharp edges or corners. Surfaces that should be smooth are very rough. Rotating parts are not guarded. Product will probably deform under expected conditions of use such that it will soon become non-functional. Product can fall over or is otherwise unstable. Product is difficult to hold or use.	Most burrs, sharp edges and exposed faces have been filed or sanded reasonably smooth. Component parts are well-assembled and unlikely to “work loose” in typical conditions of use. Product can be used effectively but results can be inconsistent. Product may be difficult to service / maintain. Does not meet 2 of the original stated performance requirements and no justification is documented for these shortcomings. Product is actually “over-designed”, for example far too heavy or far too thick etc.	All burrs, sharp edges and exposed surfaces have been filed or sanded smooth. Product is strong enough for the expected service conditions. When used many times the product provides consistently good results. Does not meet 1 of the original performance requirements and no justification is documented for this shortcoming.	Complies with Level 3 and, in addition:  Any differences between the “as-built” product and the original requirements document and design drawings are justified in the decision-making documentation.  <i>In all respects, the product does what you wanted it to do and performs as you had intended.</i>

Expectation (Out of 20 Marks)	Level 1 (Up to 12 Marks)	Level 2 (13 to 14 Marks)	Level 3 (15 to 16 Marks)	Level 4 (17 to 20 Marks)
<b>Materials Selection and Utilization</b>	Inappropriate materials were selected for the given conditions or Materials were appropriate but were ineffectively used or wasted (eg wood grain direction is inappropriate)	Materials were appropriate. Materials were not wasted during prototyping or production. Wood grain runs in the appropriate direction.	Materials were appropriate and were sensibly used and geometrically arranged within the product to benefit strength.	Materials were appropriate and were very creatively used to optimize strength, durability, function and ergonomics.

Expectation (Out of 20 Marks)	Level 1 (Up to 12 Marks)	Level 2 (13 to 14 Marks)	Level 3 (15 to 16 Marks)	Level 4 (17 to 20 Marks)
<b>Construction: Attention to Detail, Quality and Pride of Craft</b>	Construction reflects carelessness and / or poor attention to drawings and requirements. (eg shapes that were specified as circles are not true circles) Construction bears little resemblance to the design drawings and no documentation is provided to support the changes. Fasteners are carelessly applied or materials were damaged / <b>cracked</b> during fastening. Joints are sloppy or do not reflect intent of the type of joint.	Construction reflects reasonable care and attention to drawings and requirements (eg shapes that were specified as circles are reasonable circles) Construction does not reflect the design drawings in 2 or 3 significant respects and no documentation is provided to support the design changes. Fasteners were reasonably well-positioned and applied.	Construction reflects a careful practitioner and good attention to drawings and specifications (eg shapes that were specified as rectangles have 4 angles of 90 deg +/- 1 <b>degree</b> ) Construction does not reflect the design in 1 or 2 significant respects but as-built documentation or decision-making documentation is provided to support the changes. Joints are well-made.	Complies with Level 3 and, in addition: Construction accurately reflects the design documentation in all respects. All measurements are within tolerance. The product (and its finish) is neat and attractive.  <i>In all respects, the product looks like what you wanted it to look like.</i>

Expectation (Out of 20 Marks)	Level 1 (Up to 12 Marks)	Level 2 (13 to 14 Marks)	Level 3 (15 to 16 Marks)	Level 4 (17 to 20 Marks)
<b>Design Process Documentation</b> (Refer to: <i>Written_Report_rubric.doc</i> and <i>Rubric_Information_Processing.doc</i> and <i>DesignProcessDetails.ppt</i> )	There is minimal documentation in support of the design process. Documentation is at level 1 in Written Report & Info Processing rubrics	Design brief and Requirements are adequate but simplistic. Parts list is too general, eg -- "4 pieces of wood" Fabrication Plan is too simplistic, eg -- "get the wood from teacher". Quality control steps / test protocol is simplistic. Minimal value in the Reflection document.	All design documentation is provided and meets all general criteria and the minimum requirements. Tolerances are specified. Fabrication plan is in table or spread-sheet format showing a numbered list of clearly-written steps, including identification of the raw material and tool to use as well as expected time to take. Safety checks are included. Quality control protocol reflects the requirements document. The test report is thorough.	Complies with Level 3 and in addition:  It is clear that the student used the higher-order thinking skills to great advantage in learning and product development. The Reflection document shows advanced technological competence, eg reflection describes, in detail, at least 2 areas for improvement.

### 3 As Needed for Your Project, Create Your Own Additional Rubrics

For example, in your opinion for your project, the rubrics above may not adequately address aesthetics and structure (including strength) and mechanism (including assembly of moving parts).

Expectation (Out of 20 Marks)	Level 1 (Up to 12 Marks)	Level 2 (13 to 14 Marks)	Level 3 (15 to 16 Marks)	Level 4 (17 to 20 Marks)
<i>Aesthetics</i>				

Expectation (Out of 20 Marks)	Level 1 (Up to 12 Marks)	Level 2 (13 to 14 Marks)	Level 3 (15 to 16 Marks)	Level 4 (17 to 20 Marks)

### 4 Self-Reflection

- 1) What I did well
- 2) What I did "not so well"
- 3) What I will do better in a future similar situation
- 4) Other aspects of my "Process" that I will improve (eg design process, fabrication process, testing process)

### 5 Peer Comments

NOTE: In the feedback, the Peer Assessor must "make the student think" (both critically and creatively) – not give the student the answer! Be sure to include comments justifying the assessment value that you are giving. Peer Assessor must put his / her comments in **red** font.

**Assessor's Name and Additional Notes:**

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