

## Element F: Consideration of design viability

This entry would be likely to receive a **score of 1**, based on the EDPPSR. The engineering educators who scored this portfolio felt that the proposed design was reviewed based on superficial considerations. They cited as “marginally relevant” the ease of purchasing materials with which to build the prototype. The remarks related to cost-effectiveness are too vague to contribute to a higher score. The designers did not include in this very brief portfolio entry any credible evidence to support their judgment about design viability.

To receive a higher score the entry would need to have contained some evidence that the plan or prototype proposed for solving the problem could conceivably make it from the lab bench or computer screen as a prototype to the end user the device or is trying to help both at the scale proposed by the problem statement and in a sustainable way. If a rationale or overview business case from drawing board to end user cannot be established, then the idea has no chance of truly being a solution to the problem. It remains at best an interesting academic exercise.

### Engineering Design Process Portfolio Scoring Rubric Component and Element Titles

#### Component I: Presenting and Justifying a Problem and Solution Requirements

- Element A: Presentation and justification of the problem
- Element B: Documentation and analysis of prior solution attempts
- Element C: Presentation and justification of solution design requirements

#### Component II: Generating and Defending an Original Solution

- Element D: Design concept generation, analysis, and selection
- Element E: Application of STEM principles and practices
- **Element F: Consideration of design viability**

#### Component III: Constructing and Testing a Prototype

- *Element G: Construction of a testable prototype*
- Element H: Prototype testing and data collection plan
- Element I: Testing, data collection and analysis

#### Component IV: Evaluation, Reflection, and Recommendations

- Element J: Documentation of external evaluation
- *Element K: Reflection on the design project*
- Element L: Presentation of designer’s recommendations

#### Component V: Documenting and Presenting the Project

- Element M: Presentation of the project portfolio
- Element N: Writing like an Engineer

**Please Note:** Elements M and N require no submission from the portfolio author(s) and are intended to be scored based on the portfolio work as a whole from what has been submitted from Elements A through L

## ***Element F: Consideration of design viability***

**5** The proposed design was carefully reviewed based on several relevant extra-functional considerations; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—is clearly realistic and well supported with credible evidence.

**4** The proposed design was adequately reviewed based on several relevant extra-functional considerations; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—is generally realistic and adequately supported with credible evidence.

**3** The proposed design was partially reviewed based on one or two relevant extra-functional considerations; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—is only somewhat/sometimes realistic and is only partially supported with credible evidence.

**2** The proposed design was superficially reviewed based on one or two relevant extra-functional considerations; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—may be generally although not completely unrealistic and/or may be inadequately supported with credible evidence.

**1** The proposed design was superficially reviewed based on one or two extra-functional considerations of marginal relevance; a judgment about design viability based on those considerations—the capacity of the proposed solution to address the problem—may be unrealistic and/or not supported with any credible evidence.

**0** There is no evidence provided that the proposed design was reviewed based on any extra-functional considerations.



## The Design and Creation of a Modified Posture Corrective Apparatus for Adolescent Females

CONSIDERATION OF DESIGN VIABILITY F

This will be a posture corrective back brace that encompasses both the upper and lower backs. There will be bars that run across the back from shoulder to shoulder, bars that run down the side of the body and across the chest. This solution will act as a posture corrective device designed for people who remain seated for long periods of time. It also reinforces comfortable posture stability by having extra support in the upper back region. The shape is designed to be a general form fitting contraption that will encompass an individual's upper and lower torso.

It has adjustable bars across the back and shoulder areas that can be molded to a specific form of body. While the initial construction of this piece might be difficult to maintain, the final investment in the manufacturing of this will be beneficial because it is a device that will outlast most devices for the wearer will not be participating in anything strenuous while wearing the brace.

Materials used to construct this device are all materials that are easy to find in the nearest home improvement store and the brace should be easier to maintain because the main medium is a uniform material. Cost of a prototype is hard to determine within the vicinities of our school environment but the cheap price of the PVC tubing should not make it a very expensive prototype.