EVALUATION OF ALTERNATE MOUTHPIECE MATERIAL TYPES TO MINIMIZE VIBRATIONS AND HEAT LOSS – THE RESEARCH AND EXECUTION OF PROTOTYPES

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Capstone Proposal:
Evaluation of Alternate Mouthpiece Material Types to Minimize Vibrations and Heat Loss – The Research and Execution of Prototypes

Capstone Abstract:
This paper is based on the idea of current horn mouthpieces being made solely out of brass with a limited market of stainless steel and titanium with plating being silver or gold. This is an opportunity to explore alternate materials; specifically steel, cast iron and aluminum for the base material and chrome, copper and nickel for plating materials. Readers will learn about metal properties such as hardness, thermal conductivity and specific heat and learn why certain materials are more beneficial than others.

Paper Outline:
1. **Introduction:** The purpose of this paper is to introduce readers to both the current materials used for mouthpieces and introduce new potential materials for both the base and plating metal. Additionally, readers will see a step-by-step process of how the mouthpieces were made and which one performed the best in both material properties and a blind study.

2. **General Outline of Paper:**
   I. Current Market Materials
      a. Base materials
         i. Brass
         ii. Stainless steel
         iii. Titanium
      b. Plating materials
         i. Silver
         ii. Gold
   II. Properties of Mouthpieces Materials and How They Effect Playing and Sound
      a. Hardness
      b. Thermal conductivity
      c. Specific heat
      d. Cost
III. Choice for Prototype Creation
   a. Steel
   b. Cast iron
   c. Aluminum

IV. Prototype Creation

V. Blind Study
   a. Participants
   b. Questions
   c. Results

VI. Conclusion
   a. Benefits of new material
   b. How this could change the market