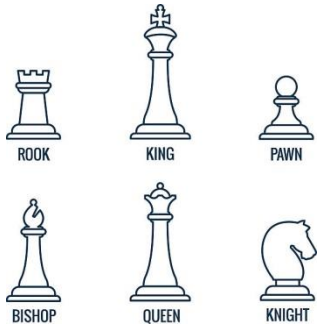
A New Chess Piece Game Set



Situation

Manufacturing Students currently create chess sets as part of the grade 10 course making use of common manufacturing machines and looking for a refresh on theme and design with Technological Design students.

Problem

Class project collaboration between two classes - Manufacturing (MAN)and Technological Design (TD), will collaborate a new themed chess set design that will make use of the mill and lathe machine processes. Design must be simple, consistent, similar to current and relative sizing, and easily manufactured using common manufacturing machines in our machine shop. TD students to identify SPICE design steps. Manufacturing will support TD students with current manufacturing process capabilities and current chess set designs/specs. TD students will design a new set based on new agreed and instructor approved theme. TD students will finish with final model designs and build drawings to pass on to MAN students to create.

Ideas/Investigation

- Collaboration, co-operation, and co-ordination by two related but different course areas working together in 6 groups both grade 11 and 12 seniors
- Chess piece themes can be based from several areas such as: classic, robotics, historical, etc.
- Consideration on machine process, tolerances, initial sizing and relative sizing with each of the pieces

Create/Construct

Major steps for this collaboration between Technological Design and Manufacturing classes:

1. Meet for initial exchange of manufacturing process capabilities, current design, and decide on theme for new design in 6 groups one for each chess piece.
2. TD students to come up with 5 sketched thumbnail ideas for each chess piece, with group vote on final design
3. TD students to create orthographic sketch of final design with dimensions for group refinement and finalization
4. TD students to create CAD model and manufacturing drawings for manufacture (3D print and machine creation)
5. MAN students to create and manufacture chess pieces to be later checked by TD students for quality and accuracy

Evaluation

Technological design: SPICE Process /20, 5 thumbnail ideas /15, final ortho with dim. sketch /25 and CAD model and drawing /30, 3D print /10

Manufacturing: build process /50, accuracy /10, finish /10

Group work: Collaboration, co-operation, input, and progress /20