DEVELOPING CONJECTURES ON HOW TO DERIVE FORMULAE FOR TOTAL SURFACE AREAS OF PLATONIC SOLIDS

SIBAWU WITNESS SIYEPU

CAPE PENINSULA UNIVERSITY OF TECHNOLOGY

siyepus@cput.ac.za

Target audience: FET phase mathematics teachers

Motivation for the workshop

The South African Curriculum and Assessment Policy Statement (CAPS) (2010) proposes introduction of **mensuration** that deals with the calculation of volumes and total surface areas of shapes made by combining prisms and pyramids, cylinders, hemispheres and cones to form more complex solids. My analysis is that learners should be taught regular solids first before they are engaged in combination of different solids. Therefore that necessitates introduction of Platonic solids prior the teaching of other solids such as combining prisms and pyramids as the traditional old principle proposes a movement from simple to complex.

This workshop is designed to develop learning activities that allow learners to develop conjectures with regard to total surface area of Platonic solids. In geometry a Platonic **s**olid is a convex polyhedron that is regular. This is hands on workshop familiarising the participants with the new demands of the South African Curriculum and Assessment Policy Statement gazetted in 2010.

The content of the workshop

The participants will explore basic geometrical concepts that are involved in the development of Platonic solids.

- The activities will deal with the development of Platonic solids using the nets supplied. These activities will enable participants to count faces, edges and vertices of the five Platonic solids, that is, a tetrahedron, cube, octahedron, dodecahedron and icosahedrons. These activities will also assist participants to develop conjectures about how to derive the total surface areas of the platonic solids and derive Eulers' formula for Platonic solids.