Cyberlearning and Constructionism in Sustainable Life Cycle Engineering

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About Me

Calvin Hawkins is a third year undergraduate student at Wayne State University studying Mechanical Engineering

Project Introduction

CooL:SLiCE (Constructionism in Learning: Sustainable Life Cycle Engineering) is a cyber-learning platform that uses constructionism to provide an interactive learning environment in sustainable product development.

The web portal consists of three tools:
1. Online CAD tool
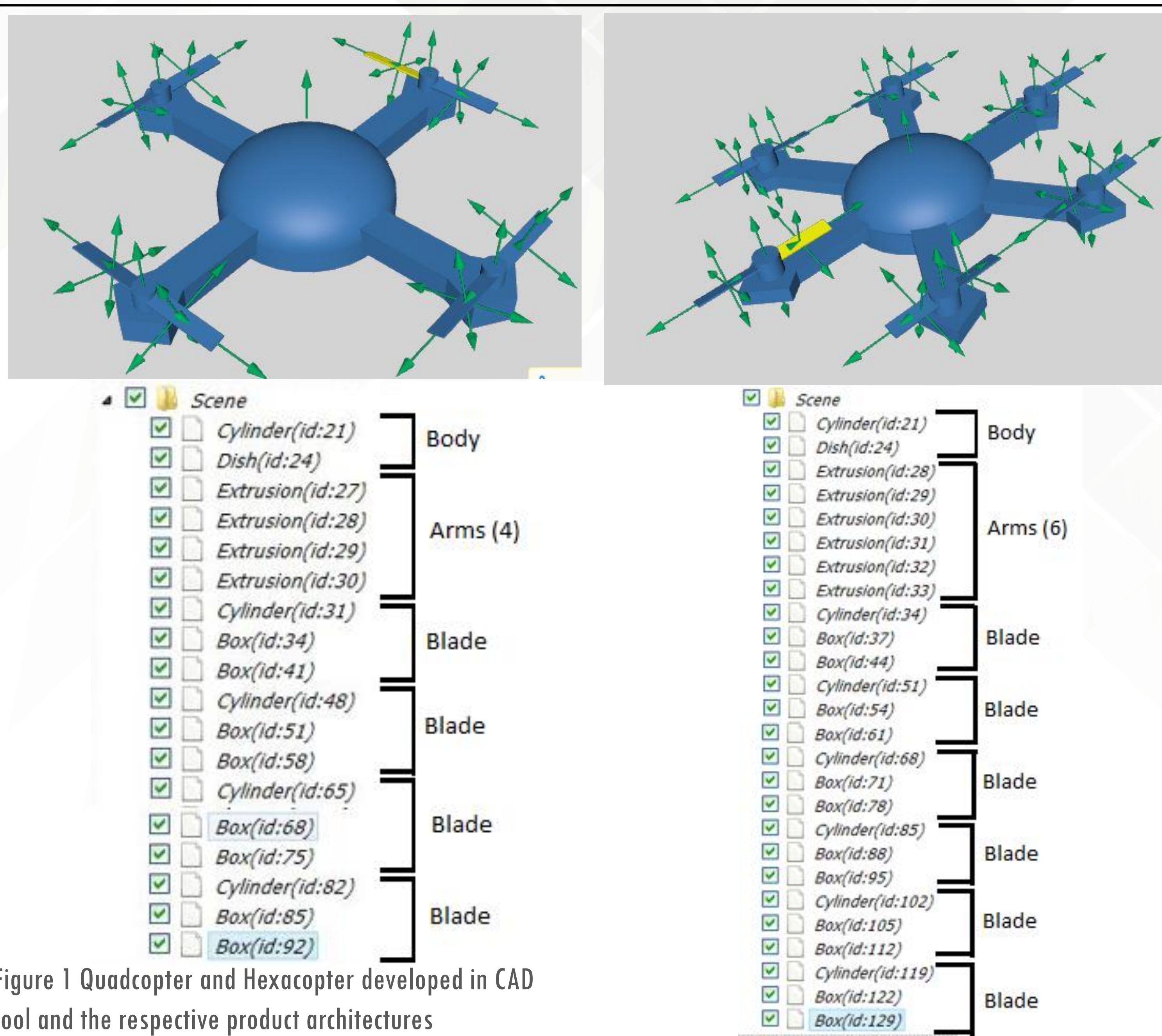2. S-PASS
3. Manufacturing Analysis

Figure 1 Quadcopter and Hexacopter developed in CAD tool and the respective product architectures

Conclusions

The data comparison tool is the first step to integrating the other tools into the online CAD tool. Comparing product architectures will allow the user to compare the associated results from the S-PASS tool and Manufacturing analysis tool

Results

Developed a data comparison tool within the online CAD platform that can compare product architectures
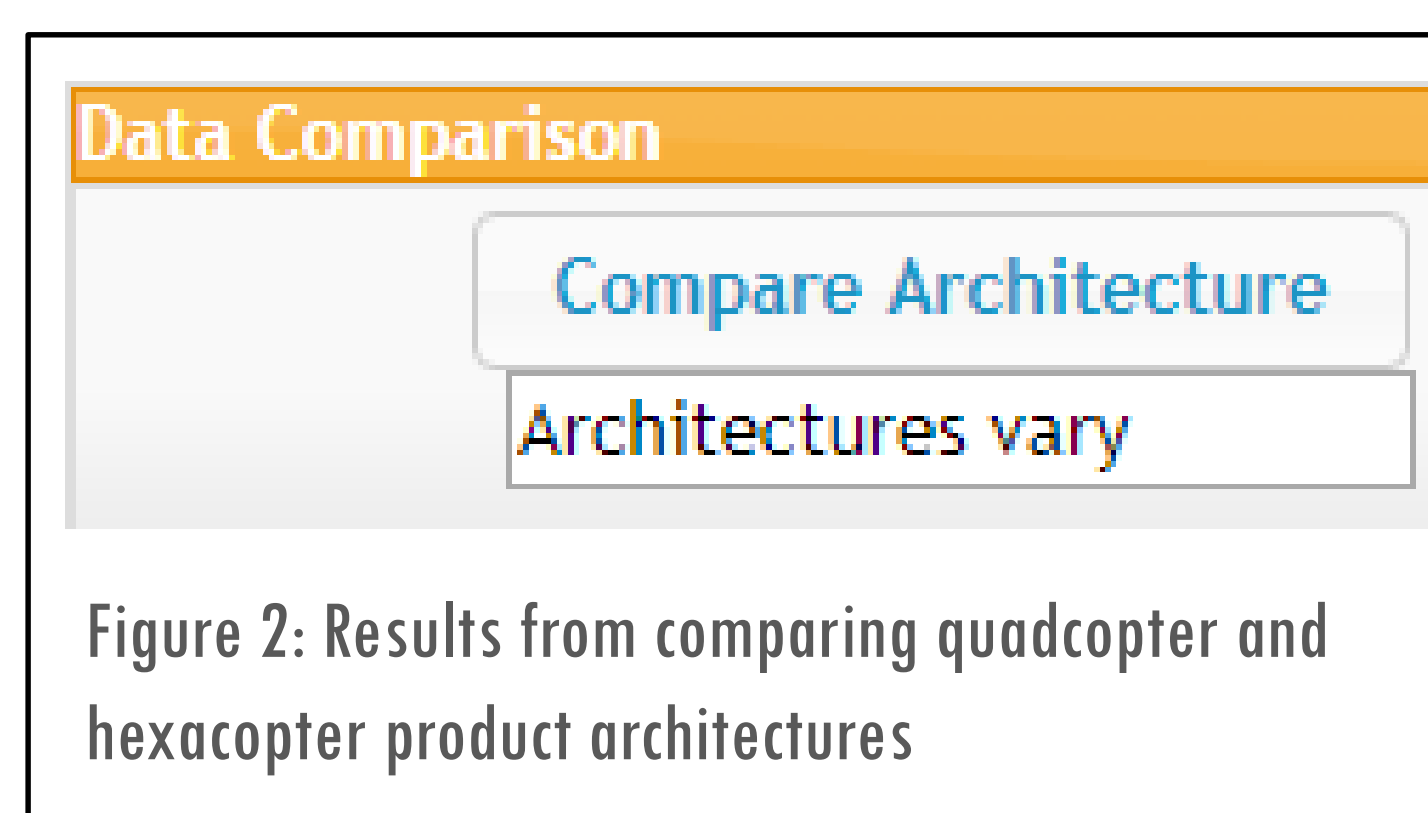

Figure 2: Results from comparing quadcopter and hexacopter product architectures

Relation Sustainable Mg.

Spreads sustainability awareness by designing sustainable products. Environmental impacts are deciding factors for manufacturing processes and supplier selection

State of Knowledge

Engineering was originally a hands on discipline, but there has been a transition to a lecture based curriculum. This transition has inspired the creation of CooL:SLiCE. The project takes a constructionist approach to provide scaffolding to effectively teach sustainable life cycle engineering.

Approach

CooL:SLiCE takes a constructionist approach and uses an experimental learning model to create an interactive learning environment. Scaffolding is used within the S-PASS and Manufacturing analysis tool to allow users to learn through their own discoveries
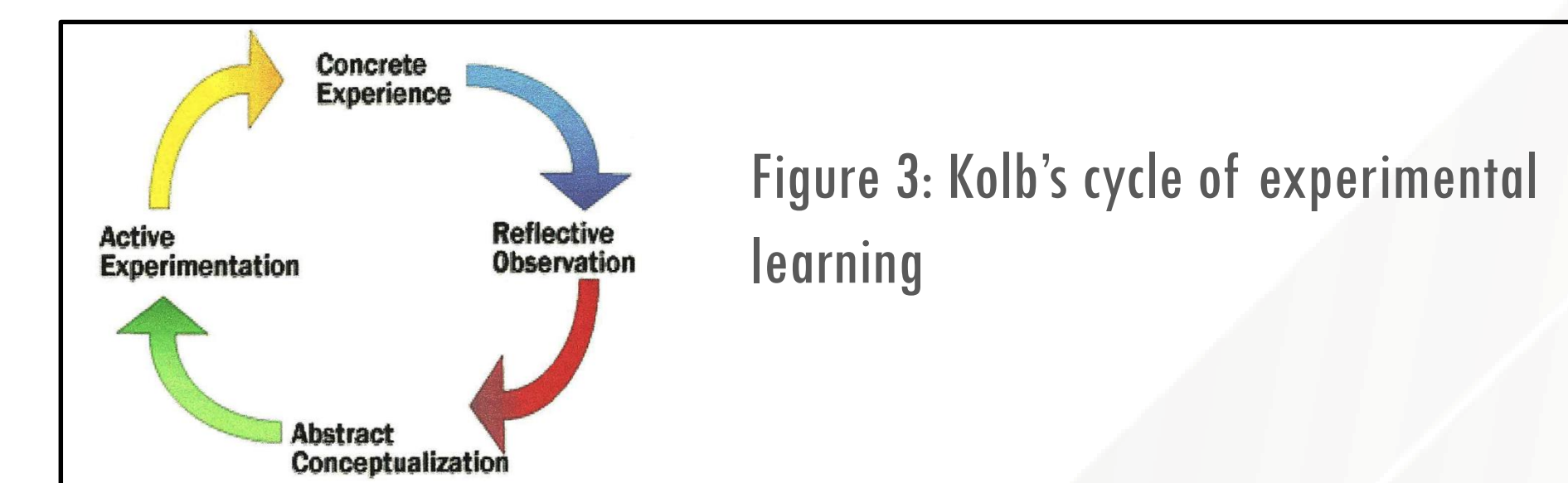

Figure 3: Kolb's cycle of experimental learning

Acknowledgements

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