

and (8) a box for keeping all components. Figure 20 shows these components where each component is referenced by its order in this list.



Figure 20. Contents of the Jenga Applied computing (JAC) Toolbox

5. Conclusions

A new strategy for teaching computer science topics was investigated. The strategy aims to promote engagement through playing a customized Jenga game. The customized Jenga constructs an active learning environment that reveals a model for concepts to learn. This allows students to perceive the model in different ways that fit their diverse experiences. Dry-erase tape, fine dry-erase markers, and cardboard XL Jenga were used to create an editable, large and light weight version of the Jenga. Three activities were designed and conducted in the course SYST39409 held in summer 2016 to test the strategy experimentally. The marks of a quiz on the topics targeted by the activities were used to evaluate the strategy impact on the students' uptake of learning. These marks were compared to the marks of a control group which studied the same material in fall 2015 but without applying the strategy. The comparison demonstrated an improvement in the class average. Additionally, a survey was conducted to get students feedback on the strategy. The survey showed that students like the strategy because they can learn from it more than traditional lectures. The survey also showed that students like the regular and XL sizes of Jenga.

6. Future work

This work developed a framework of tools and instructions that provide the basis for an effective development environment where robust game-based learning activities can be developed to facilitate learning complex concepts. To get closer to this environment this work requires further investigation

in two directions: design more activities and use a 3D printer that enables printing customized blocks.

7. References

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