

Buletin FKA

PENGAJIAN KEJURUTERAAN AWAM

UNIVERSITI TEKNOLOGI MARA CAWANGAN PULAU PINANG

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SINK OR FLOAT?

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C-D-I-O can be defined as Conceive, Design, Implement and Operate. It is one of the teaching and learning methods used in Diploma in Civil Engineering (CEEC110). For course ECW231 – Fluid Mechanics, the CDIO component is applied in the assignment, specifically on the topic of buoyancy. In the assignment, the designed CDIO activities are assessed in three (3) stages which are; (i) exposed and teach students with skills (T), (ii) utilized skills (U) and (iii) assessed (A) in the final stage. Ideally, the CDIO assignment requires students to work in a group maximum of four (4) to design and produce a clay boat model which can float and at least carry a minimum mass of 200g. However, several requirements should be met during designing the boat such as, the boat must be in rectangular shape and the clay/plasticine ball used to create the boat should not exceed 5cm in diameter. The test run of the constructed boat model was conducted on 15th December 2022 at Hydraulics Laboratory UiTM Cawangan Pulau Pinang. Each group presented with variety of boat shape and colour, and ready to see either their boat is capable to float or will sink down. The initial dimensions (height, depth, width) and initial weight of the boat were recorded before the testing. The boat was placed in the hydraulic bench and the initial immersed depth of the boat was recorded. Then, coins were given as the testing load and were arranged carefully in the boat until it reached the minimum carrying load of 200g. Some of the clay boats sink before they reach the minimum load but surprisingly several boats are able to float not only at the minimum load of 200g but also more than that! Thirteen (13) groups out of twenty-one (21) achieved loads more than 200g with the highest recorded load is 320.56g while the lowest recorded load is 54.9g. Kudos to all the students! At the end of the day, all the students claimed that they enjoyed this hands-on CDIO assignment, especially on the testing of their clay boat as they never experienced such activities like this. This is due to fully online classes in the last two semesters, where all of their assignments were submitted online. (Let's put the blame on COVID-19). Consequently, implementation of CDIO activity in the course does promote great exposure among the students as it emphasizes active and experiential learning process.



Evidence during testing of the boat model



One of the group with their clay boat



Student carefully placed the coins in the boat