CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The goal of my project was to fabricate aquaponic dry gravel plantation system for tomato plant. The process is conducted step by step as shown in the flow chart below. The literature review has been carried out to establish the specification of the history development of aquaponics, why is so significant for future, types, technology, advantages, types of plantation, types of animals and vegetables and the significant of gravity flow design. The design concept of the gravity flow system and curved tank is has been implemented by using the Solid Works software. Then, the concept generation and concept selection are performed to select the best design in order to fabricate the best gravity flow system and curved tank. In this section also shows material selection and the process that has been conducted to fabricate the gravity flow system and curved tank.

Then improve the design, try to come with several concepts. Then compare the criteria from each design which are the best. If the best design chosen still needed to be improved go back to the previous step. If no improvement is needed go to next step. Produce the drawing together with dimension of the product and the type of materials needed. After completing the previous task, start the fabrication process. Gather the parts needed for the project to proceeds the fabrication process. Here come the testing and
evaluation process. The test rig will be test to see if it full fills the requirement such as safety, ability and strength.

During the testing, if a problem occurs, the process of fabrication gravity flow system will step back to the previous process. The reason to step back is to fix the error. After all the parts had been joined together and no error, here comes the phase of result and discussion. In this part, how the gravity flow functions will be informs. Beside, how to achieve objective and solve problem statement of the project will be discuss in this phase.
Figure 3.1: Flowchart