Synthesis of the Study

One of the main reasons of involving automation, sensors, computers and artificial intelligence to agriculture is to improve crop field productivity and to lessen maintenance while the monitoring environment conserves soil, water, and other natural resources for a sustainable agriculture. The proponents found different related studies in Foreign Literature from different places such as Nigeria, India, Iraq, and Malaysia. Most of the study were conducted by different Universities and Engineering students. The common microcontroller used by these different studies is Arduino in which helps with the automation of all the systems that are designed. Three of the same studies used an IoT-based irrigation system which gives the access to homeowners of all the data and information in a server database. One of the foreign studies make use of mobile phone or Smartphone for the monitoring and controlling of the system while the last of the found foreign studies make use of SMS for controlling. All the foreign studies have the common components used in the system which is the soil moisture sensor. According to five different foreign studies, the soil moisture sensor is inserted in the soil to irrigate the plants automatically if the ground is dry. The Arduino microcontroller helps with the measurement without requiring the homeowners to do the work. One of the foreign study states that its system records data in real-time wherein it automatically collects and upload data into the Internet.

Furthermore, the proponents spend time finding related studies in Local Literature. Pangasinan, Davao, Isabela, Cavite, and Nueva Ecija are mostly provinces and also mostly target places to implement automated gardening. Water, soil, air, sunlight and sufficient nutrients are most commonly fundamental requirements that are met manually. These gardening processes are facilitated through the creation of automated system by most of the Universities in the province. Local studies also use Arduino as microcontroller and soil moisture as the main sensor used for the monitoring of the soil and to the system being designed. One of the studies made by proponents in a University from Davao believed that an irrigation system with a soil moisture sensor helps with the accuracy up to its maximum capacity. Comparing the local studies and foreign studies in terms of monitoring and controlling the system, local studies mostly used SMS or GSM Module rather than an Android Application. The proponents believed that it is more user-friendly specially for a non-technical person like farmers. One study is different from the other since it uses a Solar-Powered Irrigation System which make all the electronic tasks operate on a circuit board. It still uses GSM module or SMS for the monitoring and controlling of the data. On the other hand, a study was conducted which uses artificial light for growing vegetable plants. Right amount of light should be distributed to plants or else lettuce was determined to be bitter with the lighting of 25°C.