



UNIVERSITI  
TEKNOLOGI MARA  
MALAYSIA

## B-TECH

---

**Faculty** : Faculty of Health Sciences  
**Program** : Bachelor in Nursing (Hons.)  
**Program Code** : HS2406A  
**Course** : Technology Entrepreneurship  
**Course Code** : ENT600  
**Semester** : March 2019 – July 2019  
**Group Name** : Qobotic  
**Group Members** : Nur Aqilah Binti Mohd Za'aim  
(2016250936)  
Nur Ermarina Aida Binti Mohd Bahar  
(2016250958)  
Nurfeekah Afzatul Binti Tutienande  
(2016250918)  
Nurul Shamiera Binti Moxsin  
(2016251064)

Submitted to

Madam Zanariah binti Zainal Abidin

Submission Date

17 June 2019

# TABLE OF CONTENTS

2. EXECUTIVE SUMMARY	2
3. INTRODUCTION	3
4. NEW PRODUCT DEVELOPMENT	4
4.1 Definition	4
4.2 Classification of NPD	4
4.3 New Product Development Process	5
4.3.1 Research & Development	5
4.3.2 Product Design/Feature	8
4.3.3 Concept Testing	9
4.3.5 Prototype	10
4.3.6 Test marketing	12
CONCLUSION	13
REFERENCE	14
APPENDICES	15

## 2. EXECUTIVE SUMMARY

Qobotic is an innovative company that innovates and develops product that is based on technology and health. It is run by four members and each of the members play crucial role in order to keep Qobotic strive and to contribute ideas in for products made.

The team had experienced firsthand with the issue of clinical waste disposal error in various clinical setting in Klang Valley. In a research carried by Omar, Nazli, and Karuppanan (2012) concluded that general and clinical waste may intermingle due to lack of awareness and education among hospital staffs. These mistakes result in the cost of disposal since clinical wastes are disposed by weight.

Hence, Qobotic developed B-Tech. a smart bin that can avoid the mistake of disposal error. Before B-Tech is developed, the team went to through a lot of process from research and development to market testing once the prototype is functioning. Research, observation, interviews and a lot of brainstorming is done to ensure the product delivered will satisfy and fulfill the user's demand. Apart from that, the team aspire that B-Tech will benefit Malaysia by resolving this issue.

### 3. INTRODUCTION

- **Problem Statement/Issues**

In a clinical setting, there are several ways to dispose waste according to the type. Yet, the most basic type of disposal is by classifying waste into clinical and general waste. These wastes are disposed in separate bins. However, mistakes in classifying these wastes could happen by both healthcare members and public. It may cause problems as clinical waste is different from other waste. In Malaysia, clinical waste may be defined as, any waste consists wholly or partly of human or animal tissue, blood or other body fluids, excretions, drug or other pharmaceutical products, swabs or dressings, needles or other sharps; and any other waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practice, investigation, treatment, care, teaching or research, or the collection of blood transfusion. (World Health Organization, 2015)

This may cause various problems because it may cause pollution, has potential of transferring pathogens and increase the cost of clinical waste management (Ambali, Bakar, & Merican, 2013; Razali & Ishak, 2010). There is, therefore, a need for an intelligent bin to reduce disposal error.

- **Methodology**

The team collected data through observations of how health care providers and public dispose clinical waste in the hospital.

Aside from that, the team used verbal survey which is by interviewing health care personnel on usage of clinical bins and disposal of clinical wastes.

- **Limitations**

- Data collection and research happen in a specific settings and may not reflect actual situation in Malaysia.
- Observation were conducted in hospitals from Klang Valley. This may not reflect the situation of other hospitals.
- The assumptions is at the ward in hospital settings, the situations could differ in another clinical setting
- Respondents are mostly made up of student nurses especially during observation and market survey. The output may be different if the respondents were staff nurses and other health care staff.

## 4. NEW PRODUCT DEVELOPMENT

### 4.1 Definition

B-Tech is a smart bin that can avoid the mistakes of disposal error of clinical wastes. It is equipped with sensor controlled hollow filter that detects items thrown thus will open to only correct type of waste. This product is also features sound alarm and LED body.

B-tech is an intelligent bin that can be used as a clinical waste bin or a general bin at a particular time. The setting of the bin can be changed according to user's desire.

### 4.2 Classification of NPD

- B-Tech is an improvement of a conventional bin. ~~Hence~~ it is in pre R&D development phase.
- Conventional bin has been used since 1989 according by one of the regulations enacted in Environmental Quality Act 1974 (Department of Environment Malaysia, 2005).
- The regulation enforced; Environmental Quality (Scheduled Waste) 1989, stated that contain infectious agents, genotoxic in nature that cause DNA damage or mutations, toxic chemicals or dangerous, radioactive and waste consist of material that is sharp is to be thrown separately, which is in the yellow bin.
- Hence, the conventional bin has already achieved technology mature phase.