

Observation of Solid Waste Management System of Daffodil International University

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Department of Civil Engineering
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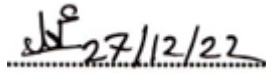
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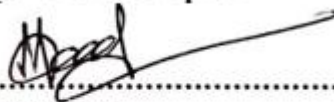
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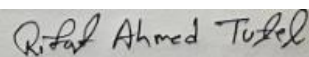


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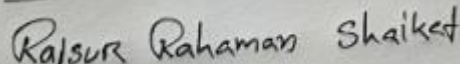
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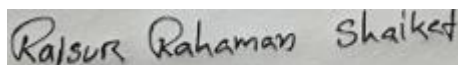


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LIST OF ABBREVIATIONS

DIUAS	Daffodil International University, Ashulia, Savar
VA	Varsity Area
COD	Collect on delivery

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ABSTRACT

Universities are a good example of an institution where a large number of people go to work or study every day. However, independent of their task, they use the University's various services such as cafeterias, canteens, and photocopy, and as a result of their activity, a cleaning service is also required. Rising costs and decreasing availability of dumping sites, as well as natural resource depletion, pollute the university environment, driving the need for university waste reduction, recycling and disposal management. When students use notebooks and pens, they can be discarded, as they should be thrown away after they fall. They should be cleaned promptly after use and moved to another location. When students eat, the leftovers should be thrown away. Leftover university canteens and food courts should be relocated as soon as possible. Reducing waste not only protects the environment, but it also saves money on disposal costs. Similarly, recycling and/or reusing waste benefits the environment by reducing the need to extract resources and lowering the potential for contamination. Uncollected solid waste can also obstruct storm water runoff, resulting in stagnant water bodies that serve as disease breeding grounds. Waste dumped near a water source also pollutes the water body or ground water source. According to the analysis, 100% of waste is directly disposed of in a dustbin, 0% is not disposed of, and 0% is neutral. We discovered this by surveying our university's waste management; we received 100% positive responses, 0% negative responses, and 0% neutral responses. When I asked if they encouraged other students to throw trash in the bin, they said 100% yes, 0% no, and 0% neutral. I asked everyone if they had any messages about providing a 100% solid lightning system. They respond with 100% no, 0% yes, and 0% security. The study concludes that the Waste Management is the human control of the collection, treatment and disposal of different wastes. Some components of waste have economic value and can be recycled once correctly recovered. The most important barriers to recycling are lack of equipment and technology, lack of materials to recycle and lack of consumer awareness. The compositions of different wastes have varied over time and location, with industrial development and innovation being directly linked to waste materials.

CHAPTER 1

INTRODUCTION

1.1 General

University waste is classified as pre- and post-consumer waste. Pre-consumer waste generated by university students, faculty, and employees consumes large amounts of food and pens and pencils in many places from the beginning of class to the end of class and waste. Every day, 500 to 600 kg of waste is generated in the varsity, and if it is not generated properly, it has a negative impact on our varsity. Our university generates 400 to 500 kg of waste per day among export officers. Learned from the employees that they generate 200 to 300 kg of waste per day. Waste management aims to reduce waste's negative effects on human health, the environment, planetary resources, and aesthetics. The goal of waste management is to reduce the harmful effects of waste on the environment and human health. Poor waste management contributes to climate change and air pollution, as well as having a direct impact on many ecosystems and species. Landfills, the waste hierarchy's last resort, emit methane, a powerful greenhouse gas linked to climate change. Waste management is the collection, transportation, processing, recycling, or disposal of waste materials, as well as their monitoring. The term usually refers to materials created by human activity, and it is usually done to reduce their impact on health, the environment, or aesthetics. Reducing waste not only protects the environment, but it also saves money on disposal costs. Similarly, recycling and/or reusing waste benefits the environment by reducing the need to extract resources and lowering the risk of contamination.

1.2 Background of the Study

Waste is inextricably linked to human development, both technologically and socially. Waste management practices differ between developed and developing countries, as well as between urban and rural areas, and between residential and industrial manufacturers or producers. This is done to lessen waste's negative impact on the environment and society. Environmental protection can be achieved by using cutting-edge technology to reduce waste generation and effective waste treatment to ensure that waste disposal meets expected standards. Solid waste includes both human

and animal waste. As According to Pandey, every living thing consumes water, food, and various materials throughout their lives. The organisms generate waste while eating these things. "These wastes can be classified as solid waste, liquid waste, or vaporous waste," Panday (2004) explained. Use to distinguish between the present (with a focus on waste management) and the past. Garbage and other household waste are thus not only collected from current waste. Includes all waste generated by domestic, industrial, commercial, and agricultural activities. Solid waste is waste that has a solid structure and is considered waste in its current state. Something different is a little movement in a thick book or paper.

1.3 Objectives

The objectives of this study are as follows:

1. To observe the situation of Solid Waste & Management System Daffodil International University.
2. Observation of Solid Waste Management System of Daffodil International University.

1.4 Organization of the thesis

This thesis consists of 5 chapters,

Chapter 1 (Introduction) describes the study's background and objectives.

Chapter 2 (Literature Review) study area maps, concept of waste, various stages of wastage in Daffodil International university, reasons of wastage, waste management is a method, advantages of waste management.

Chapter 3 (Methodology) The third chapter discusses the various methods of conducting the study and the methods that were chosen for the study.

Chapters 4 (Results and Discussion) examines the findings of this research.

Chapter 5 (Conclusion and Recommendations) presents a summary of the study's major findings and recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

A literature review summarizes the research that professionals and academics have conducted on a specific topic. One may be required to create one on their own occasion, but it is more common to do so when writing an article, research report, or thesis. A literary review's goal is to communicate to the reader what knowledge and opinions have been established about a subject, as well as their benefits and drawbacks. Literature reviews are used as resources for a specific topic. If you don't have much time to do research, literature reviews are a good place to start. A good place to begin your research for a research report is with a literature review. The majority of research tasks required a thorough understanding of the field's literature. If you don't have much time to do research, literature reviews are a good place to start. A good place to begin your research for a research report is with a literature review. . The majority of research tasks required a thorough understanding of the field's literature. Because of the increased disposal of significant amounts of textile waste to landfills and the combustion of unsold stock, the waste management literature has placed a special emphasis on the disposal of clothing items in post-consumption situations (Hu et al., 2014, Havas, 2014, Burton, 2017). Furthermore, despite the fact that many students, faculty, and staff recycle or reuse products, it is estimated that 10% of campus waste ends up in landfills (Mckinsey Global Fashion Index, 2019; Burton, 2018). According to Tchobanoglous and Kreith (2002), solid waste management is the discipline associated with the control of waste generation, storage, collection, transfer and transport, processing, and disposal in accordance with the best principles of public health, economics, and public attitudes. Similarly, Bernstein (2004) defines Municipal Solid Waste Management (MSWM) as the collection, transfer, treatment, recycling, resource recovery, and disposal of solid waste generated in university areas. The functional components of a waste management system are divided into six parts The active ingredients are: Waste generation: It includes activities where materials are identified as no Valuables become longer and are either thrown away or collected for disposal The quantity and general composition of the waste material generated is very important Importance of designing and operating solid waste management systems. Onsite Handling, Storage, and Processing: Activities involving

the handling, storage, and processing of solid waste. The process of storing materials after they have been disposed of but before they are collected and disposed of is referred to as waste storage. Where should storage facilities be located? Most teachers and students who use them find them simple to use.

Waste can be solid, liquid, or gaseous, and each type has different disposal and management methods. Waste management is concerned with all types of waste, such as industrial, biological, household, municipal, organic, biomedical, and radioactive waste. In some cases, waste can endanger human health. [2] Health concerns are present throughout the waste management process. Health problems can arise both indirectly and directly. Directly, through solid waste disposal, and indirectly, through the consumption of water, soil, and food. Human activity, such as the extraction and processing of raw materials, generates waste. [4] Waste management aims to reduce waste's negative effects on human health, the environment, planetary resources, and aesthetics. Waste management aims to reduce the hazardous effects of such waste on the environment and human health. Municipal solid waste, which is generated by industrial, commercial, and household activity, accounts for a significant portion of waste management. Additionally, university waste management that incorporates circular approaches is still considered fragmented. Accordingly, from the point of view of circular education, it is necessary to design solutions that take into account the obligations and interdependencies created between agents related to university waste management and the resources needed to collect, sort and recycle materials in plastic, paper, Steel Production Chain (Pal, Gander, 2019). From a practical standpoint, these methods can provide an overview of how dustbins are selected and waste is transferred within the Ashulia Identifying and mapping these projects, in theory, would suggest new approaches that could be tried in various situations (Bech et al., 2019). campus, as well as how this process is carried out (resources and responsibilities). An estimated 9% of all plastic produced by humanity has been recycled since the 1950s. Despite growing interest in and development of plastic recycling systems and facilities, only 14% of plastic waste is currently collected for recycling. Because landfilling and burning plastic has negative consequences for human and environmental health, recycling is increasingly seen as having enormous potential to address the plastic crisis. However, due to the nature of the material, plastic recycling presents numerous challenges. Meanwhile, relying solely on recycling is insufficient to address the plastic crisis and

the full range of plastics' impacts across the value chain. Paper recycling is the process of converting waste paper into new paper products. It has several significant advantages: It prevents waste paper from entering people's homes and emitting methane as it degrades. Because paper fiber contains carbon (which was originally absorbed by the tree from which it was produced), recycling keeps the carbon locked up and out of the atmosphere for a longer period of time. Approximately two-thirds of all paper products in the United States are now recovered and recycled, though not all of it is recycled into new paper. The fibres become too short for the production of new paper after repeated processing, which is why virgin fiber (from sustainably farmed trees) is frequently added to the pulp recipe. Mill broken paper, pre-consumer waste, and postconsumer waste are the three types of paper that can be used as feedstocks to make recycled paper. [2] Mill broken is paper trimmings and other paper scrap from paper production that is recycled in a paper mill. Pre-consumer waste is material that was produced at a paper mill but was discarded before it was ready for consumer use. Postconsumer waste is material that has been discarded after being used by the consumer, such as old corrugated containers (OCC), magazines, and newspapers. [2] Paper suitable for recycling is known as "scrap paper," and it is frequently used to make moulded pulp packaging. Deinking is the industrial process of removing printing ink from recycled paper fibers to produce deinked pulp, which was invented by German jurist Justus Claproth. [3]. While all types of steel are recyclable, it is important to note that the recycling process differs from that of many other products. This is due to steel's inherent value—rather than being disposed of in a landfill or traditional recycling facility, steel products will be sold to a scrap yard for compensation. Steel scrap is sold to scrap yards from three sources: home scrap, prompt or industrial scrap, and obsolete scrap. Even with waste management in developing countries, it only concentrates where there are high-profile people, commercial areas, and so on. Cointreau (1991) investigated the efficacy of waste collection in developing countries. He concluded that waste collection differs significantly, with commercial areas, main streets, and more prosperous neighbors receiving higher priority. Furthermore, many poor urban areas are unmanaged and unauthorized, excluding this population from municipal services. Most municipal solid waste management schemes devote the majority of their budget to waste collection and transportation, but only 50% to 70% of waste generated is

collected, and less than 50% of the population is served. Urbanization and industrialization have exacerbated the waste problem (Spren 1995).

Around 30,000 people visit the Daffodil International University campus. Every year, they have a population of students, teachers, and staff. Universities have only recently begun to participate. Approaches that are novel in order to promote sustainability. Among these initiatives are a Gardens and planned forest reserve areas, Solar Decathlon participation and efforts focuses on waste sorting and recycling. Internally, MEF required workers to collect and arrange all garbage at disposal sites. This method, however, failed because it was not required. The people who work on it. The number of staff on campus was insufficient to sort all of the waste at the disposal site, and no additional assistance was provided. In this situation, there is a labor shortage, which has resulted in the failure of this effort. Only the front end of the recycling plan was created externally. The Departments of Student Health, Civil Engineering, and Environmental Engineering have placed waste collection bins around campus. No plans were implemented after the garbage was sorted to transport it to its respective locations for disposal or recycling. Another business that keeps recycling bins attempted to reuse recycling bins. The system has been tested at Daffodil Smart City Ashulia Campus. However, because this company failed to return and Recycle bins, university maintenance was forced to mix all waste going to landfill.

2.2 Study Area Maps

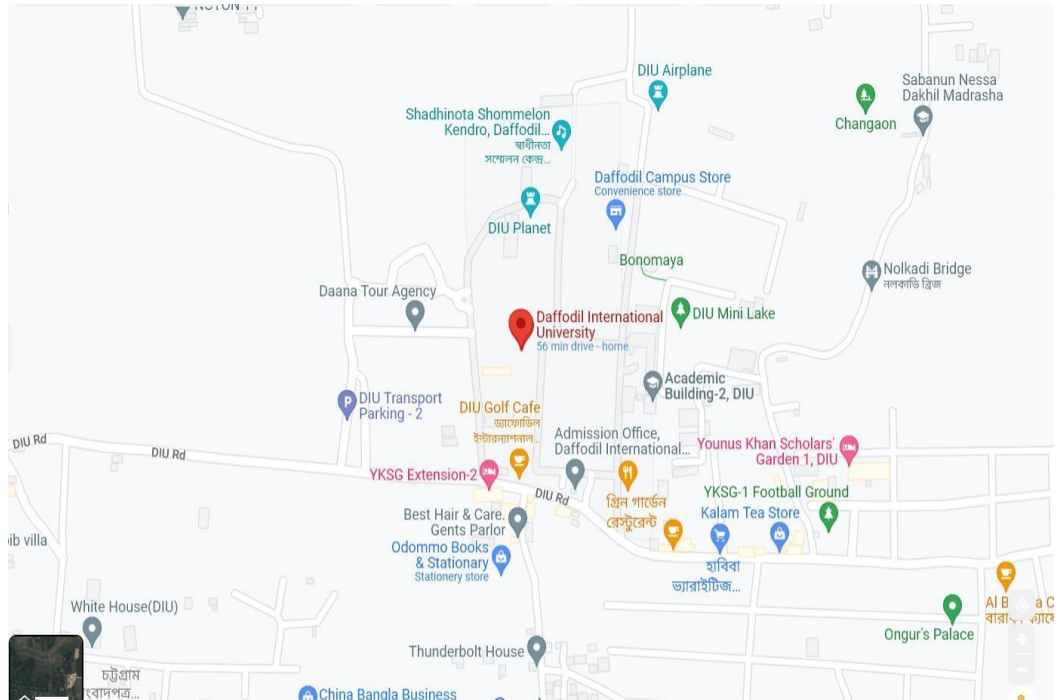


Fig. 2.1 Location Map of study area.

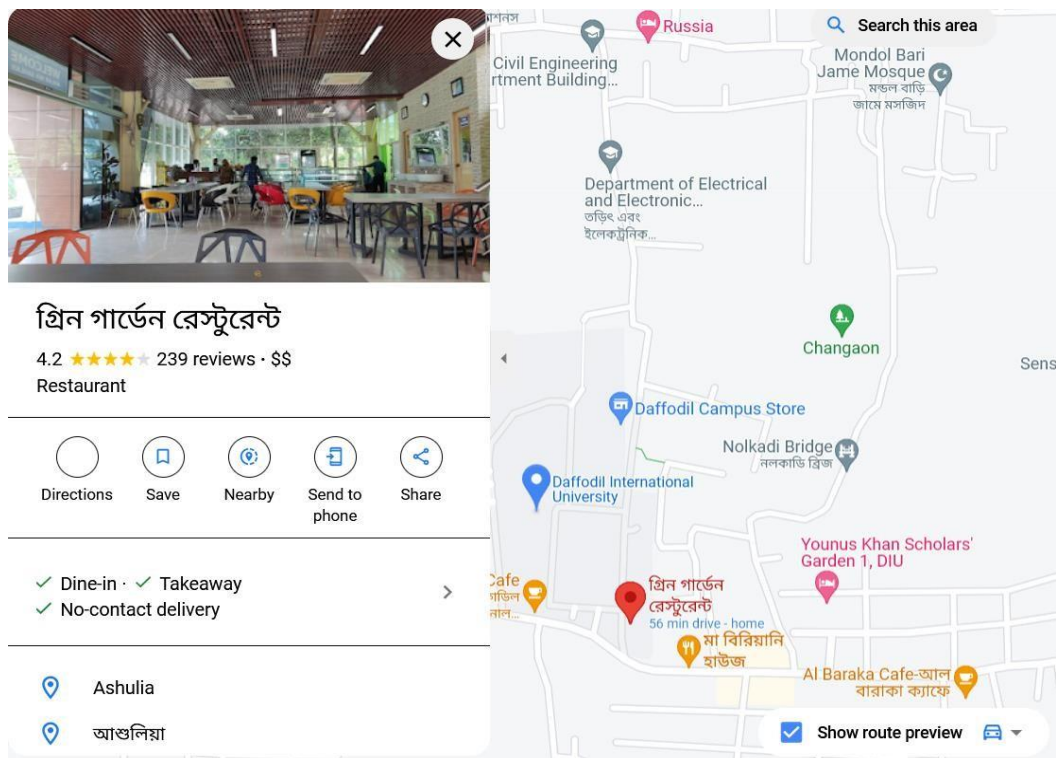


Fig. 2.2 Location Map of study area.



Fig. 2.3 Location Map of study area.

2.3 Concept of Waste

Only plastic bottles such as Pepsi, 7-Up, Coca-Cola, Prana Up, Lemonade, and Juice are purchased as waste. And waste paper, pens, pencils, and steel such as 7-Up cans, Tiger cans, Speed cans, and red balls that are not later used as products. It is an unwanted material or substance; additionally, depending on the type of material, it is referred to as trash, garbage, trash, and so on.

The following simple production flow diagram can easily explain waste (Figure-2.4).

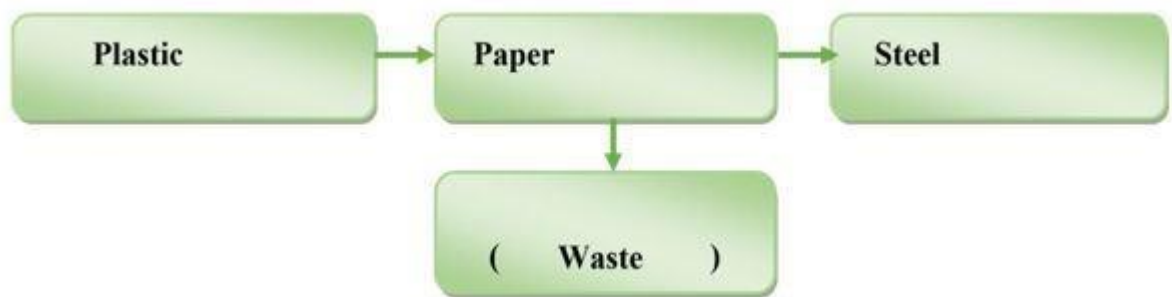


Fig.2.4 Production Flow Diagram

2.4 Various stages of wastage in Daffodil International University

The stages of wastage from Daffodil International University perspective can be described as the flow chart in Figure 2.5.

2.4.1 Plastic

Plastic waste, also known as plastic pollution, is defined as "the accumulation of plastic objects (e.g., plastic bottles and many others) in the Earth's environment that has a negative impact on wildlife, wildlife habitat, and humans."

Plastic waste in campus are coca cola, Pepsi, Sprite, Fanta, speed, Tiger, water bottle. According to our research, After meals in university restaurants, a large amount of solid waste is discarded and stored. Restaurants now use one-time plates and glasses that are discarded after the meal. We've noticed that glass or plates are occasionally broken and then discarded.

2.4.2 Papers

It refers to paper that has been discarded or that has been discarded prior to use by the consumer.

Pages from magazines, ledgers, or books written by students and teachers may be included. Some A4 paper will be damaged when printing

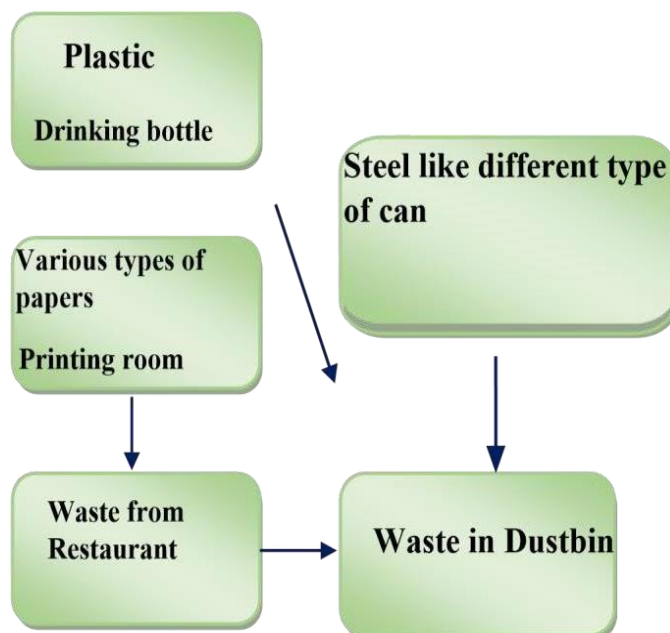


Fig. 2.5 Stages of wastage

2.4.3 Steel

Tinplate steel, which is produced in basic oxygen furnaces, is used to make steel cans. To prevent rusting and to protect food and beverage flavors, a thin layer of tin is applied to the can's inner and outer surfaces. As a result, steel cans are frequently referred to as "tin cans." In the can-making process, however, a chromium wash is replacing tin. Example: coca cola can, Pepsi can, Sprite can, Fanta can, speed can, Tiger can. The majority of steel cans are used for food, followed by paint, aerosols, and other products.

More than 90 percent of food cans are made of steel. More than 600 different container shapes, styles, and sizes are used. Although the rate of steel can recycling has increased, the amount and percentage of steel cans in municipal solid waste has decreased dramatically over the last 40 years due to competition from lighter aluminum and plastic containers.

2.4.4 Gardening waste

Mulch, branches and lopped debris, grass clippings, tree trunks and stumps, leaves, and undesired plants are examples of garden organic waste.

2.4.5 Printing waste

The wastages happen when either the pieces are lost or misplaced during the transportation for washing, dying, printing or embroidery. The printing on the garment does not match the standard while in the case of embroidery, it may not be on the correct place on the garment or the number of threads used is less and desired effect is not obtained.

Many different types of paper, including white office paper, newspaper, colored office paper, cardboard, white computer paper, magazines, catalogs, and phone books, can be recycled.

2.4.6 Poly bag

When purchasing items, students or teachers carry polybags and dispose of them somewhere, It is then obliterated.

2.4.7 Finishing

We can simplify the various stages of waste, particularly during production, which are listed below (Table-2.1)

Table 2.1 Different stages of waste in university

Paper	Some paper is lost when the professors and pupils are in the paper, and this lost paper is eventually deemed to be waste. Paper is wasted when printing
Plastic	All types of drinks of drinks bottle.
Steel	drinks can
Garden waste	A lot of solid waste is generated during gardening.
Construction waste	A lot of solid waste like rod steel is wasted during the construction of new buildings in the university.

2.5 Reasons of wastage

The main causes of wastage in daffodil international university can be stated below:

- I. After eating food
- II. After printing and after writing in paper.
- III. Drinking 7up, sprite and water in plastic bottle.
- IV. Using poly bag
- V. Decorate Gerden
- VI Working in construction

2.6 Method of Waste management

The following triangle depicts the notion of waste management Figure 3.1.



Fig. 2.6 Different Steps Of Solid Waste Management System

2.7 Advantages of solid Waste Management

Not only would reducing waste protect the environment, but it will also save money or lower disposal costs. The environment benefits from recycling and/or reusing waste since it reduces the need to extract resources and the likelihood of contamination. The advantages of solid waste management are listed below:

- Saving resources and energy
- Reducing pollution like water and land pollution.
- Assistance with community development

CHAPTER 3

METHODOLOGY

3.1 Introduction

The methodology describes methods for gathering data and fundamental planning steps. Finding the goal and choosing the study field is the first step. Any study sheet is used to serve as the anchor, thus a clear concept and good graph of linked topics are essential to achieving the project's goals. This chapter focuses on how each goal is dependent on its corresponding theoretical foundation. An extensive and in-depth discussion of pertinent terminology and techniques connected to the situation was conducted as part of a volume analysis of campus waste at a chosen Daffodil International University to look for potential ways to improve the current situation.

3.2 A flowchart of the methodology

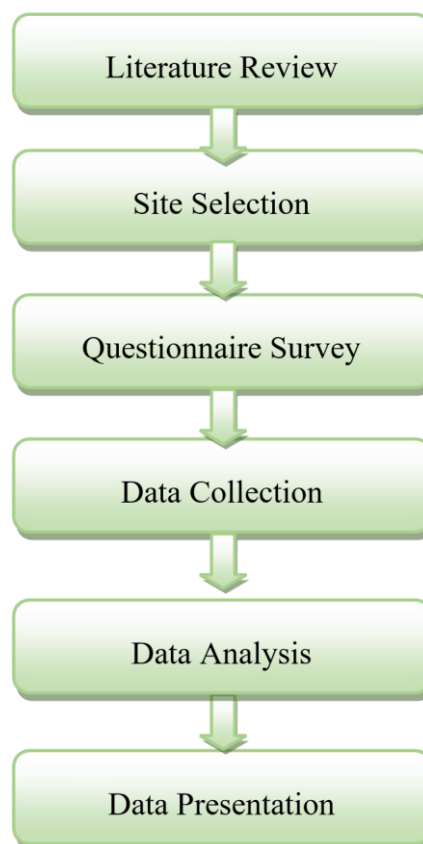


Fig 3.1 Flow diagram of methodology

3.2.1 Literature Review

Since the study is based on secondary data, literature review was an important part of the study. Another area of study is questionnaire research combined with semi structured interviews. In order to compile trustworthy information regarding Daffodil International University's environmental responsibilities, literature research was done in addition to a thorough assessment of the current situation there. This method was used to establish a conceptual framework prior to doing a thorough analysis of the survey study. Step-by step analysis of the university's solid waste issues was done with a focus on target regions.



Fig. 3.2 Solid waste storage inside of university

3.2.2 Site Selection

This study was chosen for Daffodil International University with a particular emphasis on the target location on our university. Based on the comments from 100 students, 20 employees, and 10 teachers, we have finished our thesis.

3.2.3 Questionnaire Survey

Our team completed the Questionnaire Survey of Daffodil International University's areas.

3.2.4 Data Collection

We went to the ground and collected individual data from each person, and then we went to the campus to see everything for ourselves and collect information by asking questions.

3.2.5 Data Analysis

Raw data were collected from the questioner, then organized and summarized into the scrutiny, followed by coding and interpreting the results using the Microsoft Excel2016 program.

3.2.6 Data Presentation

Data is presented in a Microsoft Word document for the research paper and a Microsoft PowerPoint presentation.

CHAPTER 4 RESULT & DISCUSSION

4.1 Introduction

Daffodil International University's waste management has been studied. All data was analyzed using a questionnaire for general 100 students, 10 teachers, and 20 employees. We have also seen with our own eyes and analyzed each one individually.

4.2 Questionnaire for Students

Table 4.1 Questionnaire for students

Questions	Total Survey on 100 no's of students		
	yes	no	neutral
What is the daily menu in your campus cafeteria?	Plastic	Paper	Steel
Do you Throw all type of waste used in the university in the dustbin?	100%	0%	0%
Do you think the waste management our university is right?	90%	7%	3%
Do you encourage other students to throw waste in the dustbin?	85%	5%	10%
Do you have any idea about solid waste management system?	12%	80%	8%

4.3 Questionnaire for Senior Officer

Table 4.2: Questionnaire for senior officer

Questions	Answer
How much waste is generated every day?	(500 to 600) kg
How waste is managed in the university?	Dumping selected place out of campus area.
In the future do you have any thoughts about recycling with the waste generated in the university?	Yes, it's under process and our ESDM look it to this nature.
What are your future plans for the waste management of the university?	We have a plan & fertilizer in Agriculture field.
What precautions should be taken by the staff for waste management in the university?	Safety globs, Boots, Mask.

4.4 Questionnaire for Employee

Table 4.3: Questionnaire for Employee

Question	Answer
How much waste is generated every day in the university?	100kg
Where is the waste generated daily disposed?	DIU selected area
What type of waste is generated every day?	Gardening waste, plastic, paper, steel.
How waste is carried?	Three wheeler vehicle.
Which type of waste is more common among the wastes?	Plastic
How many kg of waste is generated per day?	100kg

4.4 survey Questionnaire report

Question no. 01. Do you Throw all type of waste used in the university in the dustbin?

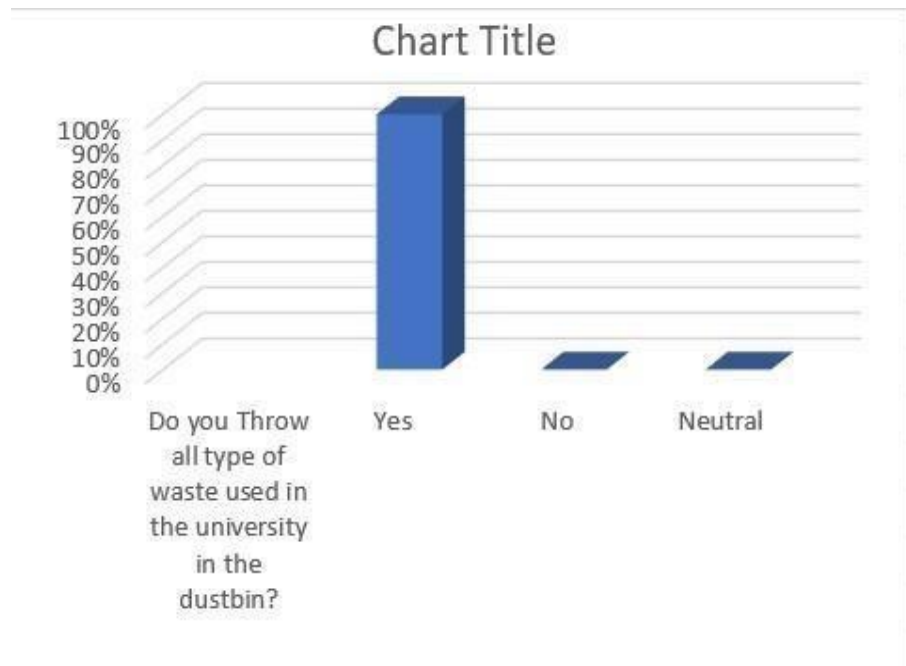


Fig. 4.1 survey report on questin no. 1

Question no. 02. Do you think the waste management our university is right?

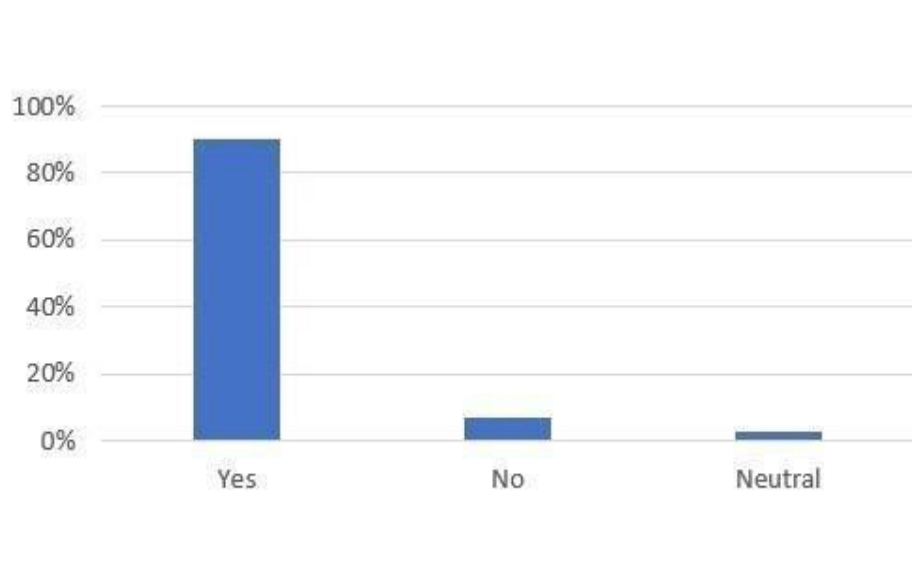


Fig.4.2 Survey report on question no. 2

Question no. 03. Do you encourage other students to throw waste in the dustbin?

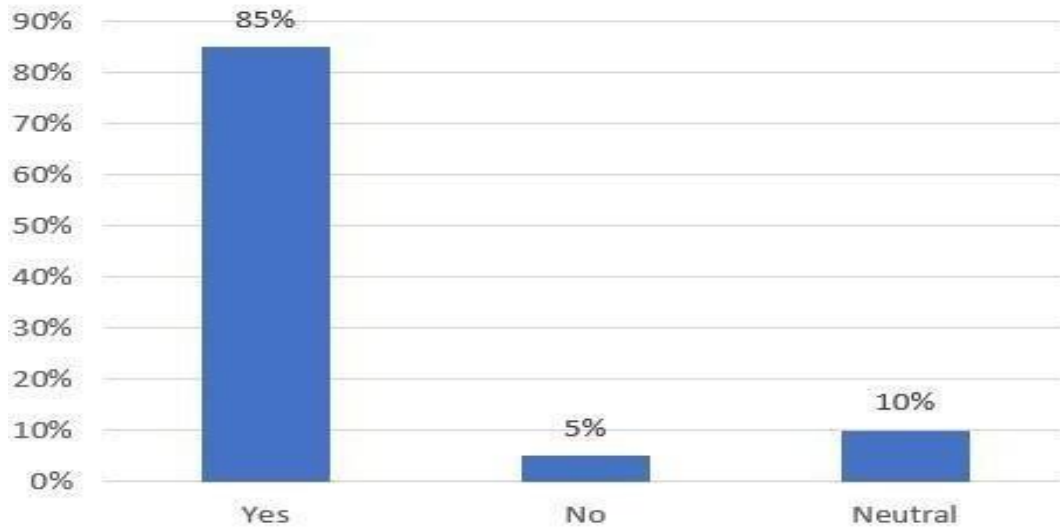


Fig. 4.3 Survey report on question no. 3

Question no. 04. Do you have any idea about solid waste management system?

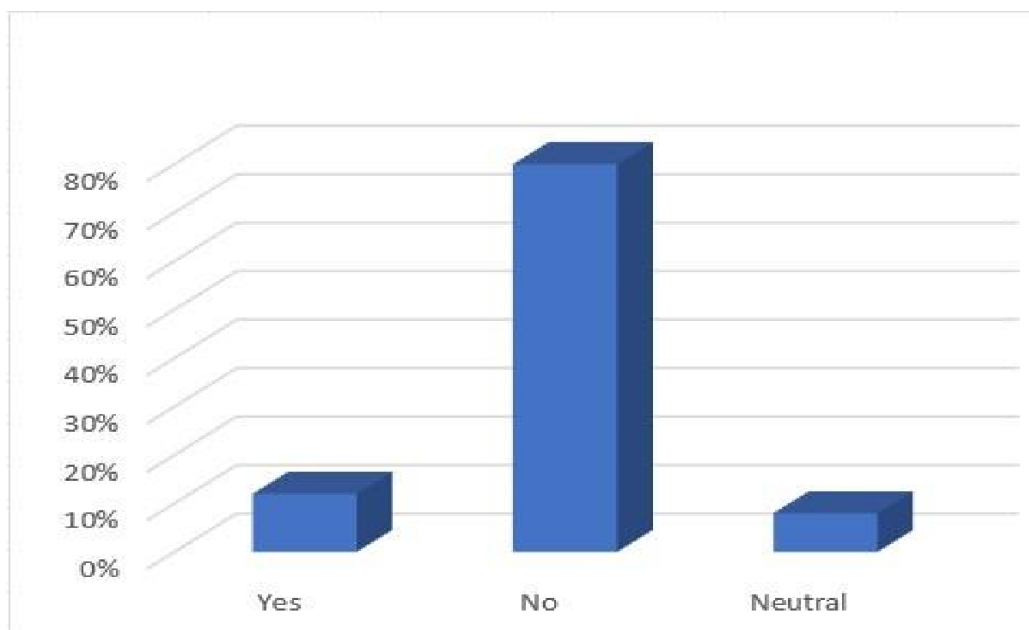


Fig. 4.4 survey report on question no 4

4.5 Summary

According to the analysis, this University solid waste affected 5% of the population, 90% of the population, and 5% of the population was unaffected. Some people have been affected by this waste in the last six months were 41% of people said that average 1/10 people are affected, no one 80%, neutral 2%, the management of this Daffodil international is correct were yes 95%, no 2%, and neutral 3%, waste affecting your education environment were yes 2%, no 92%, and neutral 6%, the could be the way out of this problem were yes 99% of people said improvement of university, no 0%, and neutral 1%.

Daffodil International University generates solid waste. Most are left over from drinking from plastic bottles, printing on paper, and construction work. Every day, our university generates (500-600) kg of waste. We have a transportation system for the transfer of generated solid waste. Every day, around 500kg of recyclable waste is generated from the university; workers are affected by the generated waste to varying degrees (yes, 0%, no, 80%), and future plans for improving University waste and management are being discussed with higher authorities in order to reduce this waste.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusions

It would be best to just recycle the solid waste we get into our recharge. University solid waste isn't trash; it's valuable and recyclable. Every component is reusable. This trash recycling has grown into a multibillion-dollar industry. Due to its size, this project was only carried out at ASBC and EPZ. Examining the collected data determines the significance of this recycling company for our country. If the facilities in this sector are improved, it will be able to contribute more to our economy. The recycled goods produced by this industry are used throughout the country, and recycled garbage is even exported to other countries.

Students, teachers, and employees at Daffodil International University These are the three types of people we discussed, as well as our observation of Daffodil International University's poor collection and storage systems. 80% of officers stated that campus solid waste management needs to be improved. These university solid wastes pose a threat to the educational environment, and only a small number of people have been affected. The good news is that 87% of respondents said they had not been impacted by university solid waste in the previous six months. Recycling is the most obvious alternative to dumping trash in a landfill. Recycling can benefit a wide range of materials, and it may even have financial benefits. What is being discussed here is waste recovery without any pre-processing. As an example, consider a) proper waste minimization and segregation.

- b) Make use of eco-friendly trash cans.
- c) Create an emergency response plan.
- d) Look over the Compliance Guideline.
- e) Conduct routine solid waste management and disposal audits.

5.2 Recommendation

Solid waste management and waste control are inextricably linked. The primary goal of solid waste management is to utilize trash cans and recycle waste. Natural resources are conserved. Reduces the destruction of ecosystems. Waste and landfill space are reduced. Emissions of greenhouse gases are reduced. Reduces other types of pollution. It conserves energy. Job creation. We didn't have enough time to finish everything, so it's not good enough. More research is needed in this area.

- We collected data with only 125 people due to time constraints, and research would have revealed more information if we had searched our university in sections.
- Employees at the university must perform well. Owners should also be more aware of waste collection and storage at Daffodil International University.

REFERENCES

- [1] N.M. Bech et al., Evaluating the Environmental Performance of a Product/Service System Business Model for Merino Wool Next-to-Skin Garments: The Case of Armadillo Merino, *Sustainability*, vol. 11, no. 20, pp. 2-21, 2019.
- [2] L. S. Beh and colleagues. Second-life retailing: a reverse supply chain perspective. 259-272 in *Supply Chain Management-an International Journal*, vol. 21, no. 2, 2016. Bocken,
- [3] N. et al. Circular Business Model Experimentation: Driving Sustainability in a Large International Clothing Retailer. *Energy and Environmental Economics and Policy*, vol. 1-2, no. 1-2, pp. 85-122, 2017.
- [4] Bukhari, M. A., Carrasco-Gallego, R., and Ponce-Cueto, E. developing a national textile and clothing recovery program. *Waste Management & Research*, vol. 36, no. 4, April 2018, pp. 321-331.
- [5] DBurton, K. Examining EPR as an option for reducing waste in the apparel university.
- [6] *Recycling Cultures*, vol. 5, no. 1, March 2018, pp. 33-45.
- [7] Diddi, S. et al. Exploring young adult consumers' sustainable recycling consumption intention- behavior gap: A Behavioral Reason Theory perspective. *Sustainable Production and Consumption*, vol. 18, pp. 200-209, 2019.
- [8] *ELLEN MACARTHUR FOUNDATION* (Ellen as MacArthur Foundation). A New waste recycling economy: Redesigning good future. 1. Ed. Geneva: *MacArthur Foundation*, 2017, 150 pp.
- [9] Franco, M. A. *Circular economy at the micro level: A dynamic view of incumbents' struggles and challenges in the recycling company. Journal of Cleaner Production*, vol. 168, pp. 833-845, 2017.
- [10] Fraser, K. Refashioning New Zealand: A practitioner's reflection on fast fashion implications. *International Journal of Environmental, Cultural, Economic and Social Sustainability*. vol.7, s/no., pp. 275-284, 2011.
- [11] Govindan, K, Hasanagic, M. A systematic review on drivers, barriers, and practices towards circular economy: a supply chain perspective. *International Journal of Production Research*, vol. 56, no. 1-2, pp. 278-311, 2018

- [12] Hu, Z. H. et al. Sustainable Rent-Based Closed-Loop Supply Chain for Fashion solid waste. *Sustainability*, vol. 6, no.10, pp. 7063-7088, October 2014.
- [13] Hvass, K. K. Post- retail responsibility of recycling– A fashion industry perspective. *Journal of Fashion Marketing and Management*, vol. 18, no. 4, pp. 413- 430, 2014.
- [14] Jung, S.; Jin, B. A theoretical investigation of slow fashion: Sustainable future of the apparel university. *International Journal of Consumer Studies*, vol. 38, no. 5, pp. 510-519, 2014.
- [15] Keith, S.; Silies, M. New life luxury: upcycled Scottish heritage University. *International Journal of Retail & Distribution Management*, vol. 43, no. 10-11, pp. 1051-1064, 2015.
- [16] Kim, S. Y. Beauty and the Waste: recycling Idols and the Ethics of Recycling in China Pop Music Videos. *Fashion Theory - Journal of Dress Body and Culture*, 2019.
- [17] Kozłowski, A.; Searcy, C.; Bardecki, M. The re design canvas: construction waste as a tool for sustainability. *Journal of Cleaner Production*, vol. 183, pp. 194-207, 2018.
- [18] Larney, M.; Van Aardt, A. M. Case study: Apparel industry waste management: A focus on recycling in North Asia. *Solid Waste Management and Research*, vol. 28, no. 1, pp. 36-43, 2010.
- [19] Leal-Filho, W. et al. A review of the socio-economic advantages of textile recycling. *Journal of Cleaner Production*, vol. 218, pp. 10-20, 2019.
- [20] Ishrat Jahan (2017), “A STUDY ON WASTE MANAGEMENT AND MINIMIZATION IN READY MADE GARMENTS (RMG) INDUSTRY” , German Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS) (2017) Volume 35, No 1, pp 266-273.
- [21] F. Tabassum, Q. H. Bari, M. M. Rahman, S.M. Moniruzzaman, M. M. Mahmud and A. R. Raj "Solid WASTE RECYCLING IN DHAKA: A CASE STUDY OF MIRPUR AREA" 5th International Conference on Solid Waste Management in South Asian Countries, Volume: Paper ID 005.

- [22] Sule A.D. and Bardhan M.K. (2001) "*Recycleling of solid waste for environmental protection – An overview of some practical cases in the textile industry*", Indian Journal of Fiber & waste Research, Vol. 26, pp 223-232.
- [23] Chavan RB (2014) "Environmental Sustainability through Textile Recycling in Science and Engineering, S2: 007. doi:10.4172/2165-8064.S2-007
- [24] Andreoni V., H. G.M. Saveyn and P. Eder (2015), "*Polyethylene Always recycling: Waste policy scenario analysis for the EU-27*", Journal of Environmental Management, Vol. 158, pp 103-110.
- [25] InokaRathnayake, GayaniKarunasena and UthpalaRathnayake (2014), "Zero Solid Waste management in university : Preliminary Study", 5thInternational Conference on Sustainable Built Environmental 2014, Kandy.

Appendix

Part A Questionnaire

for Senior officer:

1. How much waste is generated every day?
2. How waste is managed in the university?
3. In the future do you have any thoughts about recycling with the waste generated in the university?
4. What are your future plans for the waste management of the university?
5. What precautions should be taken by the staff for waste management in the university?

Questionnaire for Students:

1. What is the daily menu in your campus cafeteria?
2. Do you Throw all type of waste used in the university in the dustbin?
3. Do you think the waste management our university is right?
4. Do you encourage other students to throw waste in the dustbin?
5. Do you have any idea about solid waste management system?

Questionnaire for Employee:

1. How much waste is generated every day in the university?
2. Where is the waste generated daily disposed?
3. What type of waste is generated every day?
4. How waste is carried?
5. Which type of waste is more common among the wastes?
6. How many kg of waste is generated per day?

Part B

B.1 List of Questionnaire for Expert Officer (VIP People)

SI No.	Name	Address	Profession	Contact Number
1.	Md. Moslehuddin Chowdhury	DIU Smart city	Deputy Director	01847140131
2.	RSM Belal	DIU hall	Officer	01811458863
3.	Golam Mortuza Prodhania	DIU Smart city	Assistant officer	01811458823

B.2 List of Questionnaire for Employee

SI No.	Name	Address	Profession	Contact Number
1.	MD. Momin	Khagan Ashulia	Gardening	01870405004
2.	MD. Khokon Mollah	Dattapara	Gardening	01859526718
3.	Rakib Mia	Savar	Gardening	01647725570
4.	MD. Hyder	DIU Staff Hall	Staff	01963549370
5.	MD. Manik	DIU Staff Hall	Gardening	01836191930
6.	Md. Aminur	DIU Staff Hall	Cleaner	01964357164
7.	MD. Babul	Changao	Cleaner	01623810172
8.	MD. Alhaj Ali	Khagan	Cleaner	01767705701
9.	Rajib Hossain	Birulia, savar	Staff	01883183601
10.	MD. Shahlom	Paragao	Staff	01748721981
11.	MD. Motalab	Khagan Ashulia	Cleaner	01902706967
12.	MD. Jubayer	Dattapara	House Keeper	01826387833
13.	Shatul	DIU Staff Hall	House Keeper	01628172685
14.	Aminul	Khagan	House Keeper	01941102023
15.	MD. Rana	Khagan	Cleaner	01307970489

B.2 List of Questionnaire for Students

SI No.	Name	Address	Profession	Contact Number
1.	Nahid	DIU HALL	student	01782089106
2.	Abu bakkar	DIU HALL	student	01976734323
3.	Tafazzel	DIU HALL	student	01711273630
4.	Fazlu	Mohammadpur	student	01706037277
5.	Abdullah	DIU hall	student	01743292140
6.	Golam Rabbi	Dattapara	student	01321081957
7.	Umme honey	Dandabal, Ashulia	student	01616603271
8.	TIB Rakib	Dhanmondi	student	01741476254
9.	Bomin	dattapara	student	01618050022
10.	Ariful	Uttara	student	01580394013
11.	Shanto	Diu hall	student	01712488399
12.	Tutul	Uttora, Dhaka	student	01571791209
13.	Abdul Al Mamun	DIU hostel	student	01975677516
14.	Labiba	DIU hall	student	01322081957

15.	Emon	DIU Hostel	student	01515607077
16.	Mahla	DIU hall	student	01558002499
17.	Dihi	DIU Hostel	student	01810705324
18.	Bithy	DIU hall	student	01618050025
19.	Rifat	DIU Hostel	student	01990501489
20.	Tanvir	Changao, Ashulia	student	01623810172
21.	Md. Babul	Chandao, Ashulia	student	01975677516
22.	Hridoy	Subhanbag	student	01759081117
23.	Tani	Ashulia	student	01717127501
24.	Rifat	Mirpur	student	01672260093
25.	Lipi	DIU hall	student	01322781957
26.	Sagor	DIU Hostel	student	01645231089
27.	Robiul	DIU hostel	student	01713229720
29.	Ariful Islam	Mohammadpur	student	01762969026
30.	Islam vai	Khagan	student	01560294012
31.	Rabbi	Uttara	student	01580394012
32.	Hasib	Khagan	student	01770276126

33.	Zhumu	DIU hall	student	01645231089
34.	Dewan md Jakirul islam	DIU hall	student	01782002147
35.	Masud	changaw	student	01863837499
36.	Anmi	DIU Hostel	student	01783181397
37.	Mosieur	DIU Hostel	student	01988867073
38.	Rafi	DIU Hostel	student	01521425183
39.	kobita	Khagan	student	01863835599
40.	Hamim	Khagan	student	01782005547
41.	Neloy	Dattapara	student	01778195732
42.	abukor	Uttara	student	01763835599
43.	Rabbi	Khagan	student	01322781957
44.	Polash bai	Sukrabad	student	01922781957
45.	Emran	Sukrabad	student	01752683558
46.	Rishad	DIU Hostel	student	01345782256
47.	leon	Khagan	student	01935564485
48.	Ripon	DIU Hostel	student	01634418698
49.	Mohabbot	DIU Hostel	student	01783987855
50.	Pabel	Khagan	student	01797703995
51.	Asif	Khagan	student	01608832209
52.	MD Rifat	DIU Hostel	student	01788071972
53.	Dip	DIU Hostel	student	01305522130
54.	Faysal	Khagan	student	01760110534
55.	Auprosh-vvo	DIU Hostel	student	01714433986
56.	Sakib	Uttara	student	01876166446
57.	Faria	DIU Hostel	student	01788724324

58.	Ishtiak	Uttara	student	01725352180
59.	Wahid	Shyamoli	student	01537437213
60.	Arjan	Khagan	student	01862860425
61.	Abid	DIU Hostel	student	01923807087
62.	Naimol	Khagan	student	01643623353
63.	Tarek	Khagan	student	01682793361
64.	Abbasi	Uttara	student	01964775083
65.	Jummon	DIU Hostel	student	01825352180
66.	Polash	Mohammadpur	student	01723807087

67.	Jamil	Uttara	student	01877437213
68.	Rajib	DIU Hostel	student	01978724324
69.	Robin	Khagan	student	01324724324
70.	Kotha	DIU Hostel	student	01788724333
71.	kabbo	Khagan	student	01888788324
72.	Nowab gay	DIU Hostel	student	01768685223
73.	Emran	Khagan	student	01966332562
74.	Shariar	Dattapara	student	01782793361
75.	Sabbir	Khagan	student	01898832209
76.	Ashik	Dattapara	student	01629880337
77.	Tanvir	Khagan	student	01923982877
78.	Mirza	Dattapara	student	01733243311
79.	Sani	Akanagor	student	01720293622
80.	Soumit	Dattapara	student	01854429223
81.	Fahim	Mirpur	student	01749209865
82.	Kazi	Dattapara	student	01580399401
83.	Jibon	Uttara	student	01835623588
84.	Akash	Mohammadpur	student	01786880337
85.	Sowrab	Dattapara	student	01524556322
86.	Sabina	Sukrabad	student	01785963355
87.	Farida	Changao	student	01935645772
88.	Mukhlas	Dattapara	student	01325880337
89.	Manik	Mirpur	student	01852366654
90.	Emtiaz	Ashulia	student	01749209575
91.	Tanjina	Uttara	student	01954429223
92.	Hrittik	Naraynganj	student	01918608646
93.	Baziraw	Sukrabad	student	01722858422
94.	Khabiran	Uttara	student	01987255210
95.	Kari bain	Dattapara	student	01880399401
96.	Zaman	Uttara	student	01757136038
97.	Tirtharoy	Sukrabad	student	01767255210
98.	Swift	Dattapara	student	01722858431
99.	Ridoy	Uttara	student	01618608646
100.	Sani Afrad	CMS	Student	01792080607

Part C Photographic Season

C.1: Photograph during Questionnaire for Senior officer

Meeting with senior officer .
Visit in the university with senior officer.



Discuss with the senior officer
University are leaking dirty

C.1 Photograph during Questionnaire for Senior officer



Solid waste for construction



Solid waste for construction

C.3: Photograph during Questionnaire for employee



Solid waste storage inside of university



Talk with a cleaner



Talk with Employee