

# University Students' Behaviours on Single-Use Plastic and Their Ideas on Promoting Sustainable Practices

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Received: 26 October 2024 | Accepted: 17 December 2024 | Published: 15 February 2025

DOI: <https://doi.org/10.55057/ajress.2025.7.1.22>

**Abstract:** *As concerns about environmental degradation and plastic pollution continue to grow, understanding university students' perceptions toward single-use plastics is crucial. As the young generation, it is important to study what they think about future sustainability practices. The study examines university students' ideas on promoting sustainable practices of single-use plastic. The specific aspects studied are their current behaviours on managing single-use plastic waste, their exposure to information on sustainable practices, and their suggestions on how to enculturate sustainable practices of single-use plastic. The study involved questionnaire data from 386 participants who filled in an online Google form. The results indicated frequent use of single-use plastic, up to three times a day or more, despite having a good awareness of the importance of reducing the use of plastic. Their behaviours are driven by the need for convenience as they have busy class schedules. They perceive the troubles of having to carry with them reusable containers and do not wish to wash the food containers after use. Some are willing to pay up to RM2 per takeaway container for convenience. Their suggestions to reduce single-use plastic include vendors giving them a discount for customers who bring their containers and institutions providing functional facilities for them to wash their containers and refill their water bottles. The study suggests that infrastructure should be put in place to facilitate the enculturation of minimal plastic consumption.*

**Keywords:** Single-use plastic, university students, sustainable practices, Sarawak

## 1. Introduction

The issue of plastic waste is a global issue that has become more critical, and it contributes to the release of gases that are harmful in large volumes, such as methane and CO<sub>2</sub>, because of unsustainable practices of waste management. Whether we like it or not, plastics are now part of our environment, and plastic is now ubiquitous in the marine environment and has created a lot of damage to it (Xanthos & Walker, 2017). In 2018, WWF estimates around 100,000 deaths of aquatic mammals are linked to the consumption of plastic bags or being trapped by plastic wastes that pollute the sea (WWF-Australia, 2018). As an example, the death of a whale in 2019 in the Philippines is attributable to the consumption of plastic bags worth 40 kg found in its stomach (BBC News, 2019).

Malaysia is reported to be one of the world's largest contributors to mismanaged plastic. As such, Malaysia's Roadmap towards Single-Use Plastics (2018 – 2030) was launched to combat the critical issue of plastic waste in our country (MESTECC, 2018).

In UNIMAS, the use of single-use plastics is widespread in cafeterias, food kiosks, and during official events taking place at the university. The following are the regular events with regard to single-use plastics on campus: the purchase of food at the kiosks or cafeterias that comes with a plastic bag, plastic container and plastic utensils that will be discarded after every use; the distribution of bottled water or packed food in meetings or official events on campus; the usage of plastic utensils by the patrons who eat-in cafeteria on campus. Despite the launching of the campaign 'UNIMAS towards Zero Single-Use Plastic' in January 2020, the dependency on single-use plastics is apparent as food vendors still offer to sell food in *tapau*<sup>1</sup> packs, and they charge RM0.20 for each container used. Similarly, meeting organizers on campus continue to provide packed food in single-use plastic containers, and this practice seems to be more prevalent after COVID-19, potentially due to hygiene purposes.

In what way does the campus community depend on single-use plastics? How do they treat plastic waste after use? How can we reduce our dependency on single-use plastic? This paper aims to provide empirical evidence on the extent to which the campus community relies on single-use plastic and how they manage the waste. Another important aspect covered in this paper is students' responses towards the different ways that could motivate them to rely less on single-use plastic packaging. A better understanding of these behaviours will help to determine how campus policy on single-use plastic should be designed and implemented to create sustainable practices related to single-use plastic.

## 2. Material and Methods

### 2.1 University Students and Their Use of Single-Use Plastics

University students are often seen as being at the forefront of social change, which extends to environmental issues like plastic pollution. As young adults who are typically more engaged with sustainability and environmental causes, students can be both part of the problem and part of the solution when it comes to single-use plastics (Truelove et al., 2023).

The lifestyle of many university students, characterized by busy schedules (academic load, dealing with assignment deadlines, attending classes, extra-curricular activities), tight budgets, and a reliance on fast food or take-out, encourages the use of single-use plastics. A typical day may involve purchasing bottled water, coffee in disposable cups, or snacks wrapped in plastic (Rabiu & Jaeger-Erben, 2024). It is a common practice among students to purchase takeaway food and dine in their rooms or between classes to avoid spending too much time in a cafeteria (Hamid et al., 2022); this way, they can manage different tasks simultaneously against their busy schedules. The convenience offered by online food delivery (OFD) has prompted more students to purchase takeaway meals using this method. A study on purchases made using OFD among university students in Terengganu found that about 85% of the respondents use OFD 1-5 times weekly to purchase food, while the rest purchase 6-10 times a week using OFD (Jalis et al., 2023). OFD is synonymous with single-use plastic packaging, and the growing demand for takeaway food using OFD contributes to the substantial growth of single-use plastic waste and greenhouse gas emissions (see Janairo, 2021). With many campuses lacking sufficient recycling infrastructure, much of this plastic waste ends up in landfills or as litter, contributing to environmental degradation (Ebrahimi & North, 2017).

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<sup>1</sup> *Tapau* is a word commonly used in Malaysia to refer to takeaway food or drinks, usually in single-use plastic containers.

On university campuses, single-use plastics are omnipresent—found in cafeterias, vending machines, and convenience stores. Items such as plastic cutlery, bags, and plastic-wrapped food items are often the default. As students juggle their academic workload, social lives, and extracurricular activities, convenience often precedes sustainability (Nguyen et al.). This behavior is exacerbated by the fact that alternatives, like reusable cups, containers, and utensils, may not always be affordable or readily available (Benveniste, 2024). Additionally, many students live on a budget, and the upfront cost of purchasing reusable alternatives may deter them from making sustainable choices. This notion suggests that despite a growing awareness of environmental issues, many students remain unaware of the true scale of plastic waste and its long-term consequences (Barbir et al., 2021).

Breaking away from our throwaway culture – oftentimes associated with single-use plastic packaging – requires efforts at the institutional and personal levels. In their study on the ways to reduce single-use plastic dependency among university students in Vietnam, (Nguyen et al., 2022) concludes that the ban on single-use plastics is needed to create a plastic-free campus, but this goal must be supported with complete commitment. ‘Complete commitment’ here means institutional roles to promote continuous awareness among the campus community to engage in sustainable consumption behaviour, encourage the use of reusable utensils and cups, and make them available in cafeterias. Imposing fees for single-use takeaway packaging is another option that could be imposed. Without a strong campus-wide initiative or policy to promote sustainable practices, students might continue to opt for the cheaper, more convenient single-use plastics (Seblosa et al., 2023).

## **2.2 Research Methods and Analysis**

Students were surveyed using an online questionnaire to obtain their views about single-use plastics in their daily consumption and how they manage single-use plastic waste. A total of 386 students across different faculties and academic years were recruited to answer a self-administered questionnaire via Google Form. Data from the Google Form was transferred to SPSS where descriptive analysis was mainly conducted to generate finding of the study.

## **3. Findings**

### **3.1 Profile of the respondents**

From the 386 students recruited most of them are female (about 65%) and male is only about one-third of the total number of respondents. Many of them are Native Sarawak, followed by Malay, Native Sabah and Chinese. Most of the students are residing in residential colleges located on campus while about 20% are residing elsewhere. Students who reside in residential colleges are not allowed to cook and they usually purchase food from the cafeterias. It is also common for them to purchase takeaway food via online food delivery (OFD), as the presence of Grab or Foodpanda riders is a common sight on campus.

More than 85% of the students are in their first, second, or third year, and on average, they are likely to spend 18 hours on campus just to attend classes. The average number of hours does not include the time they spend in classes with zero credit hours, engaging in tasks or discussions to complete assignments, attending extracurricular activities, or doing volunteer work, to name a few. Their regular presence on campus suggests regular visits to the cafeterias to purchase food and beverages.

**Table 1: Profile of the Respondents**

Profile	Percentage (%)
<b><u>Gender</u></b>	
Male	35.2
Female	64.8
<b>Total</b>	<b>100.0</b>
<b><u>Ethnicity</u></b>	
Malay	29.5
Native Sarawak	40.9
Native Sabah	13.0
Chinese	14.0
Indian	2.6
<b>Total</b>	<b>100.0</b>
<b><u>Current place of residence</u></b>	
In residential colleges	78.8
Living in non-residential colleges	21.2
<b>Total</b>	<b>100.0</b>
<b><u>Year of Study</u></b>	
Year 1	28.2
Year 2	32.1
Year 3	26.2
Year 4, 5 and 6	13.5
<b>Total</b>	<b>100.0</b>
<b><u>Field of Study</u></b>	
Natural and applied sciences	56.7
Social sciences, arts and humanities	43.3
<b>Total</b>	<b>100.0</b>
<b><u>Credit Hours Registered for the Semester</u></b>	
<5 credit hours	3.9
6 – 10 credit hours	1.8
11 – 15 credit hours	11.8
16 – 20 credit hours	72.8
21 – 24 credit hours	9.2
>25 credit hours	0.5
Mean: 18.07 credit hours	<b>100.0</b>

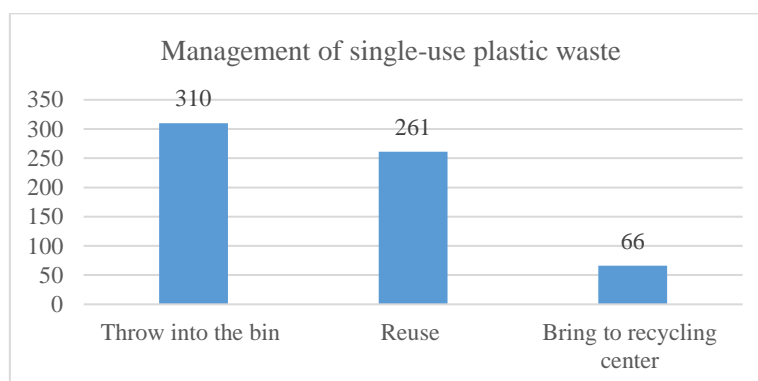
### 3.2 Consumption Behavior of Single-Use Plastics and Its Management

Table 2 shows the consumption behavior of single-use plastics as reported by the respondents. While about one-third reported do not purchase packed food from the cafeteria, the others (66%) purchase packed food at least once a day. A small proportion purchase three times or more in a day. When the students purchase packed food, most of them (89.4%) prefer using plastic containers provided by the operator because the containers are cheap and readily available whenever they need them. This is despite the fact that food operators charge them RM0.20 per container. In other words, the students prioritize convenience especially given their busy schedule. The two most used single-use packaging are *tapau* containers and plastic bags (that often come with the packed food). Interestingly, less than 10% regularly use plastic liquid containers; from the author's observations, students often bring their own bottles and refill them at water dispensers.

**Table 2: Use of Single-use Plastics**

Parameters	Percentage (%)
<b><u>On a normal lecture day, how frequent do you <i>tapau</i> food/beverages from the cafeteria?</u></b>	
None	34.2
Once a day	49.5
Twice a day	12.7
Three times or more in a day	3.6
<b>Total</b>	<b>100.0</b>
<b><u>When <i>tapau</i>, student usually:</u></b>	
Use plastic containers provided by the operator	89.4
Use own container	10.6
<b>Total</b>	<b>100.0</b>
<b><u>Type of single-use plastic normally used in campus</u></b>	
<i>Tapau</i> containers (to pack food)	40.2
Plastic bag (to carry items)	44.6
Plastic liquid containers (water bottles)	8.0
Plastic wrappers	5.2
Others	2.1
<b>Total</b>	<b>100.0</b>

The respondents were asked how they treat the single-use plastic waste after use. They could choose more than one answer as some may treat single-use plastic waste differently. The study found that 80% (n = 310) of the respondents disposed of them into the bin, while about 70% (n = 261) chose reusing them. Respondents are likely to reuse plastic bags or plastic containers that are of better quality. About 17% mentioned bringing plastic waste to the recycling center, and this refers to plastic bottles or *tapau* containers (that may need to be washed and cleaned to get rid of oil residue on the containers).



**Figure 1: How respondents manage single-use plastic waste**

### 3.3 Awareness of the Danger of Single-Use Plastic Waste

Students were asked if they agreed that single-use plastic waste could lead to environmental issues. About 95% agree that single-use plastic waste could lead to numerous issues, ranging from drainage blockage, could pose harm to human health, causing the death of aquatic animals; and more importantly, many agree that plastic takes hundreds of years to decompose. The answers suggest that students are generally aware of the danger of mismanaged single-use plastic waste.

The literature also suggests that awareness is an essential factor in promoting behavioural change to reduce single-use plastic dependency (Nguyen et al., 2022). As such, this study aims

to explore the effects of taking environmental courses on the respondents' behaviour towards single-use plastic packaging in their daily lives. In other words, this paper raises the question if taking a course that runs over 14 weeks and exposes students to various environmental disturbances should have some effect on students' attitudes towards the material (single-use plastic). Nearly 40% of the respondents have taken a course that relates to, or at least touches on, the natural environment. The courses include environmental impact assessment (EIA); aquatic and daily life; environmental chemistry; green technology; ecology; water resources and community development; environmental dimensions in development; energy, environment and society; and even urban composting.

A Chi<sup>2</sup> analysis was conducted to determine if there is an association between taking environmental-related courses and students' attitudes towards single-use plastic. The results show no association between the two variables,  $\chi^2(3, N = 385) = 1.242, p = 0.743$ .

The Chi<sup>2</sup> analysis shows that taking environmental courses does not necessarily make students more mindful of their single-use plastic consumption. The knowledge gained from these courses does not translate into actions that should include reducing dependence on single-use plastic.

### 3.4 Ways Forward to Reduce Single-use Plastic Dependency on Campus

Students were asked at what price charged for each plastic container that they would start thinking about bringing their own reusable container. It is worth noting that cafes in UNIMAS charge RM0.20 for each takeaway container. Table 3 shows that more than half of the respondents perceived that RM0.50 is the price per packaging that will make them start thinking about bringing their own container. Another 22% felt that RM1.00 is a fair price for them to do so, and interestingly nearly 18% are willing to pay RM2.00 and above for a disposable container. The different prices show the different values that students place on convenience.

**Table 3: Carrot or Stick?**

Parameters	Percentage (%)
<b><u>[Stick] At what price (of the plastic packaging) that you think you should bring your own container?</u></b>	
RM0.50	53.4
RM1.00	22.0
RM1.50	6.7
RM2.00	9.1
>RM2.00	8.8
<b>Total</b>	<b>100.0</b>
<b><u>[Carrot] Would you start bringing your own container if the café offers an RM0.50 discount to patrons who do so?</u></b>	
Yes	
No	89.4
<b>Total</b>	<b>10.6</b>
	<b>100.0</b>

The study presented a hypothetical situation in which students were asked if they would start bringing their own containers if café offered RM0.50 discounts to patrons who did so. Interestingly, nearly 90% of the respondents agree to bring their own container if there is such a condition. If we compare both results (carrot and stick), the reward approach (carrot) could potentially yield a better result as more people are willing to buy in at a minimal discount (RM0.50). This also means the respondents who indicated their willingness to pay a higher



price for plastic packaging (more than RM0.50) are now willing to change their single-use plastic consumption behaviour at a lesser price.

Having said that, the students also stressed that facilities must be made available to support the effort towards zero single-use plastic waste on campus. For example, students raised the need to have more water dispensers around campus so they could refill their bottles conveniently. A significant number of students also commented that there must working sinks and soap to wash the containers after each use as they may use the containers later. Other suggestions include banning single-use plastic packaging on campus and running ongoing campaigns to create awareness among students to promote behaviour change. These suggestions point to the institutional roles to engage in further actions to create a condition for the campus community to adopt consumption behaviour that is more mindful and sustainable.

#### 4. Conclusion

In brief, this study has presented some empirical evidence on the extent to which UNIMAS students rely on single-use plastic and how they manage the waste after use. The data suggests great dependence on this material by students, mainly due to convenience (as they juggle their hectic life as students) and easy availability of single-use plastic packaging. Most students dispose single-use plastics into the bin after use; this action highlights the convenience of using disposable plastic packaging. While a high proportion of students have good awareness of the environmental harm that could be brought about by mismanaged plastic waste, the knowledge does not change their behaviour. Behavioural change, however, may be possible when there is a suitable system in place. This study shows that students respond more positively towards rewards (discounts when purchasing using their own containers) than penalties (being charged for using a single-use plastic container). This signals the need for other efforts that must to be put in place so students could engage in more proactive actions to reduce dependency on single-use plastics.

#### Acknowledgement

The author would like to express their appreciation and gratitude to Persatuan Pegawai Akademik UNIMAS (PPAU) for funding this research and publication.

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