The Bin Project Report

Impact of GoMakeaDifference Grant

June 2024



Team photo after installing the Bin Project (gray rectangle) at UWCSEA Dover campus

Implementation & Impact

With the support of GoMAD's funding, we designed and set up smart cameras at UWCSEA East and Dover campus. Each lunchtime, the smart cameras automatically take pictures of students' food waste. Then, we were able to create AI models that classify the food waste pictures taken. For example, the figure on the right shows food waste captured by the smart camera at UWCSEA East, with computer-generated labels identifying the dishes as pad thai noodles.



Then, by analyzing the resulting data, we have been able to isolate the problematic dishes and take action accordingly. For instance, by analyzing 3161 plates of food waste over two weeks in October 2023, we realized that the pad thai dish served every Monday accounts for more than 60% of all waste generated by the East campus canteen. In other words, one dish out of a dozen served was behind more than two-thirds of the waste. Based on this finding, we recommended that the canteen reduce portion sizes for pad thai by 15%. The canteen opted to remove pad thai from its menu for the rest of the year instead. As a result, we observed that food waste decreased by 20-30% on Mondays after this change. You can find more detailed data analyses over this period and our recommendations to the canteen in this <u>document</u>.

Having tested the validity of our idea, we're looking to continue this cycle of observation, analysis, and action when the new school year starts.



AI-generated labels for food waste identifying the food waste as noodles with vegetables

How GoMAD helped

With the funding from GoMAD, we were able to:

- Acquire the electronic components necessary
- Create eco-friendly camera housing from recycled plastic
- Purchase local and cloud storage to store and process the food waste captured (the East campus camera generates more than 16GB of food waste photos every single day!)
- Create a website to spread awareness to students and other schools about our work (work in progress): <u>thebinproject.org</u>
- Adapt emerging technologies like GPTVision by allowing us to purchase API credits (processing power)

Our Future Plans

After testing our prototype over the last year, we're looking to create a newer version of the smart camera that can run 24/7 without maintenance to make sure that no plate of food waste goes unaccounted for. We're also learning from our past analyses to improve the accuracy of our AI models.

Through the project, we learnt that shaping sustainable behavior is hard, but possible if all stakeholders come together to reflect on our environmental impact. Thus, we believe in the long-term potential of The Bin Project in making food consumption sustainable. As the original four team members have graduated in 2024, we have been working to ensure the continuity of the project. We have reached out to and onboarded six new team members – now our team totals ten members! Ranging from middle school to IB, the expanded team will continue operating the project over the coming years, further its technological development, and spread awareness about our cause to the local community.



Picture on the left shows a team hackathon at UWCSEA Dover, featuring free food supplied by our canteen partners.

Please let us know if GoMAD would like any additional information or photos! We are more than willing to share.