**Reflection on Ethics in Engineering**

In our systems design course, my team and I were tasked with creating an intelligent vehicle for sorting hazardous waste, capable of identifying and categorizing such materials in specific locations.

In designing the waste-grabbing mechanical arm, I devised a principle where the gripper holds the waste until it reaches a designated position. The rationale behind this principle was to eliminate the time spent by the vehicle depositing objects upon reaching the designated area.

However, when we proceeded to integrate the mechanical arm with the vehicle for actual task execution, I discovered a certain probability of hazardous materials falling off midway, leading to task failure.

Consequently, we spent considerable time brainstorming a method that would ensure the vehicle wouldn't drop waste an route, thus preventing pollution, while also minimizing the time spent managing waste.

Later in the course, the instructor emphasized approaching problem-solving from practical and holistic perspectives. Based on considerations of engineering ethics and environmental protection, my team and I designed two trays specifically for storing waste.

Following the development of this solution, I experienced the efficiency of problem-solving from different angles. The endorsement and agreement of my proposal by other team members provided substantial support. Furthermore, efficient collaboration among team members proved crucial. After I introduced the concept of trays, Ren Zhiang enhanced the original trays by adding four sloped surfaces, allowing waste to successfully reach the bottom of the trays and be stably held.

This design exemplifies the integration of engineering science with practical application. The sloped edges on both sides of the trays enable hazardous materials to smoothly fall into them. After grabbing waste in the identification area, the mechanical arm can deposit it into the trays, preventing waste from falling off during the vehicle's return journey and causing environmental pollution. Another benefit of the trays is the reduction in the time spent by the vehicle in waste detection, completing it in the first half of the return journey, thereby enhancing the overall efficiency of the vehicle.

This holistic approach not only addressed the immediate technical challenges but also reinforced the ethical foundation of our project. By linking our design decisions to broader considerations of safety and sustainability, we ensured that our solution not only met the technical requirements but also aligned with our values as responsible engineers.

Through this iterative process of design, implementation, and refinement, I gained valuable insights into the complexities of real-world engineering projects. This experience underscored the importance of considering the broader context and ethical implications of technical decisions, lessons that will undoubtedly inform my future endeavors as an engineer.

**Reflection on Engineers in society**

In this project, I have learned many ways of approaching problems from the perspective of an engineer. Engineers are an indispensable part of society, and the significant difference between engineering and scientific research lies in the practicality and flexibility of engineering. In different scenarios, we can apply a theory to various aspects.

At the same time, we also need to consider the multifaceted impact of engineering on society, the environment, and human daily life. Taking a holistic perspective, we consider how engineering can contribute to making society better. During implementation, factors affecting the quality of engineering, such as project budget and cost, also influence the progress of engineering.

In this experiment of intelligent waste disposal by a small vehicle, my team and I designed a tray from the perspectives of safety and environmental protection, specifically for temporarily storing waste. In terms of cost control, we adhere to the principle of maintaining quality while saving money. We autonomously designed the chassis of the small vehicle, utilizing recyclable 3D printing environmentally friendly materials, which can simultaneously address engineering ethics and efficiency. Within the project, we as team members formed a company and iterated product processing based on our strengths.

Effective communication among engineers is crucial, as it enhances work efficiency and avoids misunderstandings. Engineers have a responsibility to engage in effective communication and interaction with the public and relevant stakeholders, listening to their opinions and suggestions to ensure that their engineering activities meet societal expectations and needs.

Looking at the role and responsibilities of engineers in societal development, engineers are not just technical experts but also drivers of social change and creators of solutions. Their work spans many critical areas including infrastructure construction, environmental protection, energy development, healthcare, and information technology, all of which directly impact societal development and quality of life.

Engineers need to consider long-term sustainable development goals, including rational resource utilization, environmental protection, and social equity. They should advocate and practice sustainable engineering design and implementation to reduce negative impacts on the Earth and leave a better living condition for future generations.

Engineers should strive to address societal inequalities, including equitable distribution of infrastructure, technology, and resources, by promoting accessible solutions to foster inclusivity and fairness in society. Continuous innovation and improvement are essential for engineers to tackle various challenges and issues facing society.

Engineers have a responsibility to pass on knowledge and experience to the younger generation, fostering future engineers and leaders. They can participate in educational projects, provide internship opportunities, and mentorship programs to help young people develop their skills and careers.

In conclusion, engineers play a vital role in society, not just as implementers of technology but also as active participants and drivers of societal development. Their responsibility goes beyond completing engineering projects; it encompasses contributing to the sustainable development and progress of human society.