

Cargo Drop 貨物空投

Cargo Drop

Cargo drops are used to bring supplies to places where cars cannot easily go and airplanes cannot land. The cargo is dropped from the airplane and must safely get to the ground for people to use. This delivery system is mostly used today for humanitarian aid and military assets. The students had to use their knowledge and creativity to design and build a cargo drop that would be able to protect an egg dropped from a high distance.

Designing and Testing a Cargo Drop

Students developed an understanding of how variables: drag, air speed, wind speed, direction, weight, height, shape, and size will factor into a successful cargo drop. Students also utilized their knowledge of potential and kinetic energy in their designs and build. Then, using this knowledge, they came up with their own unique designs to solve this problem.

Reflection

The students then tested their ideas and designs to see what combination of materials and in what order these materials were needed to achieve their goal of dropping an egg from different heights without letting it break. Through testing their different prototypes and height, they discovered how to achieve the best result. They also realized the importance of humanitarian aid that is needed throughout the world.

貨物空投

貨物空投用於將物資運送到汽車無法輕易到達以及飛機無法降落的地方。貨物從飛機上空投下來後，必須安全到達地面供人們使用。空投運送系統主要用於人道主義援助和軍事資產，因此，學生必須利用他們的知識和創造力來設計和建造一個能夠保護雞蛋從高處掉落的貨物空投裝置。

設計和測試貨物空投

學生瞭解阻力、空速、風速、方向、重量、高度、形狀和尺寸等變數是如何影響貨物空投能否成功的，他們在設計和創造中也需利用位能和動能知識。接著，透過這些知識，他們想出獨特的設計來解決這個問題。

反饋

接下來，學生測試他們的想法和設計，以瞭解需要什麼樣的材料組合，以及依序如何組合這些材料，才能使從不同高度落下的雞蛋不破損。透過測試不同的模型及高度，學生發現如何達到最佳結果，也意識到全球人道主義援助的重要性。

1 ASK + IMAGINE 提問 + 創思



Students discovered different variables they needed to account for in their design. 學生們發現他們在設計中需要考慮的不同變數。

4 CREATE 創造



Team members worked together to create their initial prototypes. 小組成員共同創建他們的初始原型。

6 PRESENT 展現

Students reflected on their learning during the project and presented to their peers. 學生們反思他們在做專題時的學習並向同儕展示。

3 PLAN 計畫



Students designed their cargo drop devices and collaborated to choose the best materials. 學生們設計他們的貨物投放裝置並合力選擇最好的製作材料。

5 IMPROVE 改進



After testing, students improved their designs. 經過測試後，學生們改善他們的設計。

