PORTOFOLIO

Francisco C. Del Moral Jr.
Design Technology • Product Design • STEM Education



ABOUT ME

I am an experienced STEM and Design Technology educator with a strong passion for product design, engineering, prototyping, robotics, digital fabrication, and innovation. Throughout my career, I have designed and developed various hands-on projects that combine creativity, technology, sustainability, and real-world problem-solving.

My projects focus on engineering design, iterative development, fabrication, electronics, coding, multimedia production, and applied STEM learning. I enjoy guiding students through the complete design cycle—from ideation and research to prototyping, testing, evaluation, and improvement.

This portfolio showcases selected projects and creative works related to Design Technology, Product Design, robotics, fabrication, multimedia, and sustainable systems.

DESIGN PHILOSOPHY

My approach to design education emphasizes:
Innovation and creativity
Hands-on learning
Real-world problem-solving
User-centered design
Sustainability and environmental awareness
Iterative design and evaluation
Cross-disciplinary STEM integration
Safe and responsible fabrication practices

I believe students learn best when they are actively engaged in designing, building, testing, and improving meaningful projects.

PROJECT PORTFOLIO (STUDENT OUTPUT)

CUSTOM SPEAKER PROJECT

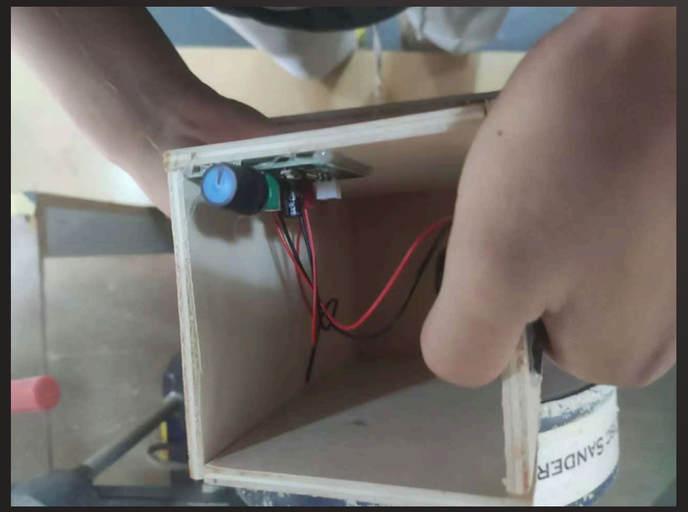
Project Overview

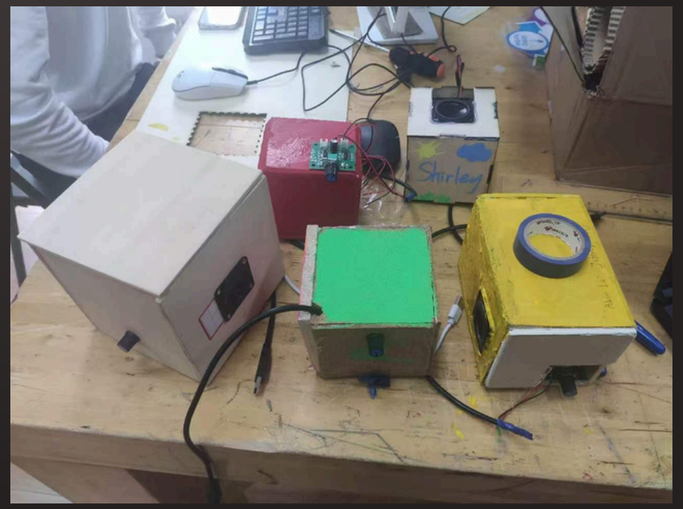
Designed and constructed custom speaker systems using recycled and fabricated materials. The project focused on sound quality, enclosure design, aesthetics, electronics integration, and functional prototyping.

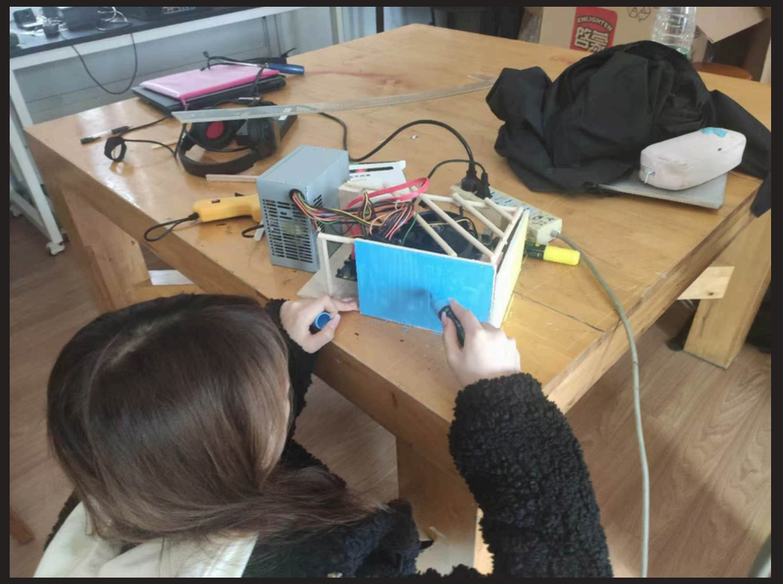
Design Skills Applied
Product design
Electronics integration
Audio system assembly
Prototype fabrication
Material selection
Aesthetic design
Iterative testing

Hand tools and fabrication equipment
Learning Outcomes
Understanding acoustic enclosure design
Improving fabrication precision
Developing electronics assembly skills
Enhancing problem-solving through prototype testing

Learning Outcomes
Understanding acoustic enclosure design
Improving fabrication precision
Developing electronics assembly skills
Enhancing problem-solving through prototype testing




Shirley




Shirley

CARDBOARD ENGINEERING PROJECTS

Project Overview

Created various engineering prototypes and structural designs using cardboard as a sustainable and low-cost prototyping material.
Projects included bridges, vehicles, mechanical systems, and architectural concepts.

Design Skills Applied
Structural engineering concepts
Rapid prototyping
Sustainable design
Creative problem-solving
Model construction

Tools & Materials
Cardboard
Cutting tools
Adhesives
Measuring tools
Sketches and templates

Learning Outcomes
Understanding structural integrity
Developing low-cost prototype solutions
Applying engineering principles in model construction










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Speed


ATM
ATM
0:05 / 0:14
Speed

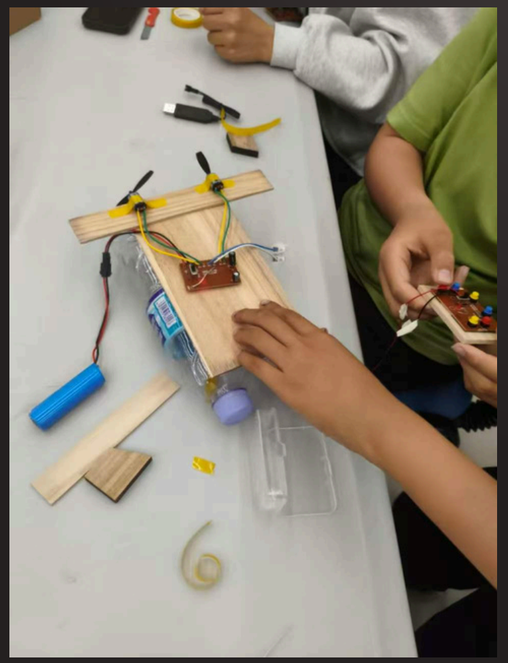
RC BOAT PROJECT

Project Overview
Designed and built remote-controlled boat prototypes integrating propulsion systems, waterproofing techniques, steering mechanisms, and lightweight materials.

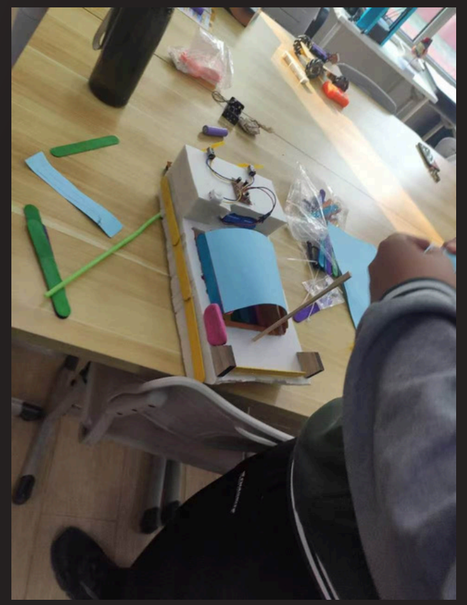
Design Skills Applied
Hydrodynamic design
Mechanical assembly
Electronics integration
Waterproofing systems
Remote-control technology

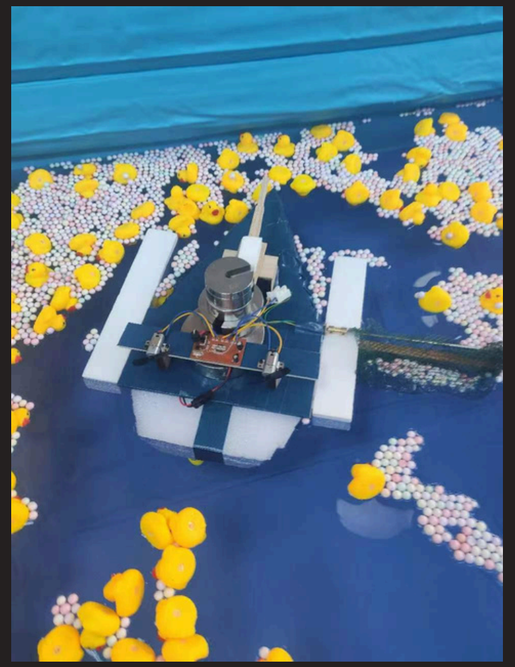
Features
Functional steering system
Lightweight hull design
Electric propulsion system
Prototype performance testing

Learning Outcomes
Understanding marine engineering principles
Developing fabrication and assembly skills
Improving iterative testing and evaluation processes









RC CAR PROJECT

Project Overview

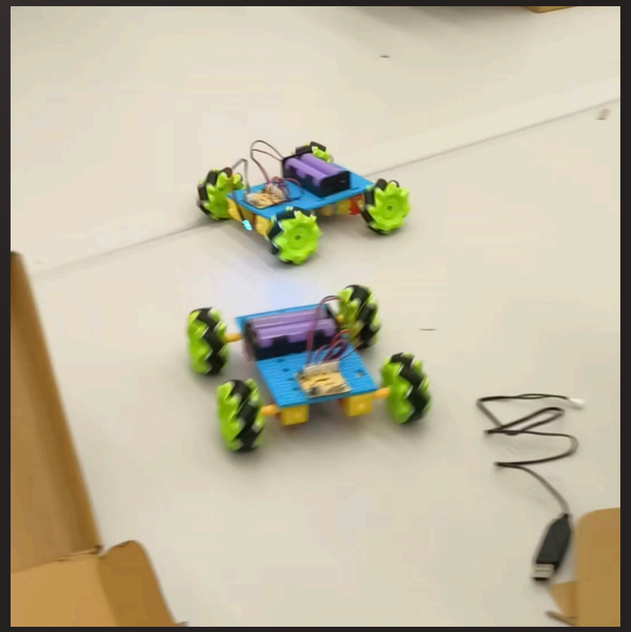
Developed remote-controlled car prototypes focused on speed, control, stability, and chassis design. The project integrated electronics, motors, battery systems, and fabrication techniques.

Design Skills Applied
Mechanical engineering
Chassis design
Electrical systems
Product prototyping
Performance testing

Features
Motorized drive system
Steering mechanism
Lightweight chassis
Custom body design

Learning Outcomes
Applying engineering design principles
Understanding mechanical movement systems
Improving prototype optimization and testing







GO-KART PROJECT

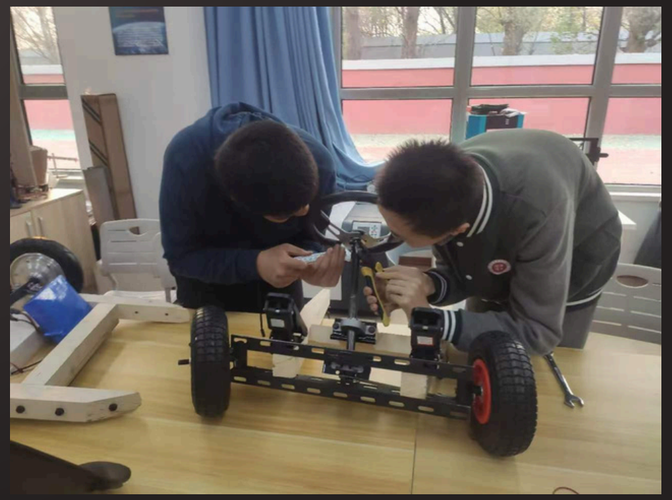
Project Overview
Designed and constructed a functional go-kart integrating steering systems, frame fabrication, braking systems, and mechanical engineering concepts.

Design Skills Applied
Mechanical fabrication
Vehicle design
Welding and assembly
Safety engineering
Ergonomic considerations

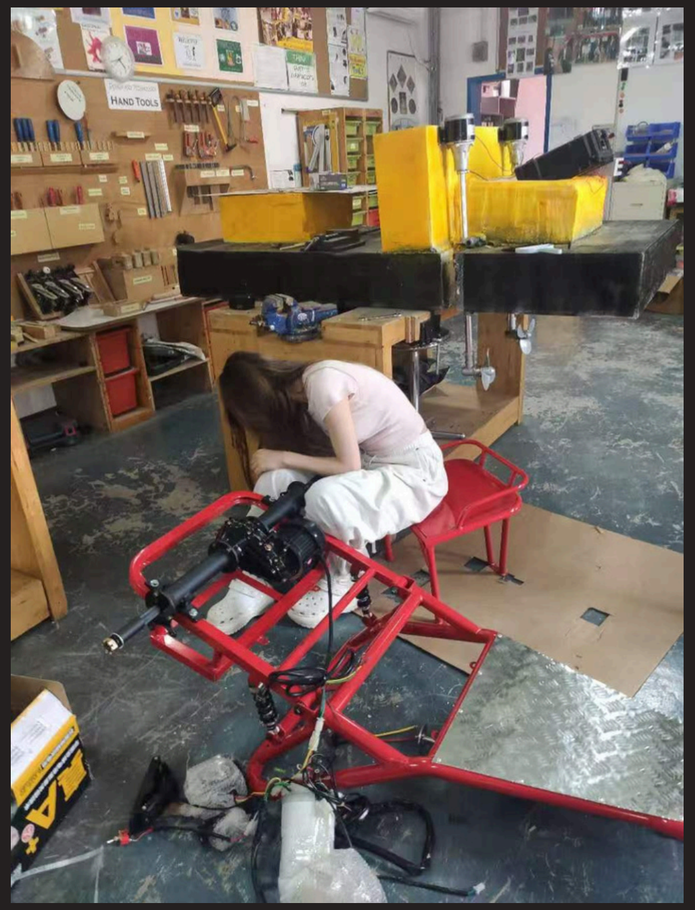
Features
Functional steering system
Reinforced chassis
Braking mechanism
Driver safety considerations

Learning Outcomes
Developing large-scale fabrication skills
Applying practical engineering concepts
Understanding vehicle mechanics and safety








HAND TOOLS

FULL-SCALE RC BOAT PROJECT

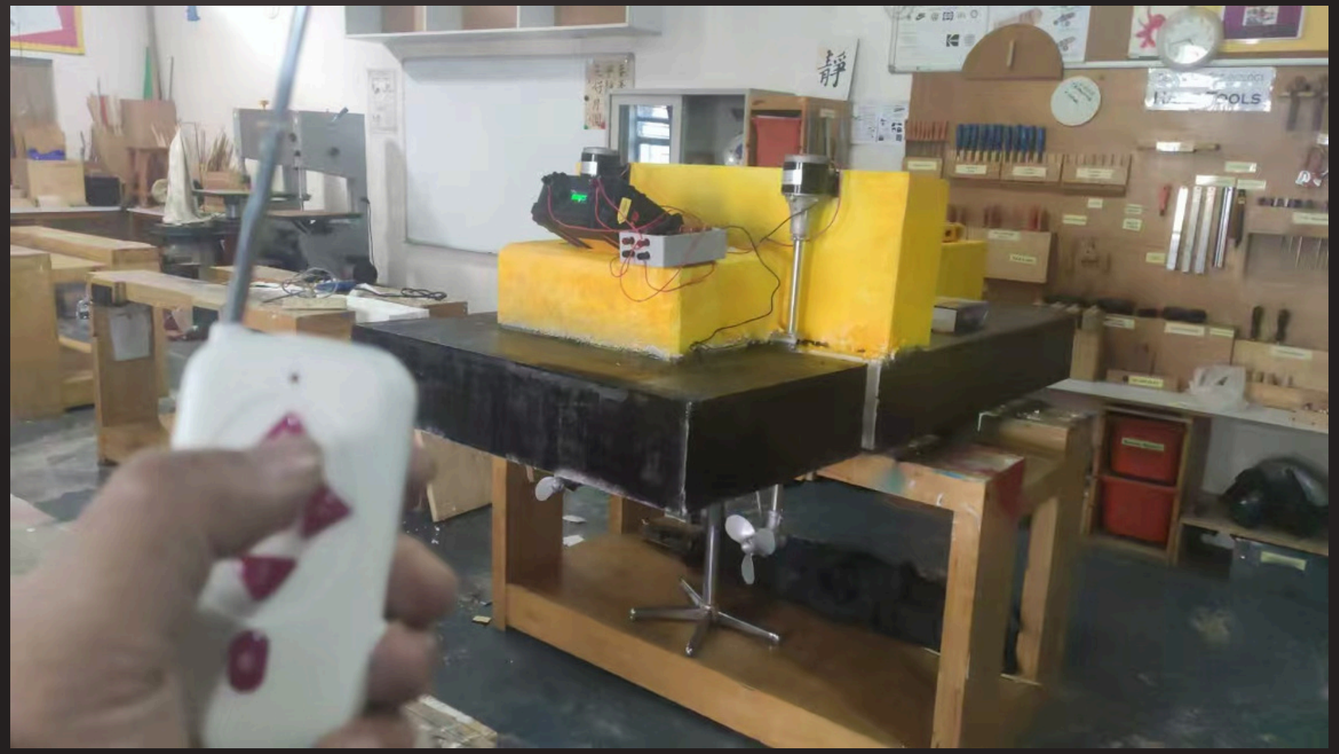
Project Overview

Constructed a larger and more advanced RC boat system designed for improved stability, control, propulsion efficiency, and durability.

Design Skills Applied
Advanced fabrication
Marine engineering concepts
Electronics integration
Structural reinforcement
System testing

Features
Reinforced hull structure
Improved propulsion system
Enhanced steering control
Water-resistance optimization

Learning Outcomes
Developing advanced fabrication techniques
Applying engineering improvements through iterative evaluation
Understanding real-world marine product development


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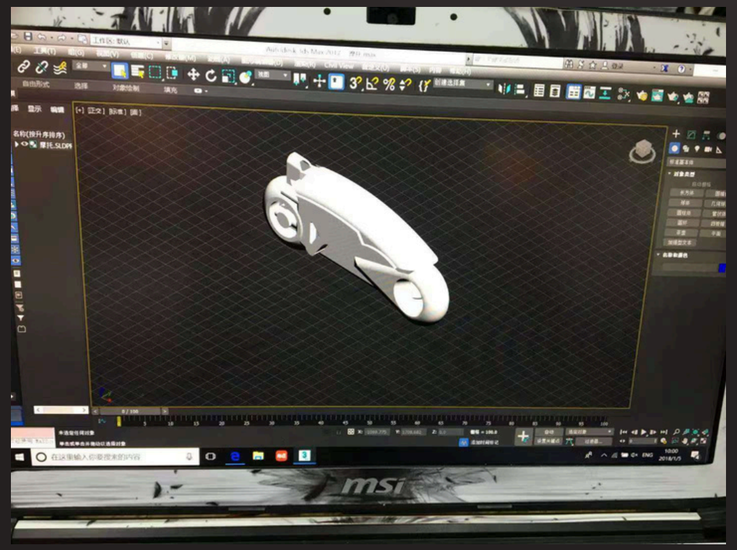
3D DESIGN PROJECTS

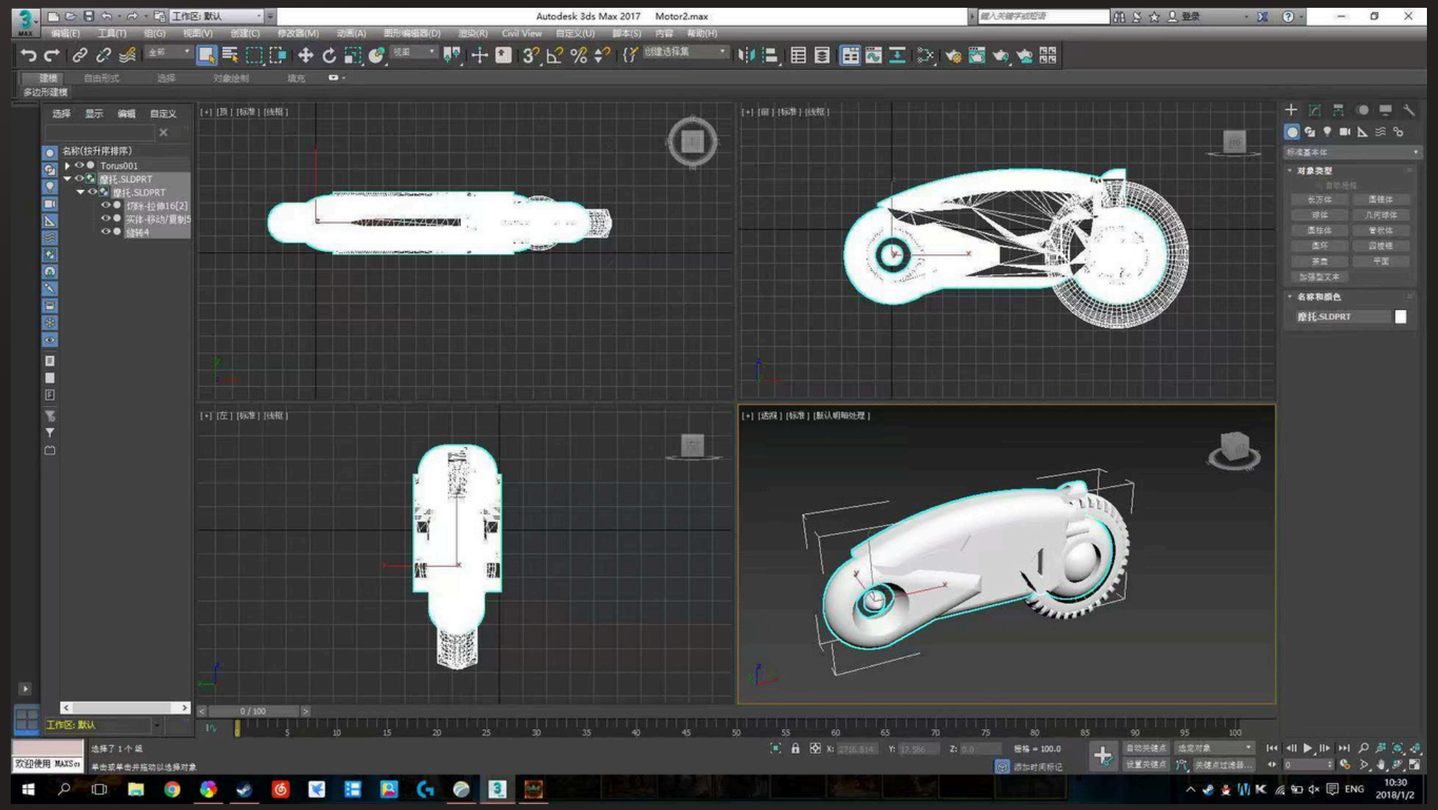
Project Overview
Produced various 3D models and digital product concepts using CAD and 3D modeling software for prototyping, visualization, and fabrication.

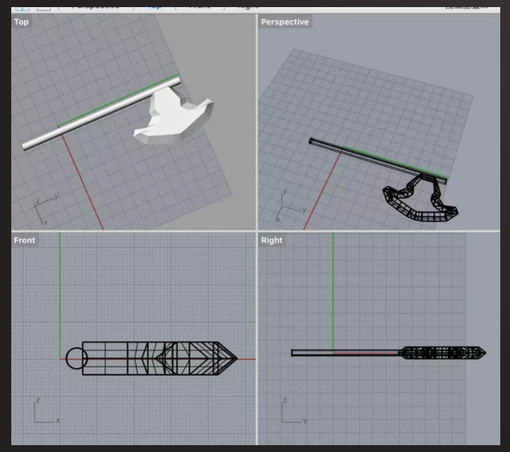
Design Skills Applied
CAD modeling
Digital rendering
Product visualization
Prototype planning
Technical drawing

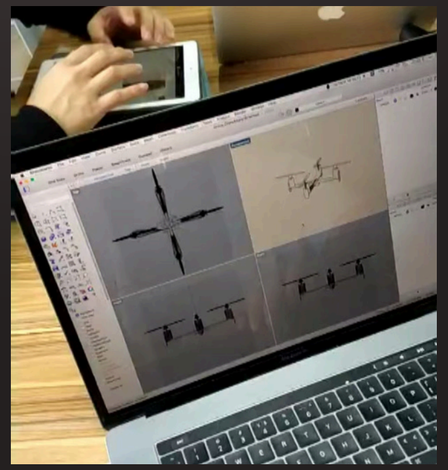
Software Used
SketchUp
Autodesk Maya
Adobe Creative Suite
3D modeling platforms

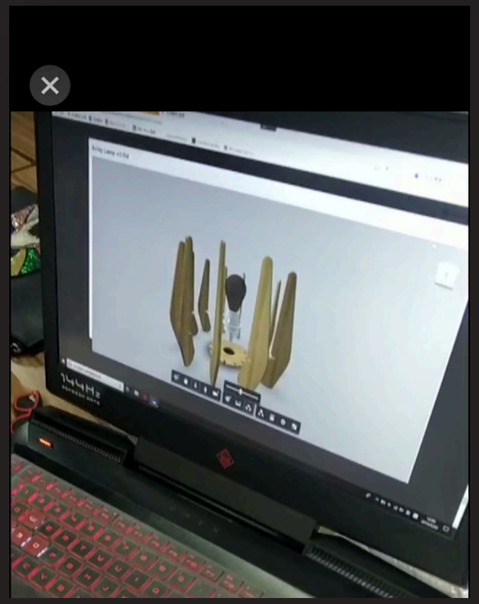
Learning Outcomes
Developing advanced digital design skills
Improving spatial visualization
Enhancing technical drawing and rendering abilities




Autodesk 3ds Max 2017 Motor2.max


Top
Perspective
Front
Right






SHOT ON MI 6
MI DUAL CAMERA

TECHNICAL SKILLS

Product Design & CAD
- SketchUp
- Autodesk Maya
- Fusion 360
- CAD Modeling
- 3D Rendering
- Adobe Creative Suite

Multimedia & Digital Design
- Video Editing
- Graphic Design
- Game Design
- Digital Publishing
- Multimedia Production

Fabrication & Prototyping
- 3D Printing
- Laser Cutting
- Woodworking
- Electronics Assembly
- Mechanical Fabrication
- Model Construction

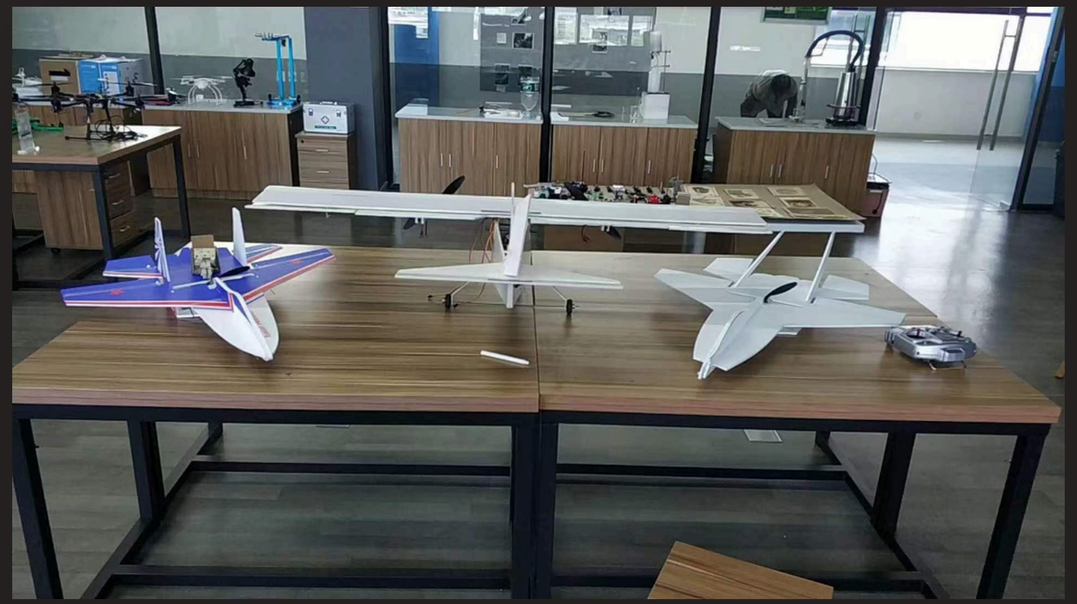
STEM & Robotics
- Robotics Systems
- Drone Technology
- RC Systems
- Engineering Design Process

TEACHING & DESIGN EXPERTISE
- Design Thinking
- Product Design
- Prototyping
- Iterative Evaluation
- Project-Based Learning (PBL)
- Inquiry-Based Learning
- Makerspace Management
- Workshop Safety
- STEM Integration
- User-Centered Design
- Sustainable Design
- Real-World Problem Solving

FUTURE GOALS

To continue developing innovative Design Technology and STEM programs that inspire students to become creative problem-solvers, engineers, designers, and future innovators capable of addressing real-world challenges through technology and sustainable design.



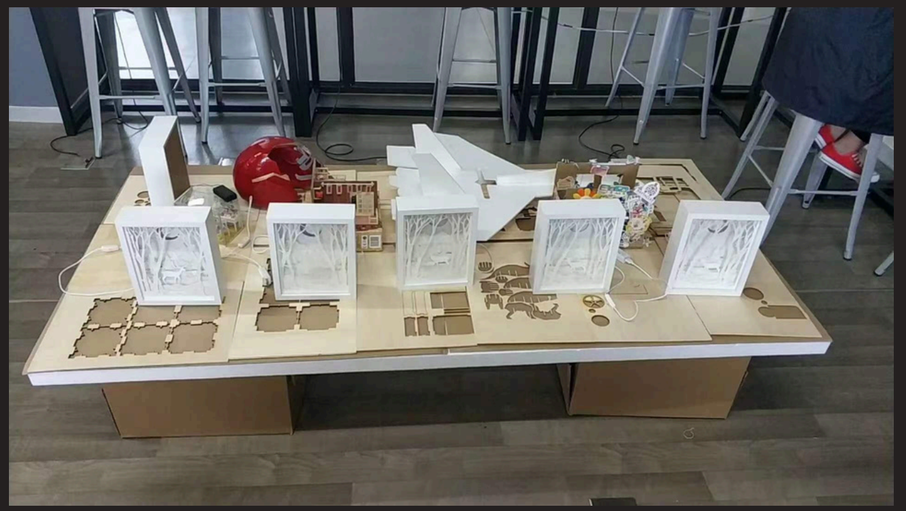






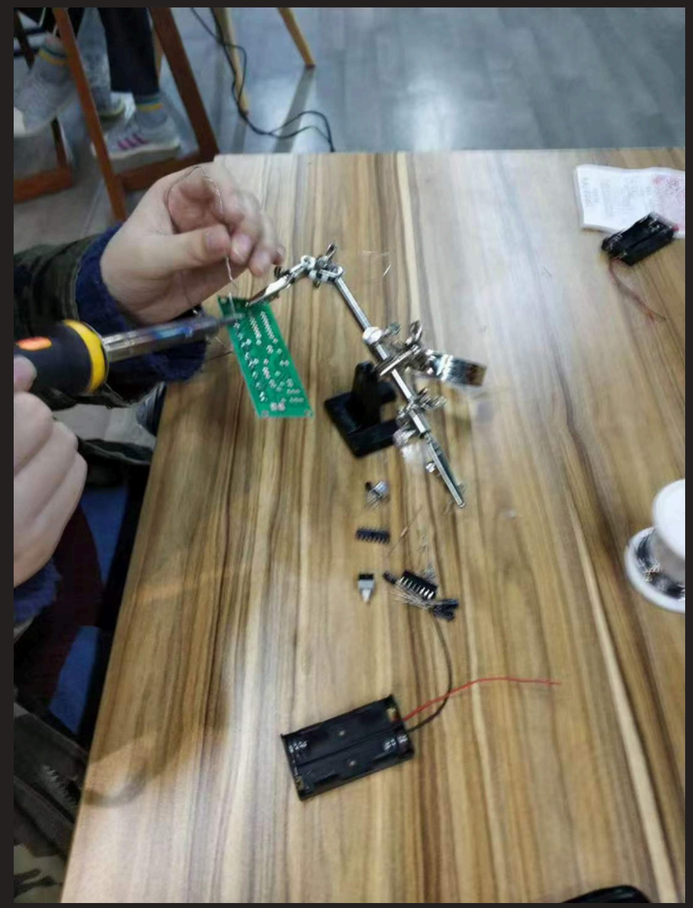




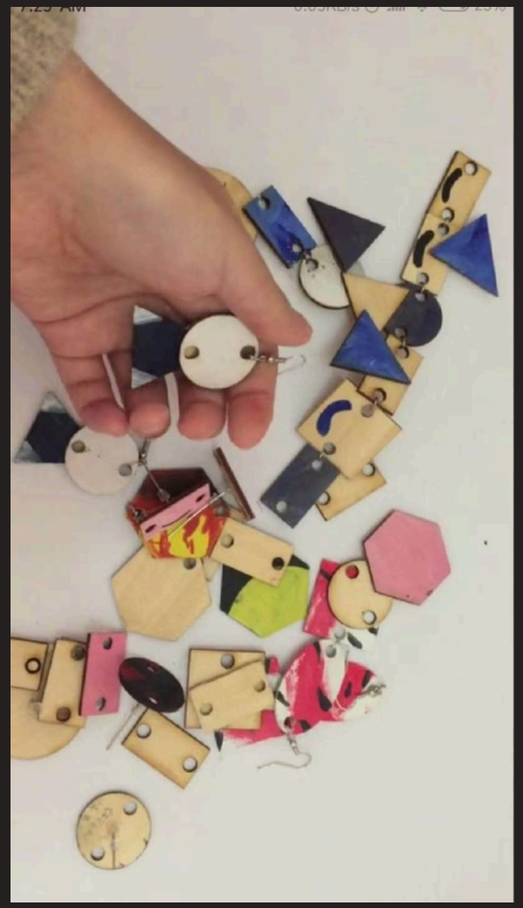



YOUNG129


0:01 / 0:09
Speed








JANET
Work Hard Play Hard


VAUL'S WORLD






100%
HAND
MADE












Bird house


SEAWATER
PURIFIER
PROTOTYPE
TEST & SHARE


Aurora Boya Academy of Beijing-STEM Competition 2024-2025
2024-2025北京博雅明悦学校-STEM竞赛


GARBAGE
TRUCK


AQUAPONICS SYSTEM
AQUAPONICS SYSTEM
AQUAPONICS SYSTEM
DRIVING
EMPATHIZE
DEFINE
IDEATE
MATERIALS
PROCEDURE
RESULTS
RECOMMENDATION


ROBOTIC ARM VEHICLE

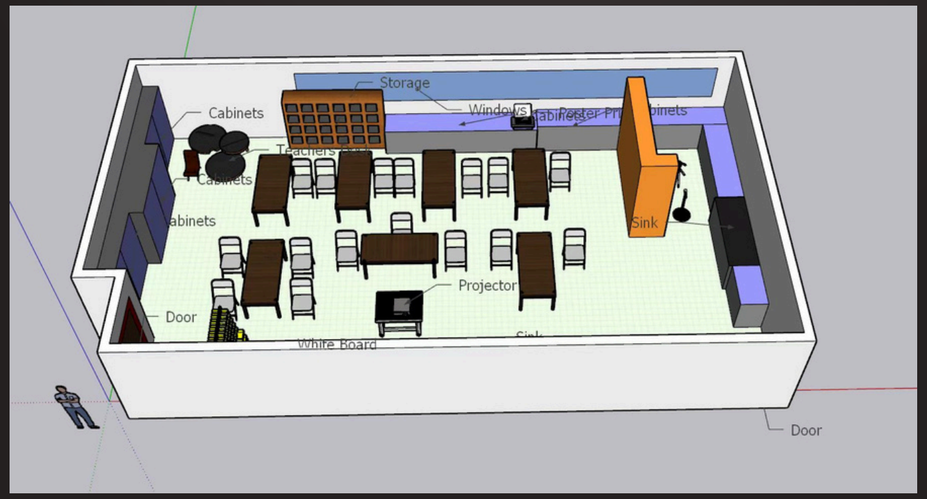

SKATEBOARD


Mango

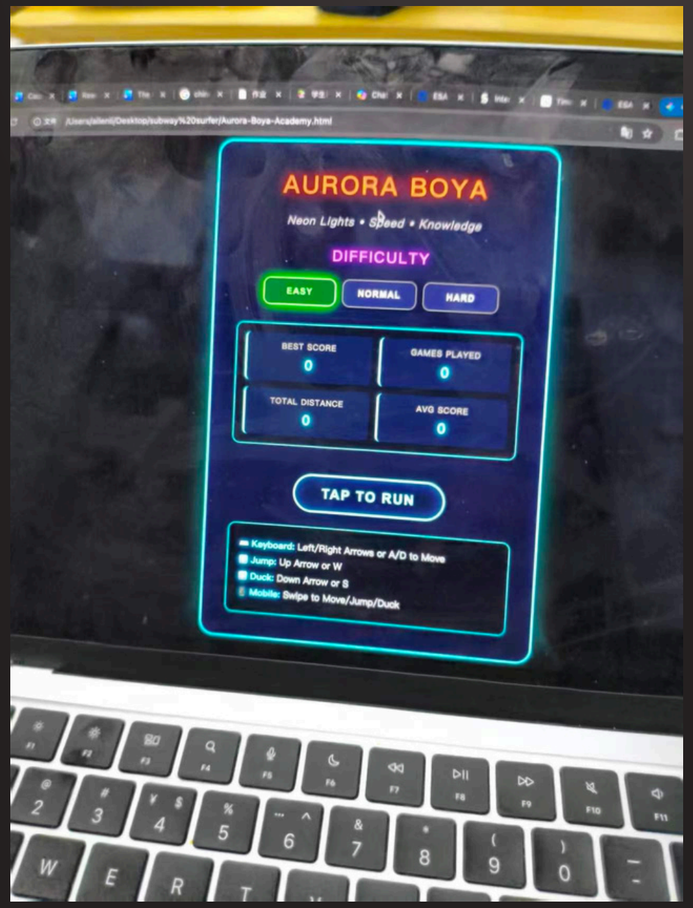

COMPUTER

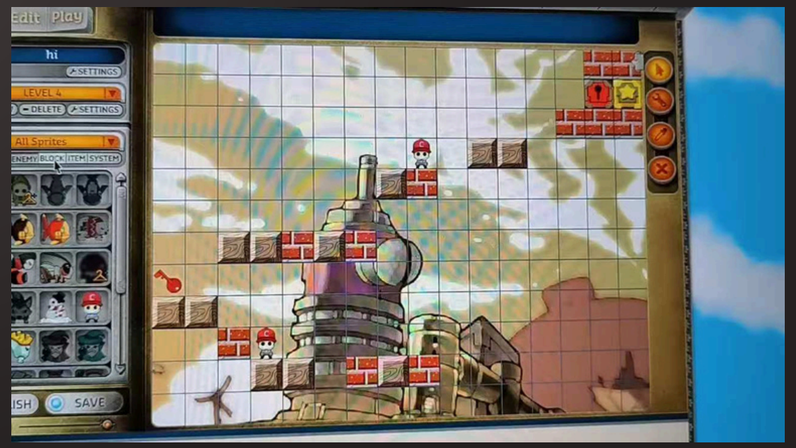



THE Spe
Hypothesis
Driving Question
Process:


Storage
Cabinets
Windows
Sink
Projector
Door
White Board
Door


OCEAN WASTE
AURORA
STEAM PBL Magazine project-Aurora Boya Academy of Beijing MAGA
STEAM


AURORA BOYA
Neon Lights • Speed • Knowledge
DIFFICULTY
EASY
NORMAL
HARD
BEST SCORE
0
GAMES PLAYED
0
TOTAL DISTANCE
0
AVG SCORE
0
TAP TO RUN
Keyboard: Left/Right Arrows or A/D to Move
Jump: Up Arrow or W
Duck: Down Arrow or S
Mobile: Swipe to Move/Jump/Duck


Edit
Play
hi
SETTINGS
LEVEL 4
DELETE
SETTINGS
All Sprites
SAVE


Edit
Play
furrry running
SETTINGS
LEVEL 4
NEW
DELETE
SETTINGS
All Sprites
PUBLISH
SAVE

THANK YOU

That's my portfolio so far.