

GFG Foundation

Drag Race Car Event

Key Information

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| Resource Type | Workshop |
| Duration | 2 - 3 hours |
| Location | Czech Republic & Romania |
| Max number of students | 20-40, split into teams of 6 |
| Facilitator | GFG staff, teachers |
| Room setup | Desks and chairs arranged facing a screen with session presentation and connection to sound. A clear space will be required for the students to race their cars. |
| Required materials | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Drag race car circuits, containing; a motor, a battery, crocodile clips x 3 and a switch (2/team + spares) <input checked="" type="checkbox"/> Drag race car kits, containing; motor, plastic wheels, chassis, spoiler, a wooden dowel, wooden wheels x 2, a straw, paper templates x 2 and blue-tac. (2/ team + spares) <input checked="" type="checkbox"/> Lesson plan <input checked="" type="checkbox"/> Powerpoint <input checked="" type="checkbox"/> Workbooks (2/team) <input checked="" type="checkbox"/> Race winner's medal <input checked="" type="checkbox"/> Design winner's medal <input checked="" type="checkbox"/> Participation medals 1/person <input checked="" type="checkbox"/> Additional activity: A3 car and outfit design sheets <input checked="" type="checkbox"/> Certificates 1/person <input type="checkbox"/> Cello-tape (2/team + spares) <input type="checkbox"/> Scissors (2/team) <input type="checkbox"/> Spare blue-tac <input type="checkbox"/> Colouring pens and pencils <input type="checkbox"/> 9V Battery (1/kit) |

Key:

= Provided by Rewise

= Tick when packed

Session Aims and Objectives

In this workshop, students will work in teams of 6 to construct 2 drag race cars from basic components. Students will only have instructions to wire their circuit, but will have to use problem-solving skills to combine the circuit with the chassis and other materials. Other activities include students creating their own team name, logo and slogan. The event finishes with all students racing their completed cars against each other. Medals are included for the winner of the race and for the best design. The course is designed to increase confidence and self-esteem in learners, both in a personal sense and in terms of STEM (Science, Technology, Engineering and Maths) related topics, through completion of small but achievable goals. It is also designed to ignite an interest in STEM subjects and to enhance and demonstrate that curiosity about the world and how things work can lead to productive careers and even great discoveries. Finally, the Drag Race Car Event helps to improve a range of soft skills such as working as a team, communication, working under pressure, following instructions and many more.

Learning Outcomes

1. To develop soft skills, such as teamwork, communication, problem solving skills, patience, etc..
2. To give a taster of STEM skills (Science, Technology, Engineering and Maths)
3. To create a fun activity to ease students into the programme and meet their peers

Workshop Timetable

| Activity | Guide Timings (minutes) |
|--|-------------------------|
| Course introduction | 10 |
| Team name, slogan and logo | 15 |
| Drag race car circuit | 20 |
| Drag race car build | 60 - 105 |
| Race and ceremony | 15 - 30 |
| Additional activity: car and outfit designs | 15+ |
| Additional activity: design the car of the future | 15+ |
| Additional activity: design their car's paper template | 15+ |

Activity Breakdown

| Guide Timings | Activity | Description/Instruction | Facilitator to check learning by | Resources |
|---------------|----------------------------------|--|--|----------------------|
| 10 | Introduction | <p>Introduction Objectives</p> <p>Staff to introduce/re-introduce themselves to the students, communicating their name and role within the GFG Foundation.</p> <p>Staff to use PowerPoint as a visual aid to introduce the overview of the course, course and outcomes.</p> <p>Overview</p> <p>Students are tasked to work in teams of 6 to construct 2 drag race cars from basic components. Students will only have instructions to wire their circuit, but will have to use problem-solving skills to combine the circuit with the chassis and other materials. The event will finish with all students racing their cars against each other with medals included for the winner of the race and for the best design. To begin everyone will create their team's name, slogan and logo.</p> <p>Outcomes</p> <ol style="list-style-type: none"> 1. To develop soft skills, such as teamwork, communication, problem solving skills, patience, etc.. 2. To give a taster of STEM skills (Science, Technology, Engineering and Maths) 3. To create a fun activity to ease students into the programme and meet their peers | Ensure that learners are engaged and listening to the introduction of the course | Powerpoint |
| 15 | Team name slogan and logo | <p>Team name, slogan and logo objectives</p> <p>Challenge 1</p> <p>Staff to hand out workbooks 2/team.</p> <p>Staff to use PowerPoint as a visual aid to introduce the activity - participants to create a name, slogan and logo for their team on page 2 of the workbook.</p> | Ensuring that students are on task and using an appropriate team name | PowerPoint Workbooks |

| Guide Timings | Activity | Description/instruction | Facilitator to check learning by | Resources |
|---------------|------------------------------|---|--|--|
| 20 | Drag race car circuit | <p>Drag race car circuit objectives</p> <p>Staff to hand out drag race car circuits - 2/team</p> <p>Workbook pages 3, 4 & 5.</p> <p>Page 3 of the workbook provides some circuit tips as well as an overview of the components for the circuit and car build.</p> <p>Page 4 includes a matching activity. Students are tasked to match description to the components on page 3. Answers: switch, motor, battery and wires.</p> <p>5 to follow the instructions on how to wire their circuit.</p> <p>Tips & Troubleshooting</p> <ul style="list-style-type: none"> - The circuit should be a cable from the battery to the motor (on the little tags of bronze or solder) then an additional cable from the motor to the switch. Finally another cable from the switch back to the battery. - Colours of the cables do not matter and are likely to differ from the instructions - If the wheels spin the wrong way then swap the two cables from the battery around <p>Safety</p> <ul style="list-style-type: none"> - Ensure that the metal parts from the crocodile cables are not touching each other, this can cause the battery to become hot. In this scenario, disconnect the battery and replace it with a new one. Also, make sure that the metal parts of the crocodile cables are covered by the rubber. | Ensure that students are on task. Double check that the metal parts of the crocodile cables are NOT touching each other - refer to the safety section. | PowerPoint Workbook Drag race car circuits |

| Guide Timings | Activity | Description/instruction | Facilitator to check learning by | Resources |
|---------------|----------------------------|---|---|---|
| 90 - 105 | Drag race car build | <p>Drag race car build objectives</p> <p>Staff to handout drag race car kits 2/team</p> <p>Teams to experiment with and figure out how to best combine the components to create their car as their are no instructions to help them. This includes adding their circuit to the chassis. Students also need to design one of the two paper templates to cover their finished car.</p> <p>Tips & Troubleshooting</p> <ul style="list-style-type: none"> - Take off the wheels from the motor to be able to tape around it and the back of chassis together - Place the wooden dowel through the straw and place the two wooden wheels on either side to create the front wheels - Ensure that the switch is accessible | Ensuring that students are on task. | PowerPoint Workbook Drag race car kits Pens and pencils Blue-tac Scissors |
| 15 - 30 | Race and ceremony | <p>Race and ceremony objectives</p> <p>Staff to introduce the challenge through the PowerPoint.</p> <p>Race: 1 car from each team lines up on the start of the track/race course. Their teammates with their other car wait at the finish line. Once the first car crosses the line the second car gets sent back to the start line. The winner of this race will receive the winner's trophy.</p> <p>Or</p> <p>Race: Teams race their two cars to find out which one is the fastest. Once all teams have found their fastest car they all race to find the winning team.</p> <p>After the main race, students are welcome to race amongst themselves.</p> <p>Staff to judge the best designed car ready for the ceremony</p> <p>Ceremony: Staff to hand out the race winner's trophy, the design winner's trophy, participation medals and certificates.</p> | Observe the race. Judge the best design. | PowerPoint Race track/area to race Race winner's trophy Design winner's trophy Participation trophy Certificates |

Additional Activities

| Guide Timings | Activity | Description/instruction | Facilitator to check learning by | Resources |
|---------------|--|---|---|--|
| 15+ | Car and outfit designs | <p>Car and outfit design objectives</p> <p>Workbook pages 7 & 8.</p> <p>Students design their team's outfit design and car design using the A3 handout sheet.</p> | Ensure that learners are engaged and are on task. | Powerpoint Workbooks A3 car and outfit design sheets Pens and pencils |
| 15+ | Design the car of the future | <p>Design the car of the future objectives</p> <p>Workbook page 9.</p> <p>Students complete the tasks on page 9 of the workbook. This includes thinking about making a futuristic car considering how the car can be environmental friendly as well as drawing their design.</p> | Ensure that learners are engaged and are on task. | Powerpoint Workbooks Pens and pencils |
| 15+ | Design their car's paper template | <p>Template design objectives</p> <p>Workbook page 10.</p> <p>Students are tasked with designing their own paper template to cover their car.</p> | Ensure that learners are engaged and are on task. | Powerpoint Workbooks Pens and pencils |