Flashing Wheels Lesson 1

Curriculum links:
- Computing: Logical thinking, designing, user needs
- Science Day and Night / Sensors, Design & technology Product design, Citizenship Road safety

Skills: Creative thinking, problem solving, team working, presenting

Resources: Teacher Guide (presentation download, lesson plan download, worksheet download), optional: a bike/scooter or pushchair with a suitable light attached (e.g. bike light)

Background:
It is assumed that you have first completed the safety introductory lesson.

Introduction
In this lesson students consider the importance of road safety at night for children and why lights are important to increase road safety for users using ‘wheels’ (e.g. wheelchairs, scooters, bikes, pushchairs etc). They work in small groups or pairs to consider ways lights could help and begin the product design process by creating a ‘persona’ for whom to design their ‘flashing wheel’ device.

Teacher guide:

Learning objectives
- to understand the problem of road safety for children, especially at night
- to understand how light can help vulnerable ‘wheel’ users
- to create a ‘user persona’ for whom to design a flashing wheel device.

Agenda
- Introduction and class discussion (10 minutes)
- Be safe, be seen (10 minutes)
- Wheel-based transport (10 minutes)
- Class discussion (5 minutes)
- Introducing flashing wheels (5 minutes)
- User personas (15 minutes)
- Wrap up (5 minutes)

Introduction
- Invite students to think/pair/share their current understanding of the main problems around road safety for children (slide 2), when children are most at risk and which children are most at risk (e.g. those with hearing, visual or movement impairments).
- Use the video on slide 3 to help with ideas if needed and make a class list on the board.

Main activities

Be safe, be seen!
- Explain that you are going to focus on road safety at night to help children ‘Be safe, be seen’. Show the video on slide 4 if it is appropriate for your students.
- Give small groups or pairs a copy of the worksheet and a few minutes to discuss and answer the questions (slide 5) before reviewing as a class. If you wish, you could ask students to come up with / a team name (e.g. Code Cookies, Tech Terriers).

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Wheel-based transport
- Introduce the learning objectives if you wish (slide 6) and explain that you will be focusing on users who use personal ‘wheels’ (e.g. wheelchairs, scooters, bikes or pushchairs, not cars or buses) and create a class list of types of wheels (slide 7 has ideas). Encourage children to think about their own lives and how they, or members of their family travel.
- Ask students to come up with ways travel could be made safer for these users in the table on their worksheet (they can use the example as a guide).

Class discussion
- Invite students to share their ideas to the class and encourage discussion around the ideas (e.g. advantages and disadvantages, barriers to making/adoptions etc). You could come up with a top 5 list if you wish (make sure you have lights on the list and discuss how they can help).
- Explain that you will be focusing on creating one particular device and they will be choosing one particular user to focus their design on that it could help.

Introducing Flashing Wheels
- If you are feeling creative and your students would respond positively, make the room as dark as possible, collect the scooter/ bike/pushchair from its hiding place, turn the flashing light on and move it across the room so students can see the impact of the wheel light(s) in the dark.
- You could experiment with different options and ask students to decide which they think is most effective (e.g. light always on, blinking rapidly, flashing more slowly etc).
- If this wouldn’t work in your class, you could show a video such as this one.
- Explain to students they will be creating their own flashing wheel device (they can choose the flashing speed they thought was most effective) and their first task is to focus on the person that they want to use it (the user persona).

User personas
- Invite students to think/pair/share why it is helpful to focus on a specific user when designing a new device.
- Show slide 8 and talk through the user persona of ‘Sarah’.
- Give pairs or groups another large sheet of paper and ask them to use it to create their own user persona, at least answering the questions on slide 9.
- If you have time, ask students to present their personas to the class.

Lesson wrap up
- Invite students to consider the questions on slide 10 and recap the learning objectives if you wish (slide 11).

Extension / homework
- Students could draw/create a model of their persona to help bring it to life. They could take a picture of this and add it, with a brief explanation, to an assessment portfolio or blog.

Differentiation

Support:
- Consider pairs or groupings carefully and you can help students with additional visual prompts if necessary (e.g. a fluorescent bib, reflective strips etc). You could also give them pictures of users to choose from to help them create their persona.

Stretch & challenge:
- Challenge students to consider more deeply potential advantages and disadvantages of their ideas (e.g. which users would it particularly be useful for, in which circumstances, what would prevent them from
using it, how costly would it be to produce etc). They can add their own ideas to come up with a more in-depth user persona, and think about user personas of different products (e.g. Mac vs PC user).

**Opportunities for assessment:**
- Informal assessment of students’ progress through answers and focused questioning.
- Formal assessment if wished of worksheet and personas.