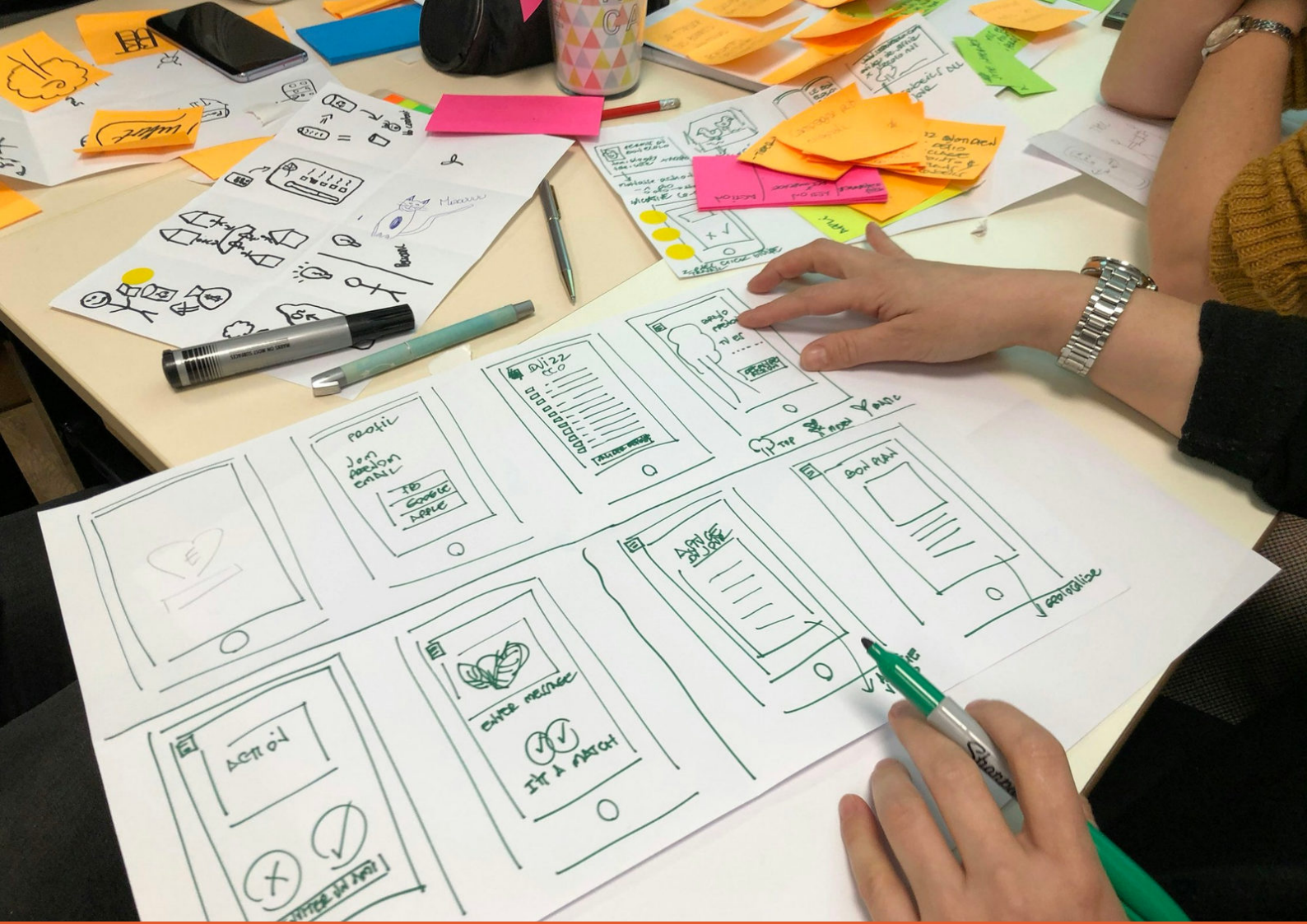




EduTrend Contents

EDUTECH · ENGINEERING · HIGH SCHOOL

Design for a Real User

Interview a user, write a specification and choose a design with a decision matrix

Ages 15–18

Level: Advanced

90 minutes

Teams of 3–4

Activity 05

Inside: activity at a glance · step-by-step session plan · facilitator notes · 3 student worksheets · assessment checklist

ACTIVITY 05 · AT A GLANCE

Design for a Real User

Teams choose a real need in the school, such as carrying trays safely or storing bikes. They interview a user, write a specification with criteria and constraints, generate at least three concepts, score them with a weighted decision matrix and make a quick prototype. They present their choice and reasoning to the user.

Learning outcomes

By the end of the session students can:

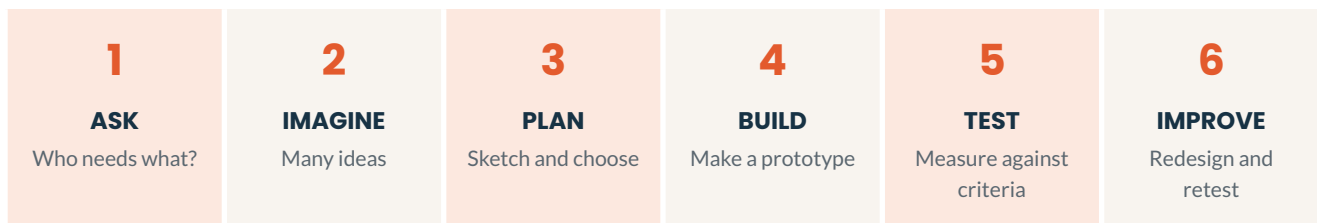
- gather user requirements;
- write a design specification;
- use a weighted decision matrix;
- justify a design choice to a user.

KEY WORDS

user · requirement · specification · concept · decision matrix · weighting

CURRICULUM LINKS

Business: stakeholders. Maths: weighted scores. Psychology: user needs.



Materials (per team)

- Interview guide
- Specification template
- Decision matrix template
- Card, tape, scissors for prototypes
- Worksheets 1, 2 and 3

Before the session

- Arrange access to a willing user (staff or students).
- Print templates.
- Prepare prototyping materials.
- Plan teams.

SAFETY

Use craft knives only with a cutting mat and supervision. Ask users' permission before interviewing.

ACTIVITY 05 · SESSION PLAN

Step by step

Push teams to write measurable criteria, not vague wishes such as “easy to use”.

Time	What happens	Say or ask
0–15 min Ask	Interview the user.	<i>“What is the real problem?”</i>
15–30 min Specify	Write criteria and constraints.	<i>“How will we measure it?”</i>
30–50 min Imagine	Three concepts.	<i>“Is each really different?”</i>
50–70 min Decide	Weighted decision matrix.	<i>“Do the weights reflect the user?”</i>
70–90 min Prototype and present	Quick model and pitch.	<i>“Does the user agree?”</i>

CHALLENGE CARD (print or copy onto the board)

Interview a real user, write a specification, score three concepts with a weighted decision matrix and justify your choice to the user.

ACTIVITY 05 · FACILITATOR NOTES

The engineering know-how in brief

Good engineering starts with the user. A specification turns needs into measurable criteria (performance, cost, safety, size) and constraints (fixed limits).

A weighted decision matrix scores each concept against criteria, multiplying by weights that reflect importance. It makes choices transparent, though the weights themselves are judgements.

Common ideas to listen for

- “Engineers decide what users need.” Ask the user.
- “The matrix gives the right answer.” It depends on weights.
- “A specification is a wish list.” It must be measurable.

Adapting the activity

Support

Provide sample criteria.

Stretch

Run a sensitivity check: change the weights and see if the choice changes.

WORKSHEET 1

Specification

Name: _____

Class: _____ Date: _____

Turn needs into criteria.

Specification

Criterion	How we will measure it	Weight (1–5)
1		
2		
3		
4		
5		

WORKSHEET 2

Decision matrix

Score each concept 1–5.

Decision matrix

Criterion	Concept A	Concept B	Concept C
1			
2			
3			
4			
5			
Weighted total			

WORKSHEET 3

Justification

Explain your choice to the user.

Why we chose this concept

FOR THE TEACHER

Assessment checklist

Use during the session. One sheet covers up to eight students; copy as needed.

Student	Gathers user needs	Writes measurable criteria	Justifies choice

Suggested codes: W = working towards · E = expected · G = greater depth

ABOUT THIS ACTIVITY

Design for a Real User is a sample activity from the EduTrend Contents Edutech Engineering programme (high school, level: advanced). Every activity in the programme follows the same format: a practical challenge, a clear session plan, facilitator notes and ready-to-print worksheets, so that teachers, club leaders and parents can run it without extra preparation.

Full 15-, 20- and 32-week programmes are available from EduStore at edutrend.org.

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