Unplugged: User Stories

Students learn how to identify features and components of complex systems by constructing user stories. Building user stories helps students understand how to define and abstract modular and atomic components of a problem. It also encourages students to explore how the features of an invention would directly benefit the user.

Activity Overview
Estimated Time: 1h

Materials for each student:	Preparation:
- Pencil - User Stories Student Sheet - Self-Assessment Student Sheet (Optional)	- Print out 1 User Stories Student Sheet per student. - Print out 1 Self-Assessment Student Sheet per student. (Optional)

Warm-up: Features versus Benefits (10 minutes)

Students differentiate between features and benefits of a product. Features describe the actual function of the product whereas benefits impact the user's life in a positive way. Facilitate a class discussion or ask students to discuss in small groups using the following prompts:

- What do you think is the difference between a feature and a benefit of a product?
- What do you think is the most important piece of technology in your lifetime?
- What are five benefits of that technology?
- What are five features of that technology?
- What are the features and benefits of a smart phone?

Activity: Constructing User Stories (40 minutes)

Ensure that each student has a pencil and the User Stories Student Sheet. Review the User Stories Student Sheet with the class. In particular, review each of the user story formats.

Explain that user stories describe features not behaviours. Users expect the features to give them some kind of benefit. Present students with a product from the following list, and have them design the specifications. The product can also be something else that supports learning in another curricular area.

- Basic calculator
- Bunsen burner
- Coffee maker
- Pencil sharpener
- Printing press
- Radar
- Single-gear bicycle

Ask students to write a full list of user stories on the provided sheet that describe the features of the chosen product. Features include reasons why the user would use the product or something that the user expects from the product. The following principles should be encouraged:

Principle	Description
Value	Has the student described a set of features that give the user a measurable or tangible benefit?
Completeness	Has the student described all of the features of the product? Has the student considered describing the size of the product as a benefit?
Context	Are the features relevant within the modern context, or do they reflect the time period when the product was originally invented?

Reflections: Innovation (10 minutes)

Give students an opportunity to share their user stories. Facilitate a class discussion, or ask students to reflect individually or in small groups using the following prompts:

- If you could design your product from scratch, what would you change to make it better?
- How would the users of the product benefit from your innovations?

Assessment

Criteria	Approaching	Meeting	Exceeding
Student shared one or more ideas about features and benefits during the warm-up.			
Student completed a minimum of 5 user stories that define the basic set of features for the product.			
Student demonstrated an understanding of the connection between features and benefits by consistently using at least one of the templates provided			
Student reflected on how he or she could improve the product either individually or in a group discussion.			

Extensions

Explore different materials
Encourage students to think about the different types of materials from which the product could be manufactured.

Build a cost-benefit user story
Encourage students to explore a cost-benefit user story, which emphasizes that the product should be affordable (or not) depending on the benefit that it provides.

Consider a different historical context
Challenge students to take the features and benefits of the product and craft them to fit in a different historical context. For example, how would a coffee maker be different in the year 1275 versus 2075?

User Stories Student Sheet

A user story can have one of two forms:

Positive Benefit 1	Positive Benefit 2
As a <role>, I want to <task> because <benefit>. Example: As a mathematician, I want to calculate the square root of a number because doing it manually is time-consuming.	As a <role>, I should be able to <task> because <benefit>. Example: As a student, I should be able to group operations with parentheses because some of my assignments are complex.

User stories can also be expressed in the negative to restrict the features of the product:

Negative Outcome 1	Negative Outcome 2
As a <role>, I don't want to <task> because <negative outcome>. Example: As a user of the calculator, I don't want to use too many keys to enter my equations because that doesn't save me any time.	As a <role>, I shouldn't be able to <task> because <negative outcome>. Example: As a user of the calculator, I shouldn't be able to divide by zero because that is a mathematically incorrect operation.

Product: _____

As a <role>,	I want to / I should be able to <task> *or* I don't want to / I shouldn't be able to <task>	because <benefit>. *or* because <negative outcome>.

Self-Assessment Student Sheet

Give an example or provide evidence of how you demonstrated or accomplished each of the following statements during this activity. Examples and evidence can include sketches, written descriptions, and references to photos or videos.

Statement	Example or Evidence
At the beginning of the activity, I actively participated in the discussion by sharing my thoughts on features and benefits and/or listening to other students' ideas.	
At the end of the activity, I thought about how the product could be improved and how my improvements might benefit others.	