Living With Limb Loss

Living With Limb Loss introduces students to people living with upper limb loss. Students read fictionalized transcripts of interviews that are based on the experiences of real people with limb loss and limb difference. They pause to check their reading comprehension and to practice looking for users' needs when considering an engineering design.

This activity may be used on its own or in connection with *HandGineering*, an activity that guides students through a user-centered engineering process.

When talking about people with disabilities, including limb loss and limb difference, careful consideration of word choice and discussion topics can avoid perpetuating unhelpful stereotypes, terminology, or attitudes that are not preferred by a disability community. We offer guidance and resources below.

Learning Objectives

- When designing a solution, user needs must be considered.
- Reading comprehension strategies help students discover useful information in complex texts.

Class Time

30-40 minutes

Materials

- Copies; one transcript and one set of questions for each student.

  **The questions, reading comprehension activities, and general contents of both transcripts are the same. Students can complete either transcript, but do not need to do both.*

Implementation

If you're using this activity with *HandGineering*, see the *HandGineering Teacher Guide* for guidance on when to introduce *Living With Limb Loss*.

Print out one copy for each student so they can mark up the transcript. Questions 1-4 are completed individually. Questions 5 and 6 involve a partner.

This activity can also be completed digitally as a fillable pdf. Each student will need an internet-capable device that can read and save fillable pdfs.

Notes from the developers

The text of these transcripts is fictional. To create the experiences of "Steve" and "Maya", we drew from sources including:

Patient education resources and first-person accounts

Published research exploring what people who use upper limb prostheses need from a device

Published research on the experiences of pediatric patients with upper limb loss or limb difference

Consultation with an educator on limb loss and inclusive language who is a certified prosthetist-orthotist with experience in the clinical treatment for individuals with limb loss and limb difference

Consultation with members of the limb loss community, facilitated by the Amputee Coalition https://amputee-coalition.org/

Talking about people with disabilities in the classroom

People with disabilities are whole people who deserve the same kindness, respect, inclusion, and dignity as people without disabilities. They are so much more than a list of things they do and don't do. Affording that dignity means letting people with disabilities tell their own stories and experiences and define their own abilities and identity.

For example: This activity uses the term "people with limb loss and limb difference." This term is person-first and is inclusive, since it includes people who have lost limbs to amputation as well as people born without a limb or part of a limb. It's the preferred term to be used by people who are not part of the limb loss or limb difference community. Person-first language is more appropriate than identity-first language when the preferences of the individual are not known.

People within a community, however, may define themselves according to their own preferences. The people in this activity, for example, refer to themselves as "amputees" because that term is true to their experience and identity. Not all people with limb loss may identify themselves the same way. Whenever possible, ask a person with a disability how they prefer to identify themselves. Using language a person or community prefers is an act of kindness.

Find more guidance here, from the National Center on Disability and Journalism: https://ncdj.org/style-guide/ It's written in the context of journalism, but the principles still apply to respectful and kind classroom discussion.

Using Living With Limb Loss as a reading comprehension activity

In addition to teaching students about disability awareness and user-centered design, "Living With Limb Loss" is also a reading comprehension activity. The reading strategies come from *Once Upon a Life Science Book* (ISBN 978-1-935155-09-6, NSTA Press, https://my.nsta.org/resource/2669), a resource for using life science passages to build reading comprehension skills.

The strategies students will use in this activity include:

Pause, retell, compare - Questions 1, 3, 5

Students practice retelling information based on their recall and then comparing their retelling to the original text.

Context clues - Question 2

Students look for words and phrases surrounding unfamiliar terms that give clues to the terms' meaning.

Chunking - Question 4

Students practice breaking a confusing sentence into chunks. In this case, the students will use chunking to assemble the meaning of two paragraphs that simulate an unedited verbatim transcript. The sentences contains false starts, filler words, and incomplete sentence fragments.

Make a claim supported by evidence - Question 6

Students are invited to make a claim about the user's needs and support the claim with evidence from the text. They will make claims about expressly stated needs and about unspoken needs. They will locate and identify supporting evidence for both claims.

Definitions for terms used in Question 2

Transradial amputation Also known as a "below-the-elbow" amputation. A transradial amputation involves cutting the radius and ulna bones of the arm, between the wrist and elbow, and removal of the forearm, wrist, and hand.

Myoelectric prosthesis Uses electrical signals from the user's muscles, sensed by electrodes on the skin, to control how the prosthesis moves.

Phantom pain Refers to painful sensations related to limbs or parts of the body that are not present, such as limbs lost to amputation. Sensations that are not painful are known as "phantom sensations."

Wrist disarticulation This amputation involves removal of the hand and wrist. The bones of the forearm are intact.