

Problem Solving Project

You will research (part A) a specific problem, and a way to address that problem with computer technology. You will then create a handout (part B) about the problem, a presentation (part C) about the technology, and a spreadsheet (part D) showing monetary or time considerations involved in the problem and/or the use of the technology.

Note that the ban on direct quoting of text from any source *does*¹ apply to this project.

You may work alone or in groups of up to 3 on this assignment; all group members should participate in all parts.

Part A - Concepts / Research – Nothing to turn in [20%]

Choose some specific problem which affects a subset of people, but not all people. It can be one that affects you, or only one that you are interested in. Research the problem itself. Then choose some computer technology that solves, helps with, or in some way addresses the problem, and research that. This technology may be hardware, software, *or* networks.

Here are a few examples²:

- missing medication deliveries which require signatures due to limited mobility, addressed with a smart doorbell
- difficulty reading text due to dyslexia, addressed with a browser plug-in that uses a specially designed font
- difficulty affording prosthetics for a growing child, addressed with a 3-D printer
- inability to use a standard game controller, addressed with a chin- or eye-based controller

Choose a specific, real problem which affects the lives of some people, but not everyone.

Choose a specific, real technology that is available for purchase/use. A technology that combines hardware, software, and networking would be acceptable, but you need only choose one.

¹ Claiming that you read this as “doesn’t” will not save you. Copied text → -100%. No excuses.

² These are only **examples**, you can choose another problem and technology that interests you.

The technology you choose must address the specifics of the problem in some way, not just make someone's life more pleasant in a way that could apply to anyone. For example, a tablet computer to deal with boredom during chemotherapy would not be an appropriate choice, since it could be used to deal with anybody's boredom in any situation.

The technology need not have been designed to address this problem, but if it involves a modification or hack of an off-the-shelf technology, a lot of your focus should be on that modification/hack.

Make sure that you choose a problem and technology that provide you enough to work with so that you can fill the requirements of the rest of the project.

About the problem I would expect you to include information such as:

- Who is affected by this problem?
- What causes it?
- What impact does the problem have on their lives?
- What strategies, other than adopting the technology, are used to deal with it?
- Are there other technologies used to deal with this problem?
- How would the people affected use the technology you are presenting?

About the technology I would expect you to include information such as

- What does it do?
- How does it address this problem?
- How does it work?
- What is the interface like? Do you need special training to use it?
- What are the costs?
- What are the drawbacks?

The grade for part A will be based on your presentation of this data in the rest of the project. The more specific the better. Include a list of your sources in one of your documents.

Part B - Word [30%]

Create a 2 full page³ (not fewer or more) document in Word that describes the problem you have chosen.

This document is **not** intended to be an essay or paper, but the kind of attractive handout you would give someone who was interested and wanted to learn more.

³ So, your content should fill from top to bottom of two pages viewed in Word.

This document is on the same topic but not directly related to the presentation in part C. In this part, you are presenting **primarily information about the problem** to people who are not familiar with it. You should also briefly introduce the technology.

Use your Word skillz to make good use of the two pages of space without having to write too much text. Part of the credit for this document will be for the overall design and professional presentation.

Formatting:

Your document must include at least 5 of the following:

- ✓ More than one font
- ✓ Other text formatting such as bold, italic, etc.
- ✓ A table
- ✓ At least two images
- ✓ A bulleted or numbered list
- ✓ A footnote or endnote
- ✓ A header or footer
- ✓ SmartArt

These should be used appropriately to present your content. Credit would not, for example, be given for a table just used to put a decorative box around text or to make columns (which would instead be done using actual Word columns).

Part C - PowerPoint [30%]

Create a 5-7 (not fewer or more) slide PowerPoint presentation as if you are trying to convince a group of people either that the technology you researched is a good choice for dealing with the problem OR that it is *not* a good choice. Your presentation should argue *why* this particular technology is or is not actually helpful to people with this problem.

Hint: Make sure that among your sources are some people who actually have the problem; what do *they* say about what kinds of tools are and are not helpful to them?

This presentation is on the same general topic but does not cover the same material as the document in part B. In this part, you are **presenting information about the technology in detail to people who already know about the problem**. You can imagine that these are people affected by the problem, or people who might contribute time or money to getting help to those who need it.

In your presentation, use

- ✓ fonts and other text formatting
- ✓ at least two images

Do not include audio or video.

Part D [20%]

Create an Excel spreadsheet that covers monetary or time issues related to the problem and the technology you chose. The items to include will depend on your topic.

Here are some possibilities to consider:

- the problem
 - how many people affected
 - how often it affects them
- losses caused by the problem
 - money necessary for other strategies to deal with the problem, such as hiring helpers
 - lost money, including income, due to the un-addressed problem
 - lost time, due to the un-addressed problem
 - costs of damage caused by the problem
 - costs of medical problems caused or exacerbated by the problem
- costs of the technology itself
 - buying or renting hardware
 - software licensing
 - extra needed hardware such as connection cables or adapters, or upgrades to existing hardware to allow more complex software to run
 - installation fees
 - salary for trained operators
 - monthly internet access costs needed
 - consumable resources such as batteries, ink cartridges, etc
 - maintenance or update costs
 - helpline or support fees
 - training costs
 - costs of modifications or hacks required
 - how long the technology lasts
- effects of adopting the technology
 - how often it can be used
 - monetary costs it helps reduce or eliminate
 - time costs it helps reduce or eliminate
 - savings compared to other comparable technologies

Not all of these will apply to all situations. You should include all that apply for your topic. These must be real numbers, and you should include somewhere the source where you found them.

If there is another type of numerical data related to your topic that you would like to use in a spreadsheet unrelated to money or time, please see me to discuss.

You must have at least 5 items (individual numbers). Put individual amounts in clearly labeled cells,

Include one of the following:

- A single cell with a **formula** for some overall result based on combining at least three of your numbers, for instance the total cost for one person adopting the technology for a year, the projected savings in medical costs if everyone affected adopted the technology, etc... The formula must be written so that it would update if the other cells were changed.
- Or, a **meaningful** graph or chart illustrating some or all of your data.

In your spreadsheet, use appropriately:

- ✓ fonts and other text formatting
- ✓ cell formatting (shading, outlines, etc)
- ✓ numerical formatting (percentage, dollar, etc)

Credit will only be given for using these appropriately.

Turning in the Project

You may work alone or in groups of up to 3 on this project. Even if working alone you will need to join a “group” by yourself in Blackboard to turn in the assignment.

Turn in your project through Blackboard by attaching all documents (Presentation, Word Document, and Spreadsheet) to a single submission. **Do not** zip or otherwise reformat your documents. If your files do not display correctly in Blackboard⁴ and open directly⁵ in the appropriate Office programs on an HCC machine, you will not receive credit.

⁴ Blackboard will occasionally choke on very complex documents. If you have created your document in Office on campus and Blackboard won't load it, come by office hours so I can check. If you worked in a different program or version of Office, you might need to come on campus and put your content into a new Office document.

⁵ I shouldn't have to enter compatibility mode or anything like that.