Github: <https://github.com/johnfraserss/ICS3U/wiki/Problem-Solving-and-Teamwork>

(14) An area of collaborative research between computer science and another field, and how the field would be different if computer science was not involved. (D2.2)

* Civil Engineering (It’s easy) -

<https://repository.lib.ncsu.edu/server/api/core/bitstreams/8b96e8e3-e0e6-431a-8a23-ad2474f09998/content#:~:text=Much%20of%20today%27s%20civil%20engineering,without%20the%20aid%20of%20computing>.

* Civil Engineering and Computer Science History:
* First used in the 1950s-1960s
* Were used in the defense and space programs as well as the interstate system
* “Cut and fill system”
* Removing pieces of the environment or adding them back in to create a suitable area
* Volumes for stretches of highway without having to draw or measure
* Further optimized
* They were given to the engineering organizations but had no applications
* Eventually, people started to use share programs created “development responsibilities
* Companies got attracted to the Bendix G-18, the LGP30, and the IBM 160.
* IBM 1160, were majorly used in the civil engineering department in the 1960s
* Created a group called CEPA
* ASCE
* Started a meeting in 1959 that discussed the future between computers and Civil Engineering
* Modeling in the 1970s revolutionized structural engineering
* Technical council of Computer Practices
* Development the relationship between civil engineering and computer practices
* Including training, usage, and practice
* From the 1970s to 1990s, there were multiple activities and concepts that the TCCP were a part of that helped stabilize the relationship between computer science and civil engineering
* TCCP turned into the TCCIT in 1997

## What is Civil engineering

* Civil engineering is about designing structures.
* From the construction to maintenance of the structures, civil engineers do all these things
* They take in and account for the problems they could face and fix them.
* Civil engineers can work anywhere, from offices to construction sites
* They usually work full time and work longer than 40 hours a week. Depending on the project they have a good work life banlance
* They have a very high job pay
* To get this kind of job you would have to have a bachelor's degree in civil engineering or a related field

Things that civil engineers could help design:

* Buildings (Skyscrapers)
* Eco Friendly projects (Buildings that using less Co2
* Geotechnical (buildings that are resistible from Natural disasters)
* Transportation (railways, cycle paths, ect..)
* Urban planning (Planning and building cities)
* Water (pipes)

They should be creative

## What is Computer Science

* Computer Science is the study of computers and their systems, which include the software.
* Includes AI, computer systems/networks, security, databases, human interaction, graphics/visuals numerical analysis, programming, bioinformatics, software engineering, and theory.
* The theory, design, development, and application all contribute to the study.
* Analyzing algorithms, finding the performance of hardware and pieces of software.
* Problems vary from the unknown to the items people use every day.

## The correlation between computer science and engineering.

* Civil engineering uses comp sci as a tool to help to them finish their calculations
  + Comp sci can help make help speed up the process and help Civil engineerings to have more accurate and precise measurements

- Civil engineers uses Dynamo (made by autoCAD) to help simulate what their buildings would look like in real life.

- Due to the increase in smart buildings, cities and simulation practices. programming skills will probably be more used in the civil engineering job.

## What Civil Engineering would look like if computer science didn’t exist.

* A lot more artists would be needed
* Blueprints would be messier
* Would require multiple blueprints from different POVs

## Interactive task idea:

1. Have the class get into groups
2. Give them each a big piece of paper and tell them to draw a blueprint
3. Then tell them to go online and build a blueprint online ([planner5d.com/editor](http://planner5d.com/editor))
4. Give them 5-7 minutes for each task
5. Let them compare the 2 blueprints
6. Get 100%