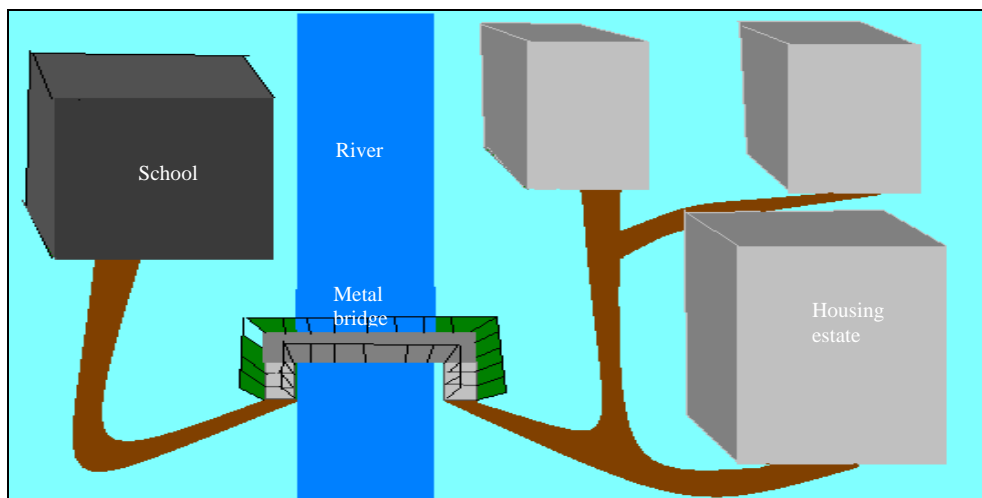




How Best to Maintain a Metal Bridge?

Student Activities

Scenario



The diagram shows a newly built housing estate (on the right) separated from the school by a river. To gain access to the school a bridge has been built over the river. As this is only a pedestrian access and it is estimated the bridge will only be needed for 18-20 years (a new school will then be built on a different location), it has been decided that the bridge should be constructed of iron.

But will the bridge last for 20 years ? How is it possible to ensure that it will last? And which method is the most suitable to maintain the bridge ?

Developer: Jack Holbrook

Institute: ICASE

Country: UK



Your Tasks

From your previous school studies you are aware that iron is very strong building material, but that iron rusts.

In this exercise you are asked to:

1. Participate in a brainstorming activity to indicate your knowledge of rusting and to suggest factors affecting rusting.
2. Complete the worksheet provided.
3. Plan (in groups) a series of experiments to determine factors affecting the rusting of iron.
4. Carry out (in groups) the series of experiments to determine the factors affecting rusting of iron.
5. Write out the method for undertaking the experiments and the conclusions reached.

Give a possible formula for rust.

6. Suggest ways that iron can be protected so that the bridge can last a long time;
7. Experiment with wrapping iron with another metal to see if this can be a further protection method and to describe the experimental findings;
8. Make a decision about what form of protection, if any, is the *most appropriate* for the iron bridge;
9. Explain what is meant by *most appropriate* for these circumstances.

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