

What were they thinking? Landmarks and Mathematics - Teachers' Notes

Curriculum Links:

This open-ended investigation provides students with the opportunity to view famous landmarks through a mathematical lens. They are asked to take the perspective of a designer of a famous human-made landmark and conduct their research with a focus on the application of mathematical concepts. This is a "springboard" investigation that could be a first step in a more in depth investigation on a technological or cultural study. There are direct links to both the Technology and Social Science curriculums as well as the Material and Physical World strands of the Science curriculum. Furthermore architecture and aesthetics can be investigated from an Arts perspective.

Background:

The level of maths required for this investigation is dependent on the depth to which the student goes to understand the elements of structural design. This can be done in a superficial way by simply identifying the characteristics of shape and angle and a statement of statistical facts about a structure. Students should be supported to work with calculations in this investigation and relate the numbers to the design. On the student sheet there are suggestions about how Geometry, Measurement, statistics, and estimation can be investigated.

Suggestions:

Creating a scale replica is a valuable task for students interested in design, as it requires working with measurement ratios as well as the practical materials side of technology and science.

Ask students to consider whether they believe there is a limit to how high skyscrapers will get? What forces impact on the structure when building for height? How do designers try to control for these? What about how long of a span bridges of various designs could support?

Visiting websites with photos of landmarks is a good first step. Many students have seen these structures and may even know the names but have never looked at them from a mathematical perspective.

<http://designlike.com/2011/12/05/100-most-famous-landmarks-around-the-world/>

<http://www.hongkiat.com/blog/awe-inspiring-landmarks-around-the-world/>