Paper Clip STEM ACTIVITY

The humble paper clip is legendary in design circles. That's because it's changed so little once it took on its modern form over a hundred years ago. There have been some slight innovations. However, almost from the beginning, the paper clip was, simply, perfect.

The idea of fastening paper has been around since the 13th century. At first, it was done with ribbon. Centuries later, in the early 1800s, people started using straight metal pins. This wasn't ideal, either. It wasn't until 1899 that the paper clip as we know it today arrived. That year, a Norwegian inventor named Johan Vaaler introduced the design. It was a piece of wire, bent into a pair of loops. Paper would be pressed in between. The real key to this design, however, was the material.

In the second half of the 19th century, low-cost steel was readily available for the first time. Steel has an amazing balance of strength and flexibility that hadn't been seen before. Steel could be shaped into things like pipes and tracks without losing strength, and without rust. You could also, of course, easily bend steel wire. This made the paper clip possible. Vaaler had the perfect material, which allowed him to make the perfect design. The two steel loops were incredibly strong, strong enough to hold papers together. The wire could also bend enough to fit the different thicknesses of different stacks of paper.

A few years after Vaaler's design arrived, an American office-supply manufacturer was churning out these inexpensive and perfect tools. They haven't changed much since. There are different colors, different shapes and sizes, and even no-skid models with ridges. However, the basic design hasn't changed since the beginning - a stainless-steel wire coiled into two loops. It is still the perfect design.

1. What were some early ways that people fastened paper together?

2. What qualities of steel make it ideal for paper clips?

3. Why has the basic design of paper clips created by Vaaler not changed much over the years?

Paper Clip STEM ACTIVITY ANSWERS

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1. What were some early ways that people fastened paper together?

Early ways of fastening paper included ribbon and straight metal pins.

2. What qualities of steel make it ideal for paper clips?

Steel has a balance of strength and flexibility. The strength of steel allows it to hold papers together. The flexibility allows it to be shaped into the paper clip design and allows it to be bent to fit different thicknesses of paper.

3. Why has the basic design of paper clips created by Vaaler not changed much over the years?

The basic design was functional and worked well that no major improvements were needed.

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Objective: Your challenge is to make your own paper clip design using wire. You can come up with any possible shape but the paper clip must be able to hold papers together and be removed and refastened easily to qualify as a paper clip.

Sketch some paper clip design ideas in the box below.

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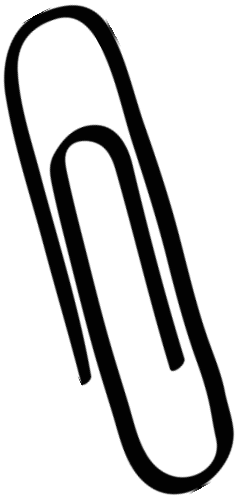
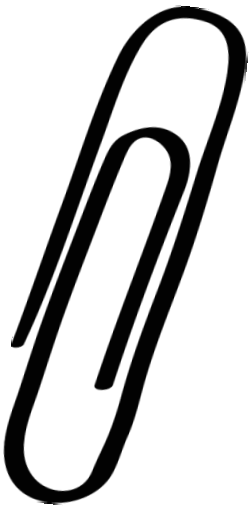
1. Reflect on your paper clip design. Was it effective? How do you know? Include whether your paper clip met the must-have characteristics (ability to hold papers together and ability to be removed and refastened easily) in your response.



2. Do you think your paper clip design is more effective or less effective than the traditional paper clip? Explain your answer.



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