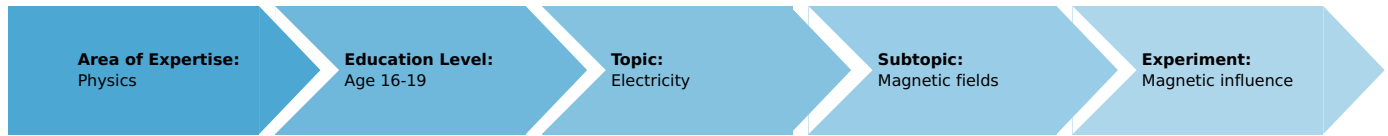


# Magnetic influence (Item No.: P1432300)

## Curricular Relevance



### Difficulty



Intermediate

### Preparation Time



10 Minutes

### Execution Time



20 Minutes

### Recommended Group Size



2 Students

**Additional Requirements:**

**Experiment Variations:**

**Keywords:**

## Task and equipment

### Introduction

When bringing a magnet closer to two sheets, these become magnetized and function themselves like magnets. This phenomenon is called magnetic influence analog to electrical influence.

### Task

### Equipment

Position No.	Material	Order No.	Quantity
1	Demo Physics board with stand	02150-00	1
2	Plate holder	02062-00	1
3	Clamp on fixing magnet	02151-01	2
4	Bar magnet, l = 72mm	07823-00	2
5	Support rod with hole, stainless steel, 10 cm	02036-01	1
6	Plate electrode, iron	07853-00	2
7	DIN A4 or letter paper, adhesive tape		

## Set-up and procedure

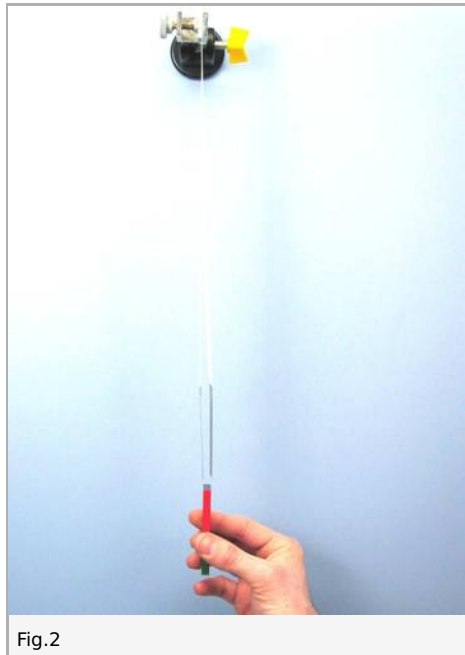
### Set-up

- Cut two strips from the long side of a piece of DIN A4 or letter paper, approx. the width of the iron sheet (20 mm), and fasten it with adhesive tape to the ends of the sheets.
- Fasten the ends of the strips into the plate holder in the clamp so that the sheets hang at the same height closely together next to each other.



## Procedure

- Now the bar magnet is approached from below the underside of the sheet (hold the magnet upright), at first allow one pole to point up and then the other pole (Fig. 2).



- Place the strips so that the underside of one sheet is positioned at the height of the middle of the other sheet.
- Create a distance between the strips with the support rod on the second clamp (Fig. 3).
- Approach the magnet again from below, at first the south pole, then the north pole going up.



## Results and evaluation

### Results

If the magnet comes closer to the sheets from below, the sheets repel each other if they are hanging at the same height. If the sheets are hanging at different levels, then they attract each other. In both cases the magnetic pole that is approached is irrelevant.

### Evaluation

Both metal sheets are magnetized in the same manner by the magnet approaching from below. The magnetization created is called "influenced magnetization". If the magnet is brought closer with the north pole side first, the north pole of the sheets also points up, the south pole is located on the underside of the metal sheets. Like poles are located next to each other. The sheets repel each other. If the other pole of the magnet is approached, then the magnetization in both sheets is vice versa. They repel each other again.

Even if the metal strips are hanging at different levels both are magnetized in the same manner. If they hang offset at least approximately at half length then they attract each other.

#### Remarks:

The attraction and repulsion behavior can be demonstrated more thoroughly with two magnets that are hung next to each other like the metal sheets:

- Two strips are cut from paper that have approx. the same width as the magnets (20 mm) and taped with adhesive tape to the ends of the magnet – each at the same pole.
- Fasten the ends of the strips with the magnet into the plate holder in the clamp so that the magnets hang at the same height next to each other.
- Then pull the one paper strip with one magnet upwards until the magnets attract.