Popular Explanations of Physical Phenomena: Broken Ruler, Oxygen in the Air and Water Attracted by Electric Charges

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Abstract

The inquiry-based approach to learning has proven to be quite effective, since Socrates, but it is difficult to found good questions to induce reasoning. Many sources explain wrongly some experimental results, which can be used as discrepant events. Some use the breaking of a ruler with a newspaper to "show" that the atmospheric pressure is powerful or "measure" the oxygen in the air using a burning candle or "explain" that electric charge attracts the water because the dipolar properties of the water molecule. Those are seemingly reasonable explanations but they are not true. Those demonstrations can be used to promote discussion and understanding from very simple reasoning.

References

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Another approach includes use physics mistakes on popular movies. A few examples are: some movies use the sound of the explosions in the battles between space ships, forgetting that the sound needs the air to propagate. The laser beams are quite visible on those battles, but in the vacuum there are not particles to disperse the laser beam allowing it to be seen. The invisible man should be blind because its eyes are no focusing the light in its retina.