Physics Through History

When we learn physics in school, we get it 'all at once', so discoveries and ideas that may have been added hundreds of years apart seem to be part of a steady flow of progress. In reality, science in general is full of wrong turns, and progress can be slow and faltering. Scientists are also influenced by the ideas of their time. Sometimes it can be very hard to break out of the conventional thinking in order to make an advance. It is useful and interesting to put scientific discoveries in an historical context. This gives a better perspective on how science progresses as well as a sense of how the historical context influences the scientific approach.

Exercise: A physics timeline

You have been given a set of cards with the names of some important physicists. Another set of similar cards contains a series of discoveries or theories and then, in the third pile, the cards show dates corresponding to periods of history.

Working in small groups, try to put the cards together so that the physicist is matched to the discovery and to the period. You can do this in any way that seems best to you, but it might be useful to start by seeing if you can pair the discoveries to the people. Some of them will be familiar to you from your lessons, so do those first. Once you have got all the discoveries linked with the discoverers, arrange the pairs in time order (and the discoveries give you clues as to the right sequence) and finally match them to the dates. You may be surprised by some of the answers.

When you have completed the physics timeline, you will be given another set of cards with important historical figures and their dates. Put these alongside your science timeline so that you can see what was happening in history when these events happened.

If you are allowed to in your school, use your smartphone to take a picture of your complete timeline. You may be interested to refer to it later.

Now that your timeline is complete, notice the connections between various aspects of our understanding about the universe. See how the ideas about the expanding universe and the laws of motion fitted in with discovering that the Sun was at the centre of the solar system.

Historians are aware of various types of **bias** that can affect the way in which we judge events in history. Throughout the period of our timeline, Western science is dominated by 'old white men', but key discoveries were also made at different times by Asian, Arabic and Eastern civilisations and by women. We also need to avoid the idea that our modern perspective is 'right' and that older views were 'wrong'. When looking back over the history of a branch of science (for example cosmology), it is easy to 'filter out' scientists and discoveries as they do not fit in with the prevailing current view.

Equally, it would be grossly inaccurate to regard the scientists of the past as being less able than current workers, simply because their ideas and techniques did not survive the test of time. The future may well judge that our own science was on the wrong track.

Questions for consideration

Discoveries appear to be being made at a greater rate as we get nearer to modern times. Why might that be the case?

Is it possible for a wrong idea to be important?

Would Newton or Galileo be important physicists if they were alive today?

Is progress in science an illusion? We think of modern theories as being 'right' and older ones as being 'wrong', but will not the future judge our theories in the same way?