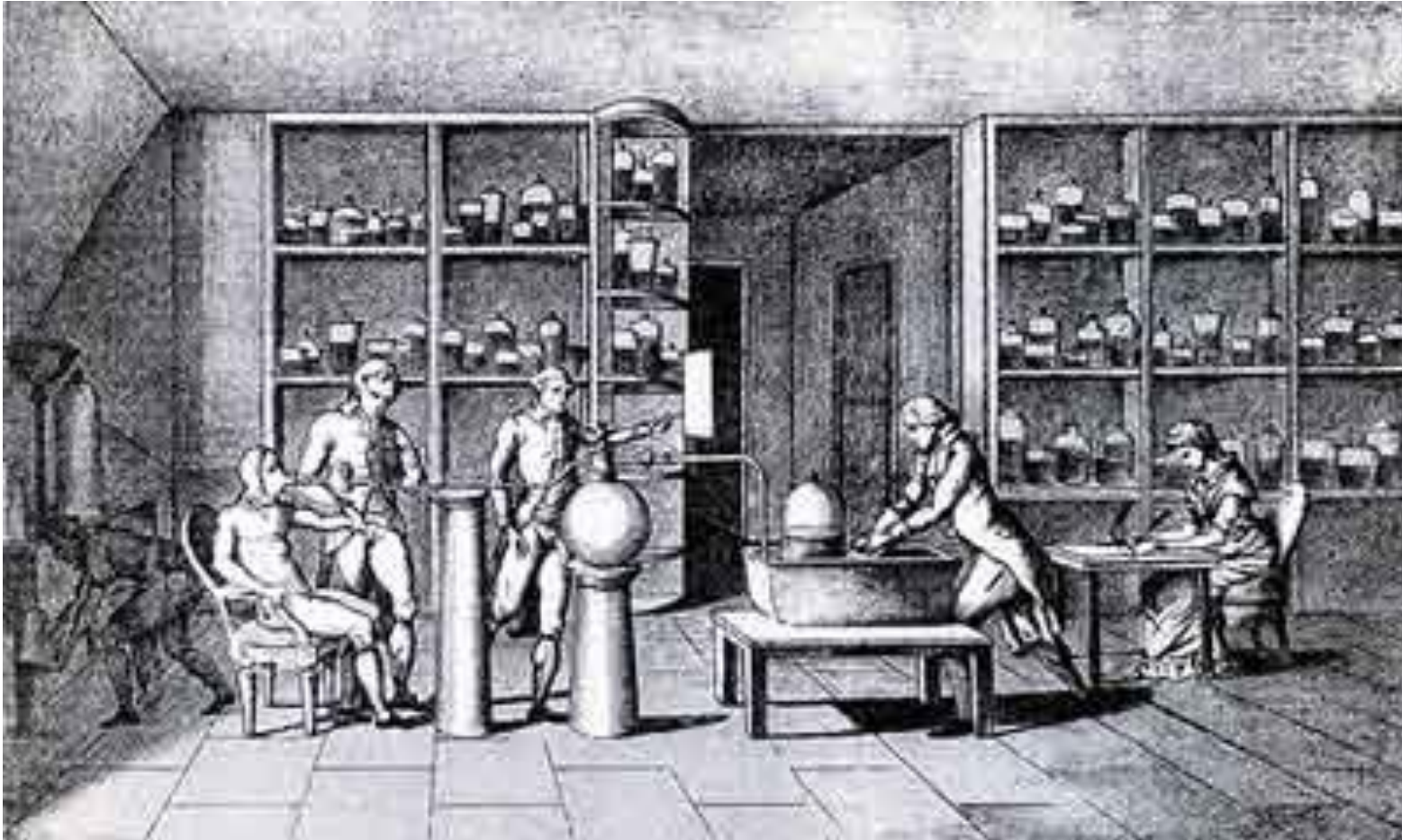




**History and Philosophy in
Science Teaching: The
Perspective of Artisans in
Scientific Discovery Using
Drama as Inclusion**

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The context: Lavoisier's laboratory

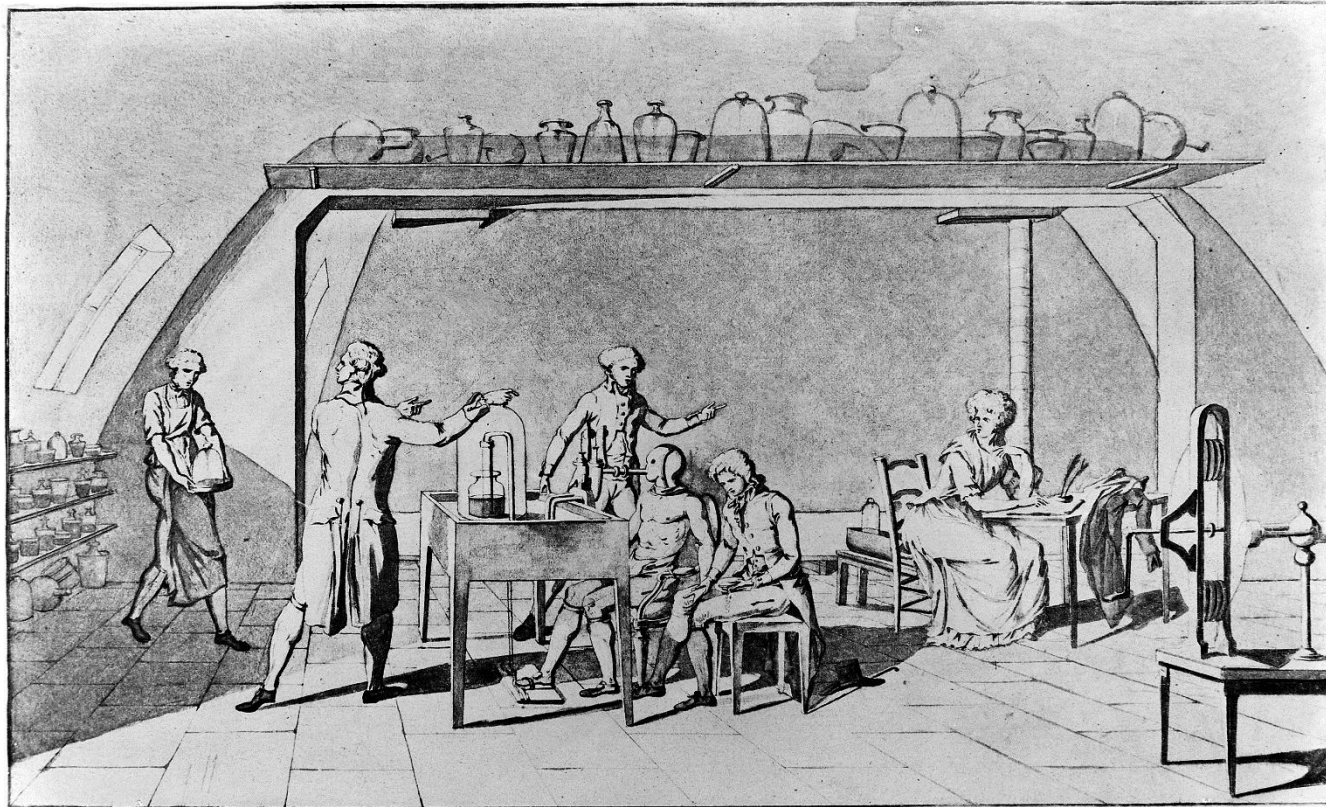


The context: Lavoisier's laboratory



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The context: Lavoisier's laboratory



Laboratory interpretation

1. The engravings identify the scientists, and Marie-Ann Lavoisier, but no one else.
2. The engravings indicate that artisans must have built it and were involved in its activity.
3. The engravings note the use of a trough (with mercury as the capturing liquid).
4. The trough is at the centre of the scientific discovery.
5. The artisans involved in the creation of the laboratory and its furniture are omitted.

Inclusion in historical accounts

1. Excluding non-celebrities favours a celebrity-only atmosphere.
2. The historical account based on the pictures does not promote social justice.
3. Q1 What evidence should we draw on to create an authentic role for artisans?
4. Q2 What evidence should we draw on to set the social and political context of the time?
5. Q3 What evidence should we draw on to relate parallel scientific discoveries of the time?
6. Q4 Can drama, using some licence, depict possible roles of the artisans?

Social and political context

Widely available from historical accounts.

Set in the chaos of The French Revolution (1789 – late 1790s).

Antoine Lavoisier was part of a tax company, who bought government taxes at a discount, and extracted the taxes from debtors, to make money. Antoine was also a member of the privileged class, as was his wife. He was executed at the guillotine in 1794 at the age of 50. His wife subsequently married Benjamin Thompson, but it was not a happy marriage.

Scientific discovery at the time

Antoine Lavoisier showed that diamond could be converted into graphite, that metals increased in mass during combustion, that sulphur was an element, and he devised a more systematic naming system for inorganic compounds. He laid the foundations for the Law of Conservation of Mass, using an accurate balance made by Fortin.

Marie-Anne Lavoisier became a chemist. Antoine entertained many international visitors and was seen as bourgeois, and an enemy of the Revolution.

Major philosophical tasks of the day were to identify elements, and the magical ingredient for acidic character.

The drama

The play has four parallel columns: a) the dialogue; b) related social context; c) the history of science at the time; d) commentary to link the first three columns.

The play is aimed at lower secondary school, 11-14 years old.

In action, the play, with accompanying notes, was given to read in advance. It is a short play. During the lesson, students choose from the 4 roles in small groups (4-6), and act it out in these groups. After discussion, roles are exchanged, and the play acted out again to take a different perspective.

The teacher listens to group discussions to link important points.

Attention was high during the acting, with little disturbance. Students expressed strong interest because of the human nature.



Conclusion

Constructing an authentic drama requires much collection of evidence, a compilation of the evidence to show the Nature of Science where all are included, and writing in appropriate language.

Some artistic licence was involved, such as the input from the stone-mason. The pictures are often not clear as to the nature of the trough material.

The human story was highly motivating for the students.