



LET NOT YOUR MAJOR LIMIT YOU!!!

「History of Science」 and 「Creative Thinking」 Class Pairing

201422963, Leticia A. Adase, Professor Chung Jae Young

Objectives

In the days of Thales and Aristotle, scientists made 'statements' and 'assumptions' based on their observations of their environments. Recently people are using schematic approaches to develop or manufacture new things. A study to come up with differences and similarities between the way scientific discoveries were done in the past and how they are carried out in modern days. Through this study, I came up with some interesting facts that will help everyone especially those interested in following their passion with no hitch.

Class 1 : History of Science

History of science deals with the discovery of science. Thales, often referred as the father of science, said *arche* of all things being water. Empedocles postulated four primary elements – earth, air, fire and water – and the forces of love and strife. Although there were contradictions as to what the 4 elements stood for, it remained the starting point of science.



Class 2 : Creative Thinking

Creative thinking is an artful way of coming up with new things. In the past discoveries were done based on what a person could do. These days a lot of people have come up with how designs are done. This includes but not limited to:

1. **Discovery** : Understand the Challenge → Prepare Research → Gather passion
2. **Interpretation** : Tell Stories → Search for meaning → Frame Opportunities
3. **Ideation** : Generate Ideas → Refine Ideas
4. **Experimentation** : Make Prototypes → Get Feedback

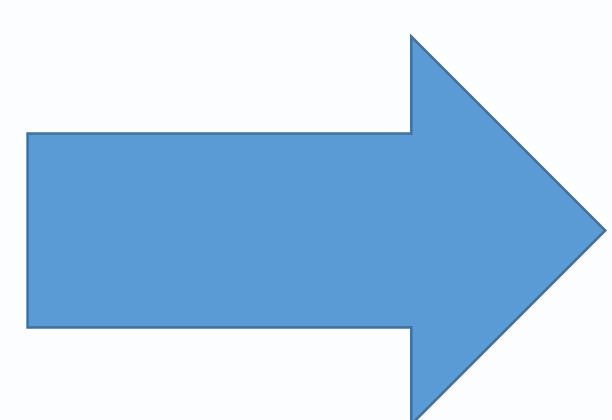


Merging/Pairing Two Classes

Looking at discoveries from old and new, there is no vast differences but just a good definition of what it is and a guided steps to discover. As for Aristotle, Thales, Parmenides, Archimedes, Michael Faraday, these people were all described as but not limited to psychologists, mathematicians, inventors, sociologists. Their fields of interest included mathematics, physics, engineering, astronomy, invention, medicine etc. Taking Faraday Michael for example he researched on magnetic field around a conductor and later discovered the principle of electrolysis. Also, as a chemist he discovered benzene from which we have a benzene burner. There is also the 4th step of creative thinking, experimentation. Chemist Joseph Priestly dealt with phlogiston, air gases, i.e. nitrous air, acidic air etc. Carl Wilhelm Scheele; acids. Antoine Lavoisier noted the role of oxygen in combustion. He named oxygen and hydrogen which are classified “air” in History of science. Sir Isaac Newton was a mathematician and a physicist discovering gravity in relation with the ‘earth’. When we look at the steps to design or manufacture, there are, almost always, passions and interest rather than one’s field of studies.

Conclusion

Can a scientist be only a scientist? Going back to history where even the basis from which all other assumptions were made, there was no way an invention or a discovery could be made based on only one area of studies. Earth, Water, Fire, and Air were interconnected where one element changes from one state to another. I believe that for a more lasting and efficient discoveries as it was in the past, scientists should have interest in other areas. Which means our educational system can also be made flexible for every student to crossover subjects and majors of their interest. This will make learning more relevant, enjoyable and compatible.



The brain with interest in different area.

References

David Williams Hauck, "Azothalchemy." *Working with the elements*, page 1
 Ideo, "The design process." *Design thinking for educators*, 2nd edition. P.8.