Pedagogical Approach and Resource Materials for e-learning and e-assessment of Chemistry

Science Education Section, EDB

15 December 2016

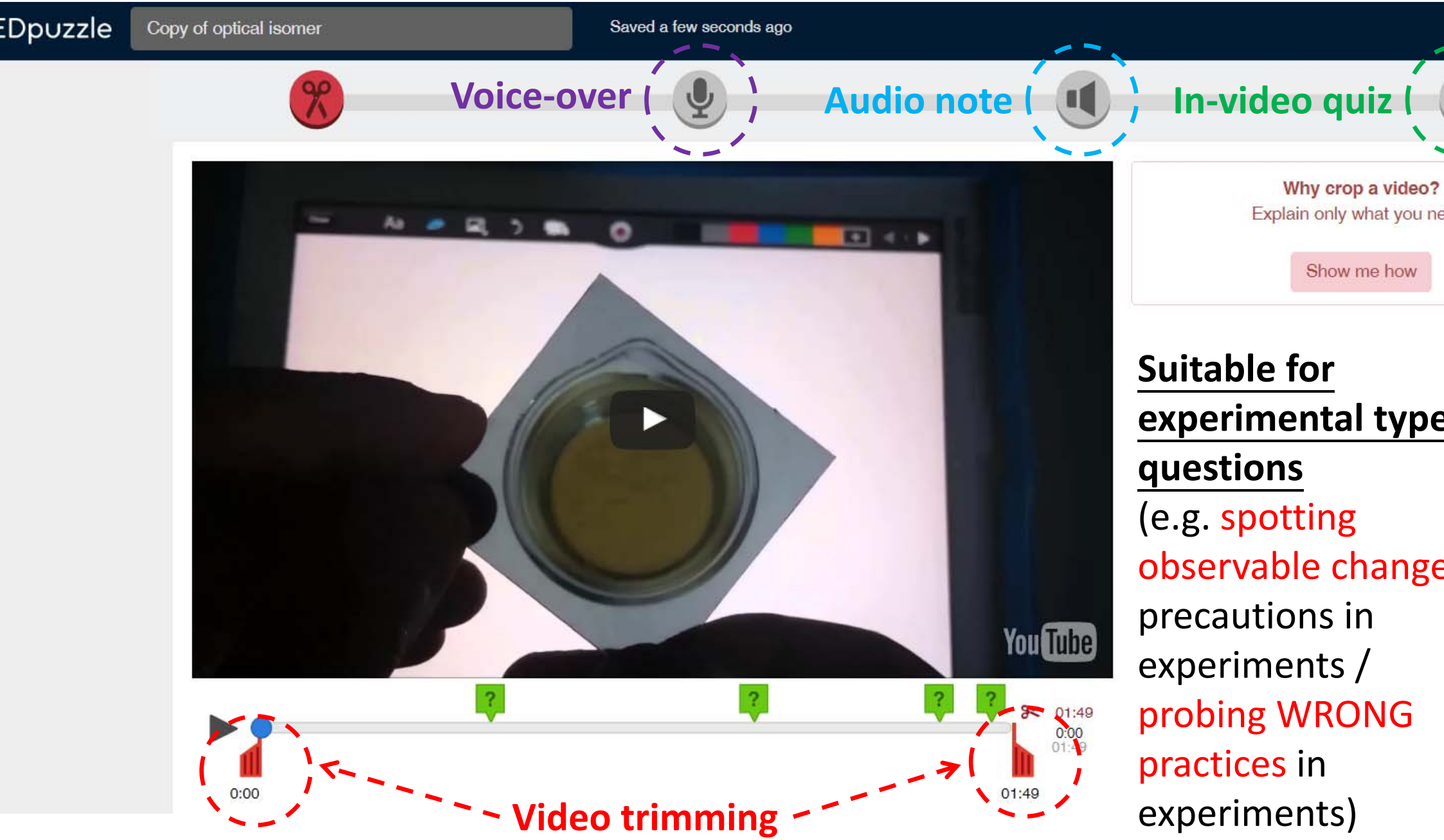
Resource materials and pedagogical approaches for chemistry learning, teaching and assessment

1. Flipped learning using video clips
2. Use of simulations
3. Using games in chemistry lesson - Kahoot!
4. Resources developed by EDB

(1) Flipped learning using video clips

- Using assessment quizzes with the supplement of video clips / diagrams..etc (e.g. Google Form)

- Using in-video quizzes (e.g. Edpuzzle)
- https://goo.gl/u38Avy



Suitable for experimental type questions
(e.g. spotting observable change precautions in experiments / probing WRONG practices in experiments)

Video resources to enhance learning in chemistry through experiments

Chemistry Experimental Techniques (化學實驗技巧)

http://minisite.proj.hkedcity.net/chemtech/eng/index.html

Youtube Channel :

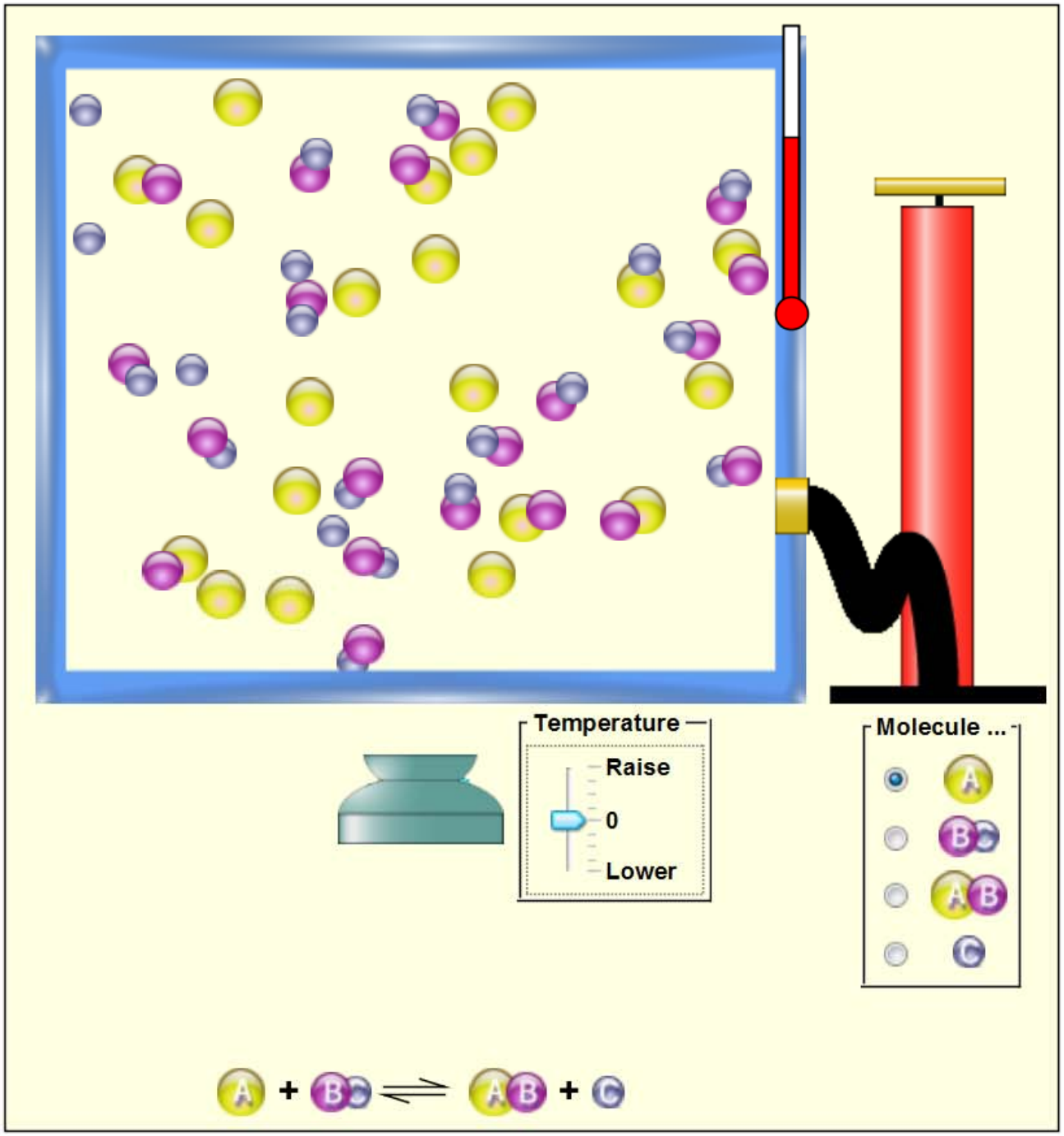
https://www.youtube.com/channel/UC4v5A0_3fCMiYLt6p9q-mVg/playlists

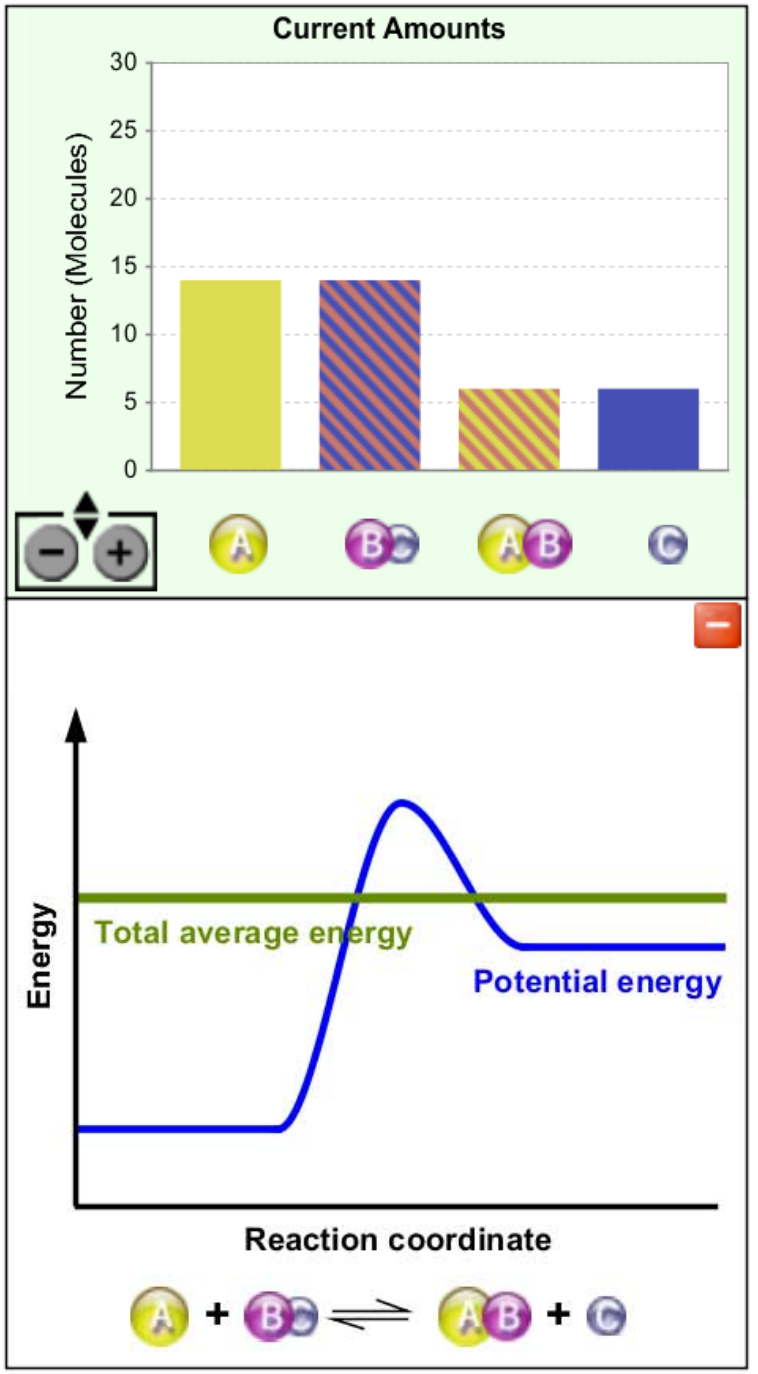
(2) Use of simulations

Why use simulations in chemistry learning and teaching?

- To visualise molecular events in a reaction / chemical interactions
- To simulate the results of chemistry experiments (NOT to replace experiments)

E.g. PhET Simulations - “Reactions and rates”


Temperature
Raise
0
Lower
Molecule ...
A
BC
AB
C
A + BC ⇌ AB + C


Current Amounts
Number (Molecules)
30
25
20
15
10
5
0
A
BC
AB
C
Energy
Total average energy
Potential energy
Reaction coordinate
A + BC ⇌ AB + C

(3) Kahoot!

Students:
https://Kahoot.it

Teachers:
https://getkahoot.com

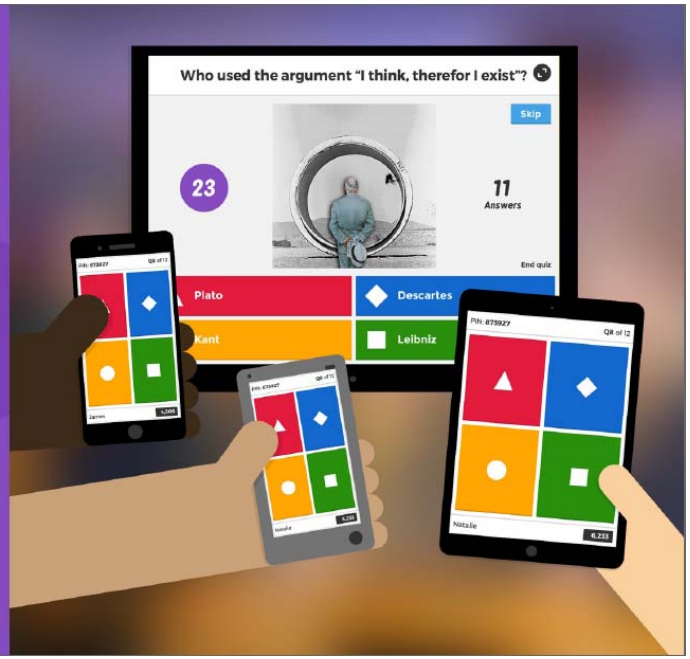
Play

Motivates everyone to look up!

Offers individual and group feedback

Fosters discussion and social learning

Everyone can feel success



evise, evise nd reinforce

evise and recap topics einforce knowledge re-assess and practice efore exams ision just got twice as e!

Quiz/Survey/Discussion

Turn learners into leaders

Challenge students to create their own kahoots:

- Individually or in groups
- Deepen understanding, mastery and purpose

Close the loop on learning!

Using “Kahoot!” to enhance chemistry learning in classroom

- [Ms LAM’s Video - to be embedded or played separately]

(4) Resources developed by EDB

(a) Google Site

http://sites.google.com/site/cdichem

(b) YouTube Channel – “chemistry edb”
https://goo.gl/97ZmHs

http://cd1.edb.hkedcity.net/cd/science/chemistry_resources/resources.html

Learning and Teaching Resources for SS Chemistry and Combined Science (Chemistry Part)
高中化學科和組合科學科（化學部分）的學與教資源

Introduction
This website compiles various learning and teaching resources appropriate for Chemistry and Combined Science (Chemistry Part) curricula. A wide variety of resources are listed and categorised according to the learning objectives and outcomes of topics. These materials include practical activities, scientific investigations, videos, simulations, animations, web-based learning packages, learning tools and reading articles, etc.
Teachers are encouraged to include suitable learning and teaching activities in their instructional design, so as to help their students to attain various learning targets. For the curriculum framework and discussion on learning and teaching strategies in Chemistry and Combined Science (Chemistry Part), please refer to Chapter 2 and Chapter 4 of the respective Curriculum and Assessment Guides.

簡介
此網站結集多項化學及組合科學(化學部分)課程的學與教資源。這些資源乃根據課題的學習目標及成果分類排列，種類繁多，包括實驗活動、科學探究、影片、電腦模擬、電腦動畫、網上學習套、學習工具及閱讀文章等。
教師可在教學設計加入適當的學與教活動，以幫助學生達至不同學習目標。有關化學科及組合科學科(化學部分)的課程架構及學與教策略的討論，可參考相關的課程及評估指引中第二和第四章。

	Topic 課題	List of resources grouped by topics 以課題分類的資源目錄
I	Planet Earth 地球 *	Download 下載
II	Microscopic World I 微觀世界I *	Download 下載
III	Metals 金屬 *	Download 下載
IV	Acids and Bases 酸和鹽基 *	Download 下載
V	Fossil Fuels and Carbon Compounds 化石燃料和碳化合物 *	Download 下載
VI	Microscopic World II 微觀世界 II	Download 下載
VII	Redox Reactions, Chemical Cells and Electrolysis 氧化還原反應、化學電池和電解 *	Download 下載
VIII	Chemical Reactions and Energy 化學反應和能量	Download 下載
IX	Rate of Reaction 反應速率	Download 下載
X	Chemical Equilibrium 化學平衡	Download 下載
XI	Chemistry of Carbon Compounds 碳化合物的化學	Download 下載
XII	Patterns in the Chemical World 化學世界中的規律	Download 下載