Rich Tasks via Rose

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https://db.tt/yBeHgAve

New GCSEs / PISA….

- Current science texts require learners to read **75** words (max) before a question.
- New Maths, English, Science, Welsh, PISA – could be up to **200** words

- **50**% "interpreting text" – domain knowledge (Science)
- **30**% "retrieving information" – from text, charts, graphs, tables
- **20**% "reflection and evaluation"

- Much more emphasis on "thinking" above "retention" of facts

→ Rich Tasks

What is a "Rich Task?"

RICH TASKS

- Meaningful (to the learner) context

- Encourage feedback & collaboration (self, peer and teacher)

- Generate and test hypotheses

- Encourage meaningful homework

- Represent ideas visually

- Promote and develop reading strategies

- Allow learners to define their own success criteria

- Make connections (between science subjects AND wider world)

- Longitudinal

Hattie J. (2009) Visible learning. Routledge
Marzano R., Pickering D. and Pollock J. (2001) Classroom instruction that works. Assoc for Supervision and Curriculum Development
Petty G. (2009) Evidence-based teaching. Nelson Thornes
William D. (2011) Embedded formative assessment. Solution Tree Press

ROSE
Relevance of science education

http://roseproject.no/

What teachers want…

1. Atoms and molecules
2. The greenhouse effect and how it may be changed by humans
3. How the human body is built and functions
4. Electricity, how it is produced and used in the home
5. How alcohol and tobacco might affect the body
6. How the ear can hear different sounds
7. How people, animals, plants and the environment depend on each other
8. The ozone layer and how it may be affected by humans
9. Sex and reproduction
10. How the eye can see light and colours

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What learners want...

1. How to exercise to keep the body fit and strong
2. How it feels to be weightless in space
3. The possibility of life outside earth
4. Why we dream while we are sleeping, and what the dreams may mean
5. How different narcotics might affect the body
6. How alcohol and tobacco might affect the body
7. What to eat to keep healthy and fit
8. What we know about HIV/AIDS and how to control it
9. How to perform first-aid and use basic medical equipment
10. Phenomena that scientists still cannot explain

What learners want...

Out of the 20 "top responses" only 1 is common:

Teacher rank 9
Learner rank 17

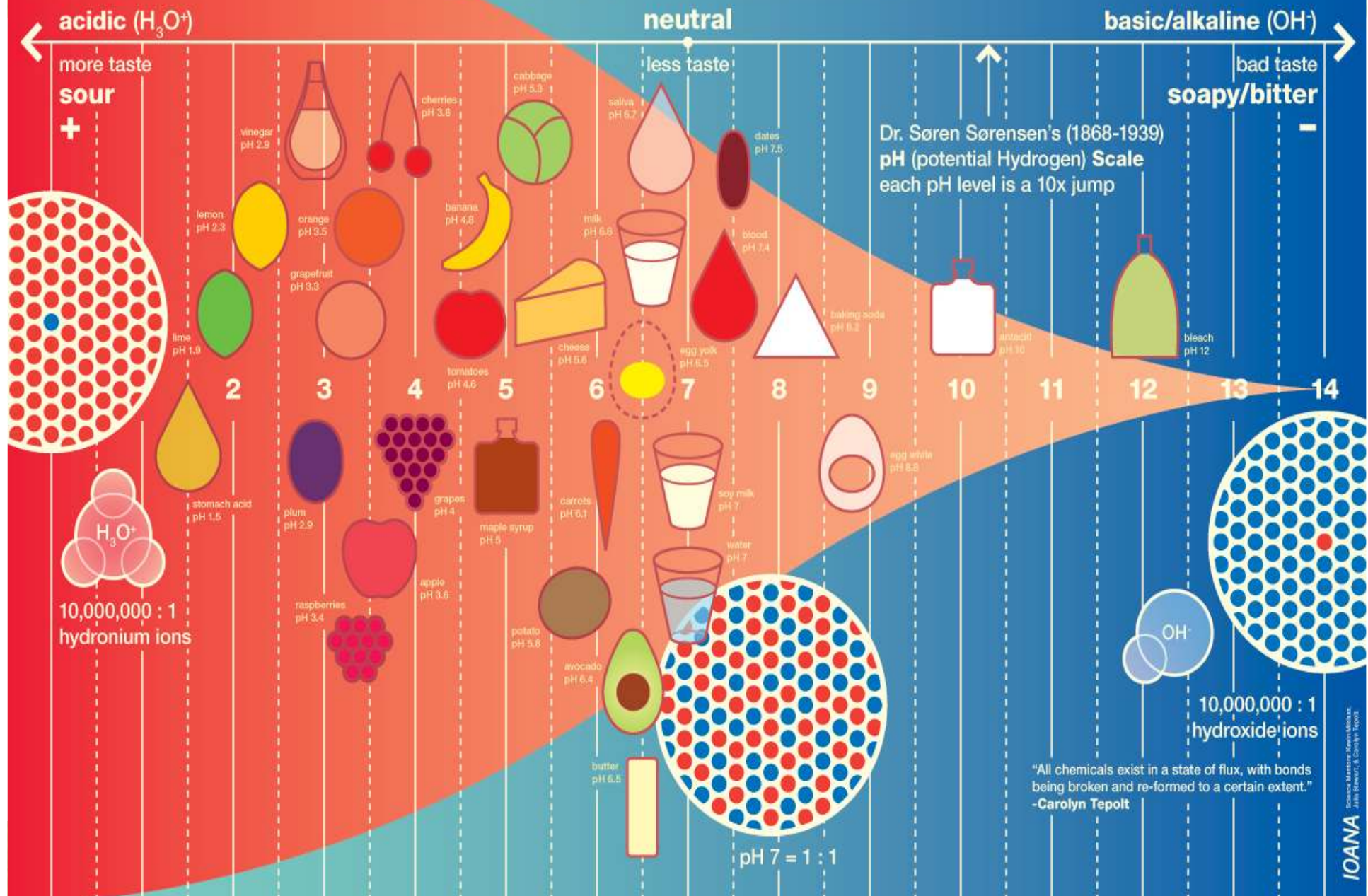"Sex and Reproduction"

What works…

- No pseudo context
- Start with some "facts" (possibly debatable / continuous)
- Discuss with the learners
  - **Co create the task**
  - Agree a range of outcomes
- Introduce some conflict
- Interact with "infographics"
- Assess the "richness"

Animal food facts……

ACIDITY

a "basic" chemical property relating taste to ion concentrations

MATERIAL PROPERTY

acidic (H_3O^+) | **neutral** | **basic/alkaline** (OH^-)

more taste
sour
+

less taste

bad taste
soapy/bitter
−

Dr. Søren Sørensen's (1868-1939)
pH (potential Hydrogen) **Scale**
each pH level is a 10x jump

vinegar pH 2.9
cherries pH 3.8
cabbage pH 5.3
saliva pH 6.7
dates pH 7.5
lemon pH 2.3
orange pH 3.5
banana pH 4.8
milk pH 6.6
blood pH 7.4
baking soda pH 8.3
antacid pH 10
bleach pH 12
grapefruit pH 3.3
lime pH 1.9
tomatoes pH 4.6
cheese pH 5.6
egg yolk pH 6.5

H_3O^+

10,000,000 : 1
hydronium ions

stomach acid pH 1.5
plum pH 2.9
grapes pH 4
carrots pH 6.1
soy milk pH 7
egg white pH 8.8
maple syrup pH 5
water pH 7
apple pH 3.6
raspberries pH 3.4
potato pH 5.8
avocado pH 6.4

butter pH 6.5

2   **3**   **4**   **5**   **6**   **7**   **8**   **9**   **10**   **11**   **12**   **13**   **14**

pH 7 = 1 : 1

OH^-

10,000,000 : 1
hydroxide ions

"All chemicals exist in a state of flux, with bonds
being broken and re-formed to a certain extent."
-**Carolyn Tepolt**

IOANA

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