

BERG: What's Inside?

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- Ontogeny recapitulates Phylogeny (Haeckel)
- Does a child increase in their understanding of internal anatomy of living organisms as they age?
- Do they use themselves as their template , does this diminish?
- Do they show they understand all living organs have the same needs? Achieved with varying anatomical solutions??

Consider

- How do learners build up an understanding
- of the contents of the human body?
- This is conceptual development.
- What the learners tell you, or draw, is their expressed mental model (Gilbert and Boulter, 2000)
- issues- can 't draw, draw but not put all they know! Talk with them and drawing!

Scoring drawings- rubric of Reiss and Tunncliffe (2001) Organs & systems

Level 1 No representation of internal structure.

Level 2 One or more internal organs (e.g., bones and blood) placed at random.

Level 3 One internal organ (e.g., brain or heart) in appropriate position.

Level 4 Two or more internal organs (e.g., stomach and a bone 'unit' such as the ribs) in appropriate positions but no extensive relationships indicated

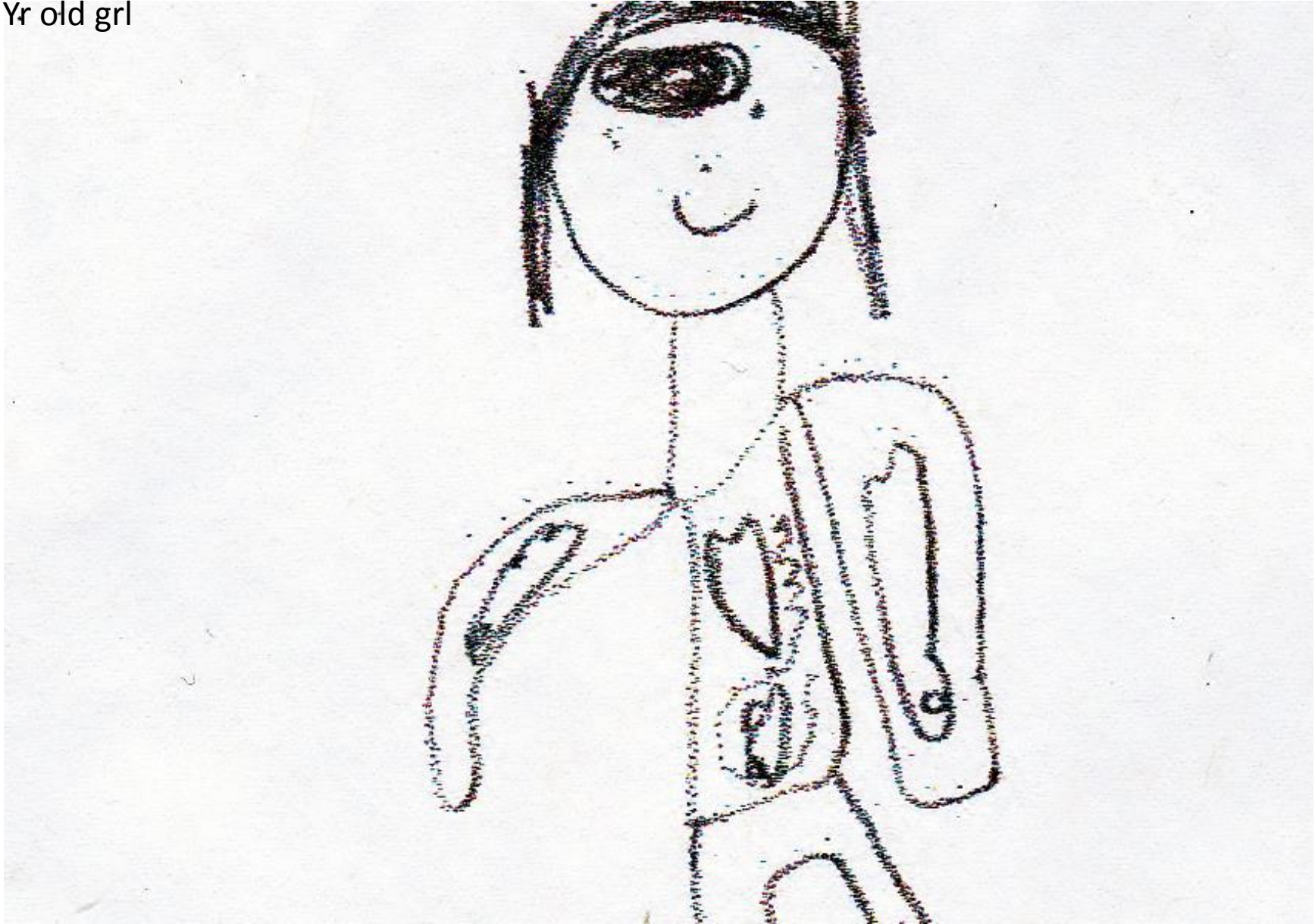
More complex understanding

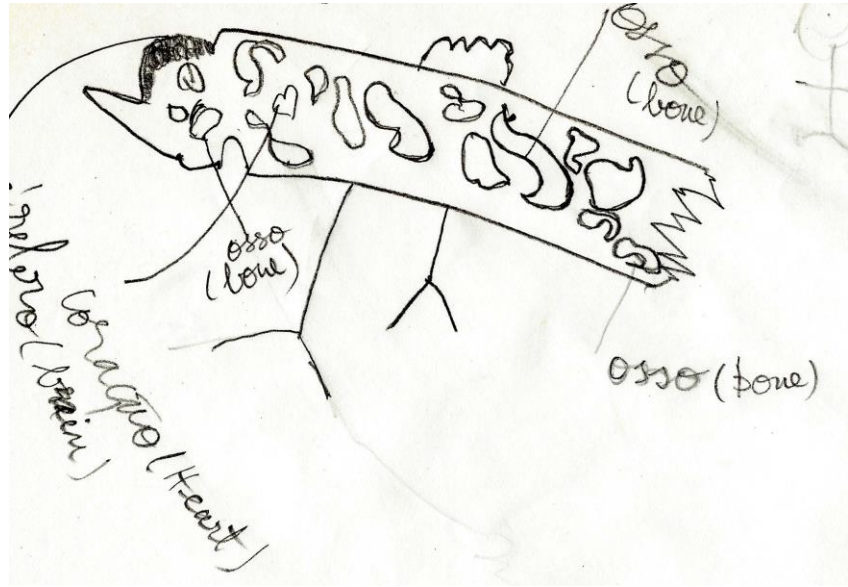
Level 5 One organ system indicated (e.g., gut connecting head to anus).

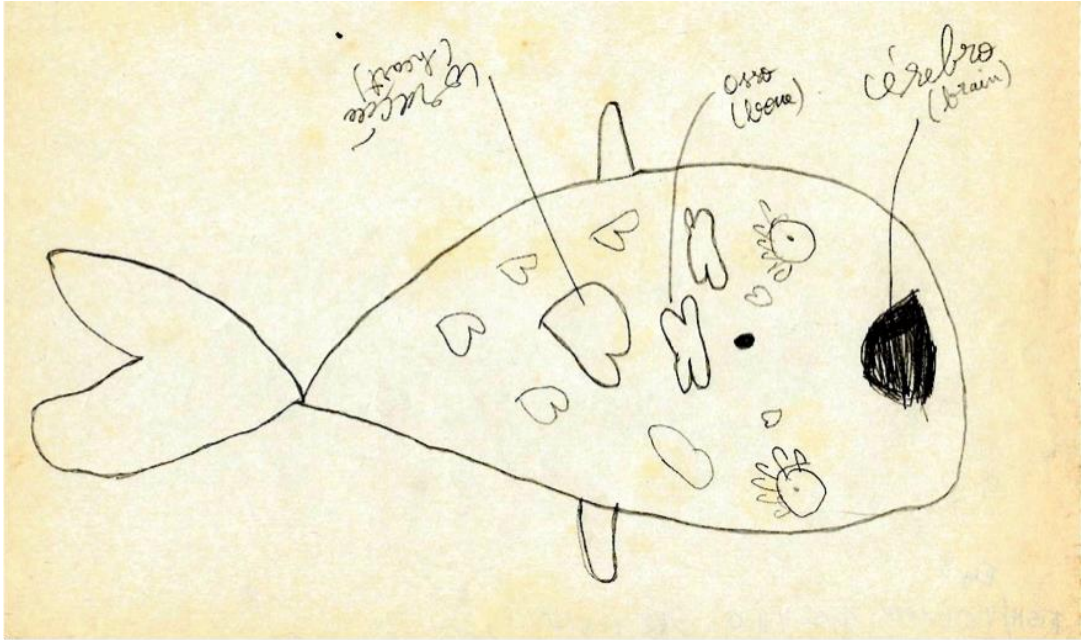
Level 6 Two or three major organ systems indicated out of skeletal, gaseous exchange, nervous, digestive, endocrine, urinogenital, muscular and circulatory.

Level 7 Comprehensive representation with four or more organ systems indicated out of skeletal, gaseous exchange, nervous, digestive, endocrine, urinogenital,

5 Yr old grl



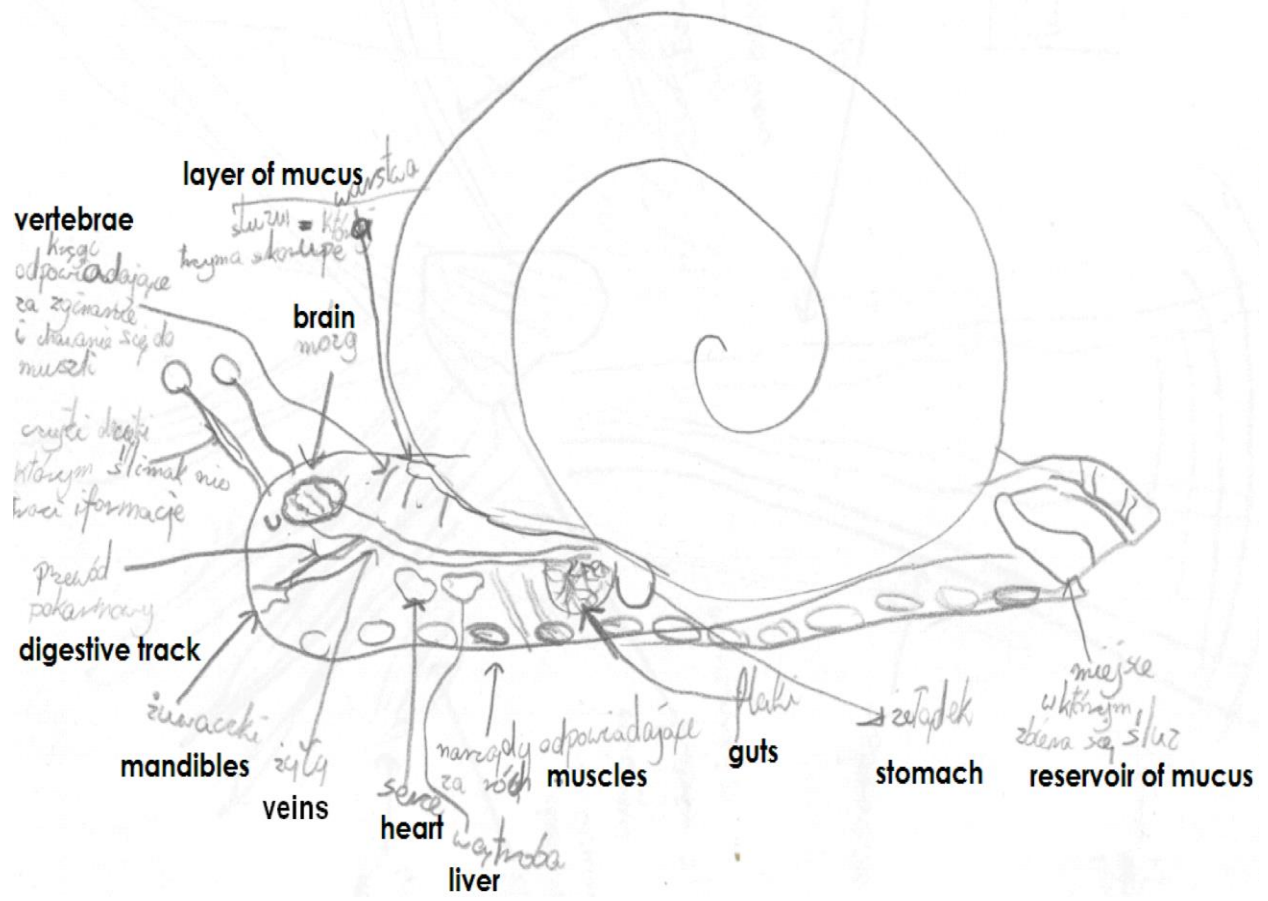


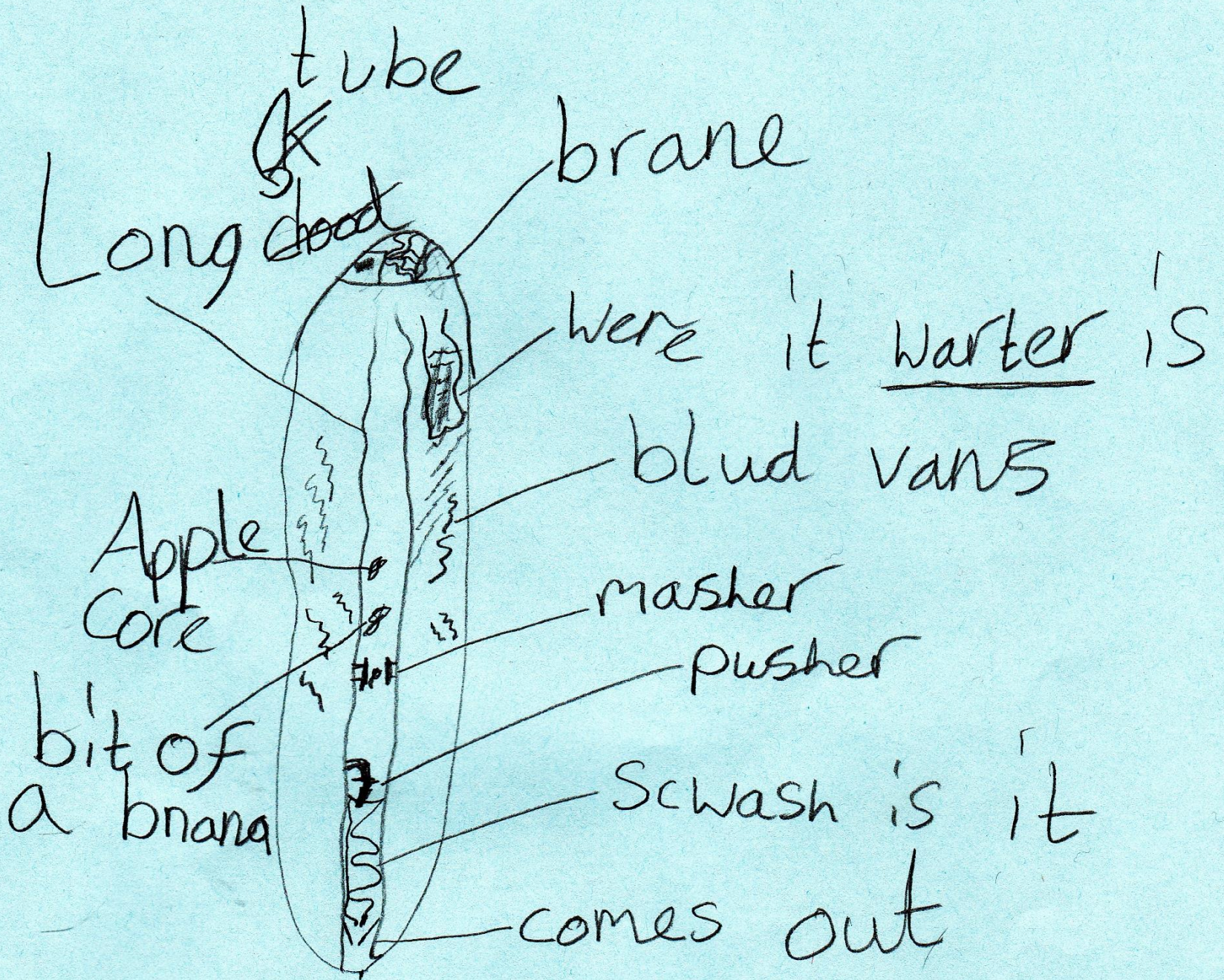


D 10 lat

D10.26
A 3 m, d, k, m
H - b
P - m

Girl, 10 years old





- What about plants?
- A woody seed bearer, a vascular plant
- Asked to draw a tree 7 yr old children drew inside the trunk a heart, some inserted tubes for water and several out in miscles to hold up branches

- Carivita, S. and Falchetti. E. (2005) [Are bones alive?](#). Journal of Biological Education 39:4, pages 163-170.
- Guichard, J. (1995) Designing tools to develop the conception of learners. International Journal of Science Education, 17, 243-253.
- [Mintzes, J. J.](#) 1984. Naïve theories in biology: Children's concepts of the human body. *School*

Some refernces

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