

The allosteric model

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"First, the teaching environment (classroom, museum, media) must provide learners with meaningful situations. We must trigger the desire to learn. To do so, the context must stimulate, motivate, concern or challenge learners, leading them to a questioning approach. Multiple confrontations are required: a single argument is not enough. We can either encourage pupil-reality confrontations, via surveys, observations, and experiments, or pupil-pupil confrontations, when learners work in groups and different ideas oppose each other. This can be completed by confrontations with (written or audiovisual) information. All these activities must be sufficiently pertinent to challenge current learner conceptions. They must convince learners that their conceptions are not adequate for dealing with the problem(s) at hand. Thus, the activities must lead learners to investigate, help them formulate their thoughts, and distance themselves from ideas which were previously taken for granted. Finally, they can help learners collect new data and broaden their experience.

It is important for learners to have access to an adequate level of formalism, as it encourages the elaboration of more adequate conceptions. This may take many guises (symbols, models, conceptual maps,...), and either provide food for thought, or assistance when thinking things through. In the latter case, formalism should encourage learners to rephrase problems, and/or consider additional links. In order to be operational, such formalism must be easy to access and manipulate. Finally, it must help organize diverse data, and can serve as an anchor when shedding light on reality.

Further, we need to provide situations in which learners can mobilize their new knowledge, and test its efficiency and limitations. Such situations must show that new data are more easily accessed or learned when using the new thought structures. Thus, learners learn to activate knowledge; in certain cases, they may also imagine individualized types of guidance .

(..) knowledge must be integrated into a network of 'organizing concepts'. (..).

Finally, learners must be able to implement 'knowledge about knowledge'. The main obstacle in this case is often the representation learners have of biology (*note of the editor: for us this is applied to any training content*) or of their own approach. Learners have trouble grasping the scope or importance of certain knowledge, or of the 'logic' underlying a given approach, without alternating learning moments with moments of 'metacognition' "

more on <http://www.unige.ch/fapse/SSE/teachers/giordan/LDES/index.html>