Laurillard's model: underlying principles

A]   Equal weight to teacher and learner:
        Teacher and learner both active

     What is learned depends on what others know
        (social distribution of knowledge)
     Academic learning is not passive, nor usually achieved
     without active contributions from teachers.

B]   Feedback and Convergence.
     Teacher and learner don't just do things separately.
     Learners need feedback.
     Teachers need to adapt this to each student's needs.
     Both need to produce versions and then relate them.

C]   Two aspects to any subject:
     Public (formal) conceptual description
                          (e.g. terminology)
     Personal experience (e.g. labs)
C2] (Reflection) Plus the links between them

(A)   Teacher centered or Learner centered?
3 Types of theory of the TLP

1)   The Transmission theory   (Teacher centered)

     The Nürnberg funnel
     Knowledge as a kind of substance that is transmitted.
     (The teacher is crucial, learning is passive.)

2)   Constructivism (Piaget)   (Learner centered)

     Learner centered approaches.
     (The learner is crucial, teachers cannot cause learning.)

3)   Conversational models of the TLP

     (Teacher and Learner equally crucial;
      and both must be active.)

Diana Laurillard   (1993;   page 103)
Rethinking university teaching (Routledge: London)

(A)   Teacher centered or Learner centered?
Aspects of a "teacher" element in TLP models

- Represent the Teacher as a key agent
- Set up 2 poles in learner interactions
- Represent both source and destination
        (cf. prior conceptions —> target conceptions)

- Represent asymmetry of T&L,
        of source and destination
- Represent the diffuse social nature of the
   destination   (socially distributed nature of knowledge)

- "Teacher" is a role or function, not a person
- A real teacher is a nexus for this function
- The metaphor of teacher as a hillwalk guide

(B) Feedback and Convergence:
Iteration and interaction
(why have them)

- Learners must act:
   applying (processing, re-expressing) the
   knowledge is important to learning

- Feedback from the (effects of the) action is
   important

- Feedback is specialised to that action:
   It is where learning becomes individual
   => Interaction, not independent action by T&L.

(B) Feedback and Convergence:
Types of interaction between T&L

1. T—>L
    To get various types of feedback to learner

2. T<—L   Teacher gets feedback:
        a) on topic: T may learn more about the subject
        b) on quality of learners' grasp of subject
        c) on teaching effectiveness

3. Convergence, negotiation
    a) Of the topic (product):
        E.g. T's concepts applied to L's examples

    b) Of processes being taught/learned:
    Teacher as showing/teaching by example
    How to grapple with the topic
    (learning the process not product of knowing)

(B) Feedback and Convergence:
Active learning => interactions with whom / what?

A crucial aspect of an adequate theory of the learning and teaching
    process is the interactions a learner performs;   thus, implicitly,
    acquiring feedback.

But interaction with (feedback from) whom or what?

Learners may / must (productively) interact with:

•   A teacher

•   Peers (fellow learners)

•   The world / concrete action

•   Self (reflection)

[Many theories emphasise one of these, and overlook
    others.]

(B) Feedback and Convergence:
Types of feedback to learners

1. Internal judgement of success by the learner.
2. Information on success or failure.
3. Information on   a) learner's output,
            b) correct output,   c) and the difference.
4. Diagnosis of which part of student output was
    wrong.
5. Explanation of why correct answer is correct.
6. Explanation of why student answer is incorrect

Feedback may come from learner,
    the task itself (intrinsic feedback),
    or teacher / surrogate (extrinsic feedback).

Feedback may be about the level of concepts,
    or of personal experience.

(C) Conceptual description vs. personal experience

Physics: Newton's Laws vs. how it feels to push
    (apply a force) to a trolley

Literature: Writing a critical essay vs. the emotions
    you feel when seeing a play.

Maths: doing arithmetic vs. counting or measuring
    physical objects.

Economics: The law of supply and demand vs.
   deciding to buy an item or setting a price.

Zoology: watching a bird vs. studying taxonomy.

Psychology: STM theory vs. trying to hold a phone
    number in the mind.

Main educational senses of "reflection"

[OED: "Reflect: go back in thought, meditate, consult
   with oneself, remind oneself or consider." 5th of
   6 meanings.]

• Thinking:
   about concepts? or about action / experience?
   Schön: iterate within practical experience alone

• Iteration: learning as a cycle, not a one-shot event
   [Laurillard]

• Relating concepts and experience [Kolb]
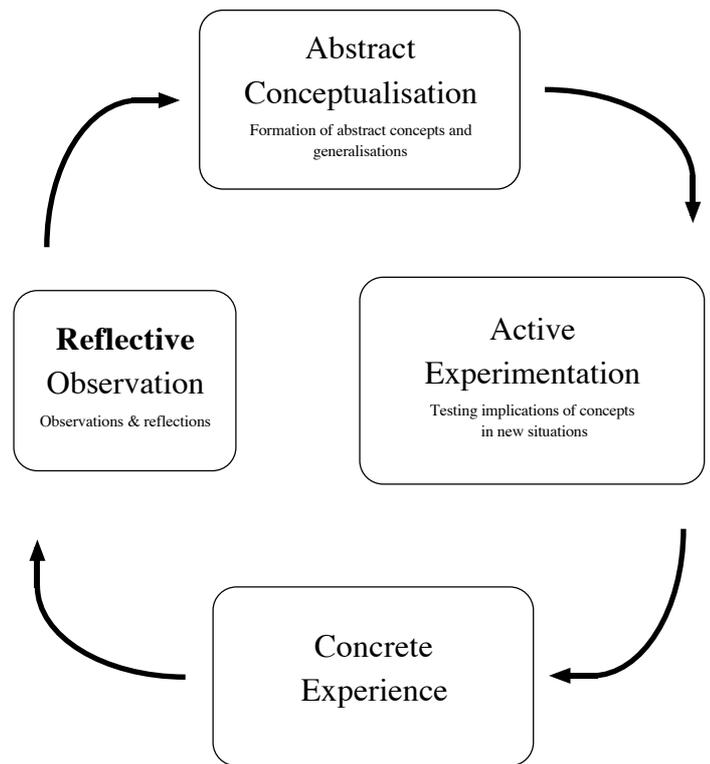
Kolb cycle

The concept of mathemagenic activity

An activity essential for learning?

   Ideal theoretical construct: but doesn't correspond to our

   experience. Like vitamins: one of many causes, all necessary.

An activity that always causes learning?

   Great for theory, but must be internal and invisible:

   so can't tell when it occurs, and not directly useful to designers.

   Like a force: a single sufficient cause.

An activity that sometimes causes learning?

   Great for practical work: we can define these as observable,

   use them in instructional design; but they may not cause

   learning, and for a theory that predicts learning we will need

   some other construct? A step model.

Rothkopf,E.Z. (1970) "The concept of mathemagenic activities"
   Review of educ. research vol.40 pp.325-336

Analysing this course section using Laurillard

Conceptual description (activities 1-4):
1: Lectures. Could be text if I wrote it, or readings if provided
2: Only the exercises, or private lecture note-taking
3,(4): Class discussion of student answers to the exercises

Tasks / actions / perceptions (activities 5-8):
These are actual learning actions of various kinds, in various
       conditions;
AND/or having students do teaching ("teachback" in study groups).

5(6-8): I have relied entirely on students' past or other experiences
       of doing learning actions; could have set exercises involving
       learning something small e.g. a poem, 13 random digits, ...
Could have set an exercise requiring students to teach something.
Or keeping a "reflective" diary of learning.

Reflection (activities 9-12):
The exercises in fact address this a bit.
9: Connect past experience of learning to various theoretical
       concepts.
10: Didn't do this. This would be like study-skills tutoring:
       prompting students to change their current study actions in the
       light of the theories taught here.
11: This OHP: me reflecting on whether and how to redesign this
       course, and the exercises in particular.
12: And yes, I search for better examples and descriptions of the
       ideas in order to connect better with the students.