

## Laurillard's 12 mathemagenic activities

### Conceptual description

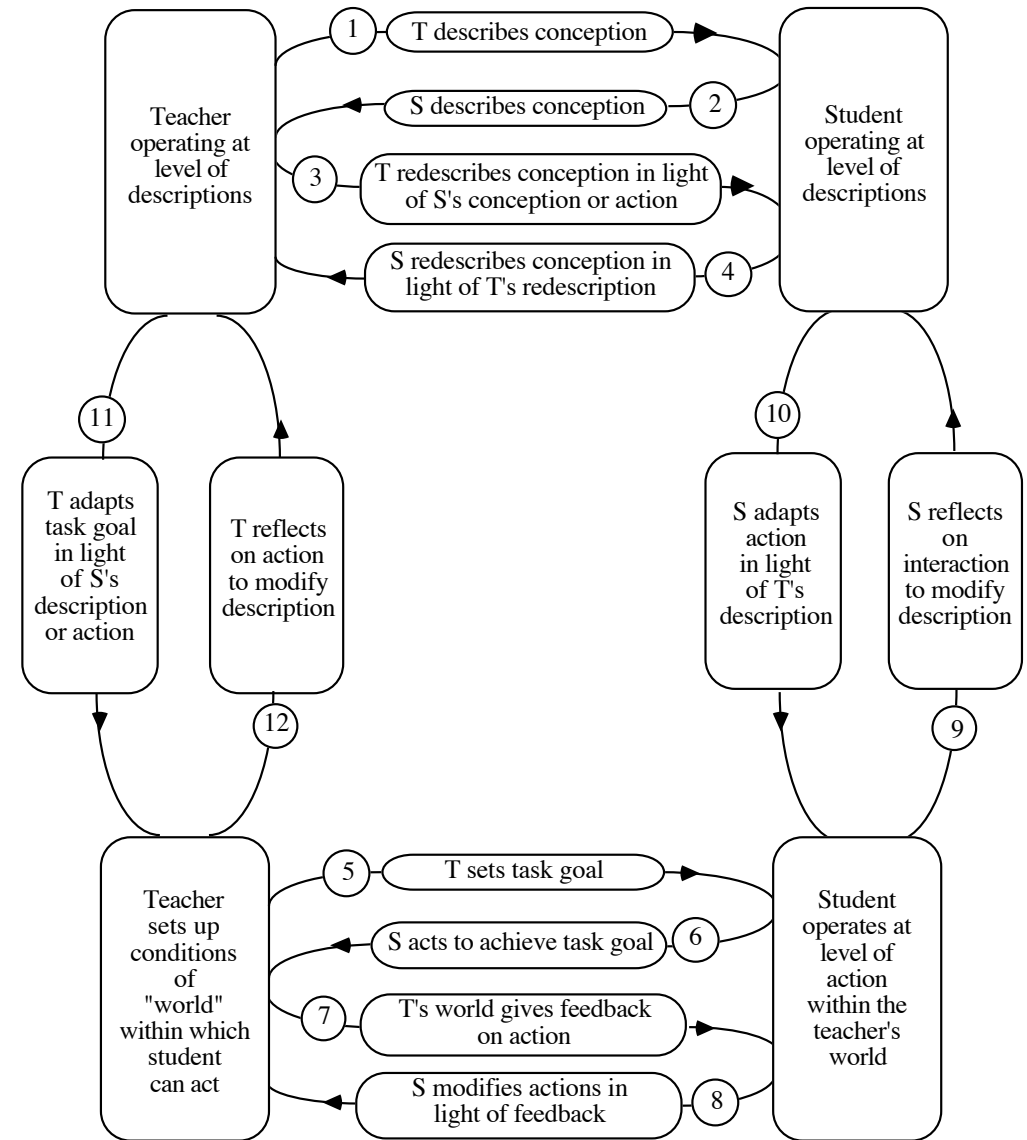
1. Teacher describes the conception.
2. Student re-expresses the conception.
3. Teacher re-describes the conception in the light of the student's expression or action.
4. Student re-describes the conception in the light of the teacher's redescription.

### Personal experience / action

5. Teacher sets task goal.
6. Student acts to achieve the task goal.
7. Teacher's world gives feedback on the action.
8. Student modifies actions in the light of feedback.

### Reflection: (linking description and experience)

9. Student reflects on action to modify description.
10. Student adapts action in light of concept.
11. Teacher adapts task goal in light of student's description.
12. Teacher reflects on action to modify description.



Laurillard's diagram of 12 activities for teaching and learning.

It is redrawn with the numbers modified from fig.II.1, p.103, in  
 Laurillard, D. (1993) **Rethinking university teaching:**  
 A framework for the effective use of educational technology  
 (Routledge: London).

**Learners benefit from others with and without special expertise, intention, or being personally known**  
 + indicates an activity initiated by the learner (proactive-ness)

<b>Helper's expertise</b>	<b>Intention to teach</b>	<b>Personal relationship (contingent action)</b>	<b>Not personal</b>
Unequal, staff, benefit not reciprocal	Intended	Teacher monitoring, Scaffolding of procedural skills + Ask a tutor	Lecturing, Writing a textbook, + Asking an expert
	Unintended	Role model (using a teacher as), (+) Imitating or observing someone more knowledgeable whom you know	+ Eavesdropping on strangers, Using a celebrity or hero as a role model, + Studying the career of a politician to gain similar success
Equal, peer, reciprocal benefit	Intended	+ Alternating roles e.g. testing each other, student reciprocal critiquing, The same but imposed by staff	Wikipedia, Anonymised versions of student reciprocal critiquing, + Posting a question to a forum
	Unintended	Peer discussion, + Borrowing lecture notes, + Spying on, imitating, or observing a classmate you know	Anonymous peer review, + Comparing your marks or actions to the class norm, + Listening to classmates' questions and comments, + Mutual help with the process e.g. ask where the classroom is.