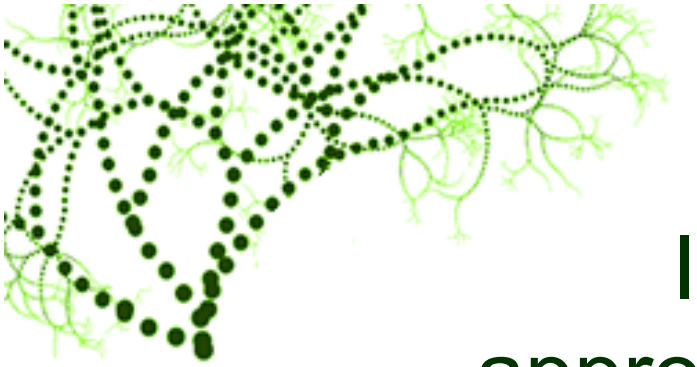

Implementing a constructionist approach to collaboration through a *learning design support environment*

Balancing users' requirements with researchers' theory-informed aspirations

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European LAMS Conference, 15th July 2010

T·L·R·P Technology Enhanced Learning

E·S·R·C Economic & Social Research Council

EPSRC Engineering and Physical Sciences Research Council

www.ldse.org.uk

To test the voting service…

- Which definition of Learning Design appeals to you most?
- Each answer choice has a 5-digit code e.g. 25348.
- To vote, use one of the following:
  - Text the code to **07624 806527**
  - Go to http://poll4.com and type the code (mobile & laptop browsers)
  - Tweet **@poll** and the code (e.g. @poll 25348)

The Learning Design Support Environment project

- Research and design an online environment for teachers to experiment
- Working with HE lecturers
- Building on previous pedagogy planner research with the addition of AI

Aims and premises of the project

- Have an impact on TEL practice
  - Adopting guidelines from theory, research, evaluation
  - Experimenting
  - Critically reflecting
- Premises about teachers' learning
  - Collaborative
  - Community of practice
  - Innovation through building on the work of others

Aims and premises

Premises underpinning research and evaluation work:

- Mediated action (Wertsch, 1994; 1998; 2002)
- People *(lecturers)* operating *(designing for learning)* with mediational means *(lesson plan templates – e.g. pencil & paper, Word; LDSE)*
- Sociocultural approach: human action in context
- Potential *to alter the entire flow and structure of mental functions* (Vygotsky, 1981)
  to have good tools is critical, because […] it's an opportunity to redesign materials effectively and make them meaningful. (IP)
- *…we should be on the lookout for qualitative transformation of that action rather than a mere […] quantitative change* (Wertsch, 2002)

Having an impact on teachers' practice

- The way they act and the way they think (Biggs, 2003) in relation to
  - Pedagogy (Pollard, 2010)
  - Technology
- At the individual and the institutional levels (and others in between) (Kaufmann et al., 1996, after Kirkpatrick, 1967)

➡ Learning design for [strategic] change in education

What evidence might we look for?

- A more principled approach to teaching and learning
  - *I line things up. I want them to get this out of this session, how do I get that. […] I think [what] they need to do and I need to do in order to secure that result for them.*

- rather than following one's own teachers:
  - *It's based largely, I think, on people's own experiences… on the grounds that it's like being like your parent…*

What evidence might we look for?

- Awareness of the value of theory:
  - *you do need that sort of level of engagement in kind of an intellectual context […] in order to better understand what it is you're doing, or probably to validate what you're doing or to extend what you are doing.*

- rather than a distrust of it:
  - *I can always think of an exception or a reason why it won't work, you know, or it's not like that for me, and then I get irritated and forget about it.*

What evidence might we look for?

- Using research into teaching and learning in order to justify one's approach:
  - *…tooling people up with, you know, […] 'this is appropriate for this module because… here are pedagogical reasons backed up with four items of scholarship and learning and teaching.'*
- rather than viewing teaching as a craft or skill:
  - *Higher education as a discipline I don't think is recognised by people who haven't thought of it already as being a discipline.*

What evidence might we look for?

- Concern with quality of students' experience
- Experimenting
  - *I've moved away quite a lot from just delivering subject content to trying to get students to think much more about… having different kinds of conversation with each other about whatever it happens to be that we're teaching, so they can learn from each other.*
- Critically reflecting on one's practice
  - *What the reflection can lead you to is the point where you go, 'Well, this is not working but I don't know how to fix it'… you need to be able to head into the theory behind it… Or, evidence-based practice.*

What evidence might we look for?

- Building knowledge collaboratively:
  - *… there's sort of an increasing need as well, in terms of developing a design, to do it as a community practice, to share and critique ideas.*
- Receptivity to ideas beyond one's home discipline:
  - *I got this lovely example of fulcrum, load and effort and a car crashing into a wall… And I thought, 'Well that's not what I do because I don't teach a concept that can be grasped like that.' And… I had an epiphany because I suddenly went, 'Oh, so when I'm teaching that means I could do this!' (Classics lecturer)*

What evidence might we look for?

- Awareness of how their beliefs influence their teaching may make them more open to TEL:
  - *teacher-designers who develop conscious awareness of… their beliefs… will be better prepared to consider what existing learning designs might be employed or repurposed (Donald et al., 2009, p. 180; also Ertmer, 2005)*

What evidence might we look for?

- Using TEL more creatively…
  - *Projecting student's brainwaves/ECGs from the computer wired up to the student onto the screen for the rest of the class to see and observe. (Student, Thema)*
  - *Operations Management course, Impulse and Discovery exercises - we used wireless hand devices to update live information on a central screen to simulate a virtual supply chain. (Student, Thema)*
- …or even starting to use it:
  - *They're medievalists. If it's not written on vellum, they're confused. (Student, Thema)*

Which is more important to you as a guiding principle?

A. Students' needs and preferences
B. Theories, models or frameworks relevant to learning and teaching
C. Both are important
D. Neither of these (i.e. something else)

Which of these learning outcomes is relevant to your subject area?

A. Grasp patterns of relationships
B. Bring appropriate concepts to bear in developing solutions
C. Understand how evidence is used in an argument
D. None of them

Users' requirements vs our aspirations: some examples

- The place of theory:

  Which is more important to you as a guiding principle in your design practice?

Users' requirements vs our aspirations: some examples

- Sharing across the disciplines:

  Which of these learning outcomes is relevant to your subject area?

Collaborative pedagogical innovation

The aim is to support teachers collaborating by:

- Adopting others' designs
- Using shared theoretical constructs
- Testing their own pedagogic designs
- Sharing designs

All these require common concepts and representations of teachers' learning designs

Theories of learning underpinning use of the LDSE

Social constructivism: 'the members of the community serve as active agents in the construction of outcomes and activities that produce a developmental cycle' (Shaw & Shaw, 1999)

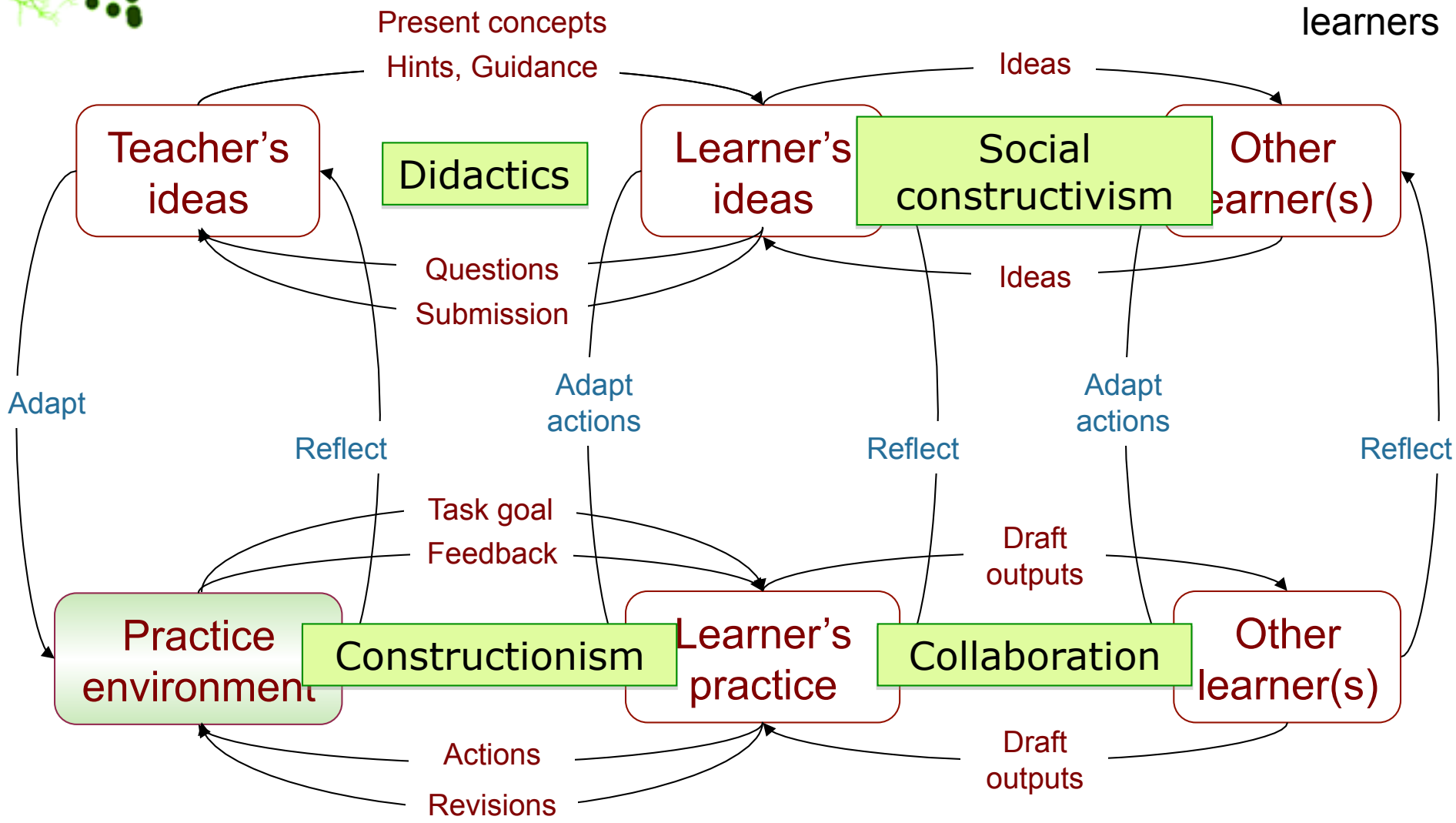
Collaboration: 'a coordinated synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem' (Roschelle and Teasley 1995)

Constructionist learning as 'building knowledge structures… in a context where the learner is consciously engaged in constructing a public entity' (Papert and Harel 1991)

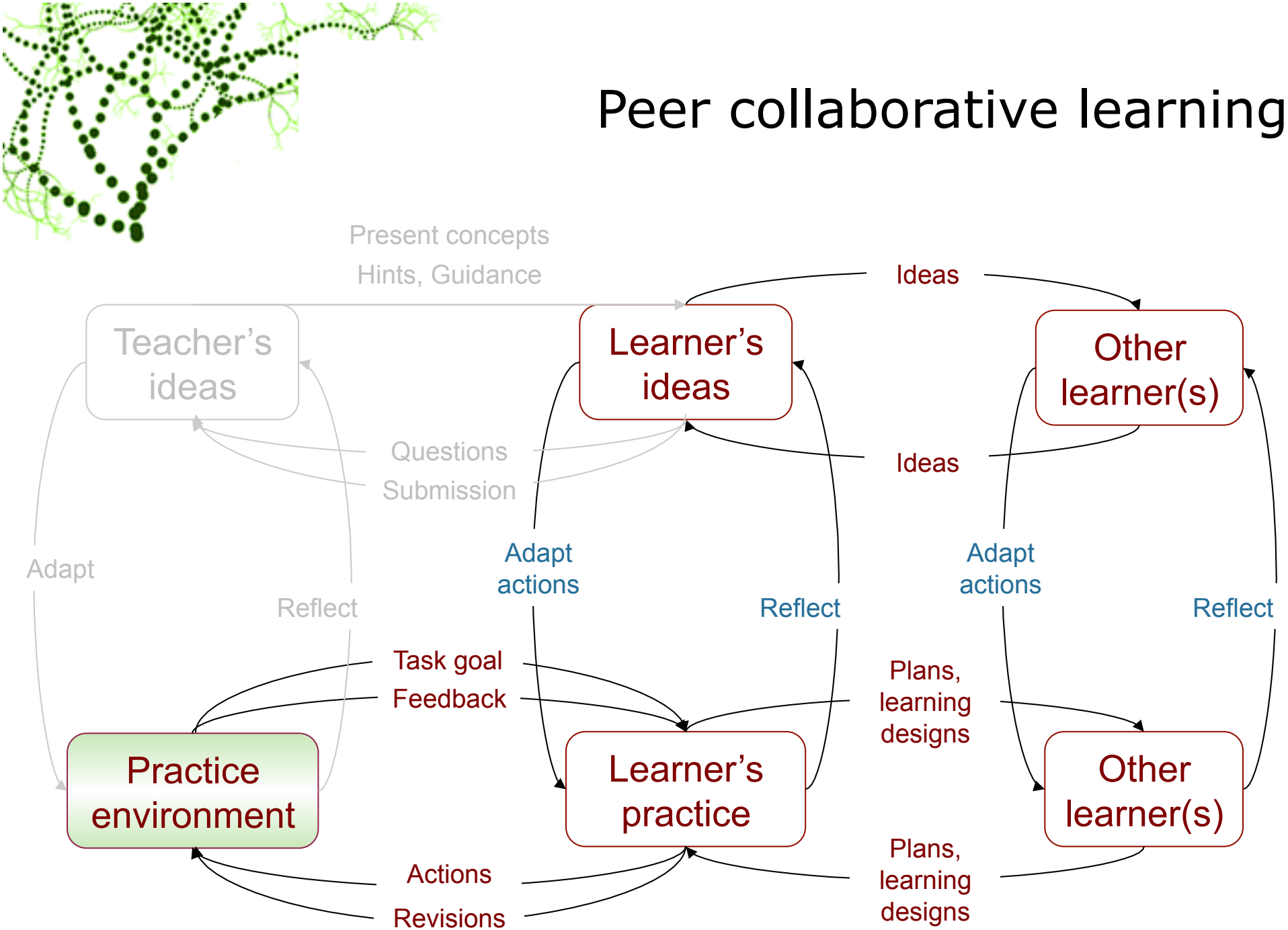
Knowledge building: "the capacity to create new knowledge and ideas… collaborative problem-solving… needs optimal environments for knowledge-building" (Scardamalia, 2010)

Learning through collaborating

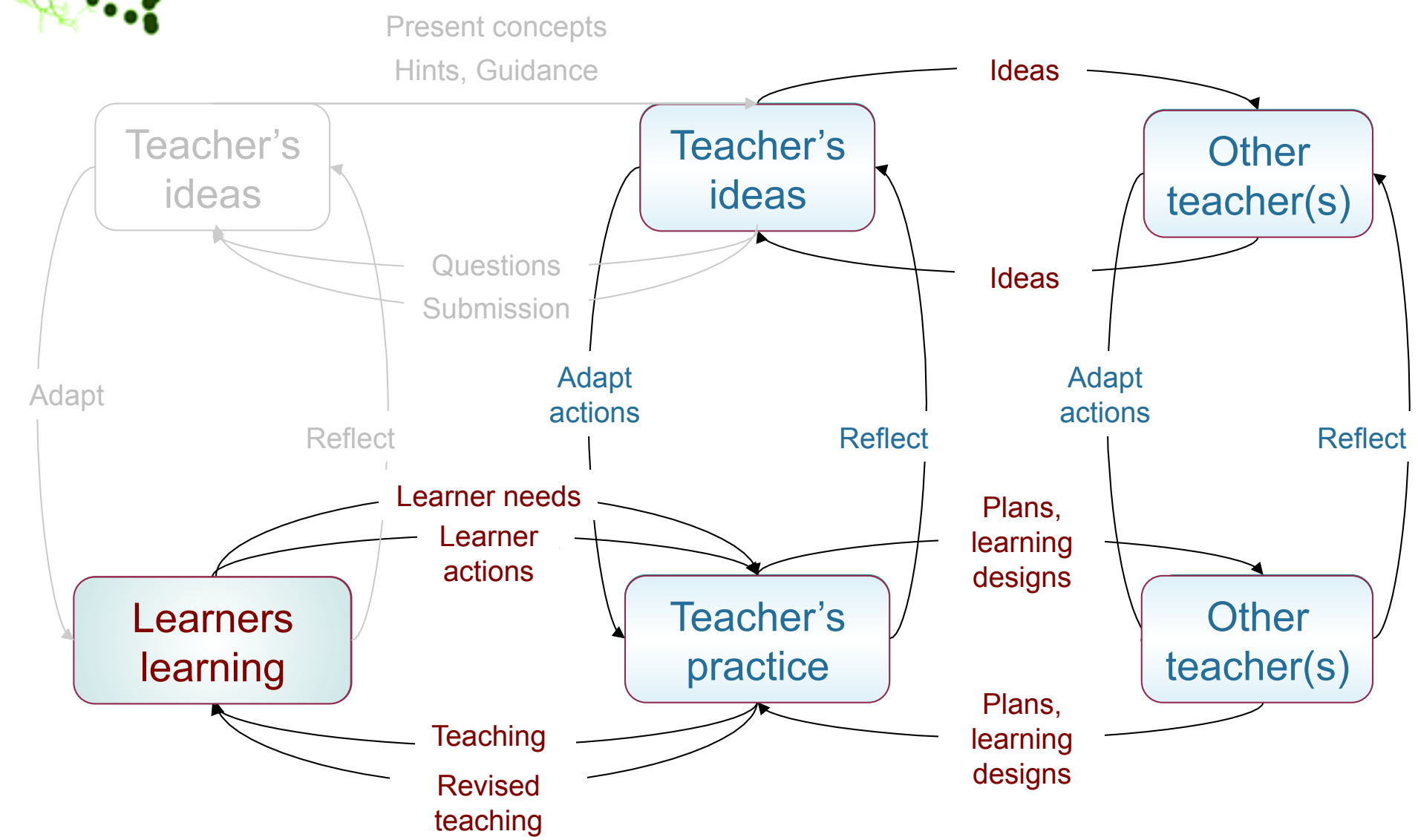
- an iteration between theory and practice, teacher and learner, learner and other learners



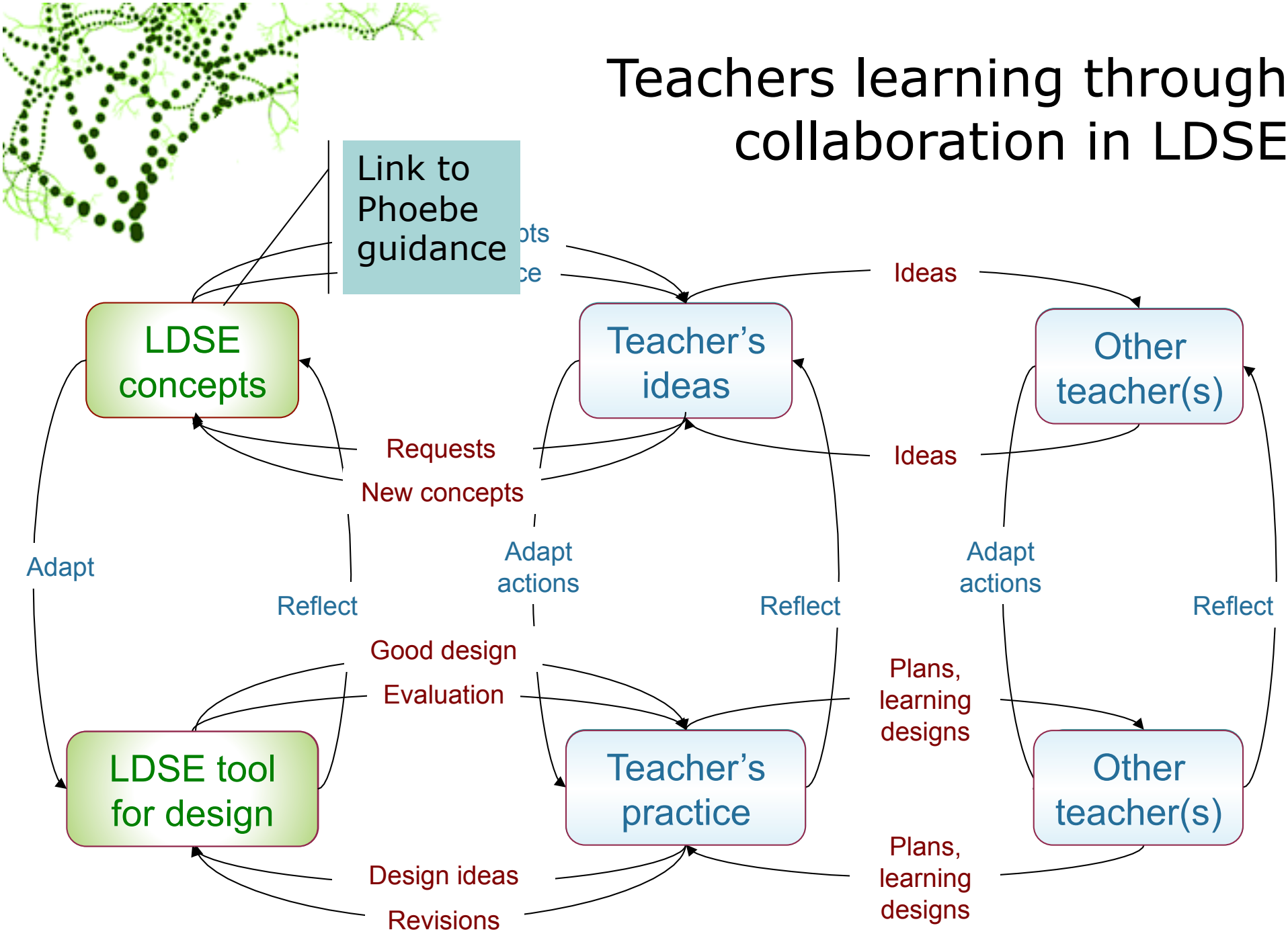
Peer collaborative learning



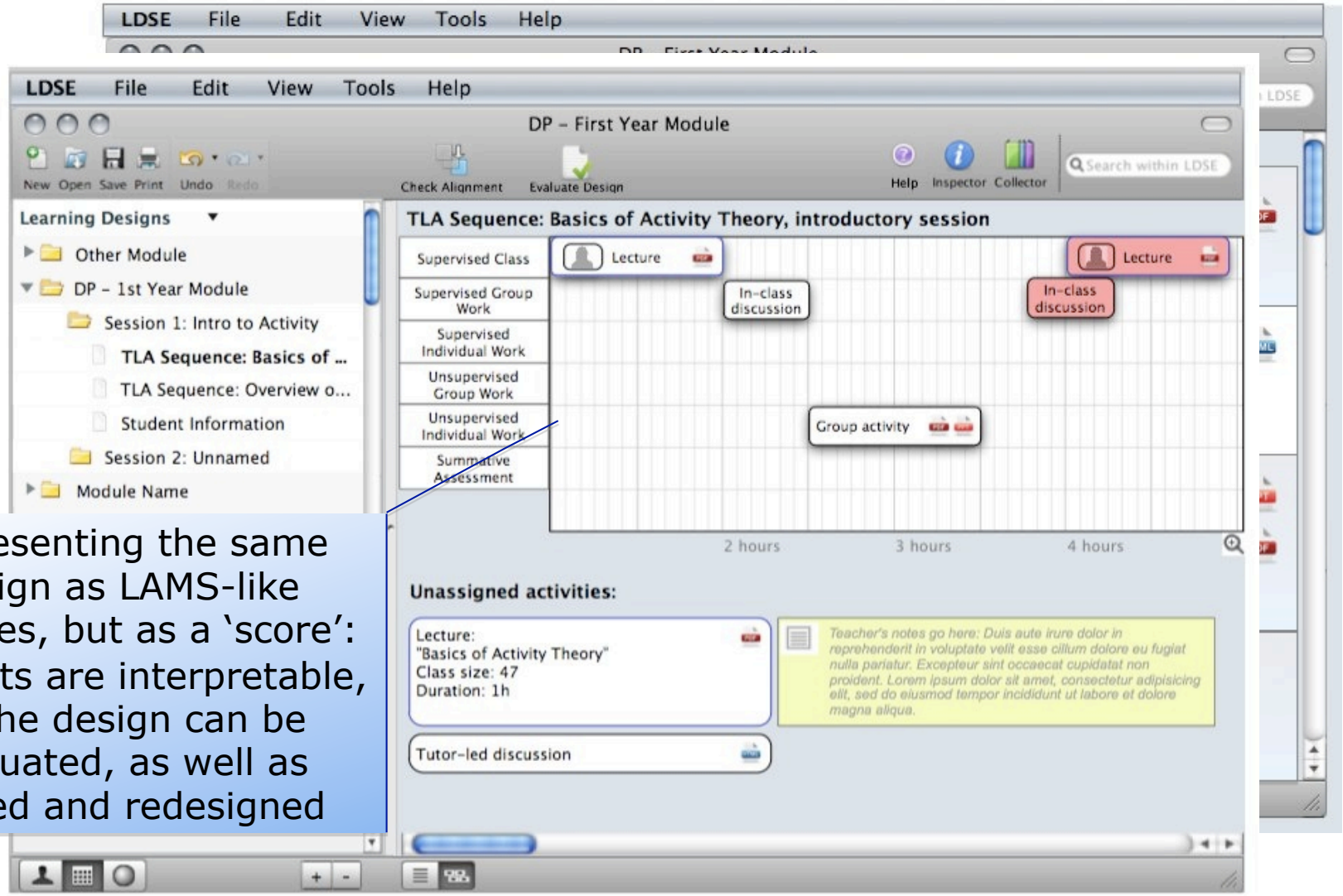
Teachers learning collaboratively



Teachers learning through collaboration in LDSE



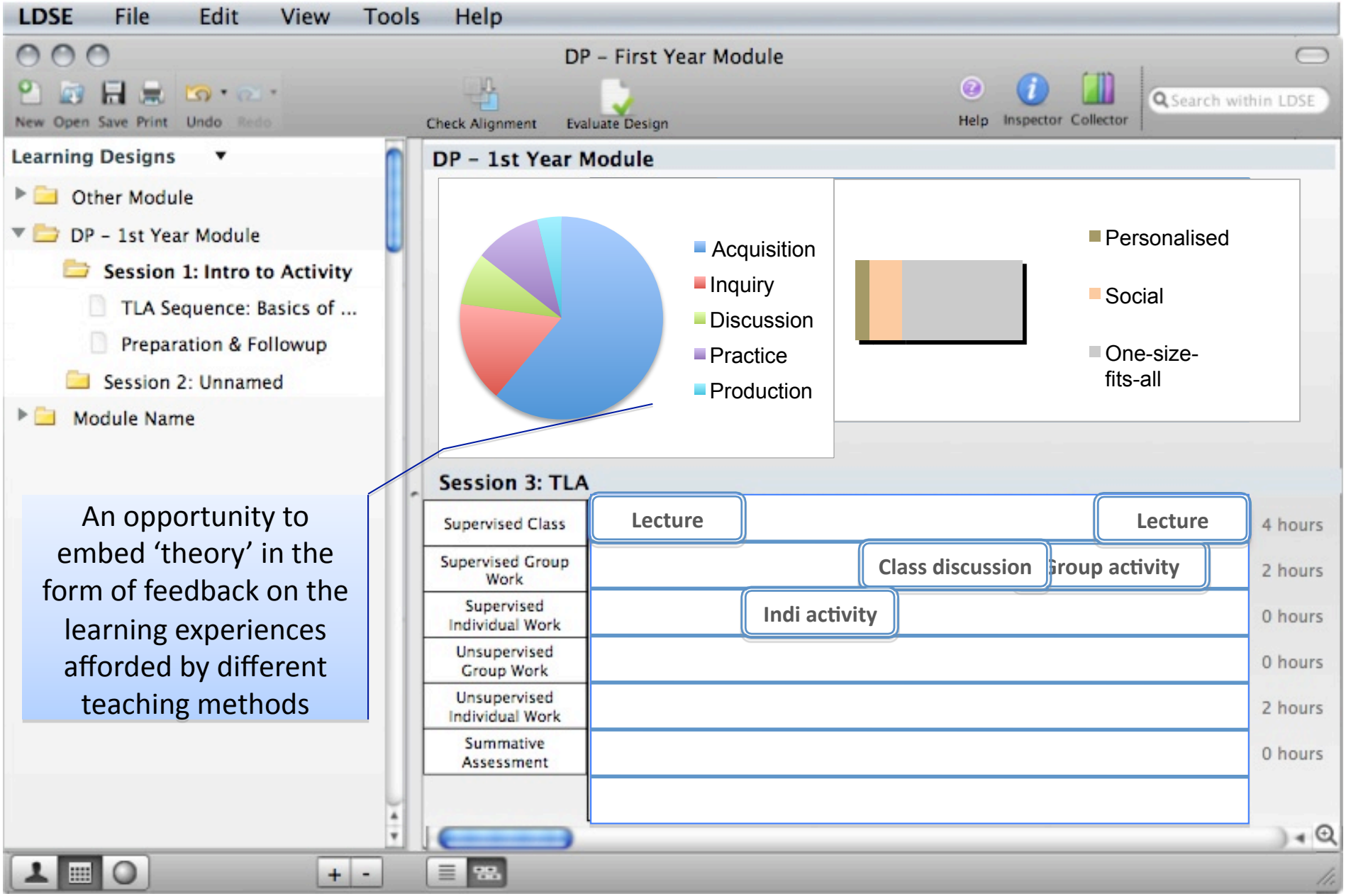
Representing learning designs for a constructionist approach



Adopti
A

Representing the same design as LAMS-like activities, but as a 'score': Concepts are interpretable, so the design can be evaluated, as well as shared and redesigned

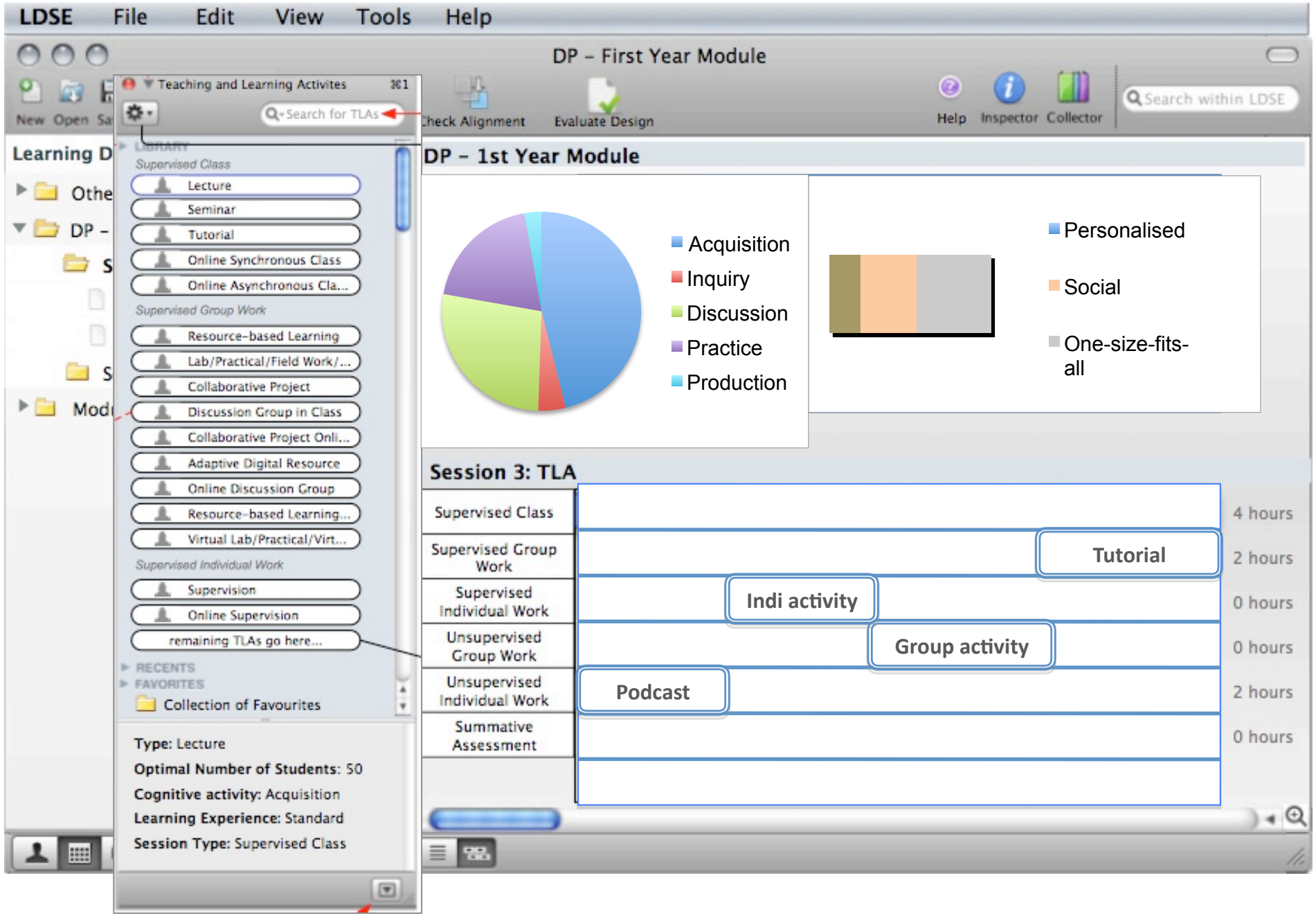
Planning Session 3 - Remove the class discussion - Reposition the group activity
- Ask for evaluation - Displays pedagogic evaluation of current design



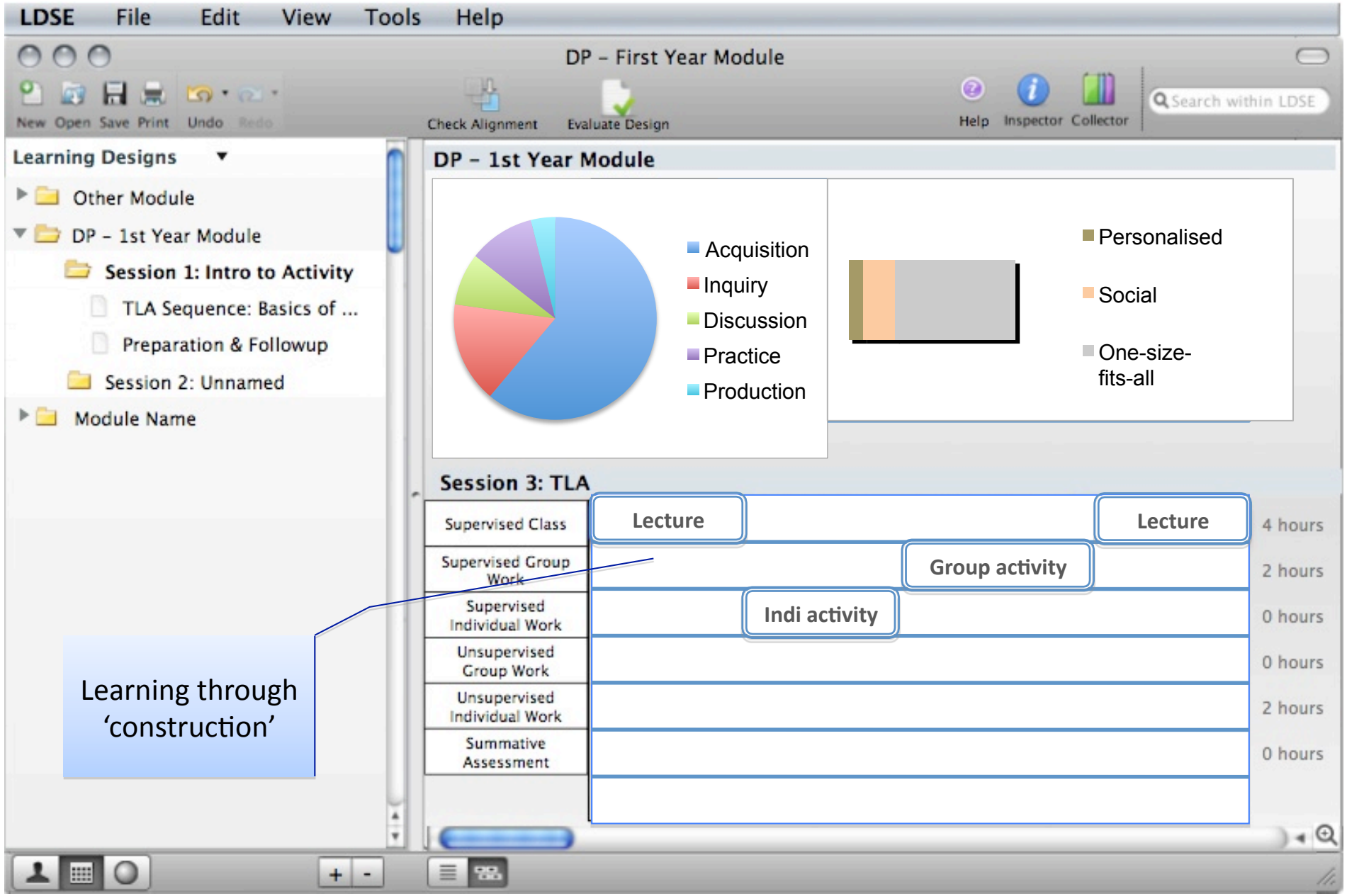
An opportunity to embed 'theory' in the form of feedback on the learning experiences afforded by different teaching methods

Replacing conventional with digital TEL-based methods - Ask for suggested methods

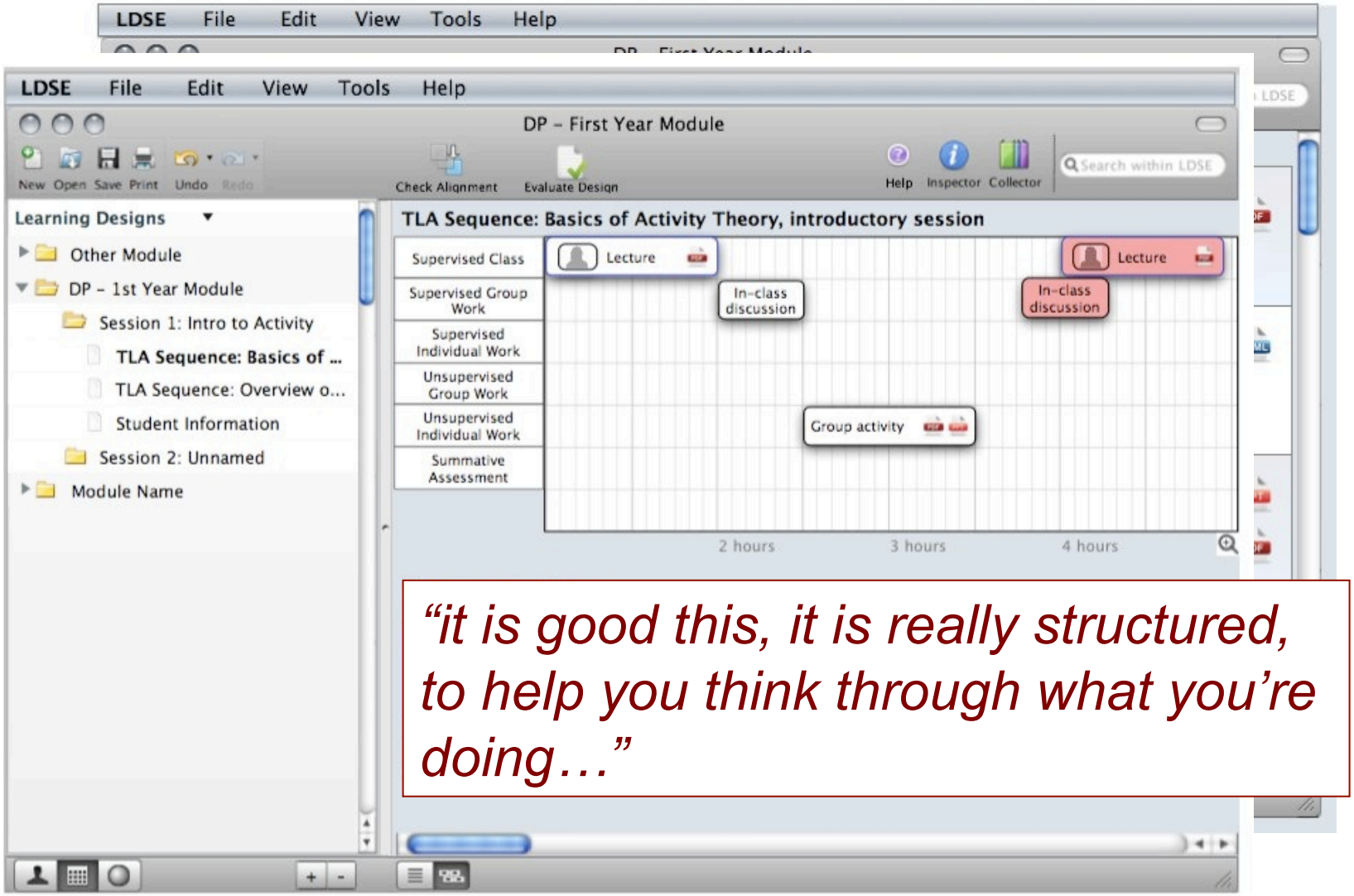
- Use ‘adaptive digital resource’ - Evaluate? - Displays pedagogic evaluation of current design



Compare with previous design – go back to compare



Building a library of learning designs



"it is good this, it is really structured, to help you think through what you're doing…"

Question: adopting others' designs

If you could access a library of learning designs, how would you want it indexed?

See note below.

If you could access a library of learning designs, how would you want it indexed?

By…

A. Topic
B. Intended learning outcome
C. Type of teaching method

Slides for the “joint” section

- *(This slide is hidden)*
- Suggested sub-sections:

1. Translating user reqs into the LDSE design (2 slides)
2. ??
3. Liz: reflection on balancing the tensions/dialectics
4. ??

Negotiation between the threads

User requirements

support for collaboration and sharing

The knowledge base in the literature

concepts and relationships in learning design

Design features of the LDSE

tools, resources and mechanisms of support

Aligning the elements of learning design

What the IPs say:

…how do I design the curriculum, the assignments and the learning outcomes to be aligned with each other (Suzanne).

…we've got some learning outcomes, how can I best design my lecture, seminar, whole course, my guest lecture, it's how can I get… do this (Isabel).

… I would think about the interplay of aspects of learning and how together they would come up … content, … delivery,… the environment… a dynamic measure of the teaching and learning (Nick).

Aligning the elements of learning design

What the literature says:

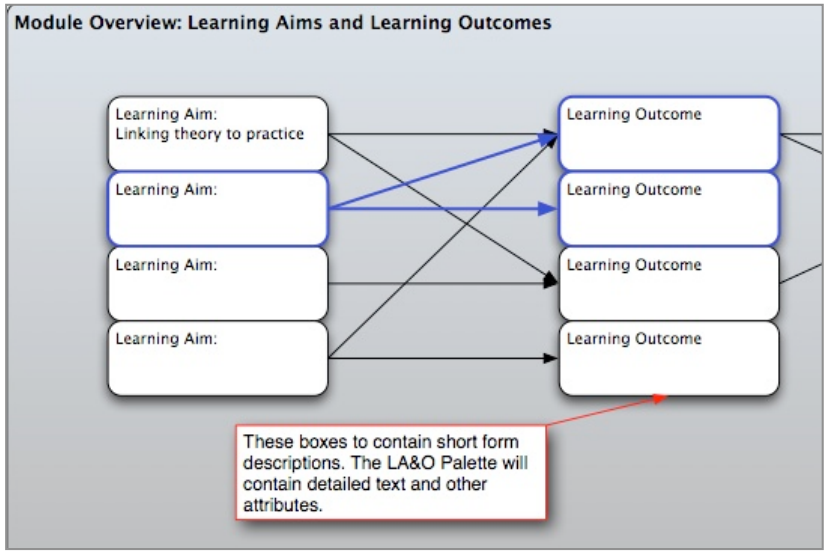
Learning outcomes, teaching and learning activities, and assessment must be aligned by the teacher to enable constructive alignment by the learners (Biggs 2003).

Software requirement:

- bring together components

- aims, learning outcomes, curriculum topics, teaching and learning activities, and assessment

- help the user to ensure they are in alignment.



Balancing the needs for both structure and free expression

What the IPs say:

… design should be I think fairly loose and allow for innovation and creativity… a design needs some kind of architecture… but it also needs to be "soft" in the sense that people will find it welcoming. (Les)

I think it is all the, you know, the kind of the structuring… the conceiving, the designing, the structuring, particularly the structuring (Oliver)

It has echoes for me of going back to kind of instructional design… It sounds to me like one is trying to set up a sequence of activities to bring about particular learning goals. And I think that's not always what one's doing in education. (Ed)

Balancing the needs for both structure and free expression

What the literature says:

It is possible to take an analytical approach to the relationship between the goals of teaching, …the learning activities, and the formative assessment appropriate to these goals and activities. (Laurillard 2002)

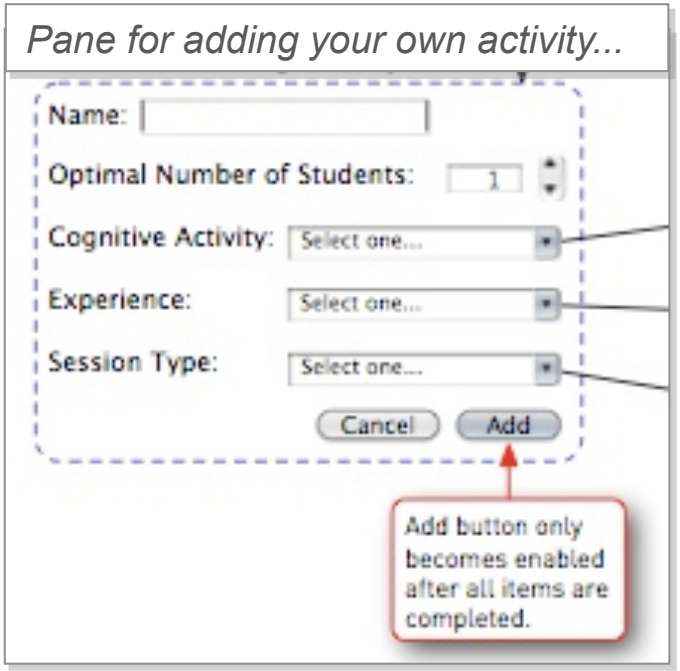
Software requirement:

-*Optimize* flexibility of design, rather than *maximise* it

- this is not as open as a concept-mapping tool

- offers a structure

- assumes that learning design is about 'setting up a sequence of activities to bring about particular learning goals'.



Sharing good design patterns

What IPs say:

How can I check along the way that the learning has occurred?

– hinge-point questions, audience response systems, etc.

What are perceived to be the problems of the bottom X%?

- generic methods of eliciting misconceptions, cognitive conflict, self-paced peer teaching, could help

How do we assist students in managing their time?

- take advantage of the time-management aspect of the technology (submit by, download by, access by dates) to assist student workload management.

Sharing good design patterns

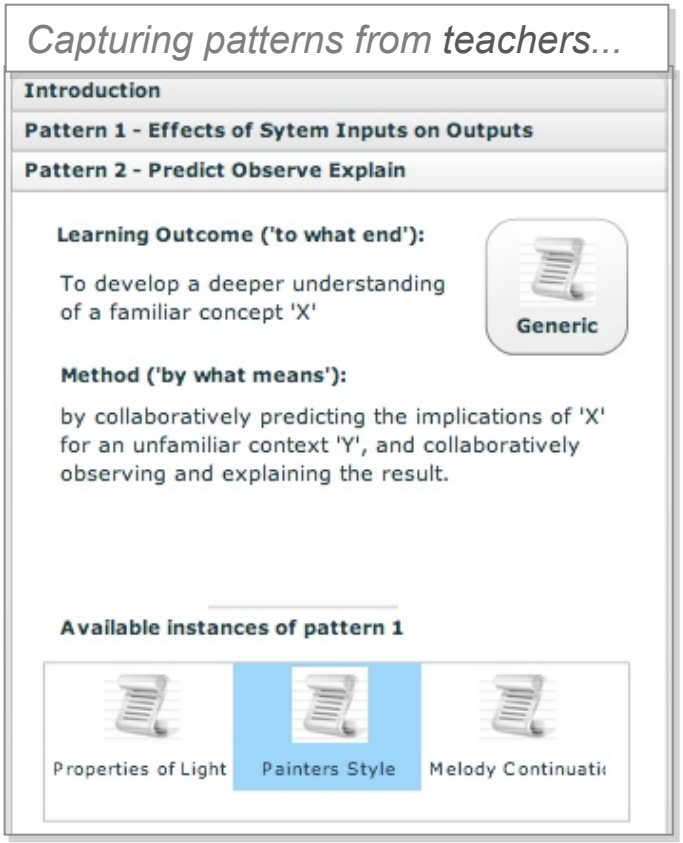
What the literature says:

McKeachie's Teaching Tips collects a lot of solutions to common teaching problems (McKeachie 1999).

Software requirement:

- a library of design patterns, classified according to the nature of the teaching problem they provide a solution to.

- challenge for the team will be the optimal way of searching, or 'pushing' the solutions.



Achieving a balance: in users' practice

Tacit knowledge/ design

Theory-informed approach

Design for validation/approval

Explicit knowledge/ design

Pragmatic (student-centred) approach

Design for teaching/learning

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Achieving a balance: in LDSE design

Iterative and messy nature of learning design as an activity

Scaffolded, structured experience for novices

Inspirational designs and resources

LDSE as a research project

Systematisation of learning design into an ontology

“Sandpit” model of interaction for experts to explore

Runnable designs/ resources

LDSE as a development project

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A constructionist approach to collaboration

Try out our online ‘patterns adoption’ site at:

http://tinyurl.com/ldsepatterns

Where you can adopt and adapt existing patterns,

And also construct and share your own learning pattern to add to our collection…