Institute of Education

UCL

Conceptualising teaching as a science of design: How to become an innovator in teaching

Diana Laurillard
UCL Knowledge Lab

Outline of the argument

- Leaping Development of Fundamental Education
  - improving classroom teaching efficiency, exploring theories
  - One-to-One learning
  - Thinking development
  - IT in the curriculum – pedagogies – small learning resources
  - IT in class to extend engagement, knowledge and thinking
- How to build that new knowledge, and share what we discover about digital pedagogies?
- Teachers cannot work in isolation given the challenges we face
- Can we use the technology to become more professional in building our collective knowledge about how to teach, in each of our subjects?

Why should digital technology be part of teaching innovation?

IT in the curriculum…

IT in the curriculum…

Learning types

Learning through:
Acquisition (Read, Watch, Listen)
Discussion
Inquiry
Practice
Collaboration
Production

(Laurillard, 2012 *Teaching as a Design Science)*

Teaching in a digital world

The digital skills required of a professional teacher:

- Keeping up with new digital tools and resources
- Blending conventional and digital methods
- Helping students with the skills of digital learning
- Using digital resources and tools designed by non-teachers…

Unlike most other professionals:

- Teachers have to discover and develop their own blended learning pedagogies *while still doing their everyday job*

Teaching in the 21st century?

- Teachers discovering new digital pedagogies
- Teachers being supported for innovation
  - Blending in digital methods to focus on learning
  - Testing and improving their designs
  - Sharing new pedagogic ideas and practices

- Teachers recognised as design professionals
- Professional development via peer collaboration

Who else can develop the new digital pedagogies?
*- What is **your** question?*

Teaching has to be seen
as a design science

A community of practice: innovating, testing, and sharing new ideas for effective design

Building scientific and scholarly knowledge

A community of practice: innovating, testing, and sharing new ideas for effective *teaching* design

Question:
What is the teaching design equivalent of the scholarly journal?

Building *learning technology* knowledge

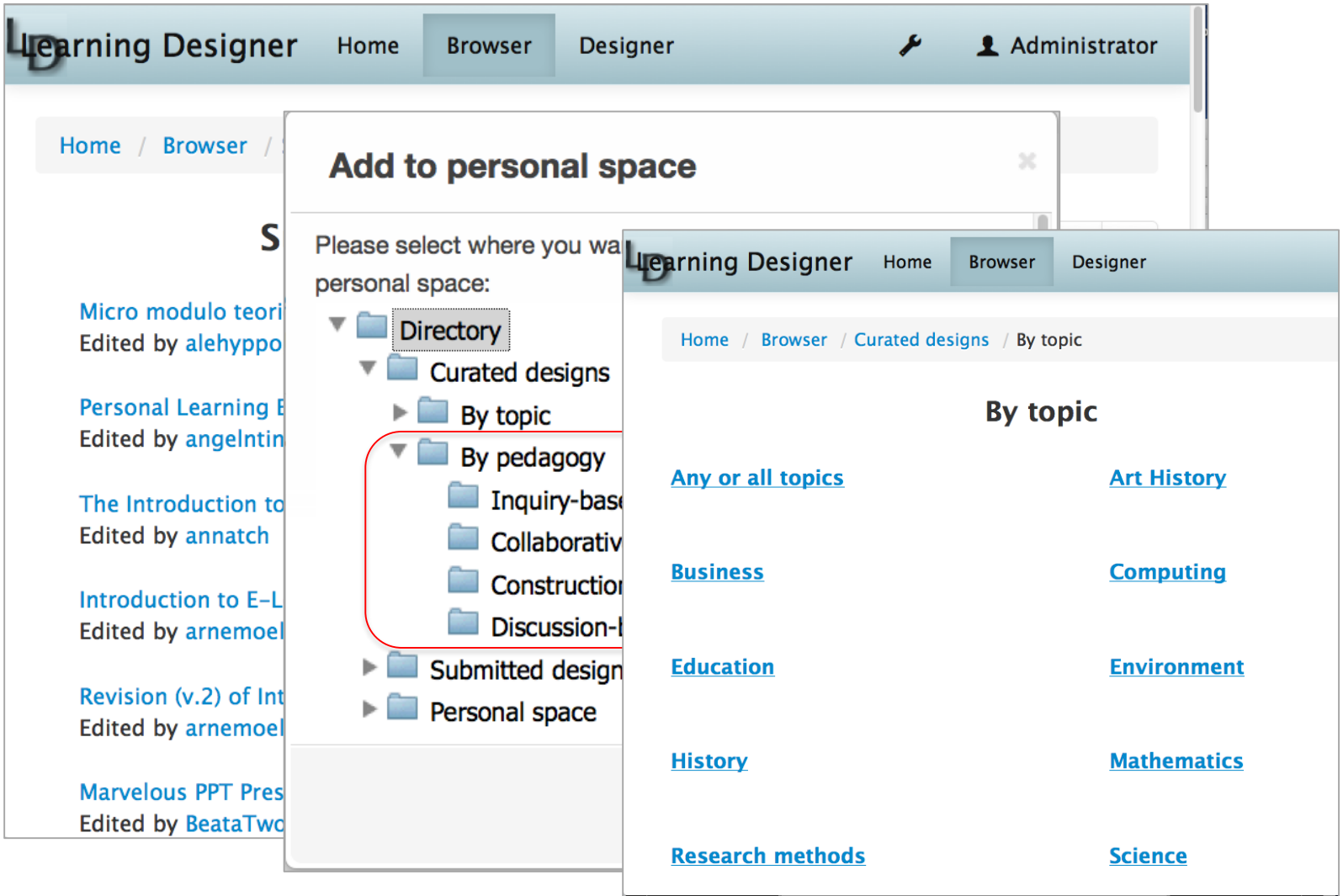
Teachers need a tool for pedagogic innovation - planning, testing, reviewing, publishing teaching designs: The Learning Designer

A power tool for teachers: The Learning Designer

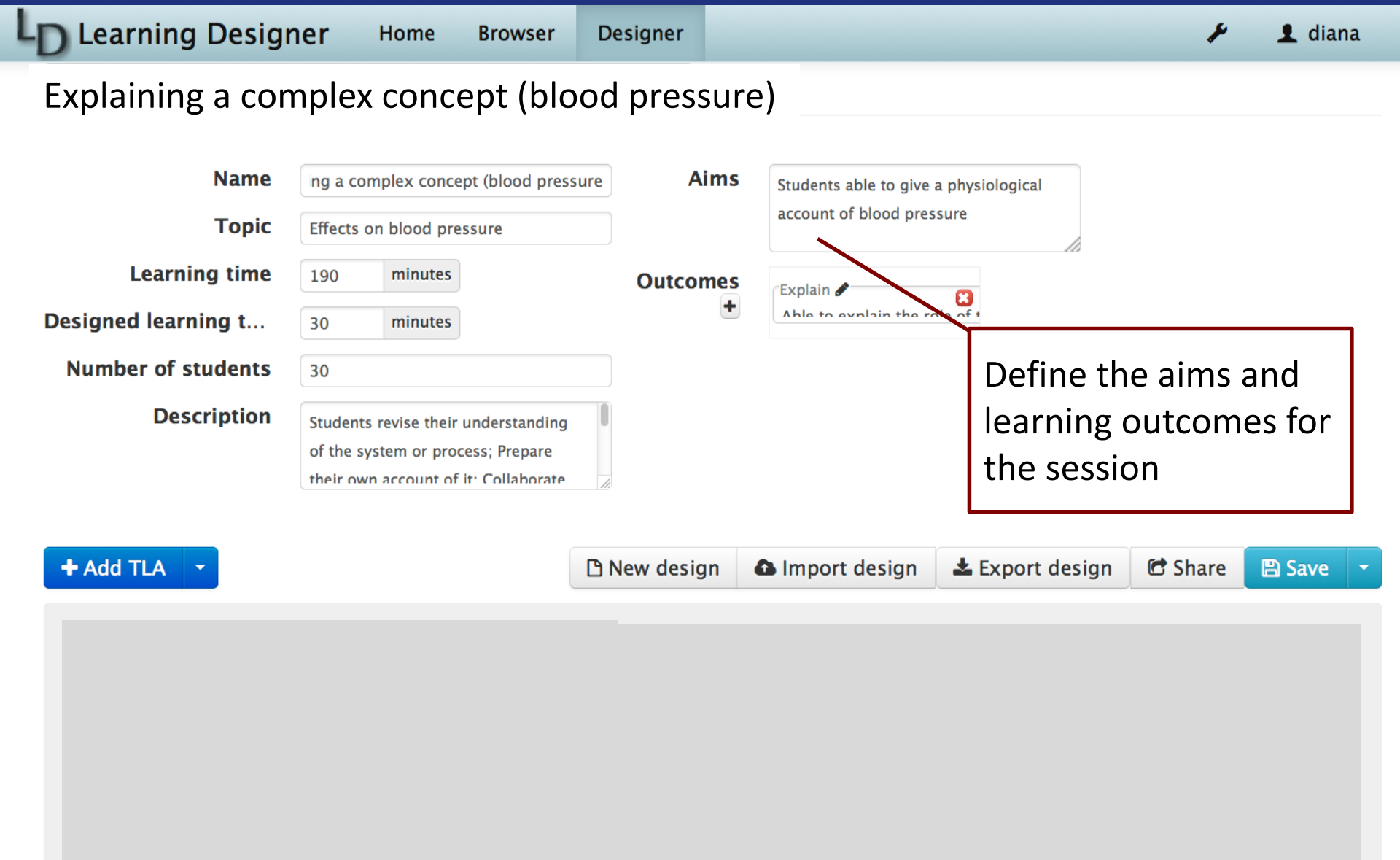
- The teacher as designer must be able to
  - Browse existing designs for blended learning
  - Adapt these and create their own designs
  - Review and analyse their pedagogic potential
  - Test them with learners
  - Redesign and re-test
  - Publish their design for others to find

The Learning Designer: Browsing designs

http://learningdesigner.org



The Learning Designer: Creating a design



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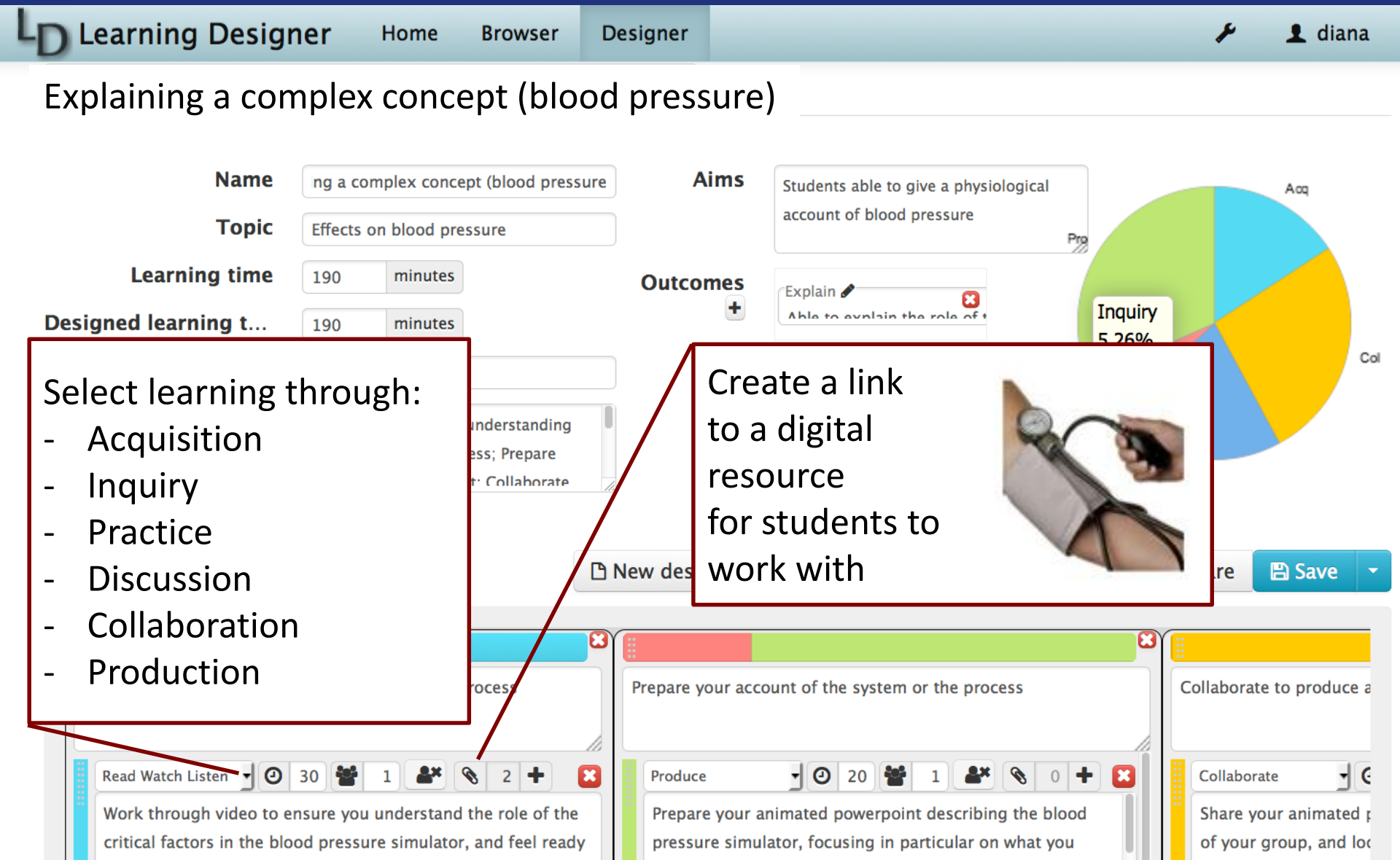


The Learning Designer: Adapting a design

Learning Designer | Home | Browser | Designer | diana

Explaining a complex concept (cash flow)

Name: Curated design: Explaining a complex

Topic: Cash flow processes

Learning time: 190 minutes

Designed learning t...: 170 minutes

Number of students: 30

Description: The idea is that for students to ... they should ... le of the critical

Aims: Students to understand the cash flow process in a business

Outcomes: Explain ... To be able to explain the re...

Edits the text, duration, group size, etc

Adds their own resource

New design | Import design | Export design | Share | Save

Exports for students and other teachers

Read Watch Listen | 10 | 1 | 0

Work through the video of the spreadsheet to ensure you understand the role of the critical factors in the cash-flow

Prepare your account of the syst...

Produce | 20

Prepare your own animated ... cash-flow model, focusing in particular on what you feel

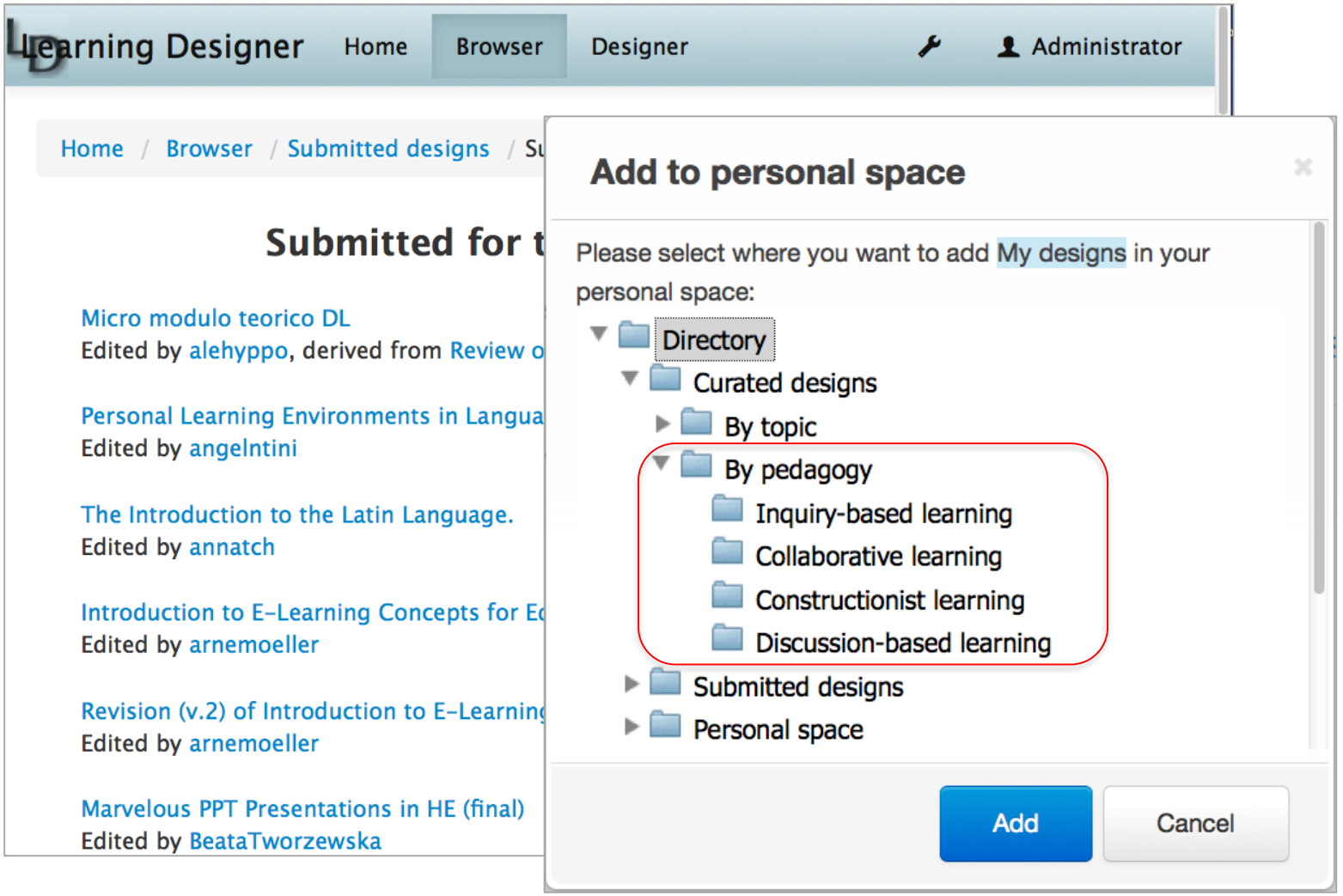
...borate to produce a...

...laborate

...are your animated p... of your group, and loc...

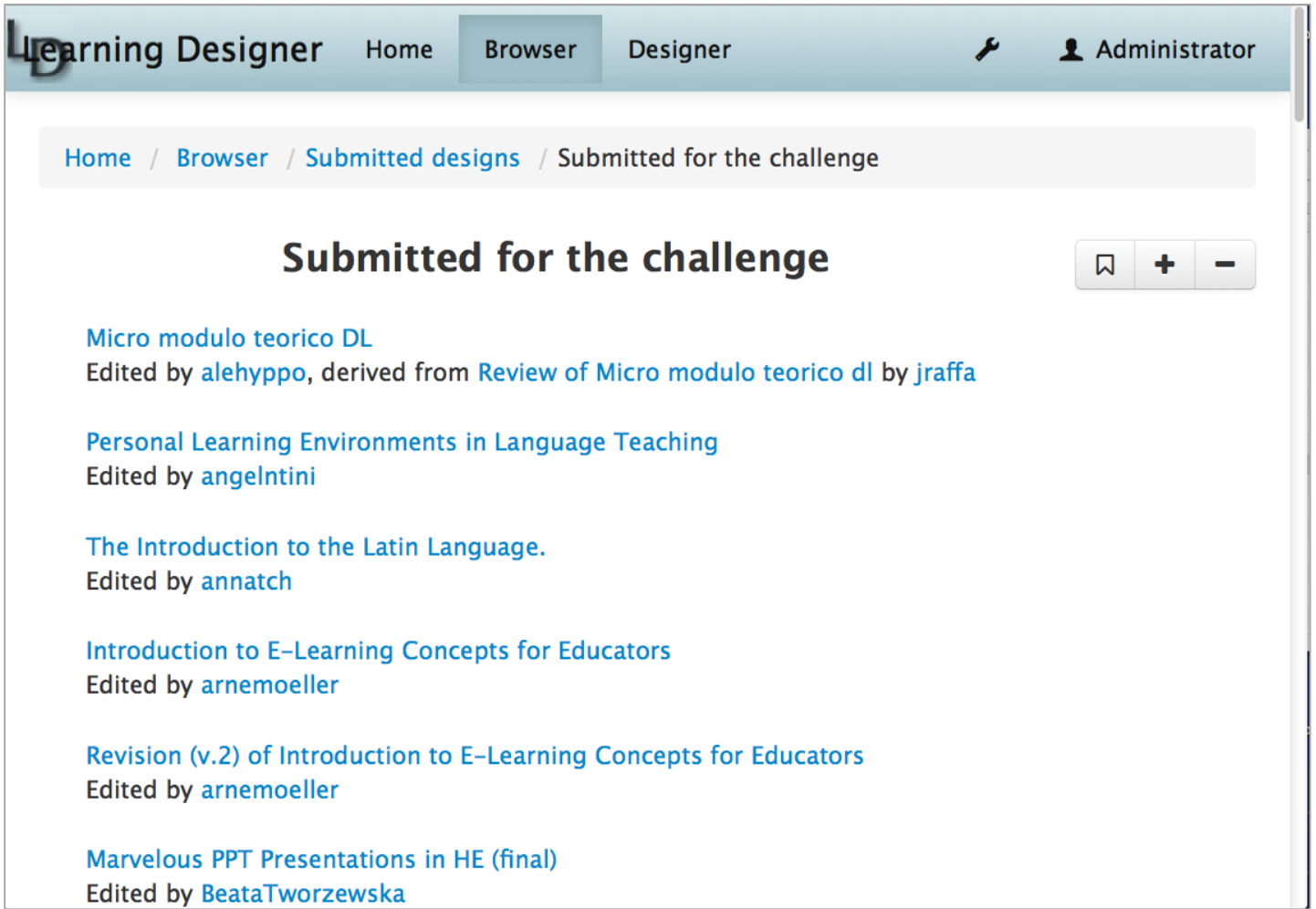
The Learning Designer: Publishing

http://learningdesigner.org

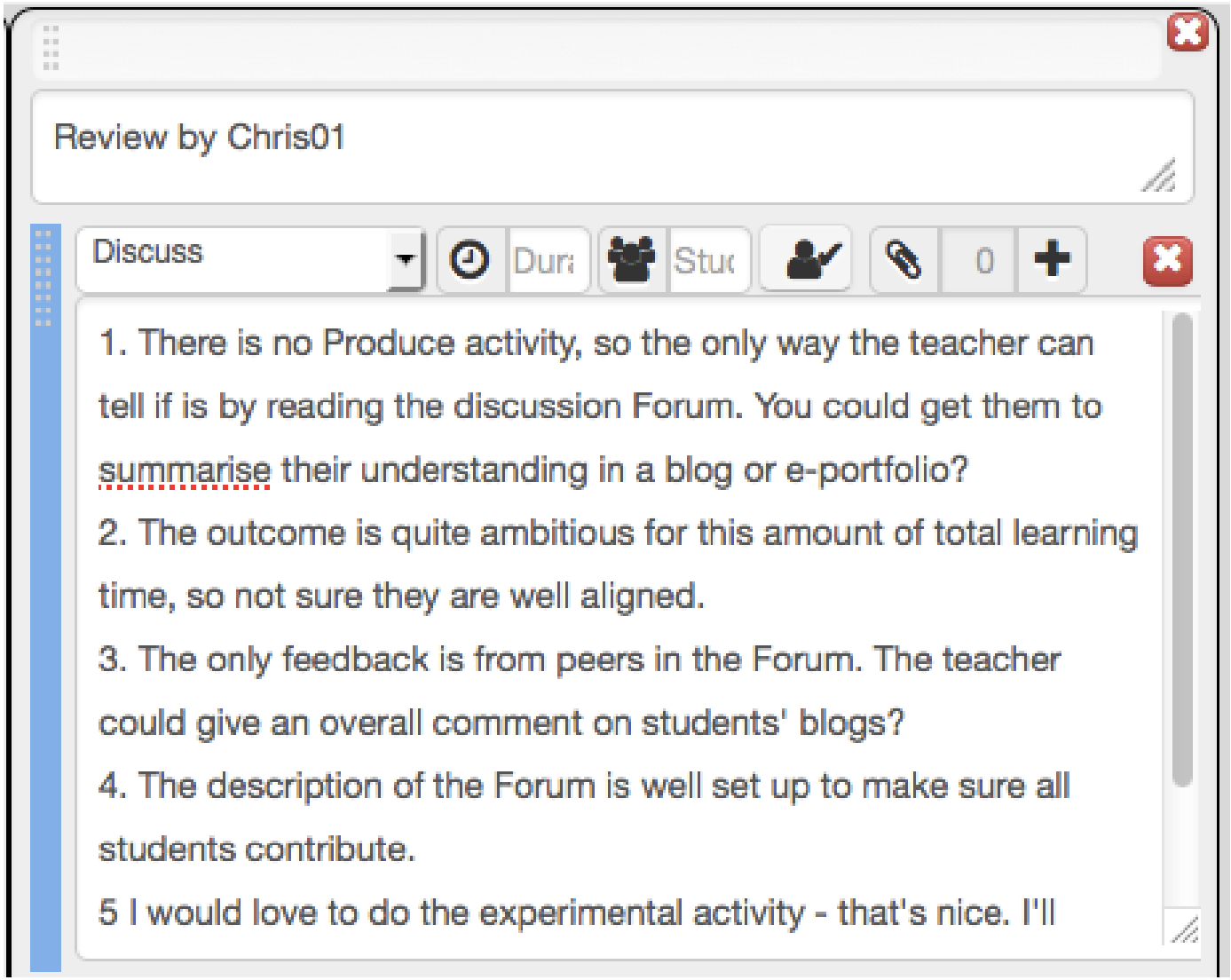


Designs submitted for peer review

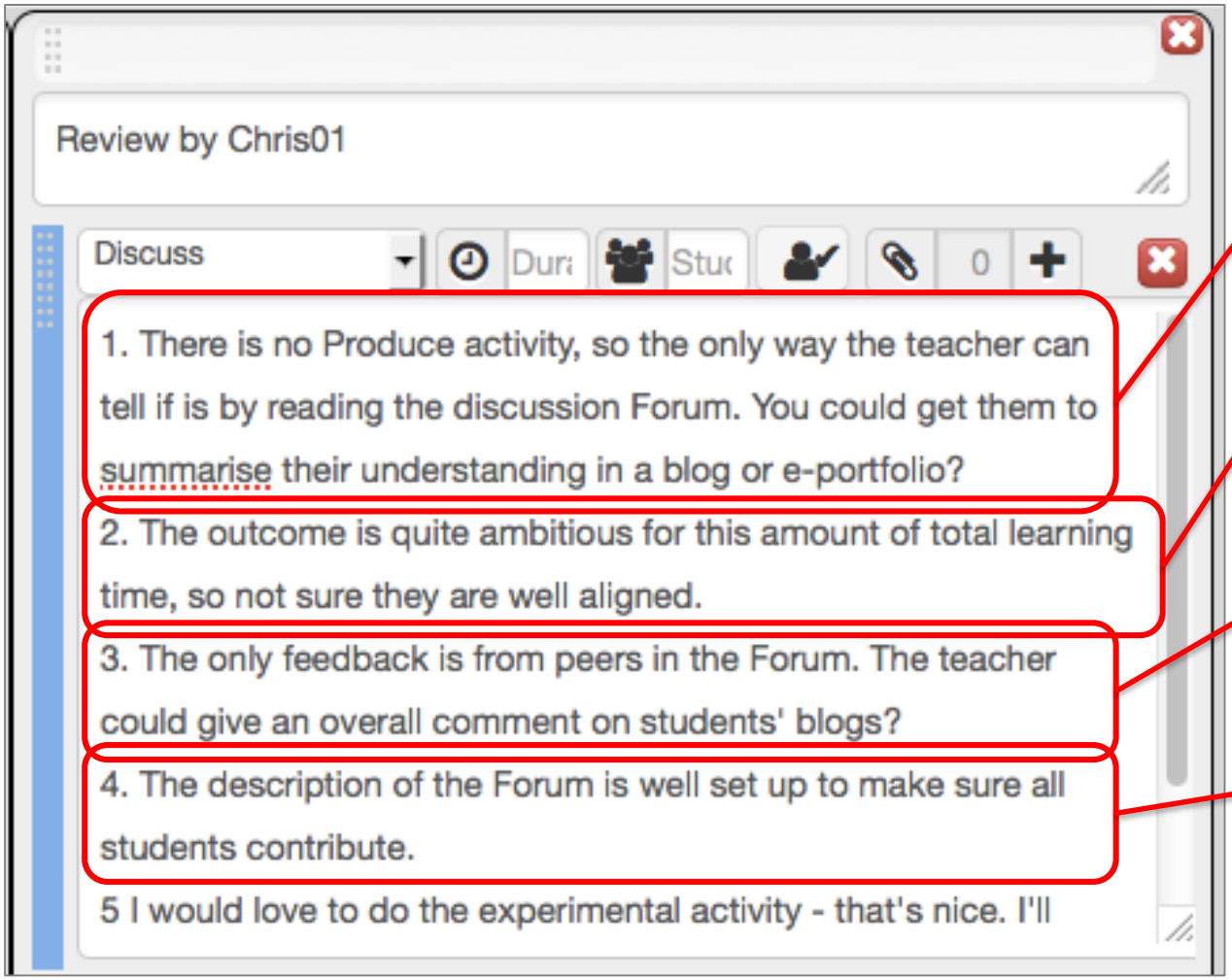
http://learningdesigner.org



The Learning Designer: Peer review for a design



The Learning Designer: Reviewing a learning design



Criteria for a good design

1 Test? - is there a 'Produce' activity, or some way the teacher can use to test whether outcomes are met?

2 Aligned? - outcome, activities, and produce activity aligned?

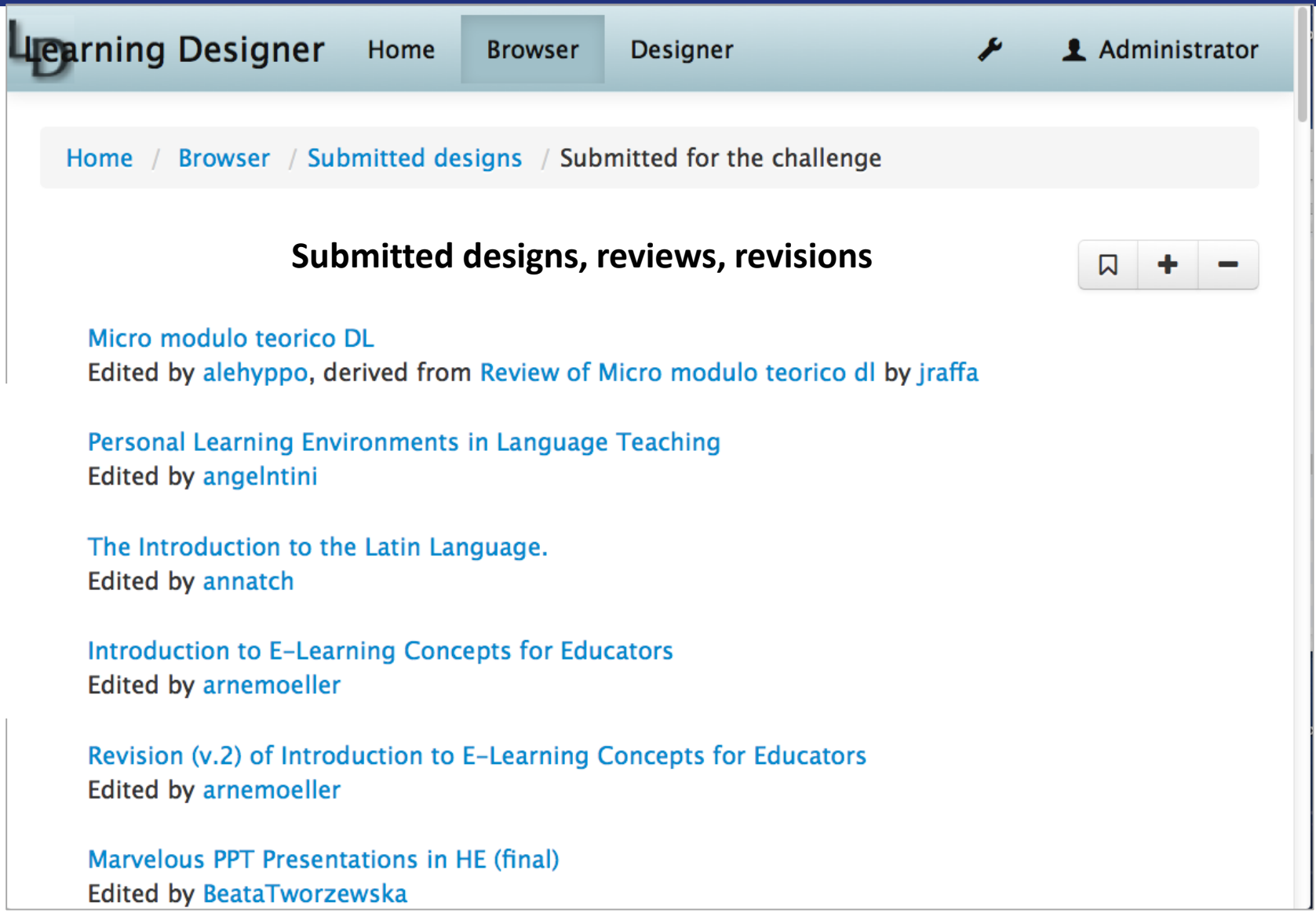
3 Feedback? - from teacher, other students, or the technology?

4 Technology? - good use of technology?

5 Other?

Reviews and redesigns added to the Browser

Teachers' designs, reviews, and redesigns in the Browser



A power tool for teachers: The Learning Designer

- The teacher as designer must be able to
  - Browse existing designs for blended learning
  - Adapt these and create their own designs
  - Review and analyse their pedagogic potential
  - Test them with learners – export to VLE
  - Redesign and re-test
  - Publish their design for others to find

But will teachers use such a tool?
*- What is **your** question?*

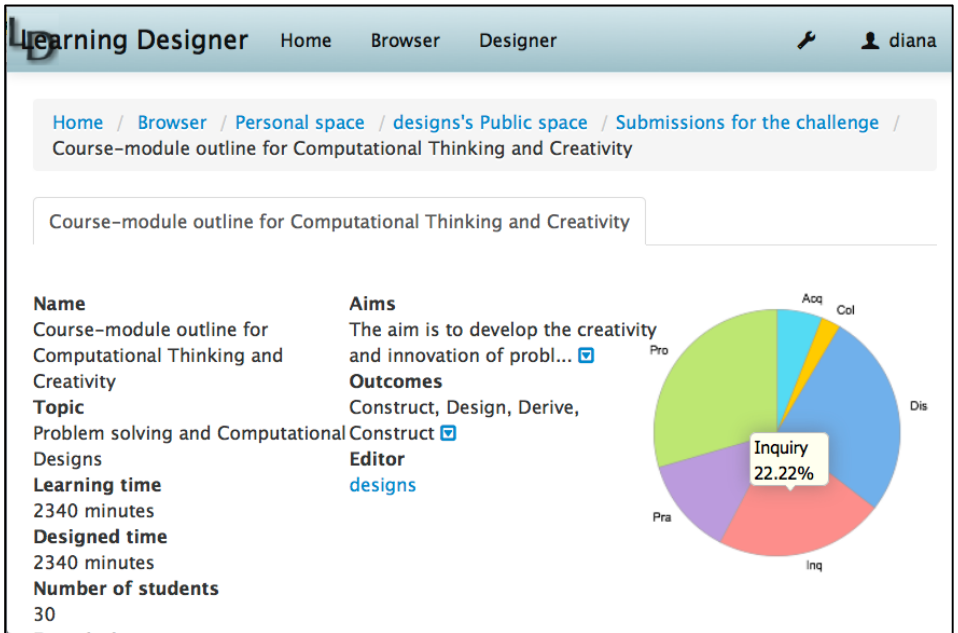
Is collaborative innovation viable for teachers?

Learning Designer user data:

>34,000 unique visitors per month

>300 shared learning designs

36% returning visitors



Is collaborative innovation viable for teachers?

Comments from a MOOC for primary teachers

Amazing

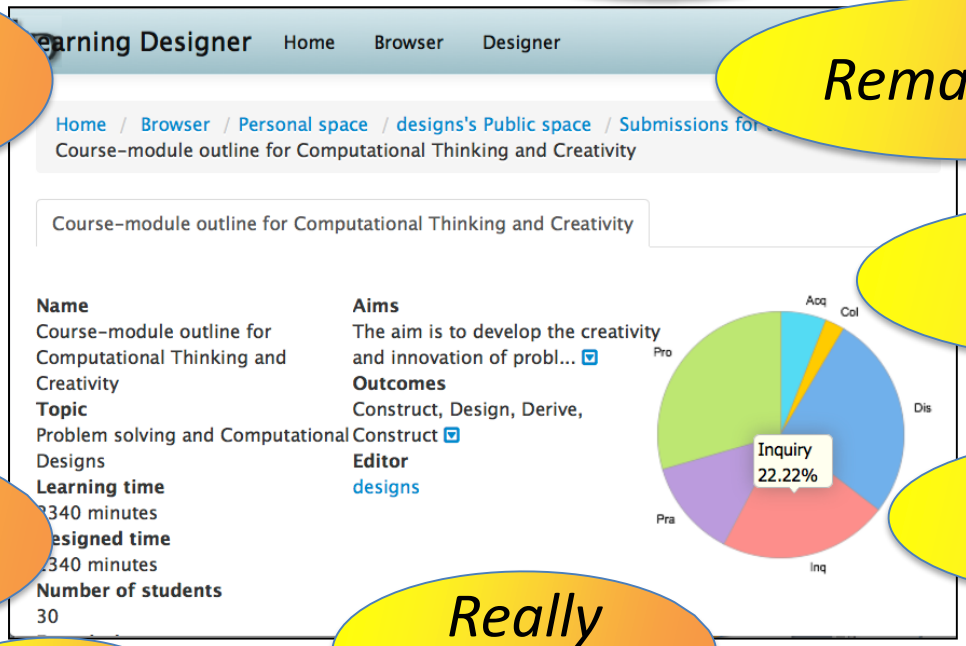
Wonderful

Invaluable

Excellent

Exciting

Remarkable



Impressive

Exceptional

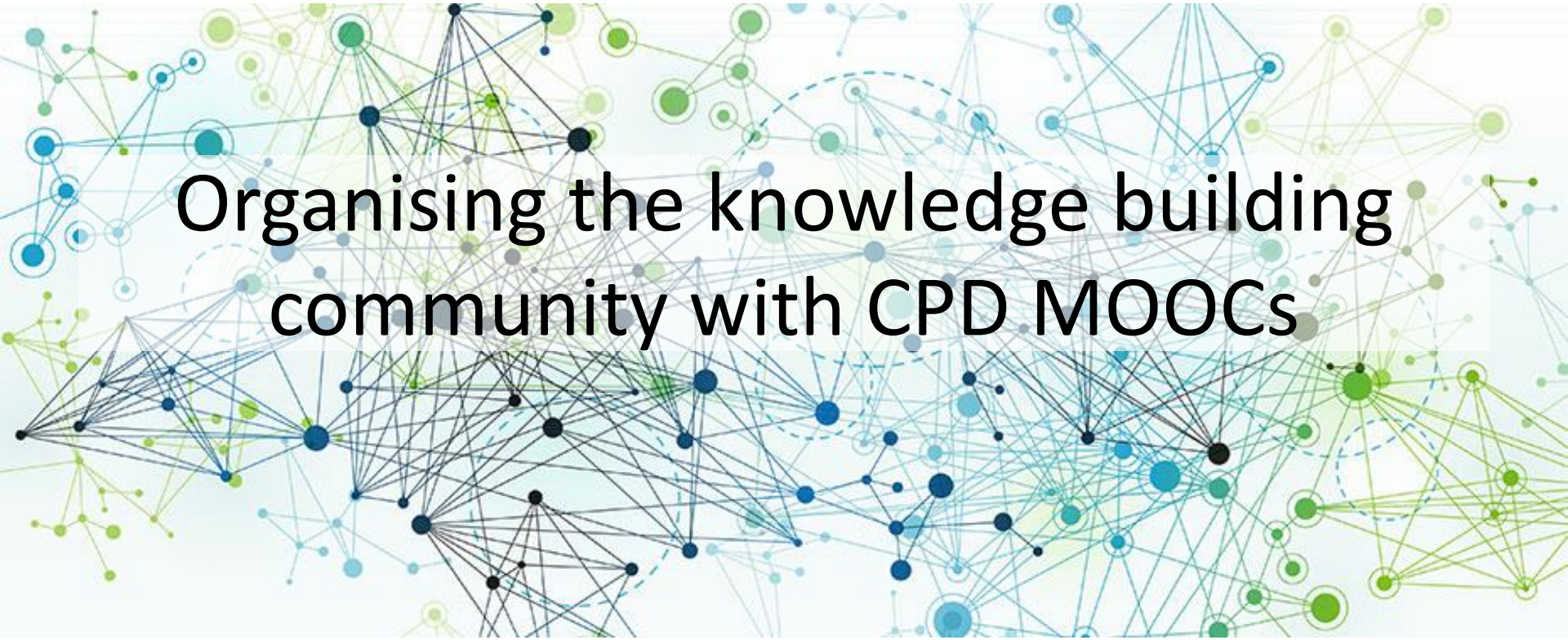
Fantastic

Interesting

Really cool

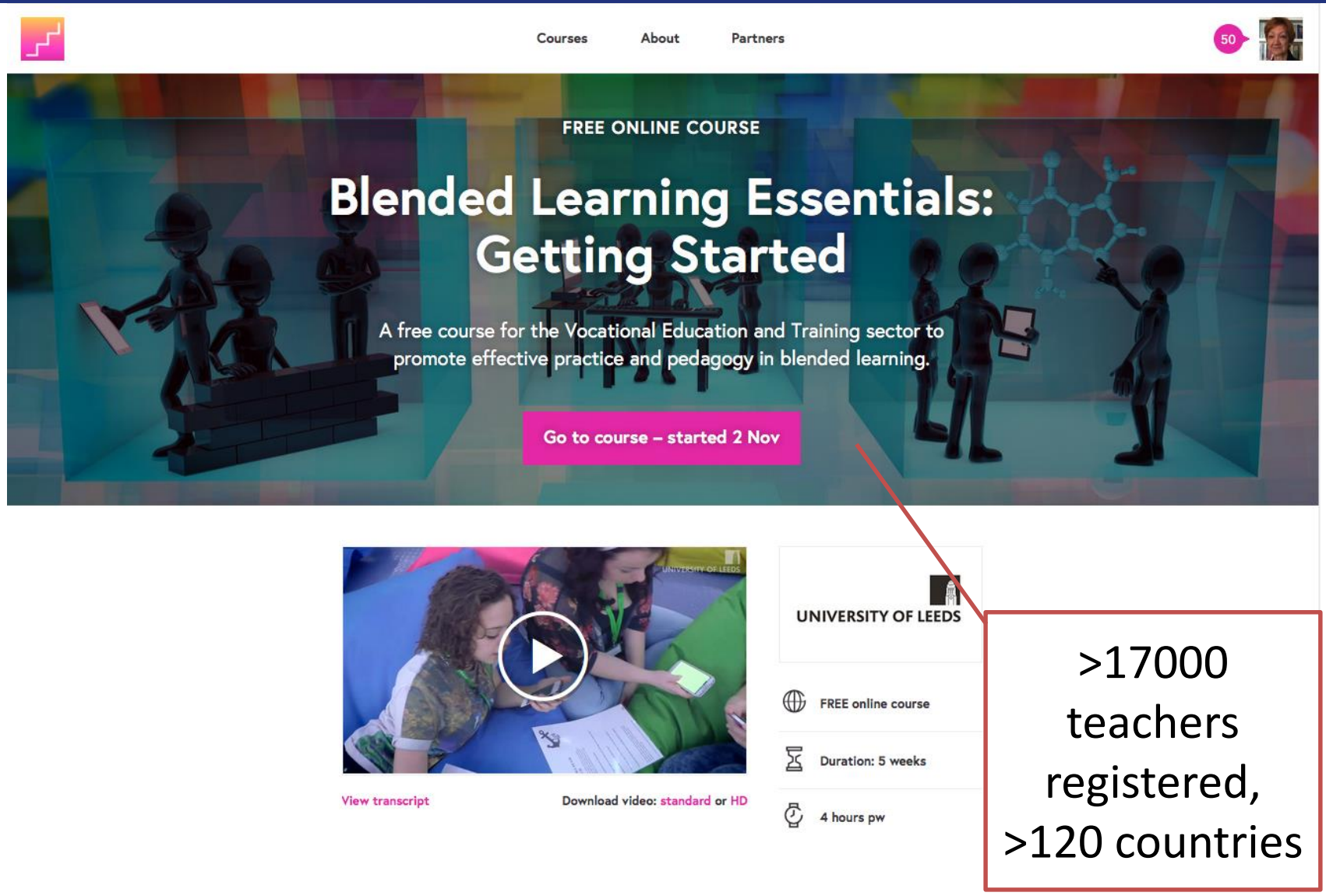
Great

Fascinating


Organising the knowledge building
community with CPD MOOCs

A MOOC for Blended Learning

For Vocational Education and Training



>17000 teachers registered, >120 countries

Professionals debating the latest teaching ideas

View transcript

Download video: standard or HD

Blended learning

This video illustrates why we use digital technologies in learning and teaching in the vocational education and training sector.

It outlines the properties of digital technologies and shows how they have been used to improve motivation, personalised self-pacing, learning outcomes, active learning, inclusion and flexibility for working students.

Have your say:

Video presentation of new approaches and methods in the field

Dynamic links to other resources and tools

Discussion and debate with their peers

Padlet: Collaborating to define the value of Blended Learning

Learning Designs for Peer Review

Once your design is completed use the long url to add the design to the wall. Make sure your name and email is

Click on the wall, insert your Title, Name, and a Link to your design or review

Example

Lynne Taylerson

Learning Design for week 2 of MIOC:

Year 2 Diploma in Education & Training session -

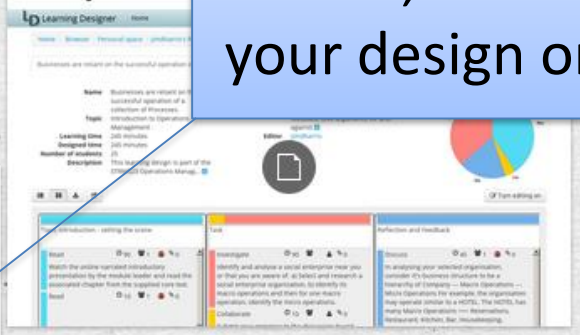
Economic & Political Initiatives in the FE & Skills Sector

email lynne@realtimeeducation.co.uk

Jim Harris

Learning Design

email: jim.harris(



Shona Robertson

Formative activity on Constructive Curriculum Alignment

email: s.y.robertson@dundee.ac.uk

Reviewed by Patricia Charlton

Patricia.Charlton@pobox.com

Author Patricia Charlton

Learning Design for week 2 move-it-online challenge

email: patricia.charlton@pobox.com

Viktorija

I'm not finish it y

email: viktorija.fl

Marianne Checkley

Learning Design for week 2 move-it-online challenge

email: marianne@iscoil.ie

Being reviewed by Lynne Taylerson

Reviewer's email:

lynne@realtimeeducation.co.uk

Eileen Kennedy/Lindy Zubairy

From Face-to-face to Online in 3 hours

email: e.kennedy@ioe.ac.uk

Being reviewed by Christina Preston

Reviewer's email

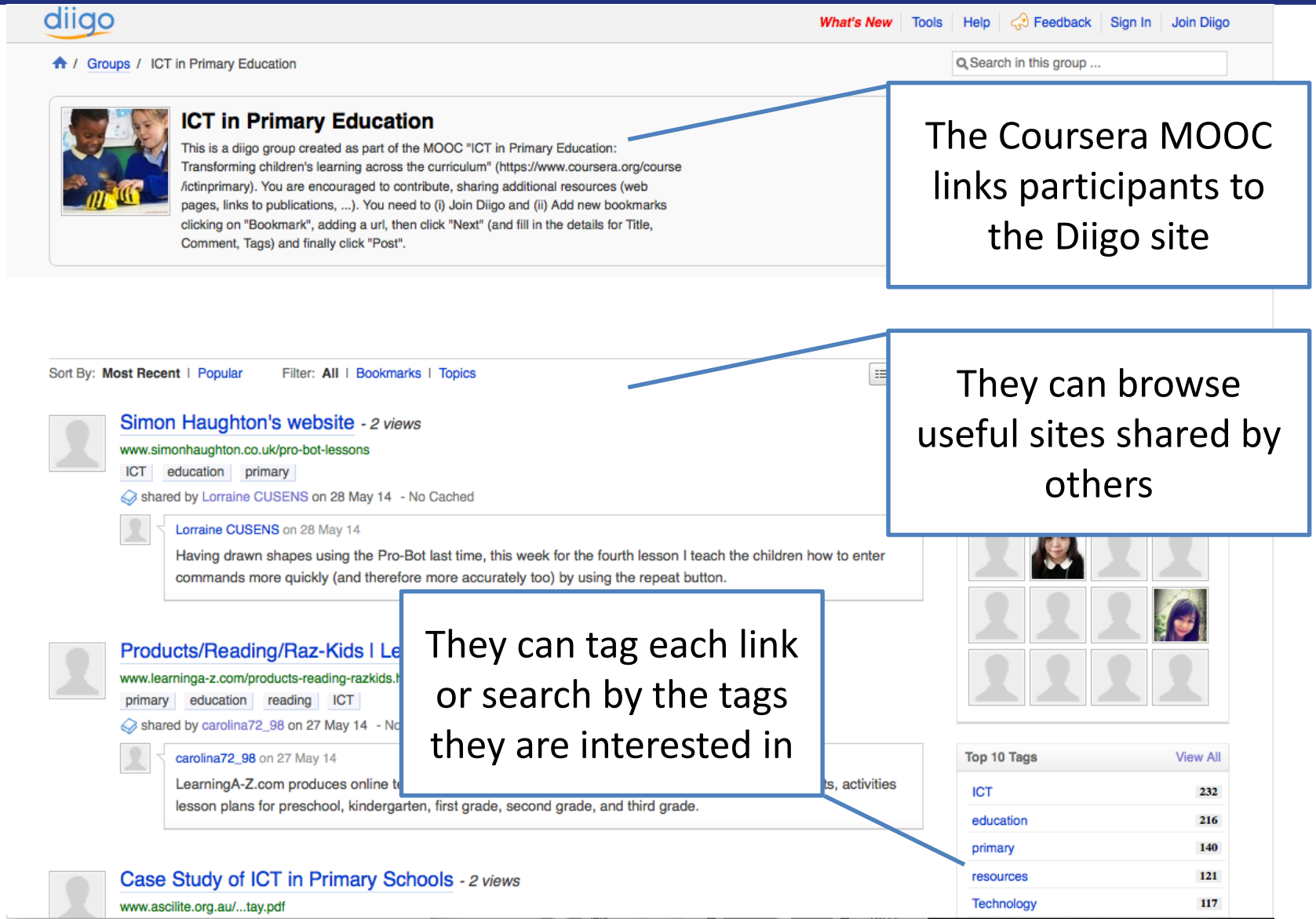
christina@mirandnet.ac.uk

Christina Preston

Using a VLE to improve learning in schools and beyond

email: christina@mirandanet.ac.uk

Professionals building a shared knowledge base



The Coursera MOOC links participants to the Diigo site

They can browse useful sites shared by others

They can tag each link or search by the tags they are interested in

UCL Institute of Education

Association for Learning Technology ALT

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Future Learn

UNIVERSITY OF LEEDS

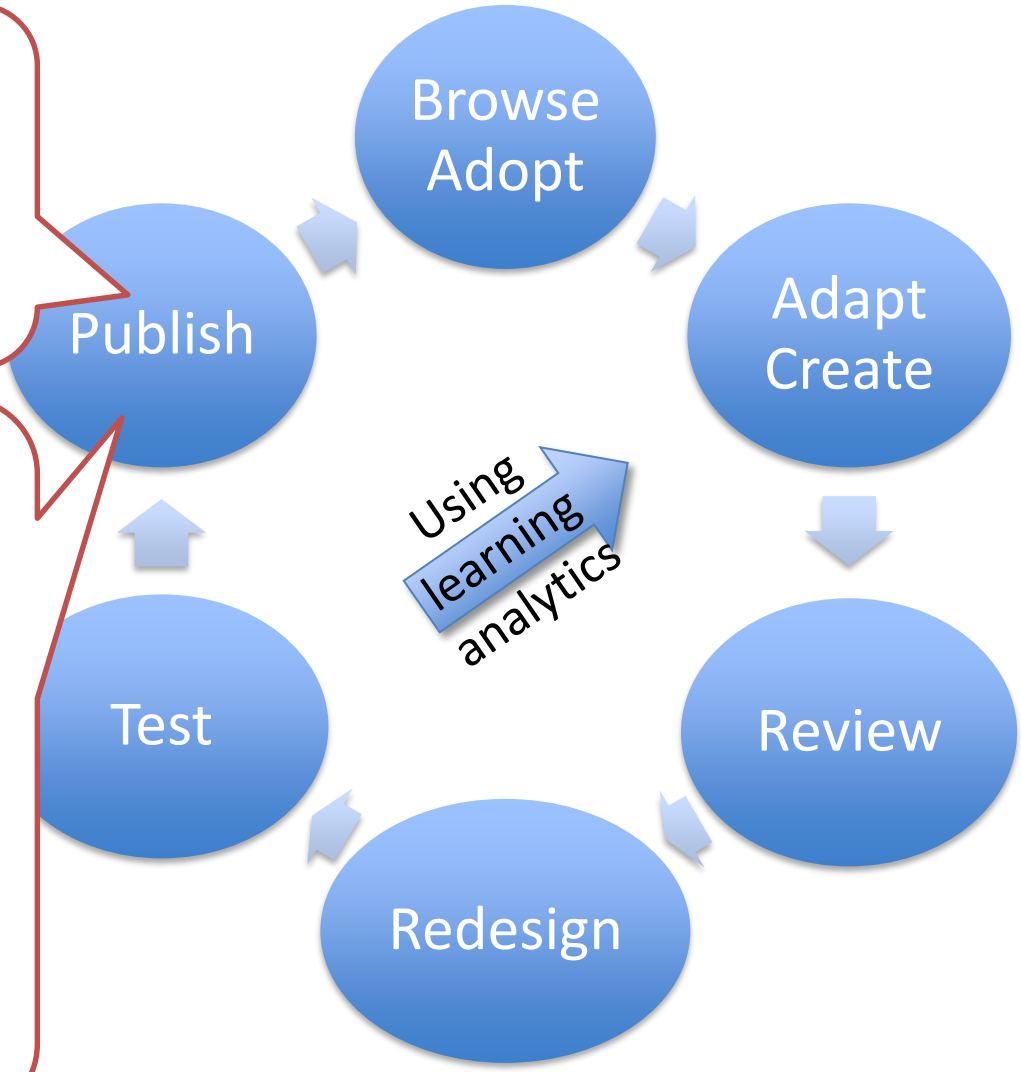
Part 1 ‘Getting Started’ re-runs 30 Oct to 04 Dec 2017 #FLble1

Part 2 ‘Embedding Practice’ re-runs 01 to 21 May 2017 #FLble2

Teaching as a design science

What is the teaching design equivalent of the scholarly **journal**?

Answer:
An online **collaborative community** sharing testable open co-designed peer-reviewed adaptable **learning designs**



Building *learning technology* knowledge

A new BNU / UCL IOE collaborative project

Advanced Innovation Center for Future Education with UCL Knowledge Lab

Building teacher community knowledge of blended learning: An online collaboration, focusing on problem-based learning, to:

- Establish an online community of teachers, supported by digital technology to build and test their knowledge of blended learning
- Use the model of scientific scholarship, by supporting
  - public exchange of innovative ideas for blended learning
  - empirical testing of innovation in problem-based learning
  - peer review of designs and reports of innovative blended learning
- Test an online environment for this community-knowledge-building
- Curate teachers' learning designs and community contributions
- Establish the teachers' requirements for the digital support needed

With Ning Ma, Associate Professor of Faculty of Education

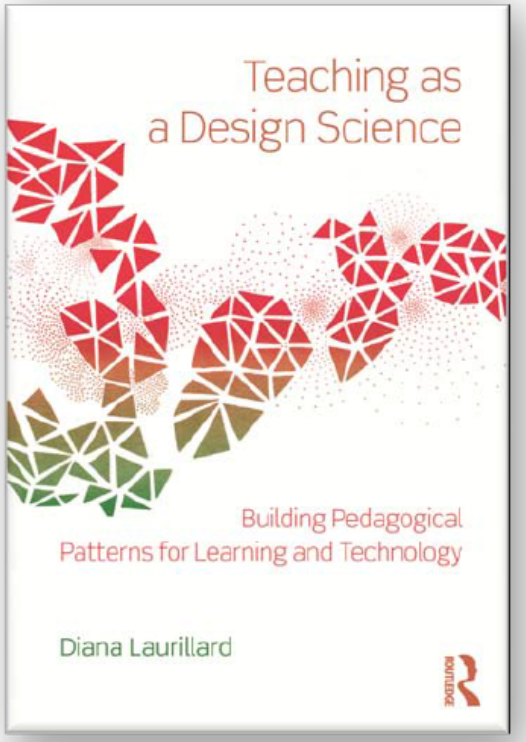
UCL

20% Discount!

Teaching as a Design Science

Building Pedagogical Patterns for Learning and Technology

By Diana Laurillard



Teaching is changing. It is no longer simply about passing on knowledge to the next generation. Teachers in the 21st century, in all educational sectors, have to cope with an ever-changing cultural and technological environment. Teaching is now a design science. Like other design professionals - architects, engineers, town planners, programmers – teachers have to work out creative and evidence-based ways of improving what they do. But teaching is not treated as a design profession.

Every day, teachers design and test new ways of teaching, using learning technology to help their learners. But their discoveries remain local. By representing and communicating their best ideas as

Summary: Teachers collaborating to develop blended learning

Blending online and classroom learning

Teachers are supported to develop the new pedagogies

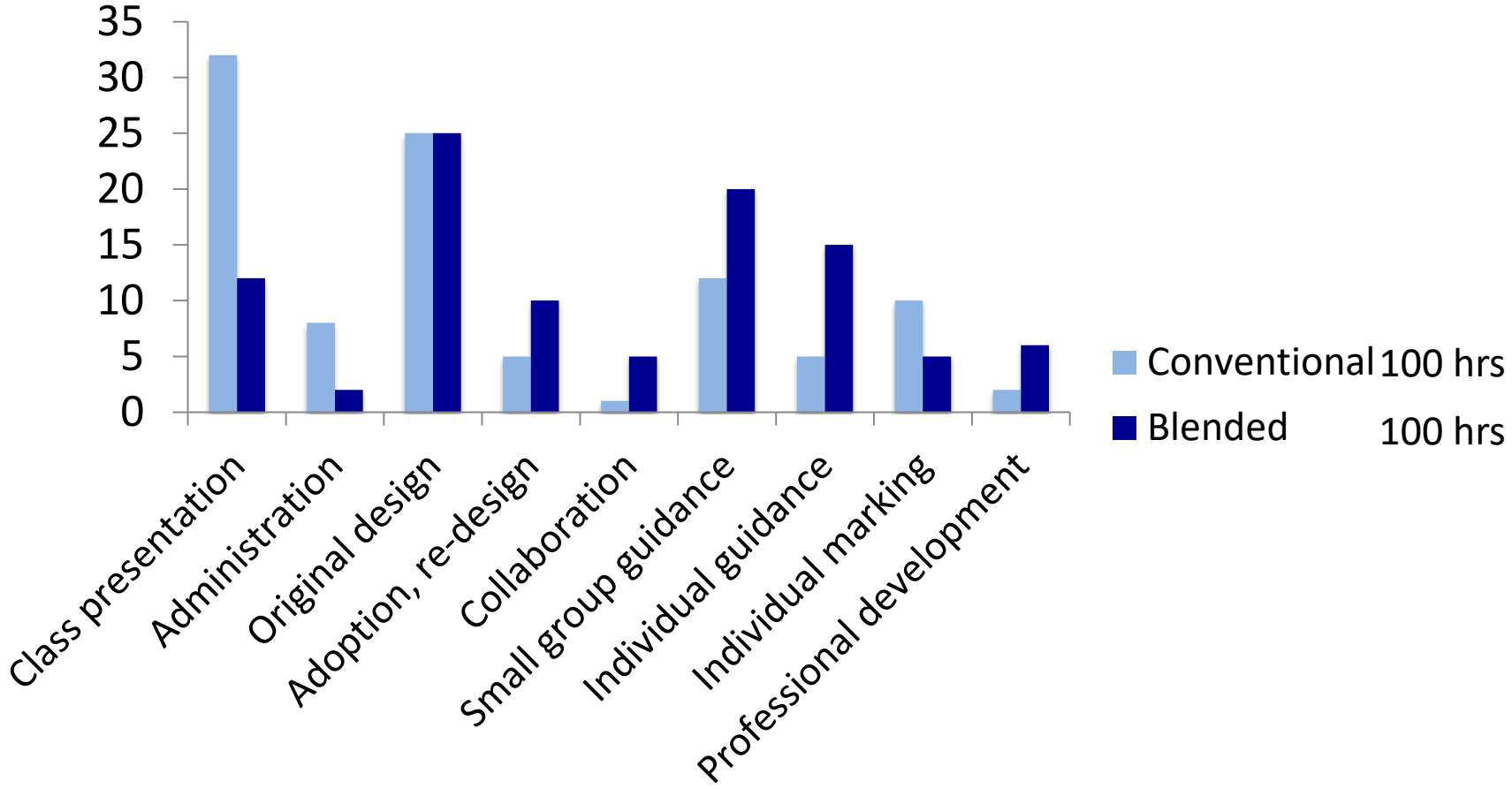
~ with a design tool like academic journals for sharing ideas

~ and an online professional community to build knowledge

Who else can develop the new digital pedagogies?

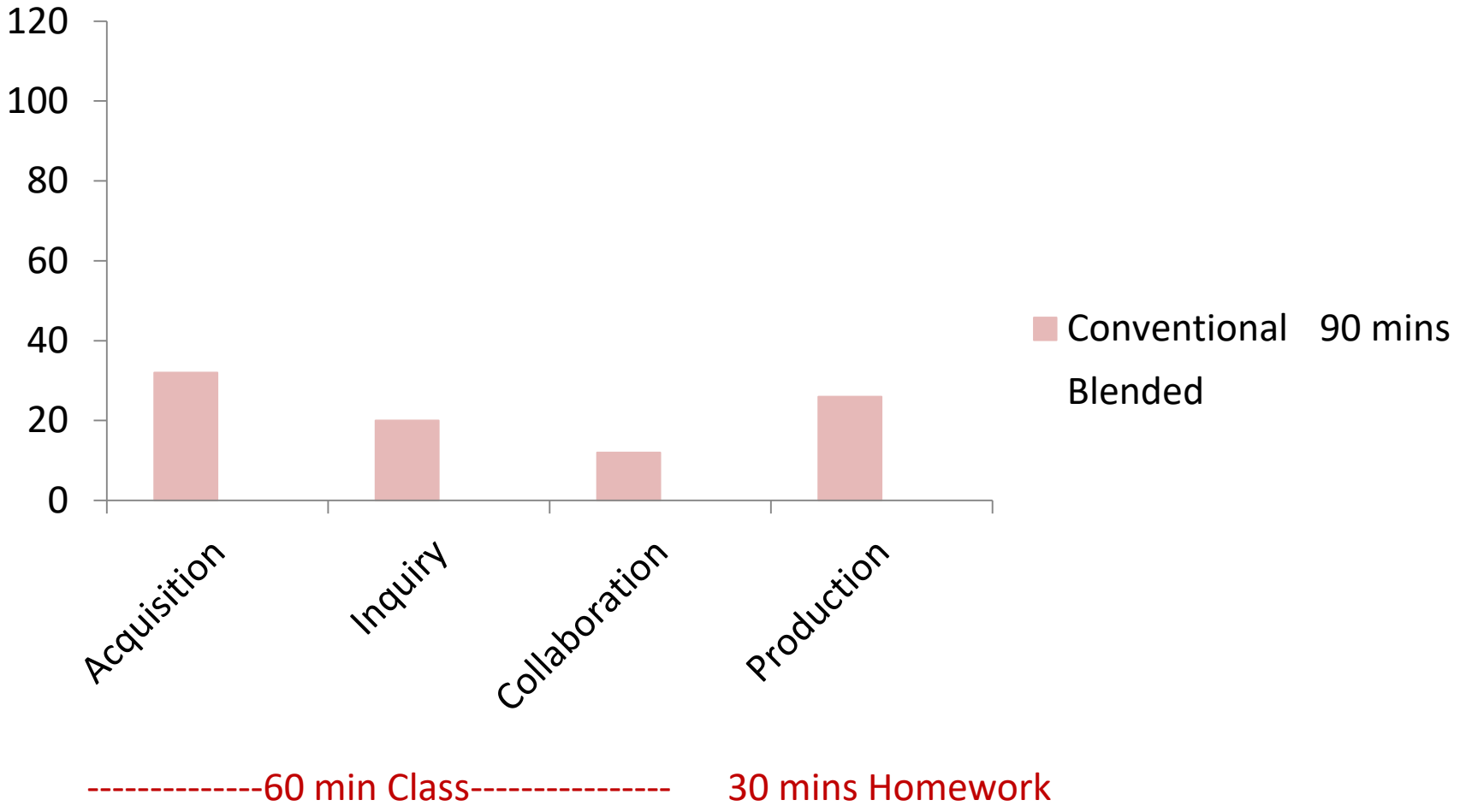
Who owns the responsibility for learning in formal education and training?

Digital demands a new distribution of trainer time

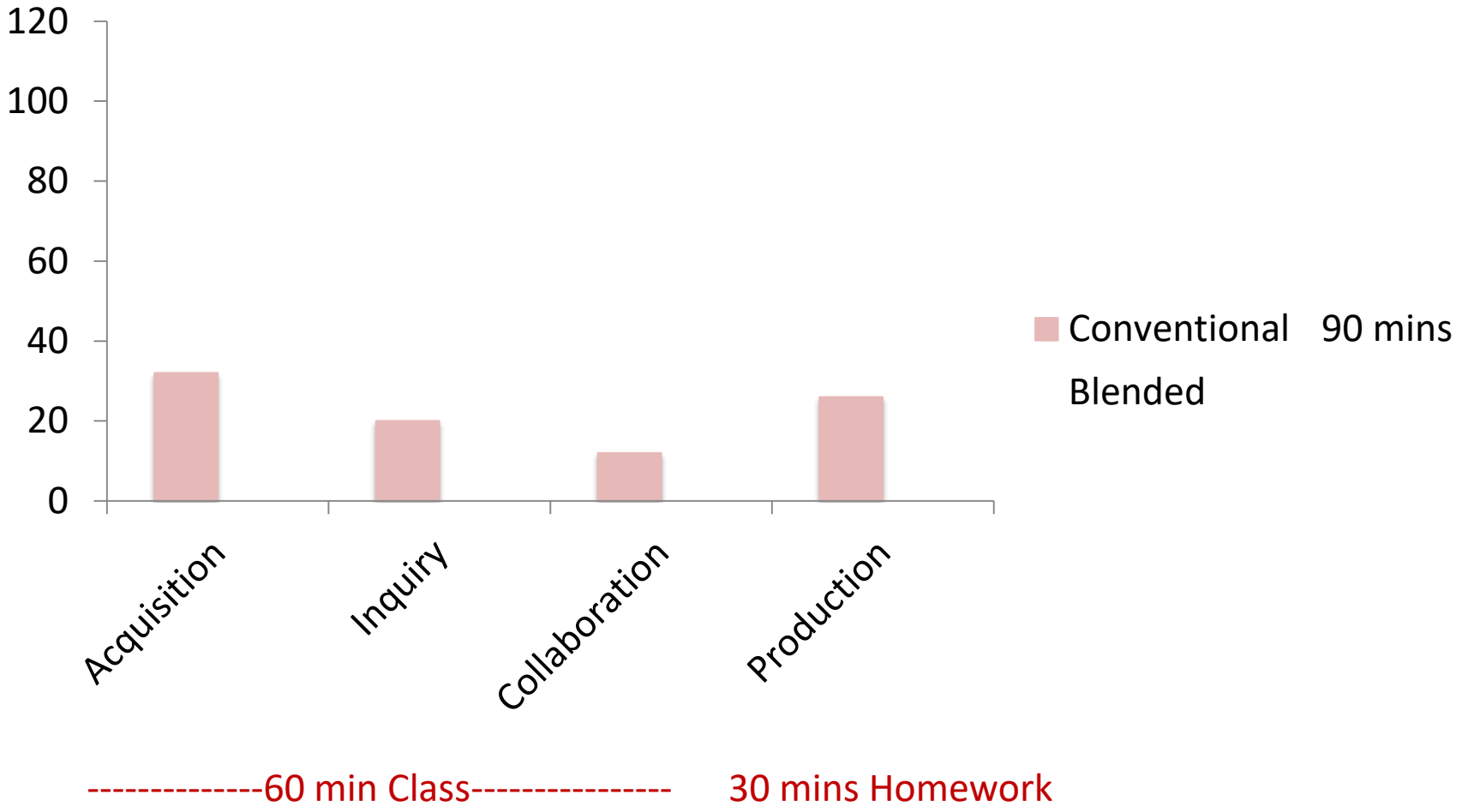


New distribution will prioritise specialised innovation, more generalist adoption, adaptation and collaboration; more learner guidance; more professional development and sharing

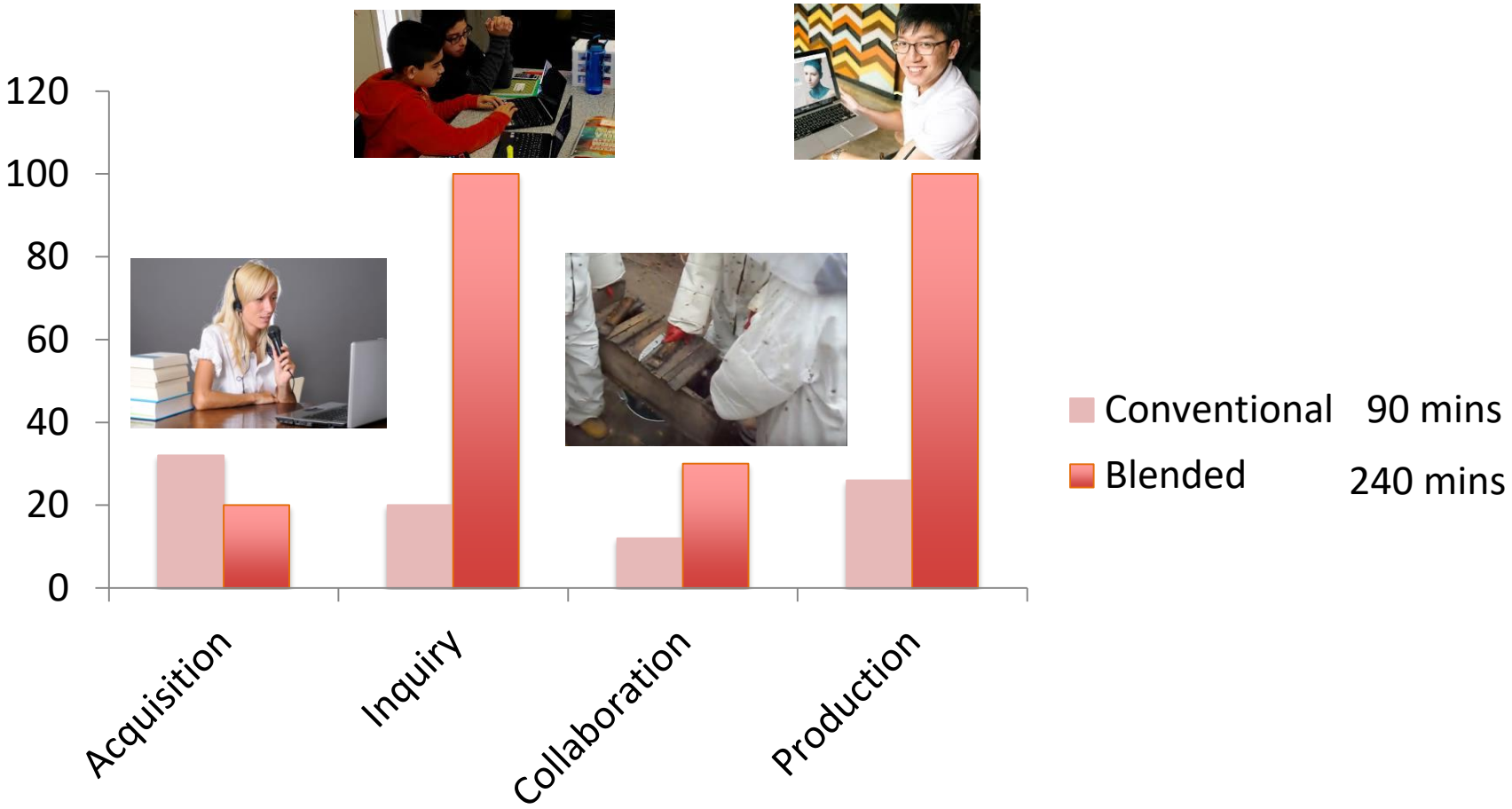
Current distribution of learner time for a session



A new distribution of learner time for a session



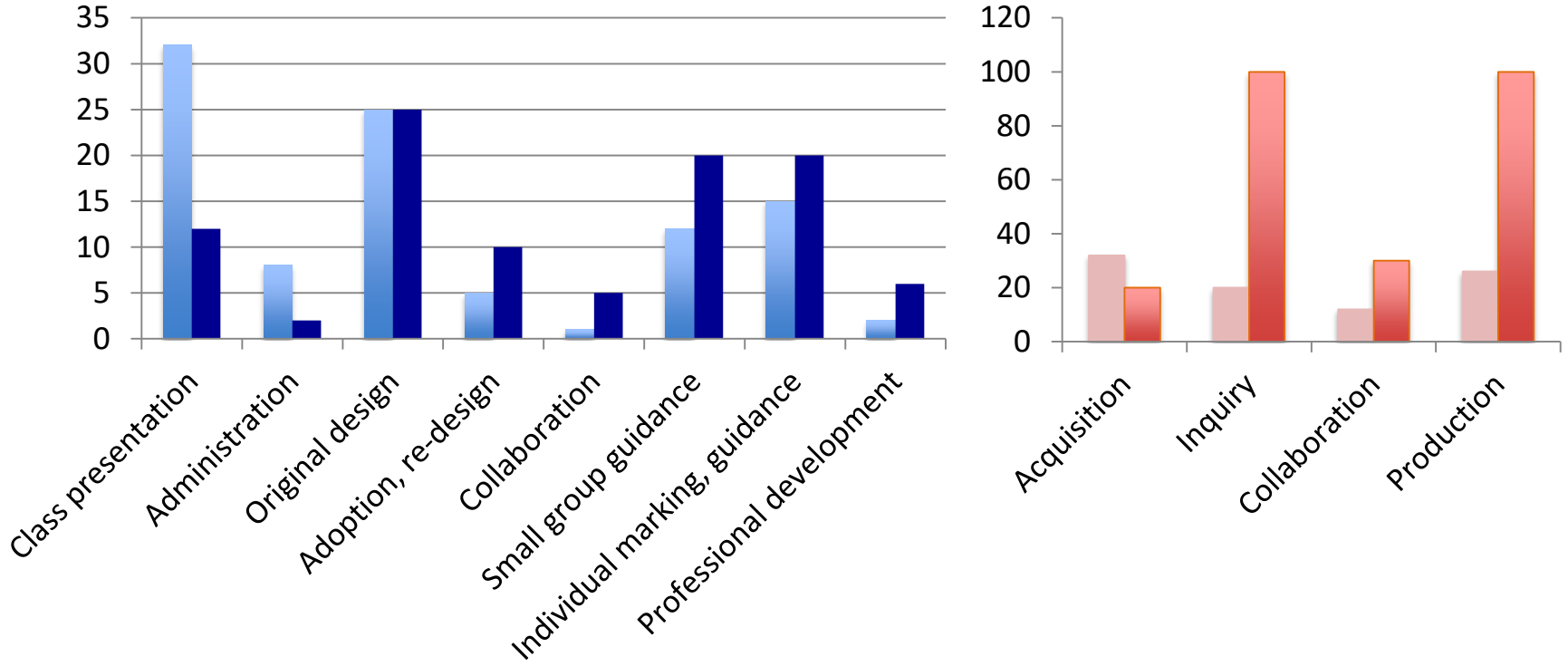
A new distribution of learner time for a session



----------60 min Class/3 hour Homework ----------

More and better supported use of learner time

Planning the new distribution of teacher/learner time



Good use of time is not a zero-sum game:

Better distribution and use of same teacher time

→ More and better supported use of learning time

→ Shared responsibility accelerates better quality learning

But teachers have to lead the change

http://bit.ly/28RNQpI

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