

Tackling the Alignment Problem: The Design of a Learning Analytics Dashboard for Teacher Inquiry

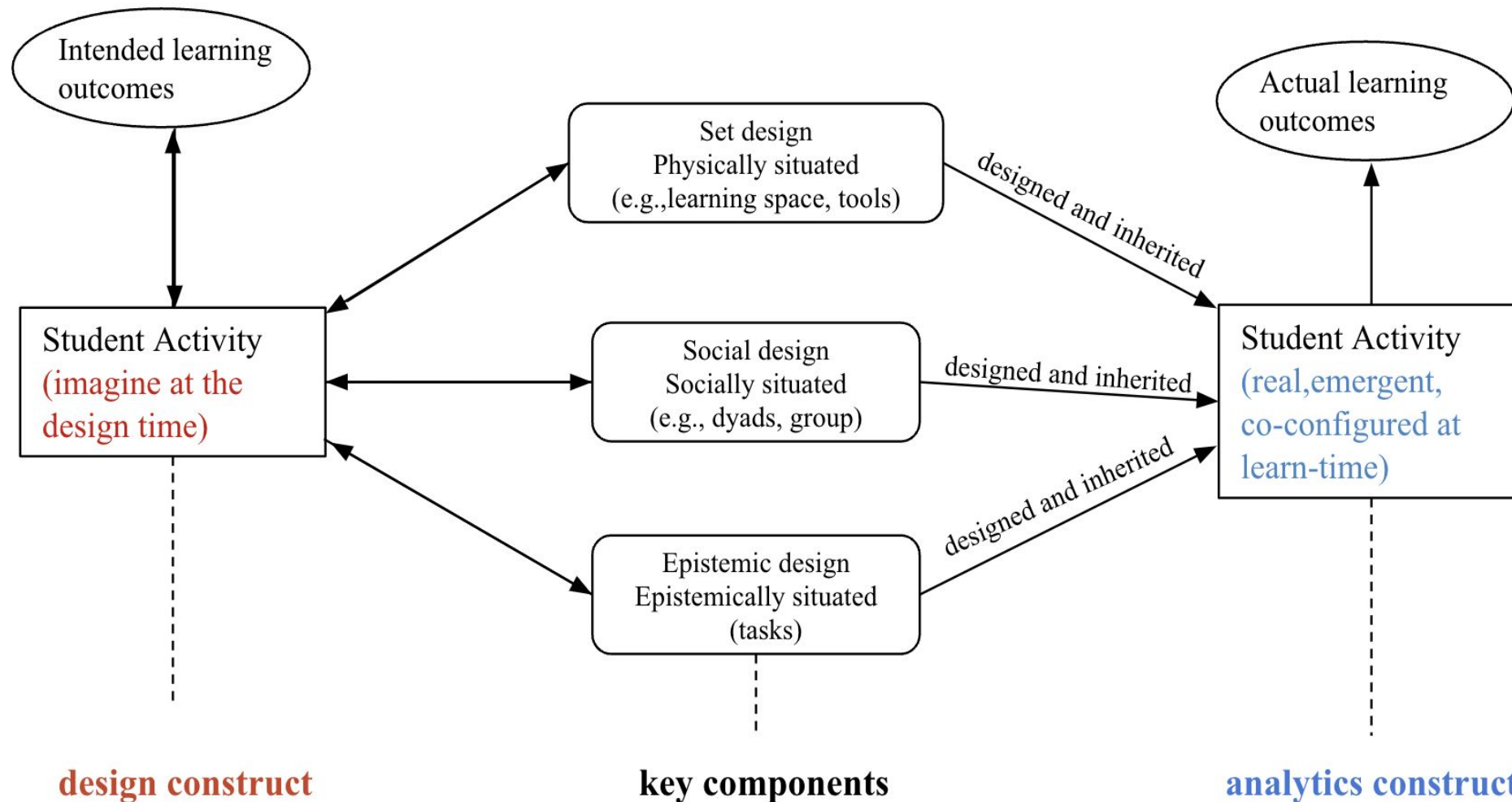
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University of Minnesota¹, University of Pennsylvania²

Objective

This study aims to design a dashboard that supports *teacher inquiry* and provides *actionable* insights for teachers to reflect on and adjust their learning design and teaching practice in social annotation activities.

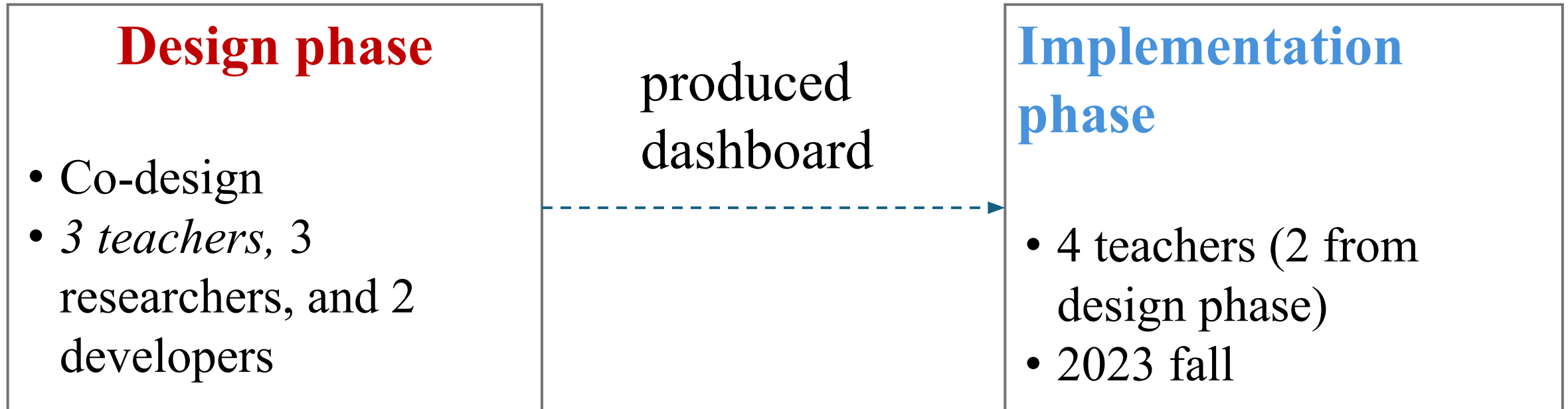
Theoretical framework: Activity-Centered Analysis and Design

(Goodyear, Carvalho & Yeoman , 2021)



Context, participants, and phases

Context: Online/blended courses at a public university in the United States



The produced dashboard

Design

Analytics

Class Title: SMCL

Class Size: 19

Format: fully online - asynchronous

Pedagogical intent/aims

Social Design

Group setting: +

Discussion roles: +

Facilitator

Synthesizer

Epistemic Design

Annotating

Replying

Questions prompting

Sentence framing

Tagging

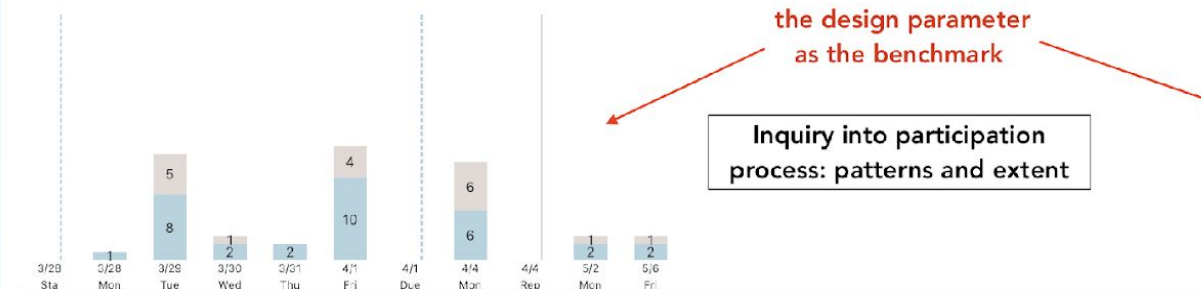
Other task designing

The design page provides a space for the instructor to specify:

1. groups and discussion roles in social design section
2. various tasks in epistemic design section

Please select the reading:

Analytics for epistemic design

the design parameter
as the benchmarkInquiry into participation
process: patterns and extent

1

17 students complete the assigned annotations and replies with substantive ? response.

0 students make *less* ? annotations or replies.0 students compose his/her annotations and replies in *short paragraph* ?.5 students *did not* do the task.

• HongS: 1:41:14 PM

Tasks design reminder: Question prompting

All Questions ? Heated discussion ? Words↓ Words↓ search in all x

Posted Mon Mar 28 2022 by HongS

Digital Citizenship

What is the most interesting/inspiring/insignificant/surprising element to you?

#DigCit

2

Inquiry into
annotation content

sync

Open in Hypothes.is

5 reply in this thread

Analytics for Social Design

• Roles: Facilitator Synthesizer

the design parameter
as a reminder tab

HongS confirm clear

3

Student's position in the thread (Read the annotation on the left):

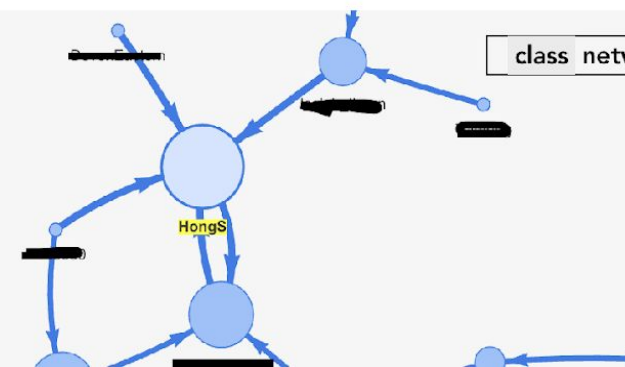
HongS - [redacted] - HongS - [redacted] - [redacted] - [redacted] ego network analysis

The interpretation for the thread's position ▶

Social graph shows the social interaction in the annotation activity:

● = student [large node = receive more replies] → = A reply B [thick arrow = more interaction]

class network analysis



Findings – Teacher Billy and Teacher Sandy

Billy

Info:

- Male
- Learning technologies

Course context:

- Foundations of Learning and Teaching
-]
- (

Sandy

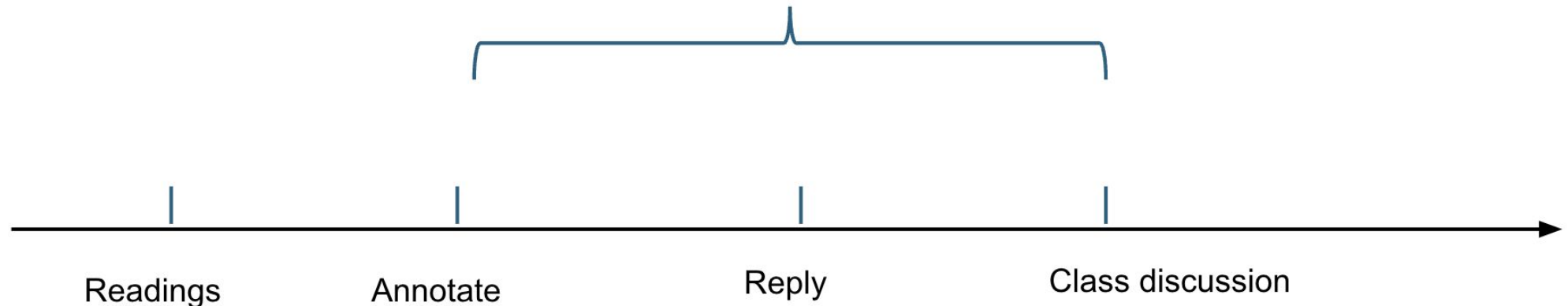
Info:

- Female
- Theater arts and dance

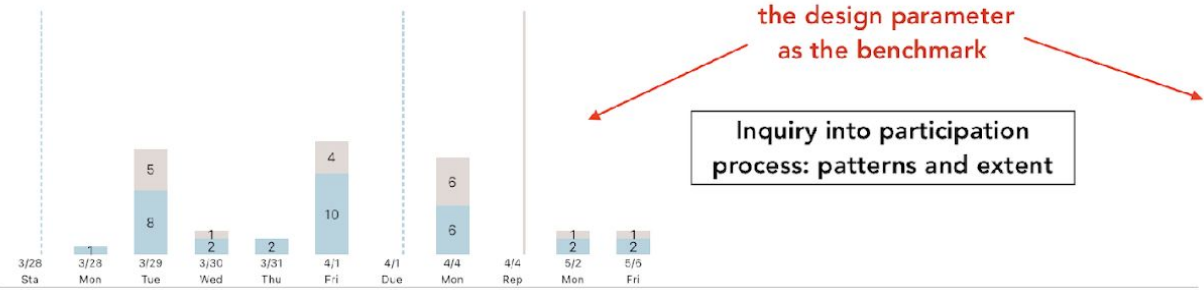
Course context:

- Dance History
- In person

Two facilitators



Billy:
use the dashboard to obtain
actionable information
and his *enactment*



the design parameter
as the benchmark

Inquiry into participation
process: patterns and extent

- 17 students complete the assigned annotations and replies with substantive ? response.
- 0 students make *less* ? annotations or replies.
- 0 students composes his/her annotations and replies in *short paragraph* ? .
- 5 students *did not* do the task.

• HongS: 1:41:14 PM

Area 1: “very useful”

Action

- lots of annotations but less replies → urge students to read peer’s annotations; reciprocal
- absent students → “send an announcement to the class, asking them to participate”

... in the class, I will urge students to, to look at each other's annotations, and try to think about how other people's annotation word would be meaningful for their own learning.

Intended Action in redesign

- readings engagement → provide more scaffolding

Observed changes

- the graph has more replies
- behavior change, “next week, they are active”

Tasks design reminder: Question prompting

All

Questions ?

Heated discussion ?

Words ↓

Words ↓

search in all x

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HongS - - - - -

ego network analysis

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Social graph shows the social interaction in the annotation activity:

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→ = A reply B [thick arrow = more interaction]

class network analysis

Area 2 - “useful”

Action

- “questions or discussion needs to be revisited” → pull them out in the class discussion

Area 3 – “less used”

Action:

- check facilitator → discuss the role script in class
- class network → “more predictable and *less useful*”

Sandy:
use the dashboard as
*a teaching tool **in** class*

Area 3 – the class social graph: “my favorite part”

Action in class: analyze the annotations with students

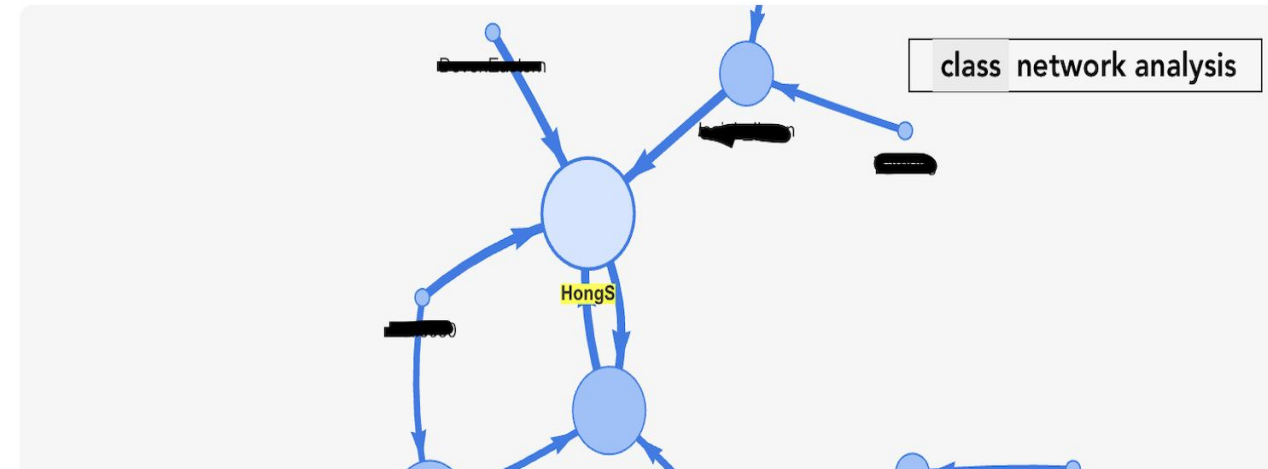
- dots → create criteria for effective annotation
- bring out students → learn from each other

Action for class:

- enlarge the node
- reply to not-connected students

Social graph shows the social interaction in the annotation activity:

● = student [large node = receive more replies] → = A reply B [thick arrow = more interaction]



Student's response: “We are not invisible”

Area 2 – questions and heated discussion

Action: discuss in the class

“...deepen and show the students to, like, they might need to be more specific and what they're saying, defend what they're saying, and realize that what they're saying could be problematic.”

Intended action in the redesign:

the class → small groups → analyze → feed back to the class

Area 1 – bar graph and cluster of students

Glance but not really use