Introduction to the Learning Sciences (Bilingual)
学习科学导论 (双语)

Lesson 6, Friday, Apr.1,2016

Chapter 10 Analyzing Collaboration of CHLS2E by Noel Enyedy and Reed Stevens

合作（学习）分析

Instructor: Prof. Baohui Zhang
Teaching Assistant: Ms. Shasha Zhang
Research Assistant: Ms. Nan Li

School of Education, Shaanxi Normal University, China

陝西師範大學教育學院
SCHOOL OF EDUCATION SHAANXI NORMAL UNIVERSITY

Presentation Plan

- Lesson Objectives
- Lecture: Chapter 10 Analyzing Collaboration
  - collaboration-as-a-window (窗口即合作)
  - collaboration-for-distal-outcomes (为远端结果而合作)
  - collaboration-for-proximal- outcomes (为近端结果而合作)
  - collaboration-as-learning (学习即合作)
- Break
- Discussion
  - Discussion Leader & Discussion Questions
  - 1. What is Analyzing Collaboration? What's the goal in this chapter?
  - 2. What are the 4 reasons to study collaboration and learning in Analyzing Collaboration?
  - 3. How to use proximal and distal to describe the processes of collaboration and cognition in research topology?
  - 4. What is the four reasons to study collaboration and learning, used to stake out a theoretical commitment to how collaboration is defined and what counts as learning?
  - 5. How to employ Analyzing Collaboration for the Learning Sciences?
- Assignment

Learning Objectives 学习目标

- Know the concept and significance of collaboration.
- Understand four reasons to study collaboration and learning.

Course Content 课程内容

1. Collaboration-as-a-Window-onto-Thinking

Methods for Representing and Analyzing Collaboration-as-a-Window-onto-Thinking

2. Collaboration as a Context that Promotes (or Constrains) Distal Learning Outcomes

Methods for Correlating Sequences of and Norms for Talk with Distal Learning Outcomes

3. Collaboration Coordinated with Proximal, Collective Outcomes within the Interaction Itself , e.g. Inter-subjectivity (主体间性)

Methods for Representing and Analyzing Collaborative Discourse with the Evidence for Learning Operationalized Proximally in the Interaction Itself

4. Collaboration-as-Learning: Committing to a Distributed Endogenous Unit of Analysis

The Methods of a Distributed, Endogenous Approach

Guiding Questions 引导性问题

Discussion Leader & Discussion Questions

1. What is the analyzing collaboration? What's the goal in this chapter?
2. What are the 4 reasons to study collaboration and learning in the analyzing collaboration?
3. How to use proximal and distal to describe the processes of collaboration and cognition in research topology?
4. What is the four reasons to study collaboration and learning, used to stake out a theoretical commitment to how collaboration is defined and what counts as learning?
5. How to employ analyzing collaboration?

Overview

1. Two authors:

Noel诺埃尔(姓氏;男子名;女子名)、Enyedy (埃涅迪) from University of California, Los Angeles (UCLA),

Reed里德(姓氏) Stevens史蒂文斯(姓氏)) from Northwestern University.

2. The study of collaboration has been part of the learning sciences from its inception. The spectrum of methodologies used in collaboration research can be usefully divided into four groups, associated with four different reasons to study collaboration: collaboration-as-a-window, collaboration-for-distal-outcomes, collaboration-for-proximal-outcomes, and collaboration-as-learning.

What Is Collaboration?

- **Collaboration** is illustrated in the picture below.

4 reasons to study collaboration (The spectrum of methodologies (方法学谱) to variety of collaboration research (合作研究), see Table 10.1):

Collaboration-as-a-window

collaboration-for-distal-outcomes

collaboration-for-proximal-outcomes

and collaboration-as-learning

How to Place Four Approaches along A Single Continuum?

- Howley, Mayfield, and Rose (豪利,梅菲尔德,和萝丝,2013) provide a well-organized discussion of approaches to studying collaboration that range from a focus on the individual as the unit of analysis to a focus on collaborative processes for enculturation (濡化,对文化的适应) as the unit of analysis (also see the “elemental” and “systemic” distinction in Nathan & Sawyer, Chapter 2, this volume).
- However, we find that a single dimension unnecessarily flattens the research topology (研究拓扑) on collaboration and learning.
- Instead, we propose that these four approaches can be distinguished along four dimensions, as shown in Table 10.1: the unit of analysis for describing processes of collaboration and cognition; the unit of analysis for documenting learning outcomes (学习结果); the degree to which these outcomes are operationalized as proximal (操作化为近端within the collaboration) or distal (outside the collaboration); and the degree to which a normative stance (规范立场) is taken on collaboration.
- We argue that these four dimensions, and the assumptions that accompany them, provide insight into the methodological choices that researchers have made and may make in the future.

Four Reasons to Study Collaboration and Learning (1)

- 1. Collaboration-as-a-Window-onto-Thinking (窗口即合作式思考)
- Methods for Representing and Analyzing Collaboration- as-a-Window onto Thinking 表示和分析“窗口即合作”方法上的考量

- 2. Collaboration as a Context that Promotes (or Constrains) Distal Learning Outcomes 促进(或限制)远端学习结果的语境下的合作
- Methods for Correlating Sequences of and Norms for Talk with Distal Learning Outcomes 与远端学习结果相关联的序列和规范的方法

Four Reasons to Study Collaboration and Learning (2)

- 3. Collaboration Coordinated with Proximal, Collective Outcomes within the Interaction Itself 与近端，集体结果及其自身相互作用来协调的合作 (与近端，集体结果及其自身相互作用的协同)
- Methods for Representing and Analyzing Collaborative Discourse with the Evidence for Learning Operationalized Proximally in the Interaction Itself (用于表示和分析在其自身相互作用中大致用于操作的学习证据的方法)
- 4. Collaboration-as-Learning: Committing to a Distributed (窗口即合作式思考)
- Endogenous Unit of Analysis (看作学习的合作)
- The Methods of a Distributed, Endogenous Approach (一种采用分布式、内生途径的方法)

Table 10.1. Four reasons to study collaboration and learning
(Enyedy & Stevens, 2014, pp. 233-234)

Objective for investigating collaboration	Unit for Processes	Unit for Outcomes	Proximal/ Distal outcomes	Normative/ Endogenous
Collaboration-as-a-window	Individual	Individual	Proximal (and Distal)	Normative
Collaboration-for-distal-outcomes	Collective	Individual	Distal	Normative
Collaboration-for-proximal-outcomes	Collective	Collective (to explain individual)	Proximal (to explain distal)	Normative
Collaboration-as-Learning	Collective	Collective	Proximal	Endogenous

The Goals in This Chapter

- The goal in this chapter is to frame the choice of methods for studying collaboration and interaction by reviewing the work in each of the four categories described in Table 10.1.
- In reviewing this work we hope to show that there is more at stake here than merely a choice of methods; these four positions each stake out a theoretical commitment (理论保证) to how collaboration is defined and what counts as learning.
- It is conscious reflection (自觉反思) on these theoretical commitments – the reason one is studying collaboration in the first place – that should drive the choice of methods.
- This is much preferred to the alternative: that the choice of methods unconsciously drives and constrains one’s theory of collaborative learning. Table 10.1. Four reasons to study collaboration and learning (p. 233)

The Four Methodological Approaches

- 1st category – collaboration-as-a-window – uses contexts of collaboration to better understand individual cognition.
- 2nd category – collaboration-for-distal-outcomes – seeks to document how particular patterns of collaboration promote or constrain productive learning activities leading to positive or negative individual outcomes that are operationalized apart from the interaction itself (e.g., performance on a later written test).
- 3rd category – collaboration-for-proximal- outcomes – attempts to link collaborative processes with outcomes within the interaction itself (e.g., intersubjectivity主体间性), and (sometimes) uses thoseoutcomes to explain distal learning outcomes.
- 4th category, collaboration-as-learning, treats collaboration as more than a means to proximal or distal outcomes, but as the focal process and outcome itself. Forms of collaboration are themselves outcomes. This view brings with it a commitment to understanding the "endogenous" organization and understandings of collaboration among research participants. (CHLS2E, p. 232)

1. Collaboration-as-a-Window-onto-Thinking (“窗口即合作”式思考)

- One reason to study collaboration is to learn more about how individuals think.
- In such a study, the focus is not on collaborative processes per se, and the methods typically used in these studies reflect this.
- For example, the learning sciences has strong genealogical roots in cognitive science, and one of the early methods for studying learning and problem solving within cognitive science was the use of verbal protocols.
- In a verbal protocol study, a person is asked to think aloud, in the presence of a researcher, while carrying out some task (Ericsson & Simon, 1993).

Methods for Representing and Analyzing Collaboration- as-A-Window onto Thinking
表示和分析“窗口即合作”方法上的考量

- A focus of this chapter is on methods for studying how collaborative discourse impacts learning, and because the collaboration-as-a-window approach treats discourse as epiphenomenal, we will keep our discussion of methods in this category brief.
- Researchers who conceptualize collaborative discourse as a window onto thinking focus primarily on the content of talk, rather than the interactional processes of talk, which is then coded at the level of single turns, aggregated, quantified, and submitted to statistical analysis (Chi, 1997). (p. 235)

Table 10.1. Four reasons to study collaboration and learning

Table 10.1. Four reasons to study collaboration and learning				
Objective for investigating collaboration	**Unit for Processes**	**Unit for Outcomes**	**Proximal/Distal outcomes**	**Normative/ Endogenous**
Collaboration-as-a-window	Individual	Individual	Proximal (and Distal)	Normative
Collaboration-for-distal-outcomes	Collective	Individual	Distal	Normative
Collaboration-for-proximal-outcomes	Collective	Collective (to explain individual)	Proximal (to explain distal)	Normative
Collaboration-as-Learning	Collective	Collective	Proximal	Endogenous

Collaboration as a Context that Promotes (or Constrains) Distal Learning Outcomes
促进(或限制)远端学习结果的语境下的合作

- For a 2nd group of researchers, collaboration is treated as a context that promotes and constrains different types of observable actions and forms of thinking (可观察的行动和思维形式).
- Studies have identified many relationships between discourse patterns and any number of measures of distal student outcomes, such as the artifacts produced as a result of collaboration (Mercer, 2008), student achievement (e.g., Nichols, 1996; Webb, 1991; Webb & Mastergeorge, 2003), developmental growth (Sun, Zhang, & Scardamalia, 2010), and motivation (e.g., Jones & Issroff, 2005).
- Different types of collaboration can be identified and associated with varying levels of individual learning outcomes, which are identified outside the immediate context of the interaction, such as performance on a later cognitive task or a measure of motivation.
- This second approach has a long history and has been used in many research studies.

Distal, Individual Learning Describes Collaborative Discourse

- Finally, some researchers that are motivated by distal, individual learning describe collaborative discourse in even broader terms, often in terms of the social norms (社会规范) that guide and constrain productive interactions (有成效的互动).

- Norms refers to the expectations for what counts as appropriate activity and interaction held by the teachers and students (Cobb, 2002).

Methods for Correlating Sequences and Norms for Talk with Distal Learning Outcomes
与远端学习结果相关联的序列和规范的方法

- This 2nd methodological approach requires identifying a collaborative pattern (i.e., either a specific process such as revoicing or a broad class of talk such as accountable talk) within discourse and correlating or relating it to a distal outcome typically reified as a product (Erickson, 1986).
- This style of research greatly depends on the researcher’s ability to operationalize and define the collaborative phenomena of interest and the outcomes in order to make both observable and measurable.
- On the process side of the equation, the researcher must choose the scale at which the phenomena of interest becomes visible – in terms of a fixed sequence of turns (e.g., IRE), classes of talk (e.g., accountable talk), or classroom-level structures (e.g., norms).

3. Collaboration Coordinated with Proximal, Collective Outcomes within the Interaction Itself
与近端，集体结果及其自身相互作用来协调的合作

- A third body of research tightens the focus of collaboration on proximal outcomes, such as intersubjectivity, that are identified within a focal interaction itself and that are believed to mediate the relationship between patterns of discourse and the distal outcomes like those described in the previous section.
- This is currently one of the most active areas of research in the learning sciences, because its goal is to explain how collaborative processes contribute directly to learning (Chin & Osbourne, 2010; Enyedy, 2003; Hmelo-Silver, 2000).

Methods for Representing and Analyzing Collaborative Discourse with the Evidence for Learning Operationalized Proximally in the Interaction Itself (用于表示和分析在其自身相互作用中大致用于操作的学习证据的方法)

- This close attention to the process of collaboration as a jointly produced activity has been accompanied by a major methodological change in how interactions are represented and studied.
- Nowhere is this more evident than in the way interactions are represented through transcription conventions.
- When one brings a collective unit of analysis to the study of collaboration, one needs techniques that allow analysts to track how interactions unfold across participants, for the purposes of identifying units of activity that span different turns, and thereby, different participants in an interaction.

Table 10.1. Four reasons to study collaboration and learning

Table 10.1. Four reasons to study collaboration and learning				
Objective for investigating collaboration	**Unit for Processes**	**Unit for Outcomes**	**Proximal/Distal outcomes**	**Normative/ Endogenous**
Collaboration-as-a-window	Individual	Individual	Proximal (and Distal)	Normative
Collaboration-for-distal-outcomes	Collective	Individual	Distal	Normative
Collaboration-for-proximal-outcomes	Collective	Collective (to explain individual)	Proximal (to explain distal)	Normative
Collaboration-as-Learning	Collective	Collective	Proximal	Endogenous

A Sample of Transcription Conventions

Table 10.2. A selection of Jeffersonian transcription conventions (Atkinson & Heritage, 1984)

Convention	Name	Use
[talk]	Brackets	Indicates the start and end points of overlapping speech.
=	Equal Sign	Indicates latching where there is no pause between turns.
(# of seconds)	Timed Pause	Indicates the time, in seconds, of a pause during speech.
(.)	Micro pause	A brief pause, usually less than 0.2 seconds.
. or ↓	Period or Down Arrow	Indicates falling pitch.
? or ↑	Question Mark or Up Arrow	Indicates rising pitch
,	Comma	Indicates a short rise or fall in intonation.
-	Hyphen	Indicates an abrupt interruption of the utterance.

Transcription Conventions 2

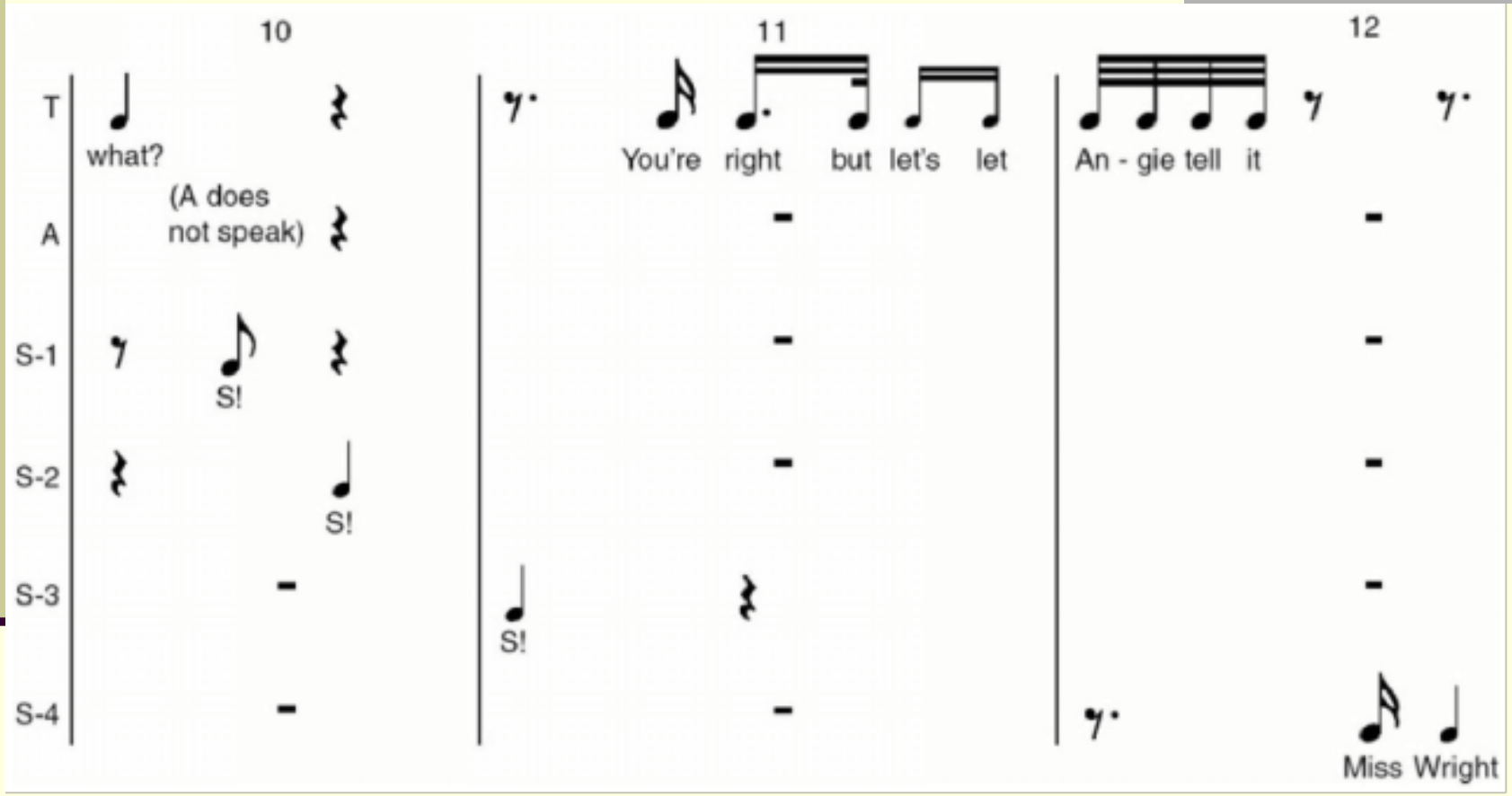

Figure 10.3. Transcription conventions that attend to the synchronic rhythms of multiparty talk (Erickson, 1996).

Transcription Conventions 3

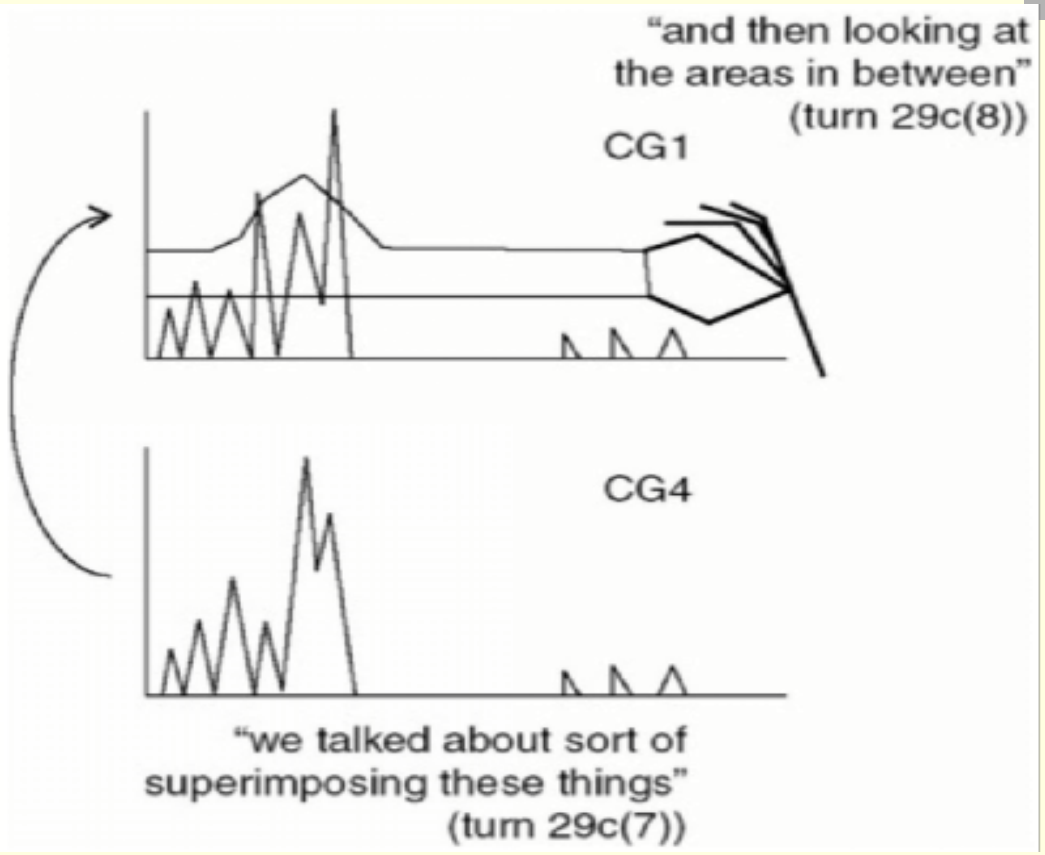

Figure 10.4. Transcription conventions that display the relations of embodied action to representational media (Hall, Stevens, & Torralba, 2002).

Collaboration-as-Learning: Committing to a Distributed, Endogenous Unit of Analysis
合作学习：置于一种分布式内生分析单元

- A fourth category within the learning sciences holds that collective units of activity are an important unit of analysis in their own right.
- Learning is operationalized as relational changes to a system with multiple parts, human and nonhuman – “adaptive reorganization in a complex system” (Hutchins, 1995a, p. 289).
- To clarify this perspective and how it differs from the other three we have already discussed, let us recall what Hutchins and others mean by “distributed cognition.”
- In using this term, Hutchins is directing attention to units of analysis that stretch across multiple people and tools, interacting in coordination in a “socio-cultural system.” Hutchins’s “How a Cockpit Remembers Its Speed” (1995b) displays this orientation in its very title.

The Methods of A Distributed, Endogenous Approach
(一种采用分布式、内生途径的方法)

- Methods aligned with either a distributed or endogenous approach to collaboration receive relatively clear guidance from the related approaches to studying social life and interaction known as conversation analysis (CA) and ethnomethodology (EM) (e.g., Goodwin, 2000; Goodwin & Heritage, 1990; Lynch, 1993; Schegloff, 2006).

- We discussed many of these methods of studying multimodal, multiparty social interaction earlier in this chapter.

Conclusion

The variability of methods adopted in the learning sciences for studying collaboration reflects **the breadth of research questions** being asked and the range of assumptions within **the field about what counts as learning**.

Many learning scientists study collaboration to better understand how it can **reveal or produce knowledge** about individual learning, and they adopt a normative perspective on what counts as good learning.

Some traditional methods (e.g., protocol analysis, clinical interviews) carry with them assumptions and theoretical entailments that were developed within an individual psychological perspective and later expanded to include collaboration.

Other traditions the learning sciences borrows methods from (e.g., ethnography and **conversational analysis**) are committed to **a distributed, endogenous unit of analysis**.

- As the field moves forward and expands its horizons outside of the classroom, discussion and debate about the consequences of the approach one takes toward the study of collaboration, about **the unit of analysis**, and about adopting **a commitment to the normative or endogenous stance** are critical to unifying or at least understanding important differences in our field's effort to study collaboration and learning in a wide range of contexts.

Appendix：Words and Expressions

- spectrum谱, the “endogenous” organization (“内生”组织),
- paradigms of learning sciences research (学习科学研究范式),
- per se(固定词组,后置)本身, genealogical roots 系谱的根,家谱的根,
- protocol n.外交礼仪；草案；协议；规章制度；【医】记录；科学实验报告, protocols n.外交礼仪；草案；协议；规章制度(名词protocol的复数形式),
- verbal protocols 口头记录, epiphenomenal (副现象),
- Commit to把 ... 托付给；把...置于,
- proximal adj.近似的；邻近的；近身体中央的, distal adj.末梢部的,
- Intersubjectivity n.主体间性(20世纪逐步兴起的一个哲学与美学概念),
- more at stake here than adj.在危险中；处于成败关头, stake out(派人)监视；明确阐述；立桩标出,
- operationalize vt.使用于操作；使开始运转, Operationalized Proximally大致用于操作的,
- endogeny n.[生]内生；内源, Endogenous adj.内生的；内成的,

Homework

Reading Task

Chapter XI: Frontiers of Digital Video Research in the Learning Sciences -- *Mapping the Terrain* by Ricki Goldman, Carmen Zahn and Sharon J. Derry in the Cambridge Handbook of the Learning Sciences (2nd) .

Reading summary in English, due 12 hours before class, send via QQ （Next Class, 7pm, Apr. 8)

Reflection journal (In English)

This is a required weekly assignment.

Due date: 6pm, Apr.2, 2016

Please post your reflection journal in QQ group

Acknowledgement

- We thank Pengfei Li and Xiangjun Ji for their serving as the instructional designers and discussion leaders

THANK YOU !

谢谢!

Contact:

QQ group No. 320585188

baohui.zhang@snnu.edu.cn;

18291856988 (HP)