Student perspectives on data provision and use: Starting to unpack disciplinary differences

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This paper …

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1. Introduces our study – student perspectives on data
2. Makes a case for **knowledge** in learning analytics practices
3. Connects students' views on data to disciplinary practices and standards for achievement
4. Suggests a framework for aligning data provision and use with disciplinary knowledge practices.

Our study

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What data about their learning would students like to have and why?

What are the benefits and risks of being guided by what students want?

Distinctiveness of analysis

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- Incorporates student voices
  - Data from student focus groups
  - Undergraduate researchers: Ly and Scott
- Gives a sociological perspective -- applies analytical tools from Legitimation Code Theory (Maton, 2014)
- Considers **knowledge** as well as knowers and knowing

Larger project

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Student and staff perspectives of learning analytics: What information is important?

Chief investigator: Dr Danny Liu

Our study

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Student focus groups mid 2015

33 participants

26 female and 7 male
24 undergraduate and 9 postgraduate

9 Arts; 11 Business and Economics;
10 Human Sciences; 4 Science and Engineering

Focus groups

FORMAT AND QUESTIONS

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Guided discussion: *Definition of learning analytics*

Questions: What data related to your learning would you like to have and why?

How would you like to receive this information?

Guided discussion: *Response to data dashboards*

Blackboard Analytics

Sample dashboard from Corrin & de Barba (2014)

Purdue's Course Signals

Question: What kind of data would you be willing to share?

Disciplinary differences

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Many students focussed on time management and accountability

How can we align learning analytics practices with disciplinary knowledge practices?

- To support learning
- To support students' capacity to contribute to the production of knowledge in their discipline

Educational research

AND LEARNING ANALYTICS

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Learning analytics needs to be grounded in educational research (Gašević, 2015)

What kind of educational research?

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Three influences on student learning research in higher education …

Student learning research/practice

IN HIGHER EDUCATION (HAGGIS, 2009)

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1. Psychological research

Cognitive psychology and approaches to learning

How do individuals learn?

Keywords: Personality; ability; motivation; learning style/strategy; approaches to learning

Student learning research/practice

IN HIGHER EDUCATION (HAGGIS, 2009)

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2. Sociological research

Social context and student experience

What influences learning outcomes? What is students' experience of learning?

Keywords: Access; transition; diversity; student experience; complexity; uncertainty

Student learning research/practice

IN HIGHER EDUCATION (HAGGIS, 2009)

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3. Cultural trends and value positions

Utilitarian and organizational discourses
E.g. quantification, efficiency and accountability

Keywords: Peer learning; self-regulated learning, multimodality, personalization, quantification

What's missing?

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How do individuals learn?
What influences learning outcomes?
What is students' experience of learning?

Learning and learners

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Educational research generally:

- Considers learning not **what** is learned (Maton, 2014)
- Focuses on **knowing** or **knowers** (students, teachers)
- Focuses on **generic** processes of learning

A realist sociology of education

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A realist sociology of education considers **what is learned**

- Focuses on **knowledge** and **knowers**
- Considers the organizing principles underlying **knowledge practices** within disciplines

(Maton, 2014)

Some aims of higher education

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- Initiating students into the knowledge practices of knowledge societies (Scardamaila, 2006; Stehr, 1994)
- Enabling critical engagement with disciplinary knowledge so that students can understand, reproduce and create new disciplinary knowledge (Clarence, 2016)
- Developing students' agency as professionals in their chosen discipline through critical engagement with disciplinary knowledge (Case, 2013)

Knowledge and disciplinarity

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Knowledge production in disciplines is shaped by systematic methods of enquiry that are specific to disciplines (Wheelahan, 2010)

Legitimation Code Theory understands disciplinary differences by examining principles that underpin knowledge building (Maton, 2014) .

Why is this important?

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‘…without paying attention to knowledge in the disciplines, approaches to teaching and learning can risk being unable to fully address the particular needs of the students, of the educators, or of the disciplines themselves’ (Clarence, 2016)

Relevance to learning analytics?

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Recognizing principles of knowledge building supports learning analytics practices that align with:

- Disciplinary knowledge practices
- Disciplinary standards of achievement

What makes someone good at your subject?

- You need to learn special skills or knowledge
- You need to have ‘natural ability’ or a ‘feel’ for it
- Only people with ‘natural ability’ can learn the special skills needed
- Anyone can do it. Nothing special is needed

(Maton, 2014:118)

Principles of knowledge building

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Educational practices and contexts represent messages as to both **what is valid to know** and also **who is an ideal actor** (learner or teacher) (Chen et al., 2011:131)

Principles of knowledge building

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Specialization is generated by:

- Epistemic relations (ER) = relations to knowledge
  - Strong (ER+)
  - Weak (ER-)
- Social relations (SR) = relations between knowers
  - Strong (SR+)
  - Weak (SR-)

Adapted from Maton (2014)

Examples

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Science (knowledge code)

- Specialized knowledge, fixed objects of study, strongly bounded procedures for enquiry, little room for actors to choose objects of study, procedures and criteria **(ER+)**
- Formal principles and procedures more important than differences between individuals – all are equally positioned and can produce knowledge if they follow the rules **(SR-)**

Cultural studies (knower code)

- Open objects of study, open procedures for enquiry; flexible curriculum **(ER-)**
- Gives voice to different experiences and points of view; primary experience more important than detached viewpoint, claims to knowledge based on attributes of ideal knower (e.g. feminist, queer) **(SR+)**

(Maton, 2014)

Knowledge and knower codes

Knowledge code	ER+, SR-
Knower code	ER-, SR+
Elite code	ER+, SR+
Relativist	ER-, SR-

(Maton, 2014)

Knowledge code

ER+, SR-

Emphasizes the possession of specialized knowledge as the basis for achievement.

You need to learn special skills or knowledge.

- Science
- Psychology

(Maton, 2014)

Knower code

ER-, SR+

Emphasizes the attributes of actors as a measure of achievement.

You need to have natural ability or 'feel' for it.

- English
- Media

(Maton, 2014)

Elite code

ER+, SR+

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Emphasize both knowledge and attributes of actors.

Only people with natural ability can learn the special skills needed.

- Music
- Architecture

(Maton, 2014)

Relativist code

ER-, SR-

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Emphasize neither knowledge nor attributes.

Anyone can do it. Nothing special is needed.

- History

(Maton, 2014)

Knowledge and knower codes

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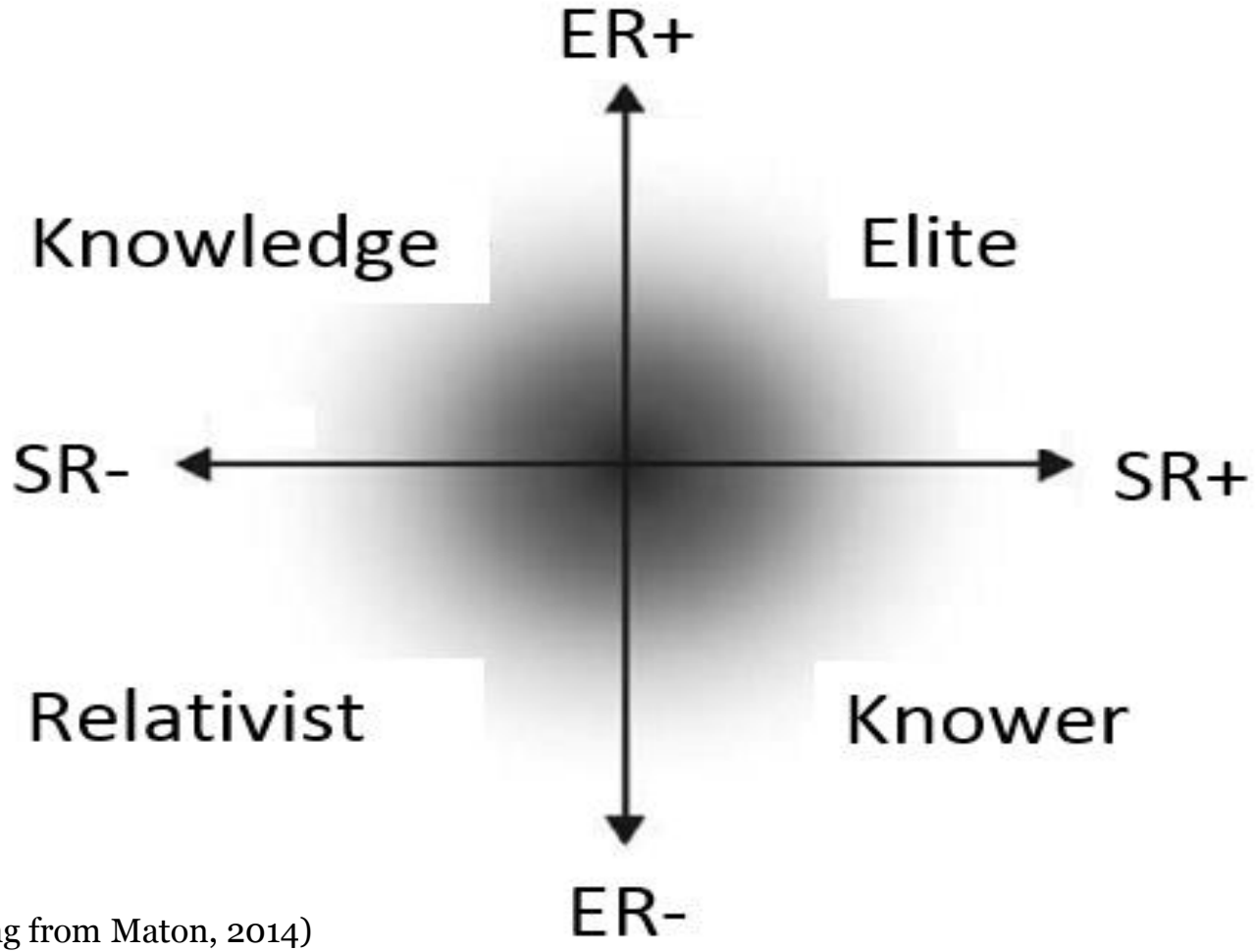
(Maton, 2014)



(Adapted for screen viewing from Maton, 2014)

Production vs reproduction

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Modalities are tendencies not absolutes.

Knowledge **production**
> **recontextualization** (curriculum)
> **reproduction** (learning and teaching)

Modalities can switch over a program, e.g.

First and second year units:	*General academic and disciplinary knowledge*
Final year capstone unit:	*Professional capabilities*

Implications for learning analytics

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Modalities influence:

- What we define as success
- Types of learning and teaching activities
- Nature of participation
- Standards for achievement
- **Proxies for learning**

Influences on knowledge reproduction
Peer learning; self-regulated learning, multimodality, personalization, quantification

Our analysis

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What students said about the provision or use of data in relation to:

- Curriculum
- Pedagogy
- Assessment

Framework

CHEN (2010)

	Epistemic relations		Social relations	
Curriculum	Content knowledge	ER+/-	Learners' personal knowledge and experience	SR+/-
Pedagogy	Teaching of content knowledge	ER+/-	Personal dimensions of learning	SR+/-
Assessment	Explicit evaluative criteria	ER+/-	Learners' self-evaluation	SR+/-

Framework

CHEN (2010)

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Curriculum

WHAT STUDENTS SAID ABOUT DATA AND CURRICULUM

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ER-	ER+
Data that downplays content knowledge as defining the curriculum	Data that emphasizes content knowledge as defining the curriculum

Curriculum is arbitrary:

- Data on graduate destinations to inform subject choices
- Data on the level of difficulty to inform subject choices

Curriculum is defined by knowledge:

- Data that helps in finding resources to build understanding of key concepts
- Data that supports exam preparation

Curriculum

WHAT STUDENTS SAID ABOUT DATA AND CURRICULUM

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SR-	SR+
Data that downplays personal experience, preferences and opinions	Data that emphasizes personal experience, preferences and opinion

Doubts about data that condenses personal experience, preferences and opinions

- Data on popular or useful resources
- Recommendations on subject selection based on:
  - own performance
  - interests
  - similarity of experience
  - popular study pathways

Framework

CHEN (2010)

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Pedagogy

WHAT STUDENTS SAID ABOUT DATA AND PEDAGOGY

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ER-

Emphasizes content knowledge (what); procedures for disciplinary learning (how) are implicit to students

ER+

Emphasizes content knowledge (what); procedures for disciplinary learning explicit to students

Prompts generic to any discipline:

- Data that indicate activities completed
- Data that indicate activities to be completed

Prompts specific to a discipline:

- Data that emphasize study habits specific to a discipline
- Data on students' use of discipline-specific resources

Pedagogy

WHAT STUDENTS SAID ABOUT DATA AND PEDAGOGY

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SR-	SR+
Data that links study habits with external standard (e.g. grades)	Data that condenses learners' choices on how to study

- Data on habits of high-achieving students:
  - Time spent
  - Study strategies
  - Study pathways
- Personalized warnings

- Data that supports time management or scheduling
- Data on what other students do:
  - Class attendance
  - Lecture downloads
  - Time spent on resources
- Data for finding likeminded peers

Framework

CHEN (2010)

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Assessment

WHAT STUDENTS SAID ABOUT DATA AND ASSESSMENT

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ER-	ER+
Data that downplays explicit evaluative criteria	Data that emphasizes explicit evaluative criteria in judging learning

- Direct interventions based on own performance
- Indirect interventions based on own performance

Personalized feedback with reference to

- Marking criteria
- Subject learning outcomes

Assessment

WHAT STUDENTS SAID ABOUT DATA AND ASSESSMENT

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SR-

Data that allows for self-evaluation with reference to standard of cohort

SR+

Data that emphasizes learner beliefs in evaluating legitimacy of learning

Data that allows for:

- Individual comparisons with current cohort
- Individual or group comparisons with previous cohort

- Beliefs about assessment criteria and academic success
- Doubts about value of others' opinions on nature or difficulty of assessment

Some parting thoughts …

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Learning analytics practices are not neutral

What are our responsibilities as agents?

What affordances do we create through collecting, analysing and recontextualizing different kinds of data?

Code clashes

What is the relationship between **disciplinary learning**

and

Utilitarian discourses: Rational economic behaviour, quantification?

Organisational discourses: Demands for efficiency and accountability?

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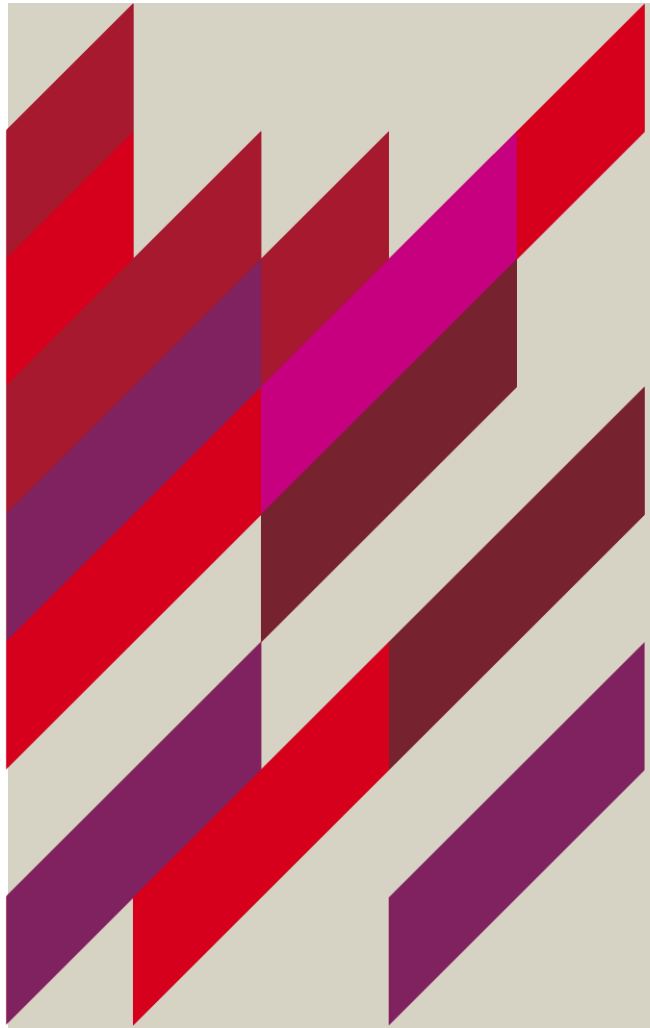

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