Disciplinary Literacy: Theorising the Specialized Use of Language and other Modes in University Teaching and Learning

John Airey

Department of Mathematics and Science Education
Stockholm University

Department of Languages
Linnaeus University

Department of Physics and Astronomy
Uppsala University
Overview

1. Disciplinary knowledge structures

2. What does it mean to become disciplinary literate?

3. What does it mean to become disciplinary literate in more than one language?
Disciplinary knowledge structures

Bernstein (1999) classified disciplinary knowledge structures as more *hierarchical* or more *horizontal*

Hierarchical knowledge structures

Horizontal knowledge structures
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Hierarchical knowledge structures

Progress by integration of new knowledge with existing knowledge

Horizontal knowledge structures
Hierarchical knowledge structures

Newtonian Physics

Quantum Mechanics

Physics
Hierarchical knowledge structures
Hierarchical knowledge structures

Airey (2012:69) adapted from Lindstrøm (2011)
So what are horizontal knowledge structures?
Disciplinary knowledge structures

Hierarchical knowledge structures
  Progress by integration of new knowledge with existing knowledge

Horizontal knowledge structures
  Progress by introducing new perspectives that do not need to be coherent with existing perspectives
Horizontal knowledge structures are likened to the introduction of new descriptive languages.

Expansion of knowledge

$L^1 + L^2 + L^3 + L^4 + L^5 \ldots L^x$
These “languages” do not need to be compatible with one another.

Each offers a different perspective that may or may not be useful in a given situation.

Same phenomenon can be analysed in different ways:

- Post-colonial
- Feminist
- Marxist

etc. etc.
Disciplinary knowledge structures

More hierarchical knowledge structures

physics  biology

L_1  L_2  L_3  L_4  L_5...

"warring triangles"

linguistics  sociology

social sciences

history  literary studies

humanities

Adapted from Martin (2011) and Wignell (2004)
Disciplinary knowledge structures are not language neutral.

Horizontal knowledge structures create new "languages".

Hierarchical knowledge structures value coherence all languages potentially equal.
Disciplinary differences and language

Suggested that these differences will affect disciplinary attitudes to English language use.

Prediction:

Least objection to English

Natural sciences  Social sciences  Humanities and Arts

Most objection to English

Adapted from Kuteeva & Airey (2014)
English language PhD theses

Salö (2010:24)
Lectures in English across Faculties

Adapted from Bolton & Kuteeva (2012)
The relationship between disciplinary learning and our first language is by no means straightforward.

Learning is intimately linked to language.

All learning can be viewed as language learning even in a monolingual setting.

From this perspective any university lecturer is a teacher of a disciplinary discourse.
Found that languages alone were insufficient to describe the interview data I collected.

Other representational forms or modes seemed important.

First I had three languages.

Mathematics, diagrams, graphs, lab work etc.

A multimodal approach
Critical Constellations of Resources

Airey (2009)
Disciplinary literacy

I bring together the multilingual and multimodal nature of disciplines in terms of Disciplinary Literacy
I suggest the goal of any degree programme is the development of **disciplinary literacy**.

Airey (2011b)
Disciplinary literacy refers to the ability to appropriately participate in the communicative practices of a discipline.
What is Literacy?

– Gee (1991) suggests that we have one primary discourse (the oral language we learn as a child) and many secondary discourses (specialised communicative practices used in other sites outside the home).

– Gee defines Literacy as ‘fluency in’ these secondary discourses.

– So literacy depends on the site i.e. Where will it used?
Disciplinary literacy

– So what site does disciplinary literacy refer to?
Disciplinary literacy

I suggest that the disciplinary literacy goals of any degree course will entail a unique mix of fluency for three specific sites:

- The academy
- The workplace
- Society
Each of these sites places different demands on language.

Academy

Workplace
Disciplinary Literacy Triangle

Society

Academy  Workplace
Disciplinary Literacy
Singulars

A singular is a discipline with strong boundaries such as physics, history, economics etc.

Singulars generate strong inner commitments centred around their perceived intrinsic value.
Regions

Regions are disciplines in which a number of singulars are brought together in an integrating framework (Young 2008)

While singulars face inwards, regions face outwards to the various fields of practice in everyday life.
Singualrs and regions

Airey & Larsson (2018)
Disciplinary differences

Hierarchical

Singular

Physics

Engineering

Region

History

Education

Hierarchical

Horizontal

Adapted from Airey & Larsson (2018)
Disciplinary Literacy Discussion Matrix

Bring together my discussion of disciplinary literacy in a simple heuristic tool—the Disciplinary Literacy Matrix.

The three columns of the matrix correspond to the three sites in which disciplinary literacy may be enacted.

The rows of the matrix relate to languages and other modes that students may need to become fluent in.
### Disciplinary Literacy Discussion Matrix

**Where used?**

<table>
<thead>
<tr>
<th></th>
<th>Academy</th>
<th>Workplace</th>
<th>Society</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First language</strong></td>
<td>Reading</td>
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<td></td>
<td>Writing</td>
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<td>Speaking</td>
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<td><strong>Second language</strong></td>
<td>Reading</td>
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<td><strong>Third language</strong></td>
<td>Reading</td>
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<td>Speaking</td>
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<td><strong>Other modes</strong></td>
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<td>Mathematics</td>
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</tbody>
</table>

Adapted from Airey (2011a)
Discuss with a colleague.

What do you think would be the disciplinary literacy goals for say a chemist, a social worker a literary scholar?

Other disciplines?

Go though the matrix describing what you think those students need.
Disciplinary literacy goals of South African physics lecturers

1. Not relevant
2. Relevant but not my job
3. Avoid problematic representations
4. Encourage translation to alternative representations
5. Offer passive support
6. Actively engage
Discussion

1. Not relevant
2. Relevant but not my job
3. Avoid problematic representations
4. Encourage translation to alternative representations
5. Offer passive support
6. Actively engage

First three response strategies are teacher centred and risk students not achieving disciplinary literacy

Linder et al (2014)
Only English?

For lecturers who did attempt to develop language competence in their students this was only done for English.

Similar findings in Sweden where physics has been shown to have strong preferences for English.

Kuteeva & Airey (2014)
Disciplinary literacy

Fluency
Airey (2009)

‘read’ the resource
Interpretive

‘write’ the resource
Generative

Language choice

Multilingual?
Bilingual?
Monolingual?—Which language?

Semiotic Resources

Graphs, Gesture, Physical Tools, Speech, Writing, Computer Simulations, Mathematics, Pictures, etc.

Type of Discipline
Bernstein (1999; 2000)

Singular or Region?
Hierarchical or Horizontal?

Scientific Literacy

Academic Literacies
Lea & Street (1998)

Derived (Metaphorical)
A set of competencies

Two Visions of scientific literacy
Roberts (2007)

Vision I
“Science for doing science”

Vision II
“Science for citizenship”

Disciplinary affordance
Fredlund et al (2012)

Pedagogical affordance
Airey (2015)

Generic affordance
Gibson (1979)

Appropriate participation in disciplinary communicative practices
Airey (2011)

Academy
Airey (2011)

Society

Workplace

What?

Definition

Where?
Summary

Each discipline fosters a unique form of disciplinary literacy for three sites: Society, Academy and Workplace.

The demands placed on languages and other modes in these three sites are very different.
Finally…

Until content lecturers see their role as one of socialising students into the discourse of their discipline, there can be no discussion of disciplinary literacy goals. Without such a discussion lecturers will continue to insist that they are not language teachers and that this should be a job for someone else.

(Airey 2011a:50)
Questions or Comments?
References


