DISCIPLINARY LITERACY: HISTORY, EVIDENCE, AND CHALLENGES IN THE EUROPEAN AND NORTH AMERICAN CONTEXTS

NEEDS FOR DISCIPLINARY LITERACY IN A COMPETENCIES APPROACH BASED CURRICULUM

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PLAN

1. The FW-B context

2. The needs for disciplinary Knowledge

3. Two teaching/learning proposals closely linked to disciplinary literacy

   3.1 How to teach disciplinary vocabulary/concepts?
   3.2 How to help students to rely on discourses to learn from their activity?
1. The FW-B context

- A pendulum principle

- Before 1997: main focus on teaching knowledges
- After 1997: main focus on « the Competencies approach »

- Core skills: mainly define disciplinary Competencies
  - Many competencies are cross-disciplinary “transversal”
  - Very few disciplinary knowledge defined in the curricula
Article 5. – Décret « missions » defines compétencies as « the ability to mobilize an organised set of knowledge, skills and attitudes in order to carry out a number of tasks ». (Article 5. – Decree « Missions », p. 2)
## Competencies approach based curriculum

<table>
<thead>
<tr>
<th><strong>Strenghts</strong></th>
<th><strong>Weakness</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Avoid unused (« dead ») knowledges</td>
<td>Principle: teach with complex tasks!</td>
</tr>
<tr>
<td>- Develop a capacity to learn from its activity (learn to learn)</td>
<td>- How to assess competencies?</td>
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<tr>
<td>- Mobilise cognitive resources</td>
<td>- How to teach competencies?</td>
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<tr>
<td>- Develop functional knowledge</td>
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</table>

### Opportunities

- Mobilise cognitive resources
- Develop functional knowledge

### Threats

- Disappearance of knowledge
- Invisible learning: focus on DOING, some students struggle in identifying what is LEARNED

**Role of disciplinary knowledges?**
2. The need for disciplinary knowledge

• Return to disciplinary knowledge as part of the competencies approach based curriculum

• Help students to weave the link between actual experience, classroom activities and targeted learnings: take a reflexive stance towards activities (problem solving tasks, experiments, ...)
  • What I did => what I learned
    construction of cognitive and language skills required for school learning
3.1 How to teach disciplinary vocabulary / concepts?

Vocabulary instruction (BaCuLit Handbook for trainers, p. 133)

“Categorization is a skill that enables to extrapolate the non-visible properties of an object and to project them on other objects.”

Building concepts
3.1 How to teach disciplinary vocabulary / concepts?

- A concept is a construct reflecting characteristics common to a set of objects, facts, or phenomena: “habitus”, “sister”, “capital city” ...(Reuter, 2017)

<table>
<thead>
<tr>
<th>Scientific concepts</th>
<th>In research disciplines</th>
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</thead>
<tbody>
<tr>
<td>School concepts</td>
<td>In school disciplines</td>
</tr>
<tr>
<td>Everyday concepts</td>
<td>In everyday life</td>
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</tbody>
</table>

build and taught
The theory of conceptual fields

• Vergnaud (1990, 2009) focuses on school concepts

• central function of learners’ activity in the development of representation, competences and concepts (operational invariants contained in schemes)

• language and symbols play an important role in the conceptualizing process of linguistic and symbolic representations.

• Considers a set of situations as part of the concept
Example: the concept of « CAPITAL (City) »

<table>
<thead>
<tr>
<th>Situation 1</th>
<th>Situation 2</th>
<th>Situation 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bruxelles – is the capital city of Belgium</td>
<td>• Bruxelles – capital of the European Union</td>
<td>• Bruges – capital of lace (predominance in one sector)</td>
</tr>
<tr>
<td>• Capital at the national level</td>
<td>• Capital at the supra-national level</td>
<td></td>
</tr>
<tr>
<td>• Function: head office of the executive power</td>
<td>• Function: head office of the executive power</td>
<td></td>
</tr>
</tbody>
</table>
What Is a Conceptual Field?

It is at the same time a set of situations and a set of concepts tied together.

=> a concept’s meaning does not come from one situation only but from a variety of situations.

How to help students to create links between those different learning situations?
3.2 How to help students to learn from their activity?

- Contextualisation/Decontextualization/Recontextualisation

  => Revisit its own activity to identify the cognitive steps implemented, to self-assess the effectiveness of the procedures implemented, to see changes in ones beliefs or conceptions, ....Reflexive stance

- =>To put his thoughts into words, alone or with their peers. Which means helping students to write, talk to learn (reflexive / communicative function of language)

- How to develop the reflective dimension of language in school subjects?
The reflexive function of language

- “The language is not only a way to record and communicate the results of the work of thought; one of its key functions is to make possible this activity even, to allow it to develop, to intensify and to organize itself “

Bucheton, 2014, p.184
The reflexive function of language

• Writing activities:
  - for students = thinking tool;
  - for teachers = window on student cognitive activity. Texts: traces of a productive activity

• Condition: to focus on the author’s processes rather than on the written product, => to assess the way the students develop themselves.

Produce intermediate discourses in school disciplines
The role of intermediate discourses

• To rewrite means to think again

• To put the text in movement again in all its dimensions (semantic and linguistic)

⇒ To learn from ones own activity
⇒ To learn to social interactions about its writings
Examples of friendly definitions* : “living being”

The characteristics are described in simple terms which do not exceed what was noted in the synthesis.

The characteristics are formulated in a more personal way or with more details.

• Examples of schematization about the digestive system

Individual « text » student’s concepts

« Text produced in groups Sharing concepts

« Text » produced in groups After a documentary research

Final individual « text »
Progress of the lesson

Question: «what is the purpose of eating?» + debate

Individual schematization

Research question: «How does food makes you grow?»

Discussions, poster production, presentation

Documentary Research

New Schematization in groups

Individual schematization
From everyday concepts to scientific concepts

• While they manipulate, create or make observations, students mobilize their everyday concepts as well as the learned concepts.

• How will they acquire scientific concepts through this activity?
From everyday concepts to scientific concepts

Manipulations | Representations (traces) | Concepts building | Manipulations

Working discourses

Jaubert et Rebière : Communautés discursives disciplinaires scolaires et construction de savoirs : l’hypothèse énonciative
Leseforum.ch
The teacher’s professionnall linguistic gestures

**Manipulations**
- Reformulations
- Reconfigurations
- Conceptuels and linguistic readjustments

**Use of scientific concepts**
- Cultural reformulations

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**Teacher’s linguistic interventions**

**Everyday concepts**
- Representations (new vocabulary, oral /written language, schématas, diagramme...)

**Building scientific concepts**
Conclusion

• Importance of Intermediate discourses
  – to develop the reflexive dimension of discourses in disciplinary subjects
  – To help students to master scientific /school concepts

• Professionnel developpement : linguistic gesture
Thank you for your attention
Elements of bibliography


Vergnaud G. (1990). La théorie des champs conceptuels
Recherche en didactique des mathématiques, 10, 23 Grenoble : la pensée sauvage.

development, 52, 83-94.
