Pieces of Knowledge: Multimodal Emergence and Trajectory in Socio-Scientific Educational Debates
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To cite this version:
Claire Polo. Pieces of Knowledge: Multimodal Emergence and Trajectory in Socio-Scientific Educational Debates. 6ème Conférence de l’Association Française de Linguistique Cognitive, May 2015, Grenoble, France. halshs-01382548

HAL Id: halshs-01382548
https://halshs.archives-ouvertes.fr/halshs-01382548
Submitted on 9 Dec 2016

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ARGUMENTATIVE RESOURCES IN SOCIO-SCIENTIFIC EDUCATIONAL DEBATES

> Appeal to students’ “system of mental representations and knowledge” (Belbète & Lagardez, 1995, système de représentations-connaissances)

**Knowledge-Belief**

Polo, 2014

**PIECES of KNOWLEDGE-BELIEF** (Polo, 2014)

<table>
<thead>
<tr>
<th>Source(s)</th>
<th>Logical level</th>
<th>Degree of generality</th>
<th>Relation to target knowledge</th>
<th>Translatable?</th>
<th>Favoring or disturbing acquisition?</th>
</tr>
</thead>
</table>

**HOW DO THE STUDENTS CO-CONSTRUCT AND REINVEST MICRO-UNITS OF KNOWLEDGE-BELIEF?**

- Temporal tracking (Transana)
- Spatio-communicative specificity
- Multimodal characterization (ELAN)

**ARE EMERGENCE AND TRAJECTORY FEATURES KNOWLEDGE-SPECIFIC?**

- Focus on units of different epistemic status
  - Knowledge piece specific to environmental education
  - Classical distinction between the cost and the price of a good or service, both school target knowledge in economics and part of daily life vocabulary
  - Comparison of emergence multimodal features and spatio-temporal trajectory

**FIRST RESULTS FROM THE US CORPUS:**

Different spatio-temporal localizations associated with different scenarios of material environment exploitation

Mostly consists of:

- Reading the slide or referring gesturally to the screen
- Using something to point
- Handling the clicker to display determination to select an option or emergency to get to a conclusion (positioning or/and interactional function)

Exploitation of the material environment mostly occurs at the group level

Supporting meaning-making process (mostly referential functions) Appeal to authority and interactional functions

Different knowledge units associated with different gestural scenarios

<table>
<thead>
<tr>
<th>“Virtual water”</th>
<th>Price / Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improper features</td>
<td>Less and smaller features</td>
</tr>
<tr>
<td>- Referential function</td>
<td>- Diversity of functions</td>
</tr>
<tr>
<td>- Little redundancy with speech</td>
<td>- More redundant with speech</td>
</tr>
<tr>
<td>Reiteration</td>
<td>Reinforcement with other words or gestures</td>
</tr>
</tbody>
</table>

Exploitation of the material environment is not very sensitive to the knowledge content.