Pieces of Knowledge: Multimodal Emergence and Trajectory in Socio-Scientific Educational Debates
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ARGUMENTATIVE RESOURCES IN SOCIO-SCIENTIFIC EDUCATIONAL DEBATES

**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>Fabours or disturbing acquisition ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Own experience</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Testimony</td>
<td></td>
<td></td>
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<tr>
<td>3. School</td>
<td></td>
<td></td>
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<tr>
<td>4. Previous café steps</td>
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<tr>
<td>5. Family</td>
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<tr>
<td>6. Media</td>
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</tbody>
</table>

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

- **Temporal tracking (Transana)**
  - Training, YouTalk pedagogical sequence
- **Spatio-communicative specificity**
  - Group discussion on quiz elucidation
  - Class explanation of correct answer
  - Group debate about an opinion question (OQ)
  - Class debate on an OQ
  - Group and class debate about the MQ
- **Multimodal characterization (ELAN)**
  - Multimodal characterization
  - Knowledge-specificity
  - Trajectory features
- **Focus on units of different epistemic status**
  - Knowledge piece specific to environmental education
  - Aimed at changing practices with new conceptions
  - “Virtual water”: water for the production of other goods
  - 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 slide to display determination to select an option or emergency to get to a conclusion (posing an inquiry or interactional function)

**Exploitation of the material environment mostly occurs at the group level**

<table>
<thead>
<tr>
<th>Exploitation of the material environment mostly occurs at the group level</th>
<th>Reinvest in group debate to select an answer (OQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial group discussion for quiz elucidation (KQ)</td>
<td>Appeal to authority and interactional functions</td>
</tr>
<tr>
<td>Supporting meaning-making process (mostly referential functions)</td>
<td></td>
</tr>
</tbody>
</table>

**Different knowledge units associated with different gestural scenarios**

<table>
<thead>
<tr>
<th>“Virtual water”</th>
<th>Price / Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less and smaller gestures</td>
<td>-</td>
</tr>
<tr>
<td>Diversity of functions</td>
<td>-</td>
</tr>
<tr>
<td>More redundant with speech</td>
<td>-</td>
</tr>
<tr>
<td>Repetitions</td>
<td>-</td>
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<tr>
<td>Reinforcement with other words or gestures</td>
<td>-</td>
</tr>
</tbody>
</table>

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

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

- 1. Own experience
- 2. Testimony
- 3. School
- 4. Previous café steps
- 5. Family
- 6. Media

**Relation to target knowledge**
- Translatable ?
- Fabours or disturbing acquisition ?

**Fabours or disturbing acquisition ?**
- Functions
- Relation to speech
- Record” status

**Functional Environment**

- Use of material environment

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

- Focus on units of different epistemic status
  - Knowledge piece specific to environmental education
  - Aimed at changing practices with new conceptions
  - “Virtual water”: water for the production of other goods
  - 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