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>Translatable?</th>
<th>Favours or disturbing acquisition?</th>
</tr>
</thead>
</table>

**PEDAGOGICAL SETTING: the YouTalk Scientific Café**

- **Participants:** 12-14 year-old students
- **Specially trained student moderators:** 15-17 year-old students
- **Schools:** 2 in Mexico, 1 in USA, 1 in France, 2 in Brazil

**MODERATORS TRAINING** (1 day)

- To lead the YouTalk Scientific Café about Drought Water Management

**YOUTALK - INTRODUCTION (10 min)**

- Game rules
- Main Question (MQ)
- First Individual Anonymous Vote
- Introduction to the 3 thematic phases

**YOUTALK - THEMATIC PHASES (3 x 20 min)**

- **KQ (15)***
  - reading and group discussion
  - individual vote
  - answer and explanation
  - reading and group debate
  - group vote and class debate
  - individual vote and results displayed

- **OQ**
  - Group debate about an opinion question (OQ)
  - Class explanation of correct answer
  - Group and class debate about the MQ

**YOUTALK - CONCLUSION (15 min)**

- Synthesis of class debates (3 OQ)
- MQ
  - reading and group debate
  - group vote and class debate
  - individual vote and results displayed

**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 on an interactional function)

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

- Initial group discussion for quiz elucidation (KQ)
- Reinvestment in group debate to select an answer (OQ)
- Supporting meaning-making process
  - (mostly referential functions)
- Appeal to authority and interactional functions

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

- **“Virtual water”**
  - Less and smaller gestures
  - Diversification of functions
  - More redundant with speech
  - Reinvestment with other words or gestures

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