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ARGUMENTATIVE RESOURCES IN SOCIO-SCIENTIFIC EDUCATIONAL DEBATES

A great heterogeneity

Interdisciplinarity - science teaching (e.g. Driver, Newton, Osborne, 2000, Sadler & Zeidler, 2005) + citizenship education (e.g. Legardez & Simonnaux, 2006)

Subjectivity - (e.g. Oulton, Dillon, Grace, 2004)

Controversy - (e.g. Albe, 2009)

PEDAGOGICAL SETTING: the YouTalk Scientific Café

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

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 Drinking Water Management in pairs

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)

Q(3) - reading and group discussion
- Individual vote
- Answer and explanation
- Group vote and debate
- Individual vote and results displayed

OQ - Multi Question (MQ)
- First group debate
- Group vote and class debate
- Individual vote and results displayed

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

- 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)

Different knowledge units associated with different gestural scenarios

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>
</tr>
</thead>
<tbody>
<tr>
<td>1. Own experience</td>
<td></td>
<td></td>
<td>Translatable?</td>
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<tr>
<td>2. Testimony</td>
<td></td>
<td></td>
<td>Favouring or disturbing acquisition?</td>
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<tr>
<td>3. School</td>
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<td>4. Previous café steps</td>
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<td>5. Family</td>
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<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)
- 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 aiming 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