Modelling student participation using discussion forum data

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INTRODUCTION:
- Course discussion forums are widely used in many learning environments
- Increasingly, instructors cannot monitor all the students all the time
- Identifying depth and quality of participation automatically from forum messages could help direct attention where it is most needed

APPROACH:
1. Build on two widely studied frameworks for critical discourse: Community of Inquiry and ICAP
2. Automate labelling of new data using natural language processing (NLP) and machine learning

RESEARCH QUESTIONS:
1. Do the two frameworks provide complementary insights?
2. Can the NLP models assign labels as well as prior work?
3. Can such models tell us which aspects of a message most affect the labelling decision?
4. Does learning labels from both frameworks together improve overall performance?

PROGRESS MADE:
1. Data labelled by two coders using adapted + extended ICAP taxonomy
2. Initial data study accepted to LAK'20
3. Conceptual and empirical framework comparison underway

Theoretical framework labels

<table>
<thead>
<tr>
<th>Community of Inquiry: phases of cognitive presence</th>
<th>ICAP: modes of cognitive engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triggering Event</td>
<td>Interactive</td>
</tr>
<tr>
<td>Exploration</td>
<td>Constructive</td>
</tr>
<tr>
<td>Integration</td>
<td>Active</td>
</tr>
<tr>
<td>Resolution</td>
<td>Passive</td>
</tr>
<tr>
<td>Other</td>
<td>Off-task</td>
</tr>
</tbody>
</table>

Other No signs of cognitive presence

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FEEDBACK REQUESTED:
1. Are there other frameworks that measure latent constructs related to learning?
2. Are there other data sets that have already been labelled using either of the frameworks?