Online argumentative maps for facilitating international debates with experts at large scale

Ale Okada , Lia Rossi, Alexandre M. Costa

[1] Knowledge Media Institute, The Open University, U.K.

{Ale.Okada,Lia.Rossi,Alexandre.Costa}@open.ac.uk

Abstract. This exploratory study reports on the use of the online argumentation tool LiteMap used in an international seminar with fifty experts from various fields. Our key questions focus on the benefits and challenges of using an argumentation tool in international debates with large groups to support collective knowledge. Results of this work suggest that argumentative mapping helped the community to evaluate the debate, structure argumentative reports including and visualise key issues for extending the discussion with new maps. These interactive maps showing the graphical argumentation were also used as open educational resources in blog, courses and activities.

Keywords: European knowledge network, web argumentation, participatory discussion, collective intelligence, expert meeting.

1   Introduction

There are various studies emphasising the benefits of using argumentation maps to support group discussion [1] particularly in small groups related to a specific domain [2]. Examples from the literature, for instance, indicate that effective mapping tools are useful for elaborating and visualising personal or collective reasoning. Graphical argumentation helps learners, educators and researchers to make sense of new topics or problems collaboratively [3]. Web Argumentation technologies foster the process of collective sensemaking in online meetings [4]. However, there are still various challenges, particularly the lack of meaningful approaches to support large Communities to use technologies effectively for expanding their collective knowledge in synchronous and asynchronous events.

This exploratory study focused on the use of the online argumentation tool LiteMap used in the first international seminar on Responsible Research and Innovation and Science Education organised by the ENGAGE project with fifty experts from various fields. Increasing number of projects and reports are emerging is this decade on RRI, however the discussion of RRI on science education is new [5]. So, the aim of this seminar was knowledge exchange among FP7 and H2020 projects and experts interested in Responsible Research and Innovation (RRI) and Inquiry Based Science Education (IBSE). The concept of RRI [6] focuses on an inclusive approach to research

and innovation (R&I) for supporting societal actors to engage in participatory debates, develop argumentative thinking and make better decisions during research and innovation process. It aims to connect the process and outcomes of R&I, with the values, needs and expectations of European society [8].

2   Methodology

The online mapping tool LiteMap was used to map issues, ideas, pros and cons of each team and connect them in meaningful conversation networks. This tool developed by KMi [8] provides a dashboard for visualization (Fig.1): People Map Ring, Contribution River, Conversation Nesting, Activity Analysis and Contribution Stream. Initially, researchers coordinators of the seminar analysed and mapped more than 60 projects related to RRI and Inquiry based Science Education. A questionnaire was sent to projects representatives interested in the seminar. Data mapped from the survey indicated three common themes of interested. These themes were then used to group experts' questions, which were represented through three preliminary maps shared before the event on its website for participants to include comments.

Fifty representatives and Coordinators of more than 25 projects from various fields including Technology, Science and Education attended this event. The debate was organised in six steps:

1. **Introduction:** maps based on the surveys including objectives, participants, projects and interests were presented to the attendees.
2. **Group Discussions:** three teams were organised based on common interests with the aim to map key challenges and strategies.
3. **Plenary session:** teams presented their issues and received feedback which allows the teams to extend their ideas with new issues.
4. **New Group Discussions:** focused on mapping problems is depth with solutions
5. **Plenary session:** teams presented their final conclusions with discussion for more feedback.
6. **Conclusions:** Coordinators of the event presented key issues and next steps and organised a live map where all participants established connections between projects, people and participants based on their perspective.

During the group discussion, each team selected a subgroup of 6 collaborators to support the debate:

1. **Facilitator** aimed to engage participation focused on the team's objectives.
2. **Mapper** focused on representing the debate graphically using LiteMap.
3. **Recorder** captured the debate through textual narrative.
4. **Reporter** presented their team's work in the plenary.
5. **Curator** coordinated the videoing of each discussion and plenary, mapped the interesting links and references shared by participants.
6. **Research Analyst** targeted the analysis of the debate and elaboration of the seminar's report.

Three thematic maps were created during the event by 3 mappers and 2 collaborators.

3   Findings and Conclusions

Mappers mentioned that LiteMap was easy to use (see Fig 1.a), however it was difficult for them capturing and typing it fast in order to keep the conversation map updated (see Fig 1.b). One team was able to finish it during the event, but the other two completed it only after the seminar. Figure 1.c Contribution River shows the debate map analytics had more contributions during the period of the seminar (1st triangle) and then later (2nd triangle) during review period. All mappers found the notes from recorders useful to review and update all maps including mappers from 1st group. The connections between mappers and maps can be seen on Figure 1.d. Interestingly that user activity analysis graph (Fig. 1.e) confirms that facilitators and reporters of the three groups preferred to use their own notes and flipcharts to support the debate instead of the live map due to unfamiliarity with LiteMap. Nevertheless analysts found the maps very useful specially to evaluate the debate. They identified different patterns and organised more coherent narrative by using the linear view of the argumentative map to export it in a sequence or arguments based on key issues, ideas, pros and cons. After the event curators found the maps useful to include links and references, which were shared by participants including some links to short clips extracted from the recorded videos of the seminar.
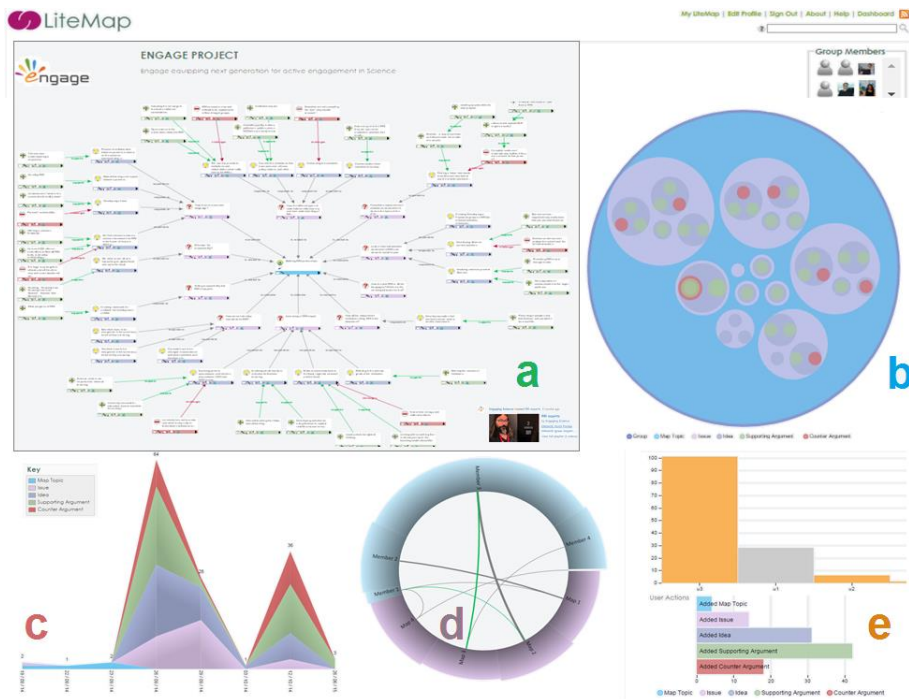

Figure 1: LiteMap G3 "RRI partnerships" (a) Debate Map, (B) Conversation Nesting, (C) Contribution River, (D) People&Map Ring, (E) User Activity Analysis

Data analysed after the event from the seminar survey and online meetings indicated that argumentative mapping helped the community to visualise the debate later to reuse the content in different ways: new maps, open educational recourses and papers. Researchers involved in this study interested in web argumentation identified various challenges. First it requires skills from mappers to capture the debate fast in LiteMap. Any other collaborators interested in use LiteMap to interact online with debate map during the event must also feel familiar with the tool. Therefore, a practical tutorial and hands on session might be useful before the event. Maps created can be confusing when they are presented to the participants. Another recommendation is that the debate collaborators establish common criteria or template to make the map representation clear for all participants. A discussion about benefits and challenges of argumentative maps with the community is also worth to increase participants' practice and more familiarity with the tool, which will enrich the development of mapping skills. Our future studies aim to investigate how the community can expand their collective knowledge through LiteMap, not only in synchronous events but also asynchronously. Our current study now focuses on methods to foster and evaluate massive open online maps for collective sensemaking and participatory deliberation in the ENGAGE project.

Acknowledgement

References

1. Andriessen, J., Baker, M. and Suthers, D. (2003). Arguing to Learn. Kluwer.
2. Conklin, J. (2006). Dialogue Mapping. Chichester: Wiley.
3. Okada, A., Buckingham Shum, S. and Sherborne,T. (2014) : Knowledge Cartography Springer: London
4. Buckingham Shum, Simon (2008). Cohere: Towards Web 2.0 Argumentation. In: Proc. COMMA'08: 2nd International Conference on Computational Models of Argument, 28-30 May 2008, Toulouse, France, IOS Press, pp. 97–108.
5. Sutcliffe, Hilary (2011). "A Report on Responsible Research & Innovation". London: Matter Business Group.
6. Okada A.; Young G.; Sherborne T. (2015). Innovative teaching of Responsible Research and Innovation in Science Education. eLearning Papers, Open Education Europa 44(1).
7. European Commission (2013). "Options for Strengthening Responsible Research and Innovation - Report of the Expert Group on the State of Art in Europe on Responsible Research and Innovation
8. De Liddo, A. & Bachler, M. (2014) LiteMap - online communities argumentative mapping tool. https://litemap.net/