



The Open University of Israel



The Center for Technology
in Distance Education

Measuring Collaboration In Educational Wikis

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Measuring Collaboration or Measuring Collaborative Learning?

- One of the **collaborative learning** goals is to achieve **collaboration** among the participants. Therefore, it is important to measure **collaboration** in the **collaborative learning** setting.
- The measurements can indicate if **collaboration** has occurred and not if **collaborative learning** has. But this information is relevant for the assessment of **collaborative learning** processes.



Measuring Collaboration in Wikipedia

Diversity/Authorship - Number of editors (Buriol et al, 2006, •
Viegas, Wattenberg & Dave, 2004, Voss, 2005)

Rigor - Number of edits per page (Lih 2004, Buriol et al. 2006, •
Wilkinson & Huberman, 2007, Shah, 2005)

Visibility (Wilkinson & Huberman, 2007) •

“The topic attention quality model” (Brandle, 2005) •

Conflict and Consensus (Viegas et al. 2004) •



Wikipedia Vs. Educational Wikis

Wikipedia

- One page per encyclopaedic article
- Unlimited number of potential editors
- Unlimited time
- Participation is voluntary

Educational wikis

- Lots of possible structures for the wiki- one page per group, number of pages per group, one wiki for more than one group etc.
- Limited number of potential editors (number of students in a course/group)
- Limited for the duration of the course/activity
- Participation is compulsory



Measuring Collaboration in Educational Wikis

some preliminary considerations and preparations

- Wiki level or page level?
- Which pages are relevant? (cleaning up log)
- What was the activity duration? (cleaning up log)
- Main Pages/Talk Pages- together or separately?
- Differentiating students from tutors



Measuring Collaboration in Educational Wikis- Participatory

$$\text{Relative Diversity} = \frac{\text{Number of potential student editors}}{\text{Number of student editors (diversity)}}$$

(Scope : 0-1 .In case of only one student editor or in case non of the students edited the page the outcome will be 0)



Measuring Collaboration in Educational Wikis- INTENSITY

$$\text{INTENSITY} = \frac{\text{Number of student editors (diversity)}}{\text{Number of return revisions}}$$

(Return revision: an edit which took place by a student in a page starting from the second time he edited this page and only if someone else edited this page before him)



Example

| | Page 1 | Page2 | Page 3 |
|--------------------------------------|--|---|---|
| | Edit_tutor Edit_stud 1 Edit_tutor Edit_stud 1 Edit_tutor Edit_stud 1 Edit_stud 1 | Edit_stud 1 Edit_stud 2 Edit_stud 1 Edit_stud 2 Edit_tutor Edit_stud 1 Edit_tutor | Edit_stud 1 Edit_stud 2 Edit_stud 3 Edit_stud 2 Edit_stud 2 Edit_stud 4 Edit_stud 3 |
| Number of potential students | 4 | 4 | 4 |
| Diversity: Number of active students | 1 | 2 | 4 |
| Relative Diversity | 0 | 0.5 | 1 |
| Number of return edits | 0 | 3 | 2 |
| Intensity of collaboration | 0 | 1.5 | 0.50 |

Interactivity with the tutor

$$\text{Interactivity with tutor} = \frac{\text{Number of responses to tutor}}{\text{Number tutor edits} *}$$

(Counting of tutor's edits does not include first edit in a page)



Interactivity with the Tutor

| | Page 1 | Page2 | Page 3 |
|---------------------------------------|--|---|---|
| | Edit_tutor Edit_stud 1 Edit_tutor Edit_stud 1 Edit_tutor Edit_stud 1 Edit_stud 1 | Edit_stud 1 Edit_stud 2 Edit_stud 1 Edit_stud 2 Edit_tutor Edit_stud 1 Edit_tutor | Edit_stud 1 Edit_stud 2 Edit_stud 3 Edit_stud 2 Edit_stud 2 Edit_stud 4 Edit_stud 3 |
| Number of returns | 0 | 3 | 2 |
| Intensity of collaboration | 0 | 1.5 | 0.50 |
| Number of tutors feedbacks | 2 | 2 | 0 |
| Number of Responses to the tutor | 2 | 1 | 0 |
| Level of Interactivity with the tutor | 1 | 0.5 | 0 |



Next step

- What influences the level of collaboration?
 - Instructional design
 - Teaching presence : Feedback and tutoring during the assignment
- How can we increase the level of collaboration?
 - By improved instructional design
 - By increased teaching presence



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Thank you!

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