

A Cooperative Way to Learn "Comprehensible Writing"

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ABSTRACT

Writing texts is difficult although a crucial ability for students. Courses that try to communicate these skills to students often focus on technical issues like correct referencing and scientific working. Writing texts that are understandable even for non-experts is a completely different problem. In an interdisciplinary setting this problem is even more present. "Comprehensible Writing" is the title of a current blended-learning project at the University of Vienna that tries to support the learning of this skill via the introduction of a blended-learning course setting including online learning modules. After highlighting the educational and theoretical background of our work, we will present our project, as well as the blended-learning scenarios that allow for cooperative writing of understandable texts. We will then conclude with a report about the evaluation of the scenarios in an expert workshop.

Keywords

Cooperative learning, interdisciplinarity, blended-learning, action based learning, online modules

EDUCATIONAL BACKGROUND

Pursuing scientific studies at a university is expected to enable students to elaborate complex topics. This implies to submit a well-documented paper in order to earn a degree. Writing texts is a crucial ability yet it is hard to learn for many students. Courses that try to communicate these skills to students often focus on technical issues like correct referencing and scientific working. Being able to communicate understandable information to a reader by means of a written document is a completely different problem.

Students now and then complain about their writing skills. Writing is more than being able to cite, index, or annotate in a proper way. One student reports: "The masters thesis is the last big roadblock. It is sort of an initiation ceremony that puts a student into social isolation, a process of painful mistakes and autocorrection. The torments of writing seem to be intrinsic." (Rausch, 2005). However, a student who adheres to the basic principles of scientific working and a specific terminology should be successful. The respective community of experts might be able to read out the documented findings and their meaning. The experts of the field may follow the writing and its concerns and might be able to assess the elaborated thesis leading to agreement or rejection. If the examiner is not an expert, the student has an even harder job with the written exposition because he or she is demanded to make it understandable also for non-experts.

Students more and more work in an interdisciplinary context and therefore are confronted with different terminology and meanings that might be confusing. So it becomes harder to make the findings of an interdisciplinary thesis comprehensible to the examiner who mostly belongs to only one discipline. Research in an interdisciplinary context is supposed to produce results that are remarkable innovative. Although many students like to go the way of interdisciplinary research, the reality at the universities seems to be that there is still a strong system of disciplines. During an interview, an undergraduate student reported: "Lately there is so much talk about interdisciplinarity but in reality nobody wants it. [...] The reality is that at our university each discipline follows the given and well-established tradition of a certain curriculum." (Eberherr, 2005). The conclusion of H. Eberherr is: "Given the background of a disciplinary-organized reality [...] targeting interdisciplinary research activities [...] can potentially turn out to block one's career. This is because scientific careers are still tied to the generation of achievements in one main discipline." Many students are put off just by the fact that the opportunity of interdisciplinary work demands different university lecturers to verify the thesis. It is difficult to bring different people together and it is even more difficult to establish a common understanding among them. It might be hard for both sides: for students to write down their findings in a proper and understandable way, and for the involved examiners to read and verify the thesis.

M. Nentwich interviewed some researchers about the topic of interdisciplinarity. He points out that “interdisciplinarity is a key asset of any application.” (Nentwich, 2003). He also summarized reasons and difficulties when facing interdisciplinary work. The most important issue was “how to find a common language and understanding” (Nentwich, 2003). In a recent paper R. Motschnig (Motschnig-Pitrik et. al, 2006) came to the same conclusion and strongly pointed out the difficulty of understanding. In the evaluated course setting, the participants complained about unfamiliar language, despite of inspiring and useful interdisciplinary presentations and discussions. E.g. one participant said: “[...] much time has to be spent to agree on terms and definitions“.

What learning system shall we build to ease communication and to keep the students always up to date? For the task of building a learning system a hint from N. W. Bolz might be quite useful: “To understand our social systems the knowledge of software is more useful than the reading of the classics of the political economics. [...] the rhetoric of the present is defined by its technologies ...” (Bolz, 1995). “Rethoric” in its original meaning is the “art of speaking”. It was the predominant cultural technique in the ancient time of Aristotle (Aristotle, 1926). These days the predominant cultural technique has been named “digital literacy” (Bawden, 2001). A part of computer literacy is the usage of search engines. University libraries are structured according to the logic of certain university disciplines whereas a search engine gives instant access to every information that is linked to a certain keyword. So everyday research, which increasingly involves being integrated in computer networks, results in a strong diffusion between languages and terminologies, which might lead to a lack of understanding. It is obvious that inter- and transdisciplinary skills are invaluable for future research.

THEORETICAL ASSUMPTIONS

Language and its understanding is always an event that is tied to a certain moment. It is updated at a moment's notice (Krämer, 2001) but in the above-described changing situation, this updating is no longer situated within a closed discipline only. In fact, we have to consider in which different disciplines a certain subject will be relevant, in order to establish a common understanding. For instance the term “application” can trigger different understanding: for a computer scientist this term will primarily initiate the idea of a technical program whereas a lawyer might think of a petition. Depending on the community and the different expertise of their members it will take time to find a common understanding before the community can start to elaborate the projected task.

The situations where we have to establish a common understanding is changing continuously. As shown already, an interdisciplinary discussion can be exhausting. Additionally time and energy spent is often wasted for irrelevant information. Concerning the task of writing a certain document as understandable as possible, we want to provide a learning and assessment system that makes the communication within a particular community as effective as possible. Our proposal is to not have an extensive discussion before writing a document but to discuss *while* the document is elaborated. Furthermore it is less important for us to have a document elaborated based on the thoughts of a single person. Instead we want to facilitate a creation based on the “revised thoughts” of the concerning community.

The idea of “revised thoughts” is based on a theory of action. Within the constructivist perspective of learning a still current theory by J. Piaget says that all knowledge emerges from action (Ameln von, 2004). Learning takes place by acting and the emerging consequences the acting person has to deal with. Piaget considers experiences to take place in a social context, especially in the form of speech interactions. Again the example of the term “application” comes to our mind: a lawyer who has up to now acted with the term only in the narrow meaning of “petition” might be disappointed or surprised when it is explicated to him by a computer scientist in a different meaning. This occasion should trigger a revision of the (lawyers) acting patterns and support the interdisciplinary understanding (among a community with technical as well as juridical concerns).

Based on this educational and theoretical background we are creating a blended-learning system to stimulate “comprehensible writing”. This can hardly be achieved without having a clear concept in mind on how to find a common language and understanding. Therefore we are focusing on a cooperative way of learning performed within a given community. Many books and websites provide useful and detailed information on how to improve one’s writing skills but they do not force the reader to take action (in the sense of Piaget). The function of the learning system is not to present a lot of information in advance but to provide detailed information when needed. Feedback will be given individually for a certain user as well as for a certain situation. Moreover one can get feedback from participants situated in different disciplines and with varying perspectives. This cooperation facilitated by the provided learning system has the potential to stimulate the evolvement of more cognitive flexibility (like exemplified above by „application“) in order to establish a common understanding.

CRITERIA OF UNDERSTANDABILITY

“Comprehensible Writing” is the title of a current blended-learning project at the University of Vienna that tries to support the learning of how to write understandable texts via the introduction of a blended-learning course setting including online learning modules. The name “Comprehensible Writing” is selected according to the book “To Express Oneself Comprehensibly” (Langer, 2002) written by Inghard Langer in cooperation with Friedemann Schulz von Thun and Reinhard Tausch which uses the “Hamburger Modell” of understandability.

The book guides the reader through the process of learning to write comprehensible texts. In order to assess the quality of texts the book uses an evaluation schema based on four criteria:

- Simplicity - the use of common words and simple sentences.
- System/Structure - inner system: sentences appear in a logical order; outer structure: the structure of the text is visible (headlines, lists to enumerate facts, important phrases highlighted).
- Shortness/Conciseness - the size of the text should match the amount of information that it wants to communicate.
- Stimulation - how to create interest in the text.

These four criteria are used to provide a means to judge texts. The user rates the text from bad (--) to good (++) according to each single criterion. This is an important tool for a learner to make the current state of the text explicit.

Langer is also providing the learner with an optimal rating for texts (see. Figure 1). *Simplicity* and *System/Structure* are the most important criteria. The optimum for these two is ++. A too complex or unstructured text always results in bad understanding. Texts that are too short and concise are just as bad as texts that are too long or diffuse. Therefore the optimum for *Shortness/Conciseness* lies in the middle of the scale. *Stimulation* is the most complicated criterion, because it depends on the other criteria. For a well structured text additional stimulation in the form of well chosen examples can be very motivating. But if a text is unstructured they can add to the confusion. Additionally very stimulating texts can not be short and concise. Therefore the optimum lies somewhere in between 0 and ++ like for Shortness/Conciseness.

Simplicity:	--	-	0	+	++
System/Structure:	--	-	0	+	++
Shortness/Conciseness:	--	-	0	+	++
Stimulation:	--	-	0	+	++

Figure 1: Optimal Rating

As described in the chapter “Theoretical Assumptions” we chose the approach to provide just the information that is necessary to solve a particular exercise. Our learning modules are implemented as independent web tools that can be accessed individually. For an example see Figure 2.

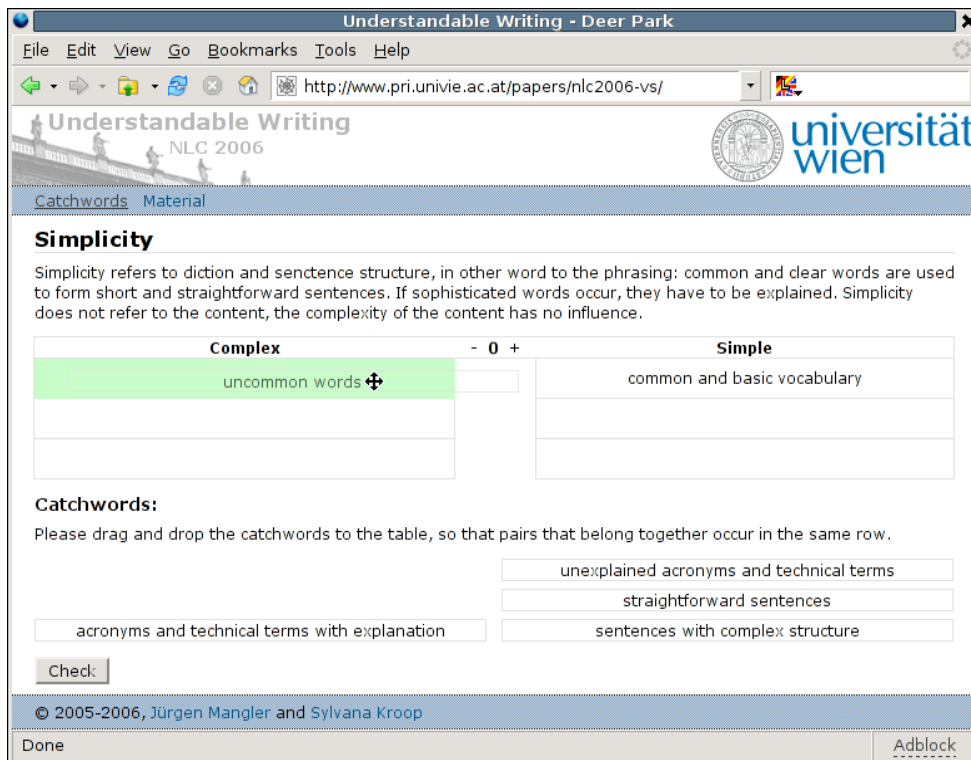


Figure 2: Attach Catchwords To Terms

This simplified example is accessible at <http://www.pri.univie.ac.at/papers/nlc2006-vs/> (Kroop/Mangler, 2005). The exercise for the user is to assign catchwords to terms that describe the two ends of the scale in a way that pairs occur in the same row. With this exercise (and 10 other small exercises) we hope to support a hands-on approach for understandable writing basics.

The modules for individual usage are just a stepping stone to support our cooperative scenarios. As outlined above cooperation and communication are for us the key elements of a successful learning system.

SCENARIO 1: INDIVIDUALLY REWRITE TEXTS AND DISCUSS THE RESULTS

Our first cooperative scenario takes for granted that the students know how to rate a text according to the criteria of understandability. The goal now is to practice how to change texts in a way such that they can be rated as understandable. According to Langer, Tausch et. al. (Langer et. al., 2002) there are two possible settings:

- 1) Students have to rewrite a text with a focus on only one criterion (e.g. structure).
- 2) Students have to change a text with all four criteria in mind.

Starting with setting 1 the students will get a feeling for changes that are necessary for individual criteria, in setting 2 they can practice their newly learned skills to finally make a text understandable.

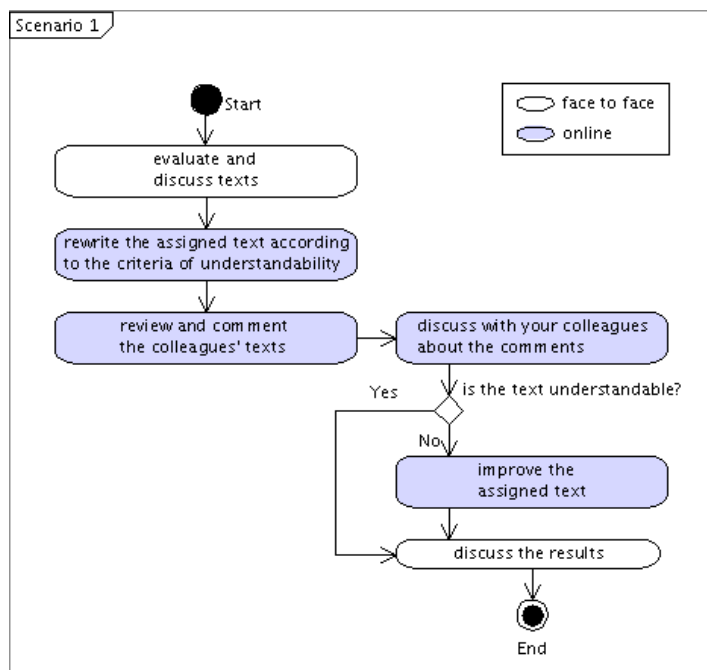


Figure 3: Rewrite Texts and Discuss the Results

We designed a blended-learning scenario (Derntl, 2005) (see Figure 3) to support the learning process in a university course. The participants of the course will be confronted with a scenario that has the following structure:

“Evaluate and discuss text” In a face to face meeting one or more texts will be presented. The participants will have the ability to rate the texts online during the meeting. The results will then immediately be displayed. This is thought to spur the discussion among the participants and with the facilitator. The discussion should focus on both, the mean as well as the extreme values. The collected arguments are meant as a help for the participants, to introduce them to the texts and to create equal premises.

“Rewrite the assigned text according to the criteria of understandability” The second step is intended to take place at home. Each participant has to rewrite an assigned text (from the set of presented texts). A deadline is supposed to exist for this task. There should be means for the facilitators (including the teachers and/or student assistants) to check progress (via reports) and maybe contact individuals. After a participant is pleased with the text it will be submitted for review.

“Review and comment the colleagues' texts” An automatically selected number of texts has to be reviewed by each participant. The review includes a rating of the text according to the criteria of understandability and comments. The comments can be used to either emphasize the quality of the result or to propose further changes. During the review no changes to the own text are allowed in order to not disturb the reviewers.

“Discuss with colleagues about the comments” During the review phase it should also be possible to discuss with reviewers to eventually better understand their comments. There will be another deadline to end the review phase.

“Is the text understandable?” After the review phase a participant has to make up his mind if he/she is satisfied with the results. When true, he/she can look forward to the next meeting, otherwise there is the possibility to apply last changes to the text.

“Discuss the results” During the next meeting the facilitator is expected to present his/her own solutions and also selected example results from the online phase. The discussion is expected to cover differences between the versions which will hopefully lead to a further deepened understanding.

The scenario is meant to combine the rewriting of a text with a peer review system. A participant is able to share his or her thoughts about a text with colleagues which hopefully adds to the overall learning effect.

SCENARIO 2: COOPERATIVE WRITING

The second scenario has a focus on the cooperative creation of understandable texts. By the utilization of Wikis (Leuf, 2001) a group of 4-6 persons should be able to work together on a text. This scenario shares some basics with scenario 1:

- The scenario can be used in the two settings mentioned before.
- The scenario is designed for a blended-learning course.
- The participants of the course need to know the basics of comprehensible writing.
- The course is facilitated by a teacher and/or student assistants.

Unlike scenario 1, scenario 2 is not starting with a meeting. The participants will receive an email which will include a list of group members and some hints for the usage of the online tools. They can then immediately start their work on the text. The scenario is supported by a unique combination of a Wiki and discussion forum to enhance the transparency and usability of the process.

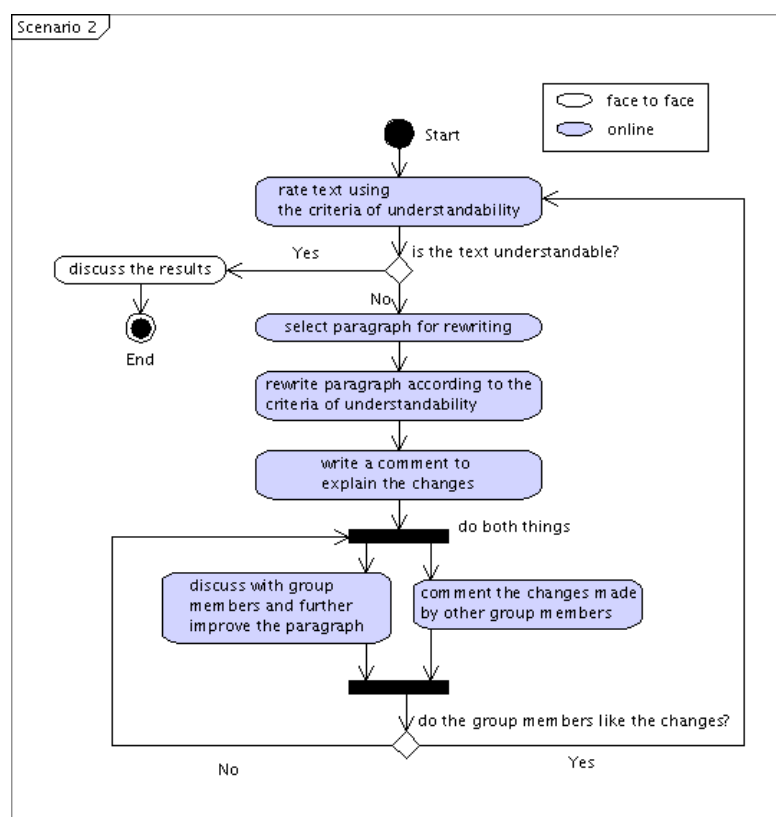


Figure 4: Cooperative Writing

The structure of the scenario is defined by the following activities (see Figure 4):

“Rate text using the criteria of understandability” After first reading the text, a participant has to formally rate the text according to the criteria of understandability. He/she can then wait for the rating and the comments of the other group members or directly proceed to the next step.

“Is the text understandable?” For every participating person it is possible to vote if the text should be changed further to make it more understandable. If a group member thinks that a paragraph needs to be changed, he/she can do so by ...

- **“Select paragraph for rewriting”** While a paragraph is rewritten no other paragraphs can be edited.
- **“Rewrite paragraph according to the criteria of understandability”** The participant is prompted to enter an improved version of the paragraph.

- **“Write a comment to explain the changes”** The process of changing the text should be as transparent as possible, so the participant has to explain why he made the changes to the paragraph.

These three steps lead to the creation of a new forum. The proposed new version of the paragraph is the starting point for a new thread. The original author can discuss with other members as well as apply further changes to the paragraph (**“discuss with group members and further improve the paragraph”**). Correct punctuation issues as well as small structural changes and different wordings are examples for changes that could arise from the discussion. The second possibility is that a group member fundamentally disagrees with the way the paragraph looks. This person can then start its own thread with a different version of the paragraph. To this thread the same rules apply:

- The owner can change the paragraph.
- Other members can propose changes (**“comment the changes made by other group members”**).

The process ends when a majority thinks that one of the paragraph versions is worth to go into the text. Accepting a paragraph is intended to be a stateful process. Every member can at any point in the discussion announce or revoke acceptance, the default value is to not accept the paragraph. For every member and paragraph the state is saved and can be viewed by all others. For our group-size of 4-6 people we assume that a majority is reached when all except one person are accepting one version of the paragraph.

After the majority is reached, the system immediately closes the forum and replaces the paragraph in the original text. When the participants enter the system the next time they are again prompted to rate the overall quality of the text (**“rate text using the criteria of understandability”**) and can then select a different paragraph to change.

When the overall quality of text seems sufficient to the group members (again the rule of majority applies) the editing is finished. The final results can then (as in scenario 1) be presented in a face to face meeting and compared to the examples of a facilitator or other groups.

The whole process seems a bit more rigid than the usual Wiki process. Not everyone is free to change everything in the text he or she wants. Our aim was to make the history of changes more transparent. In a traditional Wiki system every small change leads to a new version, which usually results in a massive change history. Discussions taking place in forums can often not be attributed to a certain version (e.g. look at an arbitrary Wikipedia article (Wikipedia, 2006)). So we tried to combine both worlds:

- Changes are atomic. Paragraphs can not be changed simultaneously.
- Changes occur in larger chunks. Whole paragraphs are discussed. Every new version is the sum of an eventually large number of minor changes. The overall version history is kept concise.
- For every version not only the changes can be tracked, but there is also access to a discussion how the version was created including other proposals for the paragraph.
- For facilitators the process keeps transparent and they can join the discussion if necessary.

All this things are intended to add to an overall transparency. Facilitators are to be supported by automatic progress reporting tools so that it will be easier to oversee multiple groups.

EVALUATION OF THE SCENARIOS

In the context of our project at the University of Vienna we conducted a survey among the heads of studies for each discipline. The following two questions dominated the results of the survey:

- Is it possible to improve the quality of teaching?
- Is it possible to save time?

On the 11th and 12th of November 2005 the 11th eLearning Business Meeting (Business Meeting, 2005) took place at University of Vienna. The focus was set to blended learning research. In the context of this meeting we held an expert workshop to discuss the scenarios. Following the questions that arose from the earlier conducted survey we set a focus on “Quality of Teaching” and “Relief of Teaching Staff”. The participants of the workshop were 15 experienced university teachers from all over Austria and from multiple disciplines.

The first issue the discussion brought to light was that there is a common agreement that texts have to be selected very carefully. Students from different disciplines need different texts to train their skills.

After the introduction of **scenario 1** several topics arose. The online rating of texts during the face to face discussion was accepted very well, because of potential positive impact on motivation. A participant teaching in the field of linguistics said that his students have an exceptionally hard job when contributing to a discussion. For them the dread of talking in a foreign language adds to the general fear to participate in a discussion. He thought that an online rating system would allow every student to actively participate somehow. There was an agreement that the face to face discussion is more fruitful when students from higher semesters are involved. They seem to have less fear to express their thoughts. There was also mentioned that a discussion needs a strong moderator. "In general involving students in a discussion is a good thing. But the discussion needs a structure. Just asking for discussion will not work." The experts agreed that the online rewriting of texts will work. Almost every student has an own computer and web access at home. Working at home is easier for the students because they face less stress than in the lecture hall. They concluded that because of the inclusion of rating and discussion the motivation for the students will be high. Regarding the quality of the results the opinions were diverging. "The discussion and feedback will lead to an amount of quality that would not have been reached without interaction" said one group. The other group competed by mentioning that the more feedback a student gets from his colleagues, the more errors and mistakes are included. The participants agreed that a facilitator has to keep an eye on the progress and that intervention sometimes is inevitable. In general the experts were fond of the ability to not only rate the texts of colleagues but to also give feedback in the form of comments. They said that sometimes it seems that students have a problem with giving qualified feedback. A scenario like this could certainly train their skills to give feedback and hopefully enhance the ability to reflect on their own writing.

Scenario 2 was perceived as the more interesting one, but it also lead to controversial discussions. A general fear was that when students work in groups the motivation to contribute will decrease. But there were also voices that considered the combination of a forum with a Wiki system suitable to solve this problem. In contrast to a pure Wiki the additional transparency was seen as a bonus. The problem came up that with large group sizes a Wiki can lead to a situation where a deadlock occurs in a way that concurrent groups with different ideas fight each other. It was mentioned that it is also possible that because of the multitude of ideas a text is probably never finished. The experts concluded that transparency and surveillance of the rewriting process are valuable tools, although maybe very time consuming. Some participants expressed their concern that multiple persons working on a text leads to stylistic inconsistencies. Others answered that a stylistic inconsistent text could not be rated as optimal, and that creating a consistent text together in a group is a much needed skill.

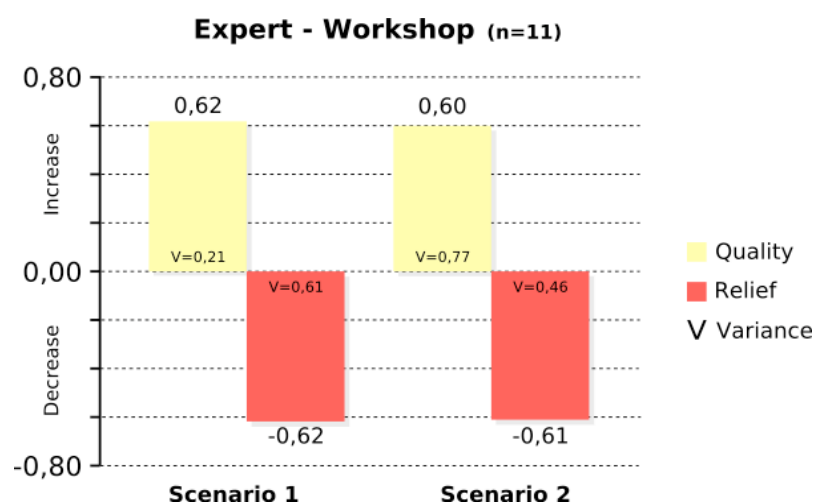


Figure 5: "Quality of Teaching" and "Relief of Teaching Staff"

Finally we asked the participants to fill out a short questionnaire to get some quantitative evidence regarding "Quality of Teaching" and "Relief of Teaching Staff". For each scenario and topic there was a scale that ranged from -2 to +2:

- [-2,0[... A decrease in quality or a negative relief of the teaching staff (more work).
- 0 ... No changes in quality or amount of work.
-]0,+2] ... An increase in quality or a relief of the teaching staff (less work).

The results (see Figure 5) were not too surprising. Both scenarios had nearly the same results. The mean value of n=11 answers yielded for both scenarios a medium increase in quality but more work for the teaching staff. When looking at the results the following details are revealed. For the first scenario the variance for “Quality” indicates that experts were quite sure about this. For the topic “Relief” the answers were more dispersed, which leaves some hope that relief might be possible (e.g. when the scenario is everyday routine for a facilitator). For the second scenario the picture is a bit different. Some experts were quite enthusiastic while others thought there would be no increase in “Quality” at all. But to some amount they agreed that scenario 2 will produce additional workload for a facilitator.

CONCLUSIONS

Based on the educational background we assumed that studying and working occurs more and more in an interdisciplinary context. So students are increasingly confronted with a mixture of languages, terms and definitions that come from different fields of expertise. As a consequence the communication to find a common language and understanding within a (interdisciplinary) community is stated to be time-consuming and exhausting.

To find a common understanding is a precondition in order to facilitate “comprehensible writing”. Hence we have to ask how to make communication more effective and understandable in order to provide a blended learning system. Our system is created by considering the above discussed theoretical assumptions in order to facilitate the following aspects:

- A focus on a cooperative way to elaborate documents.
- The introduction of the four criteria of understanding by providing online exercises.
- The introduction of the use of a rating system based on the criteria of understandability.
- The provision of blended learning scenarios including the rating system to improve individual writing skills and in particular cooperative writing skills.
- Individual and detailed feedback from the system only when needed.
- Discussion while rewriting (acting) a concrete document in order to improve it.
- The evolvment of cognitive flexibility by discussing documents from different points of view according to the (interdisciplinary) expertise of the participants and in changing situations.

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