

The Benefits and Challenges of Developing Collaborative Writing Skills to Support Students' Learning

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Abstract While the 2008 Educause Horizon report states that collaboration webs and collective intelligence tools, such as wikis, are one of the key emergent technologies that are likely to enter the mainstream use in education within the next four years, the authors of the report also emphasise the critical challenge of providing formal instructions to students on “how to create meaningful content” with the new tools. The aim of this discussion paper is to start addressing this challenge, and in particular, to identify and discuss different skills and competences that are required for developing collaborative web content as well as various issues and challenges that are pertinent to collaborative authoring.

Introduction

According to the Educause Horizon Report, “The renewed emphasis on collaborative learning is pushing the educational community to develop new forms of interaction and assessment” (Educause, 2008). One of the core skills in the collaborative learning model is that of collaborative writing or authoring, that can be supported by many different web-based tools available today e.g. Google documents, weblogs, wikis, Microsoft sharepoint etc. For the purpose of this discussion paper we concentrate on wikis, based on our own experience on using wikis as a supporting tool for blended learning.

However, unlike in our previous work, where the focus was on the description and evaluation of the collaborative blended learning process (Cubric, 2007) and its impact on students learning (Cubric & Luz, 2009), in this paper we concentrate on the collaborative writing process and the underlying skills that are becoming increasingly important and required from our students and all other participants in the process.

In their highly influential paper “Confronting the Challenges of Participatory Culture: Media Education for the 21st Century” Jenkins et al. (2006) identify and specify the core media literacy skills, required by the new “participatory culture” that “shifts the focus of literacy from one of individual expression to community involvement”. The following skills, as defined in the paper (Jenkins et al., 2006: 4) are particularly relevant to the process of collaborative (wiki) writing:

Appropriation — *the ability to meaningfully sample and remix media content*

Collective Intelligence — *the ability to pool knowledge and compare notes with others toward a common goal*

Negotiation — *the ability to travel across diverse communities, discerning and respecting multiple perspectives, and grasping and following alternative norms.*

Davis (2008) compares Jenkins specification of media literacy skills (Jenkins et al., 2006) with the reflections, obtained from interviewing primary and secondary school children in UK, and concludes that a “self-managed participatory culture” is emerging, but “this is still a long way removed from evidence of a true process of developing new media literacies”. In particular, regarding the notation of “collective intelligence”, Davis finds little evidence of “communal process of creativity and sharing”, apart from children collaborating over their homework (Davis, 2008: 11).

Josie Fraser, the ALT Learning Technologist of the year, reflects in her highly influential weblog (Fraser, 2008) on digital literacy skills that include e-safety, wellbeing, rights and responsibilities, ethical and environmental issues, commercial practices, privacy and security issues, digital identity and citizenship, along with collaboration, communication, finding, evaluating and applying information and concludes that “To not integrate and model good practice in digital literacy has huge social consequences from potentially disadvantaging individuals and communities in terms of social and economic opportunities, to the society wide disadvantage” (Fraser, 2008).

The importance of the skill of collaborative writing is crucial in today’s world of global organisations, geographically distributed teams, distance learning, and 24/7 requirements for content and service availability.

The e-skills UK has worked with Government and IT industry employers such as BBC, BT, Ford, IBM, Logica, Morgan Stanley and many others (full up-to-date list is available at e-skills web-site) on defining a set of personal, non-cognitive competences and skills that are equally important to employers as technical, business and project skills (ITMB, 2006). Majority of the competences that they describe are highly relevant to the process of collaborative authorship, either as a requirement or as a consequence of collaboration:

LI01 *Be able to make concise, engaging and well-structured presentations, arguments and explanations of varying lengths by using various media.*

LI02 *Understand their personal preferences, styles, strengths and weaknesses and be able to demonstrate how they use this knowledge to more effectively to complete challenging business assignments.*

LI03 *Understand how to gain insight into the preferences, motivations, strengths and weaknesses of other people and demonstrate how they use these insights to work more effectively with others in team situations; motivate others to work more effectively in group situations.*

LI04 Be competent in influencing and persuading others constructively, understanding the implications of defensive behaviour and personal strategies to overcome it; demonstrating knowledge of the taught techniques and the ability to use them effectively in realistic situations.

LI05 Have learnt how to deal with setbacks, misfortunes and hiatuses in ways that strengthen their positive attitude, and develop their self-reliance and ability to self-start on their own initiative.

LI06 Be able to give and receive direct feedback constructively, demonstrate how they incorporate it into learning and future action.

LI07 Be fluent written and verbal communicators, able to articulate complex issues, taking into account the audience viewpoint and have demonstrated competence in this.

The rest of the paper is organised as follows:

In the first section we describe typical collaborative writing scenarios and we discuss different roles that students and staff can assume in the writing process. We also try to identify different skills and competencies required for effective collaborative writing.

In the following section, we discuss benefits, issues and challenges that collaborative writing brings to the areas of students' engagement and assessment, and we try to understand and analyse the issues using some ideas from the game theory (Osborne, 2004).

Finally we conclude, with a summary of main points from the discussion.

Collaborative Writing Scenarios

Two main scenarios that we consider are 'transactional writing' and 'concurrent writing'. We borrow the term 'transactional writing' from Glogowski quoted in (Richardson, 2006) to describe the process of writing that is based on "write, receive-comments, reflect, re-write" cycle. We define the term "concurrent writing" to describe the process of collaborative authoring as for example used by Wikipedia.

Transactional Writing

Transactional writing is especially suitable for individual projects that can be parameterised so that all students work individually but are able to see and comment on the work of other students. In addition to the generic skills for online authoring such as use of hyperlinks, media files, and various add-on applications i.e. skills related to "appropriation" (Jenkins, 2006) and LI01 in ITMB (2006) skills set, the most important non-cognitive skills are giving, receiving and acting on feedback (LI06 in ITMB (2006) skill-set).

A fine example of a wiki developed using the ‘transactional’ approach is Ben Wilkoff’s “discovery-ism project” (<http://discoveryisms.wikispaces.com/>) developed by middle school students from the US. The content was created using “six C’s of authentic learning” as defined in the Wilkoff’s Academy of Discovery (<http://academyofdiscovery.wikispaces.com/Proposal#toc12>):

Contextual (Relevant) - *All information that is disseminated, and content that is uncovered has a greater context in the past, present, or future lives of the students.*

Connected (Hyperlinked) - *All concepts are linked to others’ ideas, whether they be original source documents, experts in the field, student experts who already have an advanced understanding.*

Collaborative - *Each assignment has the potential for working with others to brainstorm, create, refine, or revise.*

Change-directed - *All knowledge is constantly changing, and so are students understanding and demonstration of knowledge.*

Conversational - *Understanding is created through thoughtful discussion, conversation, and debate.*

Continuous (Spontaneous) - *Students can pursue all of their inspiration for learning. It does not have to wait until they get to the next class or until they get home because they have access to the technology and the freedom of the environment.*

The students can be authors and reviewers in the “transactional writing” process, and the role of the teacher shifts to a facilitator of the continuous learning dialogue. This can be done by providing guidelines not only on the content structure and quality, but also on the effectiveness of the underlying discussion. The assessment of the discussion could be based on criteria, similar to the ones proposed by (Garrison & Vaughan, 2007) i.e. regularity, quantity and quality of contributions, with the addition of “acting on feedback” rubric.

While it might be argued that “transactional writing” is not suitable for individual projects, as it uses “collective intelligence” in the context of individual work, the benefits of it, which are directly supported by influential learning theories such as: Vygotsky’s social constructivism (Vygotsky, 1978) and Laurillard’s “conversational learning” (Laurillard, 2002), clearly overcome the potential issue. The issue can be managed and resolved in a similar way as in a research paper review process, whereby, if the content has been significantly shaped by the feedback, the help of the reviewer should be acknowledged and in extreme cases, the authorship should be shared.

Concurrent Writing

Concurrent writing is suitable for group projects, whereby a group of students collaboratively works on development of one or more wiki pages concurrently i.e. at the same time. One of defining parameters for this type of writing is the granularity of collaboration. A 'fine-grain' collaboration occurs when each page is developed concurrently, without pre-defined allocation of ownership on the page content and structure. A 'coarse-grain' collaboration occurs when the allocation of ownership is established prior to writing, and each group member proceeds with creating their own 'parts', using the "transactional" model of writing, and eventually, all authors 'meet' face to face or virtually to 'integrate' the content. The latter model is a more familiar one that has been in use in traditional writing such as collaborative research papers, standards, co-authored books etc., while the former one is a relatively new model that has gained in popularity and significance with the raise of the Wikipedia project. However, the group work of students in HE is significantly different from the way that Wikipedia operates. While Wikipedia model works with "open groups" (anyone can edit any content on any page), the HE students group work model is much more restrictive and differs from the Wikipedia model in the following attributes: group composition (students registered on a specific HE module), group size (usually three to six students per group), group formation (group allocated by the tutor, or formed according to the friendship criteria) and the existence of group contract (all group members expected to equally contribute to the content).

In this paper, we concentrate on the former i.e. 'fine-grain' model of collaboration, as it offers greater potential in terms of acquisition of non-cognitive skills that students can develop while working on a "concurrent writing" project.

Skills and competencies that are required for the "concurrent" model of writing include those for "transactional" model of writing as well as additional ones that are specific to the group work dynamic, such as use of 'collective intelligence', including the skills of conflict resolution and consensus building, and 'negotiation', as defined in (Jenkins et al., 2006).

The roles that students can assume in a concurrent writing project are:

- **Authoring** - adding new content (text, images, media files, links)
- **Editing** – editing and updating the existing content (text, images, media files, links)
- **Gardening** – maintaining the consistency and uniformity of the page (or site) structure, style and general "look & feel"
- **Reading** – reading the content and adding questions and comments on the discussion pages.

While the expectation is that all students in the group will attempt all roles, in practice this is rarely the case. However, using a parallel with the "pair programming" practice from the software engineering domain, where according to Parish et al. (2004) any productivity gains are "likely due entirely to the role-

based protocol rather than to any inherent consequences of working closely in pairs”, we conclude that the use of a ‘role-based protocol’, such as exchanging group roles at some regular time intervals, can lead to increased overall group productivity.

One of the important issues pertinent to “constructing the text” through collaborative writing is, as observed by Forte & Bruckman (2007) confusion and resistance of students who perceive “the design of learning materials and the experience of learning” as ‘two distinct endeavors’ (Forte & Bruckman, 2007: 31).

The teacher’s role therefore extends the one previously described under “transactional” model to the facilitator of a group dynamic, and that includes “forming, storming, norming and performing” stages of a group development (Tuckman & Jensen, 1977) as well as encouraging the students to take responsibility for the “knowledge production” (Forte & Bruckman, 2007: 31).

In the following section we discuss the main benefits, issues and challenges of the concurrent writing model, using as a “backdrop” reflections obtained from the students of the University of Hertfordshire second year Business Economics module.

Benefits, Issues and Challenges

The main issue is students’ engagement, and according to our experience (Cubric & Luz et al., 2008, 2009) and findings of others (Davis, 2008) the students’ engagement is largely driven by the assessment. However, the assessment itself creates additional issues and challenges, as students’ frequently complain that their degrees are individual, and therefore their grades should be individual as well.

In this section we discuss the benefits from using wikis as perceived by the students and the problem and entailing frustrations of students’ engagement with collaborative (“concurrent”) writing and we try to suggest some ideas for helping ease the frustration and enable true learning to take place.

Why should any tutor consider the use of wikis as part of their assignment strategy? The answer has been given by approximately 65 students that have worked on a “wiki coursework” in a second year module of Business Economics at the University of Hertfordshire. The students were divided in groups of five and asked to work collaboratively on developing essay answers to questions set by the tutor on the module wiki.

The first reason acknowledged is that the exercise of researching and writing about a topic, gave the students plenty of opportunity to assess their own knowledge of the subject and learn “how they use this knowledge more effectively” to complete the task (LI02 in ITMB (2006) skill-set). Some were confronted with their lack of understanding, and this turned to be a very positive point, because many times

students are only confronted with their lack of understanding at the time of their exam revision, often when is too late to clear the doubt with the tutor. (Marton & Säljö, 1976) Here are some quotations of the students that show just the above:

“I sometimes found that my existing knowledge of an area was not sufficient to give a detailed answer and more research was required in order to analyse and describe something better”

“I was able to see and learn the gaps in my knowledge when answering a question”

“Through this piece of coursework, I have learnt that I do not know as much as I thought I did regarding economics as a whole. I feel like I have learnt more about economics and in the process learnt how to apply myself to my work.”

A second reason why wiki coursework is a powerful tool for learning is concerned with peer learning and the underlying concept of “collective intelligence” (Jenkins, 2006). It is well known that some students will have difficulties in apprehending the concepts in the lecture when the lecturer first presents them to the class. Peer learning consolidates the teaching of the lecturer, and for some students is the safe net of their understanding. Judging by some of the quotations below one may perceive how clear peer learning occurs with a wiki platform and how a new perspective or a new application of a theoretical concept comes to light by the concurrent writing.

“Before this assignment I never fully understood what collaborative writing actually meant. Now that it has come to an end I’m able to say I’ve learnt a lot from the other members of the group, reading their style of work and contributing to it was interesting”

“I think collaborative writing is an interesting and clever way of getting yourself to produce a piece of work with a group of people where you learn and teach others of various techniques on essay writing and skills. For example, we can edit each other’s work where needed to make the flow of the essay more fluent and edit parts that are not needed. That way each member of the group learns their mistakes and can avoid them in the future.”

“I found that collaborative writing is an excellent way to learn from one another as we all write in different ways and at times may understand concepts differently, therefore it’s a good method of learning and understanding.”

“Collaborate writing is great experience, because different people has different thought, some ideas not even comes up in my mind, but maybe others already got it”

Finally the third reason to drive wiki coursework assignments is related with the agenda of developing transferable non-cognitive skills in our modules (ITMB, 2006). Collaborative writing as students have experienced has developed many of these skills from the most obvious such as writing and research skills to other skills such as development of confidence of presenting own work, teamwork and leadership skills (LI03, LI05 and LI07 in ITMB (2006) skill-set).

“I also feel that as the weeks have gone on, my writing skills have improved as I got more confident on learning how to research”

“In general this module the business economics, specially with this coursework has taught me a lot about myself not just as a student but also as a member of a group, working and contributing all together in order to achieve the goal in this coursework exchanging ideas with the other member in my work “

“I found the idea of merging information together with others to solve a problem very exciting.”

“I also became comfortable with other people reading my work and that is one of the main worries I had when i found out about this piece of work. I feel more confident in myself and my ideas. However doing this piece of work has highlighted that I need to work a bit more on my time management.”

“My research skills have improved over the period of doing this coursework.”

“I learnt a number of things whilst completing this wiki assignment and working within a group. I felt that nobody took responsibility of leading the group so I decided to take this role. This enabled me to develop my leadership skills further”

The aforementioned reasons to use wiki as an assignment strategy are not free from challenges and now we focus on the two greatest difficulties highlighted by the students. One difficulty occurs when members of the group participate but not consciously engage in the task. As a consequence, they repeat what other members of the group have already put forward, making the wiki page created by the group incoherent. Below are some quotations that express this concern:

“Another drawback is that sometimes the work carried out does not flow like an essay, and this is due to some members not reading other people’s parts and feeding off of that. Also, I found that a lot of information can get repeated easily, and this is again due to members not reading work previously done by members and adding to it”.

“I think the most difficult aspect was actually to write something as a group which was cohesive and made sense as one piece of writing to the reader. To combat this, it was essential to fully read and understand what other group members had written before you submitted more to the question”.

Clearly, this problem is not easy to tackle and the tutor may wish to follow one of the two strategies. One to be an active reader of the contributions and as soon as it perceives repetition contact the author and explain to him/her that he/she is deviating from the rules of collaborative writing. Another strategy is to ask the students members of the group to “police” repetition and either to approach the student themselves, or to let the tutor know of the incidence.

This way, the tutor transfers the responsibility of the coherency and fluency of the wiki text to the students, who become “editors” and “gardeners” of the wiki content.

Equally to these difficulty members of a wiki group often face the “free riding” problem. Time and again students point out to the tutor their distress in dealing with peers who do not collaborate. Students plainly acknowledge both, lack of personal engagement and lack of group functioning and consequently “self-reliance” in completing the given task (LI05 in ITMB (2006) skill-set):

“For this piece of Wiki work I was not very keen on the idea. Thus I kept on postponing the day to attempt any of the questions.”

“I was faced with the difficulty with the members of my group do not contributing to the weekly wiki and also don’t respond to email. But I was able to overcome it by just trying to do the work myself and ignoring them.”

“Initially I confront the difficulties because none of the my group member was in touch with me and it was really difficult for me to start the discussion, however latter on I met the teacher and i got the solution to my problem”

“The most obvious difficulty was the non existence of communication within the group. Wiki is a coursework that requires input from all members. However, the responsibility does not all lie upon me as I have morally done my part by attempting to communicate despite failure”

In part, this is due to the student expectations of engagement. If everyone in the group has similar expectations, they will either not engage at all with the task, or engage as a group and produce well.

The problem of course, arises when there is a mismatch of expectations. When some of the students expect to “free ride” as much as possible, and others wish to work, and have high expectations of engagement for the group.

For instance in virtual a group work where the aim is to build upon the ideas of each other, if all but one student chooses to engage, this student will feel isolated, and distressed, because the question set in his wiki, he knows is the same of every group, and he faces the task he so believes of tackling it by himself.

A student in this situation may take steps to increase the peers' engagement, like writing them emails asking them questions about the task set and trying to engage others in group with the task (LI03 in ITMB (2006) skill-set). And yet more than one student in these circumstances has hit a hard wall of indifference like to students in the quotes below:

“The difficulties I met were that I emailed my group and got no response on a number of occasions, therefore there was a lack of communication. Another difficulty I came across was I started a group discussion in order to share ideas and resources but no one responded. These difficulties were overcome by me being consistent and continuing to email my group – they eventually responded”

We argue that the behaviour of “free riders” is related to the lack of participating incentives. Let us examine what these incentives depend upon by comparing how participating incentives differ for a student and an employee of a company involved in a team task. In a work environment there is a manager to whom ultimately the workers are accountable, and if lack of engagement is reported the sanction might come in the form of a loss of a promotion, or a negative comment from the manager or ultimately the loss of work.

The students however do not have accountability in the same way to the lecturer of the module nor to the peers of the group. If friendship is part of the equation, meaning that the group is constituted by friends, then the fear of losing a friendship and damaging your reputation, might be enough for participating incentive.

Indeed, many students reported that they would have rather been in a group of friends, or meet more frequently face-to-face, such as these quotations below demonstrate.

“If I were to re-start the process, I would have liked to either know the other members of my group or met them during the writing of the wiki's.”

“I would of liked to either chosen my own group who would have been more dedicated or more demanding in the fact that the group needed a lot more actual group work and not individual input”

“This course work is collaborative work, not individual, the huge problem appears that we do not know each other in this group, it is very difficult to communicate with others. For example, if one of the members edited the work, and others have not been informed, we could not know the reason why he/she has done so. Though this is group course work, our group did

not demonstrate collaborate working. I would like to advise tutor, allocate us into group on the first lecture, then we could have chance to know who the other members are in the group and it will be lot easier for us to communicate.”

On the other hand if the group is made of students that have never met before, then some other participating incentives will have to be devised. And this, we argue, is the task of student engagement that should ultimately fall under the responsibility of the tutor.

It can be argued that issues reported by students are not different than issues arising in any group work situation. The specific issues related to content and structure negotiation, conflict resolution and consensus building have not been reported as critical, not because they were non-existent, but possibly because the basic group functioning issues, such as communication and collaboration were so dominant and un-resolved.

The main challenge is therefore for the tutor to design an assessment strategy that promotes and awards the collaborative aspects of the group work, without compromising the subject knowledge requirements. Next, we will use some insights from the game theory (Osborne, 2004) to construct different scenarios for assessing students' group work and we will highlight the scenario where collaborative writing is indeed rewarded.

Assessing Concurrent Writing

The pioneers of Game Theory (John von Neumann and Oskar Morgenstern) have proposed in their book, '*Theory of Games and Economic Behavior*' (1944) to study the strategic interactions between agents, who are called players in situations that may involve conflict or cooperation. In a context of collaborative writing, students are playing a 'cooperative game', where the payoff they get for their decisions is the grade allocated by the tutor.

We argue that is possible to devise a grading strategy so that students will have a group participation incentive.

Let us imagine the group dynamics between two students that have never met each other, when they are set a task of collaborative writing. Student A and Student B face two decisions they have to choose from, either to write collaboratively, or to "defeat". Both decisions are related to the following set of grades A, B, C, D, and F. Tables 1, 2 and 3 depict different scenarios.

Table 1 displays the dynamics of the group where the grades are set in such way that there is no incentive to participate in the wiki coursework.

This is where the group receives an overall grade (C) if the work set has been completed (either by all the members of the group or by one individual) or grade

F if the work has not been done. This is the typical scenario where “free riding” occurs, because peers will count on someone in the group to do the work, and might choose not to contribute since they have nothing to lose.

Table 1: Incentive for “free-ride”

	collaborate	defeat
collaborate	C/C	C/C
defeat	C/C	F/F

Table 2 displays the dynamics of the group where the marks are set in such a way that students who participate might become indifferent to participate in group work or to work alone.

Similar to the scenario above, members of the group fail (F) if the work has not been done. The difference is however that in this scenario the tutor does discriminate between those that participate, and those that “free ride”, and unless the work is shared by both students, in which case they both receive the same mark C, the student that “free rides” gets F. This system of marking requires the tutor to identify the “free riders” and thus it is more time consuming than the one from the previous scenario. The additional downside is that the student who does the work alone might experience frustration because he has done all the work, while the effort could have been shared by the two students. On the other hand he does not have any other incentive (apart from less effort) to engage his group members in collaborative writing.

Table 2: Incentive to work alone

	collaborate	defeat
collaborate	C/C	C/F
defeat	F/C	F/F

Table 3 depicts a scenario where the participation incentives are clearly established. In this example, not only the “free riders” are “punished” with a lower grade, but also the group receives a reward for collaboration. We argue that this system of marking is the most effective: firstly, because it increases the loss of the “free rider” from (C-F) to (B-F) compared to the previous scenario; secondly, because whenever the student finds himself working alone, he will have an incentive to engage his peers.

Table 3: Incentive to collaborate

	collaborate	defeat
collaborate	B/B	C/F
defeat	F/C	F/F

Thus we argue that tutors who use the third scenario will not only address the problem of “free riders”, but create the appropriate participation incentives for students to “motivate, influence and persuade others to work more effectively in group situations” (LI03 and LI04 in ITMB (2006) skill-set).

Conclusions

Collaborative writing, and in particular “concurrent writing” is an important “digital literacy” skill, increasingly required by the new businesses models, where “collaboration is the expectation rather than exception” (Richardson, 2006). HE institutions are still not responding to this requirement in a strategic and consistent way, even though students who participate in the process of collaborative writing report benefits that range from gaining deeper subject knowledge, and enhancing their learning (Cubric & Luz, 2009) to gaining non-cognitive skills such as leadership, team working etc.

The main issues are related to lack of sustainable and “spontaneous” engagement, also reported by Davis (2006), leading to the learning activities that are tied to formal assessment (Cubric et al., 2008).

The main challenge is designing the assessment strategy that promotes collaboration, without compromising the depth or breadth of the subject learning objectives.

To further promote collaboration, we suggest explicit assessment of the group work. The assessment rubric could include criteria similar to Garrison & Vaughan (2007) i.e. frequency, quantity and quality of contributions, with additional criteria for “appropriation”, use of “collective intelligence” and “negotiation”, as defined by Jenkins et al., (2006), as well as some of the “personal” competences and skills related to understanding and driving group work dynamic (LI03 and LI04 in ITMB, 2006) and using the “role-based protocol” for increased group productivity (Parish et al., 2004).

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