DOES COLLABORATION OCCUR WHEN CHILDREN ARE LEARNING WITH THE SUPPORT OF A WIKI?

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ABSTRACT
This paper reports on the outcomes of a mini-research project about visible forms of collaboration when children are learning with the support of Wikis-online editable websites. The findings were based on observing the children using the Wiki, analysis of the video recording of the task and the survey that was completed by the children using the Wiki as a tool for a task. Qualitative research methodology became a primary technique for the data collection and content analysis approach used to explore the children's behaviour when investigating the use of the wiki and video recording of the sessions. Various types of behaviour associated with collaboration, were observed when the children were working on Wiki pages with their peers.
Keywords: Wiki, collaboration, behaviour, cooperation.

INTRODUCTION

The latest innovations in technology over the last decade have had a dramatic impact on the use of technology as a learning tool in classrooms. Educational professionals have adopted the world of collaborative opportunities that the Internet has offered. Tools such as email, blogs and chat are acquainted by many teachers. Recent developments such as Wikis and RSS feeds may not be as well known, but offer wide opportunities for online collaboration for learners. They afford many unique and powerful information sharing and collaboration features. A wiki is a website where users can modify any page, by adding content or editing that which already exists.

The focus of this essay is to investigate the visible forms of collaboration when children are learning with the support of Wikis-online editable websites. A mini-research project was undertaken by a team which consisted of three researchers to find out the answers to two valuable questions;
Does collaboration occur when children are learning with the support of a wiki?
How can collaboration be interpreted in a group activity with children?

The aim of this paper is to give a critical account of the process of completing the mini-research project. After giving a brief description of what a Wiki is, the reasons for choosing the use of Wikis and its links with collaboration as a topic is discussed. Additionally, methods of data gathering, obstacles to using specific methods and any ethical issues are addressed. Finally, a sample data is presented and a relationship between the data and literature is explored to support the research findings.

It is very hard to give a simple definition of a Wiki, but it can be described as a combination of a web site and a word document that allows users to add, modify and update its pages. Wiki's have many different features but commonly they allow their users the ability to compare previous versions of a page, track who edited what and when. Each time someone makes a change on a Wiki page, it gets updated automatically and an older version is stored. The ease of working on a content collaboratively as a group using just a web browser can be seen as the most important element of a Wiki. The name "Wiki" was inspired by the Hawaiian word wiki or wiki-wiki, which means "quick".

Désilets and Paquet (2005) describe wikis as "simple to use Web-based collaborative hypertext authoring systems". Wiki's seen as "valuable tools for successful collaborative knowledge building" (Harrer et al 2008) and widely used by educators because of its suitability to be used as part of computer-supported collaborative learning (CSCL) (Désilets and Paquet 2005).

Wiki's have been used for many different purposes by different groups. In education Wiki's are mainly used for group writing projects, where groups of students are responsible for creating their own content and learning from each other in the process of collaborative working. The collaborative features of wikis make them particularly well suited for cooperative learning environments (Schaffert, Bischof, et al., 2006). Wikis can also be seen as easy-to-use collaborative technologies. They can support knowledge creation and sharing (Lamb, 2004; Leuf & Cunningham, 2001; Wagner, 2004) between students.

In many ways Wikis are similar to traditional approaches of standard group work such as access restrictions, defined workflows, and structures. What makes wikis different is that user deciding for themselves how they

process and groups will develop, usually by making things up as they go along. Jimmy Wales, founder of most well known example of a public Wiki 'Wikipedia' states that Wikis helps young people develop writing skills and social skills by learning about group consensus and compromise all the virtues you need to be a reasonable and productive member of society.

The research questions have arisen when we discussed the use of Wiki's in education for a group activity about how collaboration occurs and which behaviour can be identified as a sign of collaboration.

RESEARCH APPROACH

The aim of this research is to find out more about Wikis and their use in Primary schools. As a starting point collaboration and cooperation terms are defined in a context of teaching and learning.

The research involved different steps; finding literature, practical research in a primary classroom, analysing the data as an outcome of the practical research to find answers to focus questions. The team looked at the meaning of collaboration and cooperation in educational contexts, then, discussed how Wikis can be used to allow children to work in these forms. As a result collaboration is defined as process of participating in knowledge communities (Lipponen, 2002) and cooperation as the act of doing something together or of working together towards a shared aim. Scanlon (2000) suggests that co-operation usually means either splitting up the work or solving subtasks individually and combining the results into a final product. In adversity, collaboration can be seen as a coordinated attempt to solve a problem together.

Both these terms are explored further by Foot, H. C., Morgan, M.J. and Shute, R.H (eds) (1990) in their book Children helping Children. In this book collaboration was seen as an unstructured activity where participants don't have a specific role and don't work under the authority of an adult towards a reward. Interestingly, they control the learning and sharing process themselves and it may take place when a child turns to another to seek help. On the other hand, cooperative learning was referred to as 'highly structured where the aim of the learning and specific roles of the participants had been identified at the beginning and was controlled by the authority of an adult.

There have been various studies about the use of wikis to support collaborative learning. According to Chong et al.(2006), wikis, when supported with suitable communication tools, promote the active participation of, and higher level discussions amongst students. One of the case studies the research team looked into which had some vital links to this research question was about using 'A Wiki as a Tool for Web-based Collaborative Story Telling in Primary Schools (Désilets, A., and Paquet, S., 2005). The children were asked to design a story on paper and then write it up using Wiki. As an outcome of their study they came up with different collaboration modes for the different types of media that were being used for the task given. When the children designed their story they all worked at the same time, so the mode of collaboration was called Co-located synchronous. When they were writing their stories using a Wiki, team members worked in parallel on different parts, side by side. There were feedback, coordination and information sharing; this mode of collaboration was called Co-located semi-asynchronous. Random walk, splitting page between the team members, sharing tasks such as writing, uploading images were the visible forms of collaboration they could see. According to Désilets, A., and Paquet, S; pair editing on story writing phase did not work well in this case. So this outcome created a question in our mind, is pair editing appropriate in primary level?

METHODOLOGY
Data Collection- Ethical Issues
For the case study the team decided to have a class wiki which would be active during the current academic year. As an ICT coordinator in a primary school one of the team members took the role of creating a wiki called 'Planet 5J' for a year 5 class of children aged 9-10 years old. As the researcher had regular access to this class, she had a discussion with the class teacher about the Wiki project. It was suggested by the class teacher that creating a 'wow' words dictionary which contained interesting and complex vocabulary would be very useful for their writing skill. This usage of 'Wow words' was also to be part of the whole schools target.

A team meeting was held to talk about how to introduce the Wiki to the children, monitoring the usage of the wiki, sampling data and gaining permission for using the data as part of our case study. It was agreed to introduce the Wiki as part of an ICT lesson, so that the children could have time to practice using it. After introducing the Wiki to the children, it was explained to them that their use will be monitored and analyzed by a team from the university as part of a study project and that the results of this project will be put onto the Fronter MLE ICT room to share with other teachers, parents and children. The team know that in qualitative research informed consent needs to be sought and may be withdrawn at any time, and additionally to include direct talk

regarding the continued willingness to participate (Cassell, 1982). A generic permission letter was prepared by the school office regarding using children's photos, videos and work on school websites or publications. This letter also included a line in which it states that educators can study their work to improve standards in school. All of the children's parents signed these letters at the beginning of the year. The children were reminded that they could withdraw from the activity at anytime they liked. In case this happened extra adults were included who would work with these children undertaking different activities on the same topic as developing 'wow' word vocabulary. At the end of the study the students were given information about the findings of the research and the video and questionnaire results were placed in the schools managed learning area.

Due to the limited time scale involved, interviews with some of the children were not sought in this research as a data collecting method. The findings were based on observing children using the Wiki, analysis of the video recording of the task and a survey that was completed by the children on using wiki as a tool for collaboration.

Working with such a young group of children as part of this study, understanding the ethical principals for conducting a research was extremely important to the team. The team spent a considerable amount of time completing the 'Ethics Review Form' thoroughly as suggested by Bera (2004). According to Bibby (1997) it is important that researchers consider different moral arguments as part of their training and reflect on what is acceptable behaviour before beginning their research. It is extremely difficult to determine main moral principals which should guide researchers to deal with the ethical issues that can arise when attempting to interpret individual realities. Ethical codes can only operate as a guide. The best solution is for researchers to regularly reflect on their work to develop their understanding of the ethical concerns associated with their research (Burgess, 1989). During this research project the research team members had continuous dialogue among the researches regarding the ethical implications of our research project.

After introducing the 'Planet 5J' wiki to the children, they were allowed regular access to the wikispace; once a week for six weeks initially. They were also allowed to access the wikispace from home. After six weeks they were still allowed to access the wikispace, but sampling the data from the wiki itself was limited to these six weeks. The children were given tuition about how to edit pages, create links and make changes to previous work. They were not guided about how to collaborate as we wanted to observe the forms of collaboration that may occur naturally whilst they were editing the wiki.

Once the 'Planet 5J' class wiki was up and running, all the research team members were allowed to access the wiki so that they could all observe and monitor the activities that took place. The data collection was administered at two levels. Firstly the team conducted unstructured observations where each researcher read through the entries of 'Planet 5J's wiki and took notes that were vital to share with the rest of the team. Because of the version control tools of wikis, we were able to track the history of the specific pages and entries. Having in mind the research question 'Does collaboration occur when children are learning with the support of a wiki?' the team was not very clear about the relationship between the wiki entries and our question. Articulating children's entries and actions on wiki in the context of collaborative working appeared to be chaotic. In order to tackle with this ambiguity it has been decided to derive coding from the text entries on the wiki to interpret the boundaries between children's entries and the research question.

The same approach was followed to investigate the video recording. The video recording of the wiki task completed by the children was watched many times and notes were taken by the research team to form an initial explanation of data. Then codes were collected from the video recording data to study deeper to find out more about the visual forms of collaboration the children were using when editing the wiki. In order to investigate the children's attitude to this experiment, a questionnaire was designed and made available online. After the wiki based learning, children were asked to complete the questionnaire.

Reflecting on the project so far, the team decided that although this is a small scale research project, it is important to use more than one method to gather data to support our findings. However when it comes to interpreting the data and constructing meaning, each member analyzed their own data followed by group discussion and analysis of the same data.

Case Study
Sample
A considerably larger than the average primary school in London agreed to host the study. The school serves an ethnically diverse community. 29 pupils from a Year 5 (age 9-10, 13 male and 16 female) class took part in the project.
Software

Wikispaces was chosen to use for this case study. The reasons for choosing Wikispaces are; it is easy to use, secure and free.

Implementation
The project ran for six weeks at the end of the autumn term in 2010. The students were asked to use a Wiki to create a whole class 'WOW' words dictionary. This is to help them to broaden their vocabulary so that they can write imaginative stories using complex sentences. By using 'Wiki's' for this task, they have an opportunity to engage in self-coordinated, collaborative work. The team wanted to see if and how young children would be able to use the 'Wiki' in collaboration.

This case study is based upon a survey that was completed by the children, including analysis of the use of Planet 5J's 'Wikispace' and a video recording of the children during their use of the 'Wikispace'. Through the study of the data collected, the team gained an understanding of; how the children used the Wiki tool to collaborate and the effects of gender in their Wiki activities. In this case the focus was the issue of collaboration. The video recordings of the sessions where children used the 'Wiki' to create a dictionary of "WOW" words.

In order to gain a better understanding about the forms of collaboration visible when children are using a wiki, qualitative research methodology became a primary technique for data collection. A content analysis approach was used to explore the children's behaviour when investigating the use of the wiki and video recording of the sessions. Furthermore, survey questions derived students' perceptions of using the wiki in the classroom. In addition, a comparison of the results from the three sources yielded reliable evidence of the particulars of the wiki use. By using triangulation research methodology the team aimed to produce reliable results which would then improve the validity of this research. According to Cohen, Manion et al (2007, p. 141), A triangulation in social sciences attempt to explore "the richness and complexity of human behaviour by studying it from more than one standpoint", and in the opinion of this author, "the more methods contrast with each other, the greater the researchers confidence".

According to Ole Holsti (1969) content analysis is a technique for making inferences by objectively and systematically identifying specified characteristics of messages. Weber (1990, p.9) suggests that content analysis is a research method which uses a set of procedures to make valid inferences. Content analysis can involve any kind of analysis where communication content such as speech, written text, interviews, images etc. is categorized. By using content analysis as a method; it endorsed our team to observe and analyze the whole content of the 'Planet 5J'. It also allowed us to sequence the communication took place and therefore made the unobserved content of wiki data clearer. Because of the changing status of the wiki, data analysis was carried out as an iterative process where data was continuously collected and new conclusions drawn (Miles & Huberman, 1994).

The team found it very difficult to obtain coding from the theories and case studies that looked at prior to this research. Coding was mainly acquired from the conventional content analysis of the wiki entries and study of the video recordings of children working on the task. Basically the team adopted a traditional approach to analyze the findings from the video recordings drawing on Strauss's (1987) "coding from the data" method where data were analyzed as they were collected. As the team continued to analyse the data, any word, text or behaviour that represents collaboration was identified and written down. When we looked at the video we identified some behaviour that can be seen as collaboration such as; pointing at the screen, talking, critiquing, advising and suggesting. As mentioned above the team found it hard to create a code table, so we decided to have a list of mode of collaboration that was evident from the data derived through the analysis of video recording, wiki pages and survey. The research team also compared the modes of collaboration that we found with Désilets, A., and Paquet,' findings from their study. The modes of collaboration found will be discussed on the finding section of this essay.

Findings-connection with Literature and Research background
Due to the limits of space in this essay data analysis of the video recording and the children's wiki entries will be used to explain the collaboration modes that occur when children are learning with the support of wikis.

The team studied two main scenarios to identify the visual forms of collaboration in this video.

Scenario 1
Boy A made a suggestion to Boy B who was sitting next to him. Boy A did not touch the mouse or lean over Boy B. Boy A kept his distance from Boy B. Boy A pointed at the word on the screen and told Boy B what he

thinks the meaning of the word is. Boy B looked at boy A's face and asked him to explain what he meant. They had eye contact during their conversation. Boy B controlled the mouse until the end of the session.

Boy A and boy B each had a PC to work on Planet 5J's 'Wikispace'. Boy A did not use his PC; he moved his chair next to Boy B and worked with him on Boy B's PC.

Scenario 2
During 'Wikispace' work in the ICT suite Girl D saw that Girl E had spelt the word incorrectly. Girl D left her chair and came over to speak to Girl E. Girl D stood behind girl E. She moved her hand over Girl E and pointed on the computer screen to the word that she had written. She then took control of the mouse and corrected Girl E's mistake. After this she explained to her what she needed to do. Girl D returned to her seat. Girl E subsequently turned to another girl F who was sitting next to her and took the control of her mouse and showed her what to do.

Content analysis of the video has shown that the children worked collaboratively in many ways while they were working on the Wiki task. Jonassen et al states that 'mind tools' helped users express what they know and construct knowledge through critical thinking and higher order learning. In our video recording we could see that using Wikis as a mind tool motivated students to learn, and having a shared learning space improved collaboration between learners. The children were actively involved in designing their own knowledge and helping their peers to learn. While they were typing their wow words onto the wiki, when they saw some entries that were not describing the word correctly or when they found the description not detailed enough, they stood up and lead discussion on how to improve it. This helped them to construct a new knowledge through collaborative working. These student centred collaborative learning activities enabled the learners to take control and responsibility of gaining new knowledge (Myers, 1991).

Another important finding from this video was the improved communication that led to collaboration within the group. Whilst the children were editing their pages, they realized that many others were editing the same page. They could not see their entries directly. They saw this as a problem as they wanted to see their entries directly. Some of the children suggested that either they should ask if someone else was editing the same page and waited until they had finished or go and sit next to that person and work together. Instead of sitting and waiting for a solution or asking the teacher for help they decided to communicate directly with their peers in order to resolve the issue. In other words using wikis improved communication between learners; they can be characterized as enablers of socio-constructivist learning (Schneider et al., 2002). There were also many scenes where they were modifying entries, asking for help from others with explaining their words, suggesting, discussing, questioning and analysing not only their peers but also their own entries. The evident of this can be seen on the wiki pages. Figure 1 shows that a child spelt the word 'Amazing' wrong. Another child made a suggestion for correcting spelling underneath it. We can also see similar action when a child tried to describe the word 'disgusting', where description of the word was re-written by another child.

Blood thirsty: eager for blood war like BLOODTHRISTINESS

Downcast:Very sad and gloomy about some one and somethink.

Disgusting:When someone is very dirty and not kind.

I think it means if SOMTHING is dirty and it has lots of other MEANINGS.

Adicted:When somone can not stop doing somthing.

Blissful: It means if somebody is extremely happy.

Adventurous: When someone likes to do stuff.

Amayzing: when some thing is good blissful:it means happy

is spelt like this amazing. Enisha

Figure 1

Again figure 2 shows children suggesting the correct spelling of the word or asking their friends to use a dictionary if necessary. We can also see that a child describing the word 'excited' and another child giving their own opinion of the meaning of the word.

Gorgeuse;When somone is very beautiful.

Gorgues(look in dictionary)

Gorgeous.Arlinda

Hideous:when somone is unbearible to look at.

Furious: Means if somebody trip you on the floor by perpes and you will start to get furious but you did not do anythink to let that person push you on the floor.PLEASE look it up in a DICTIONARY.!!

Eccentric: a person who has an unusual, peculiar, or odd personality, set of beliefs, or behavior pattern.

Elated:To be overjoyed and really happy.

Excited:When your really nervouse and happy for something.

I think excited doesnt mean nervouse but happy is good.

Figure 2

According to Lipponen (2002), computer supported collaborative learning such as Wikis promotes peer interaction and allows the sharing of knowledge within a group of learners. In scenario 1 above boy A asked boy B for his opinion about the meaning of a word; in scenario 2 girl D correcting girl E's mistake, girl E passing on her new knowledge to girl F. After analysing these scenarios closer the team found that children are not just learning to write collaboratively; they are also developing many collaborative skills, negotiating with others to agree on correctness, meaning relevance and more(Fuchs-Kittowsk & Köhler, 2005; Godwin-Jones, 2003; Wang& Turner, 2004).

As explained in the previous section of this essay we came up with a list of modes of collaboration linked to the special areas it occurred.

Content-related: Where children helped each other to write and explain the meaning of the 'wow' words; one child suggesting another one which word can be classified as a 'wow' word.
Technology-related: Children explaining each other how to use the functions of wiki software.
Random help skills: Where children showing interest and willingness to help their peers sitting next to them or leaving their chair to go and help others when they needed help.

Comparing the research findings with Désilets and Paquet's research
According to Désilets and Paquet's study (2005) collaboration had two modes; co-located synchronous and co-located semi synchronous. In the Co-located synchronous mode of collaboration; children were observed working side by side on the same task which was designing a story. The activity was paper based. In the co-located semi synchronous mode of collaboration, children were noticed working on parallel tasks, sitting side by side. They were working in a coordinated way and were sharing information. They were also giving feedback. The team hasn't used a paper based activity, nevertheless observed children using similar co-located synchronous and co-located semi-synchronous strategies. In some instances children were working independently on different parts of the "WOW" words dictionary, either in parallel or at different times and in some instances they were working on the same page. Désilets and Paquet (2005) stated that pair-editing mode of collaboration did not happen during their study. In this case study the use of a pair-editing strategy was detected where one child was the driver who typed the words and other was the navigator who helped driver.

The mini-research project produced some important results regarding the modes of collaboration drawn from the wiki based learning experiment. From the analysis of the data we saw children working collaboratively in many

ways. They observed their friends' mistakes on Wikispaces, and then they left their chair and went to speak to the person who had made the mistake. The children worked in pairs, randomly walked around and helped their peers. They made suggestions and criticized others work by pointing at the computer screen or taking control of the mouse and keyboard to model what they thought was the correct answer. The use of a video as a data gathering method was extremely useful as all the members of the research team had an opportunity to see the children working on the task. Although the video recording gave some important data for this research, the team also had difficulties analyzing it fully as it was sometimes very difficult to see exactly what the children were doing when they were editing the wiki pages. Were they modifying, deleting, or suggesting?

Because of the noise level in the classroom, it wasn't always easy to hear their dialogue with their peers. When it comes to using the data analysis of the wiki entries itself, although we can see some changes and suggestions made by the children, the volume of this data is not very high. Giving the children more time to work on the wiki pages or using the wiki with more classes may have given us more information about the relationship between wikis and collaboration. Also having a clear idea about the coding of collaborative behaviour would also help with conceptualize the data from the video and the wiki pages.

CONCLUSION
The purpose of this study was to investigate the visible modes of collaboration when children are using a wiki as a learning tool. Based upon research findings it can be suggested that children are collaborative when learning with the support of wikis. Therefore, wikis could be seen as an effective tool to support collaborative learning and knowledge sharing in education and facilitates group learning where students can learn and share knowledge. Various type of behaviour associated with collaboration, were observed when the children were helping each other with their tasks.

This case study has shown that using a wiki brought the group members together to edit the Planet 5J wiki pages which allowed children with similar ideas to collaboratively build on each other's work. It also gave the children equal access to the most recent version of the wiki.

This research project gave the team an understanding of how collaboration emerged when the children were using wiki as a learning tool. It also gave an insight of how knowledge was built socially. For the future research, it will be worth to try providing children with more structured tasks, where children have an opportunity to work as a team and are given a longer time to complete the task. The children could also be given information about types of roles they could foster in group work. This may help them with understanding of how a group functions when they are working together.

The data collection methods used for this mini-project were appropriate for showing the modes of collaboration that occurred however, the scale of the research was not large enough to draw general conclusions. Further research is recommended to confirm the findings of this research, and decide the magnitude to which modes of collaboration can be associated with wikis.

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