

**Computers, Problem Solving and Cooperative Learning
Through the Use of Wiki Pages**

Link:

<http://share.wikispaces.com/>

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Do You Wiki?

A wiki, as defined by Wikispaces.com/tour1, is “a set of web pages that anyone can edit.”(Wikispaces.com 2006) Wikipedia, the first online wiki encyclopedia, was founded by Jimmy Wales in 2001. The company is operated by the non-profit Wikimedia Foundation and has a payroll of four individuals. Wikipedia, however is maintained by over 30,000 actively participating volunteers whose mission is to work collaboratively to provide articles in many languages.(Twomey 2006) Here is a chart listing the number of articles on Wikipedia in ten main languages:

Language	Number of Articles as of 06/07/06	(Wikipedia 2006)
English	1,176,000	
German	411,000	
Polish	240,000	
Netherlands	203,000	
Italian	163,000	
Spanish	124,000	
Portuguese	143,000	
Swedish	165,000	
Japanese	220,000	
French	297,000	
141 Other Languages	11,100	

Within a wiki, the users have the ability to edit any and all data, connect hyperlinks to other wiki pages within their site, or connect hyperlinks to any external link. They can also create anchors within their wiki pages to create navigation links to certain portions of a long wiki page. I believe that the wiki, which is web based software, can be a powerful tool in problem solving and cooperative learning.

An Analysis of the Wiki Software

Problem Solving Aspects of the Software:

The problem solving attributes of any curriculum are based on how the lesson is presented by the teacher. During my research for this project, I came across a web site <http://www.nctt.net/lessonsarticles.html> hosted by the National Center for Teaching Thinking (NCTT). Within this web site is a list of lesson plans. I reviewed a Language Arts unit entitled "Tucker's Countryside" which listed problem solving in the Thinking Skills column. This plan states that "Students will learn to solve problems skillfully by clearly stating the problem, generating possible solutions, and finally selecting the best solutions on the basis of consequences." (Thinking 2006) I have adapted several of the methods and materials used in this suggested lesson plan into wiki format on my wiki site which is entitled [s][h][a][r][e] literature. It is located at <http://share.wikispaces.com/Share+Literature>. My wiki, hosted through the www.edublog.com site, proposes a lesson plan for the study of The True Confessions of Charlotte Doyle by Avi and incorporates some of the tools suggested by NCTT.

The Language Arts lesson plan proposed by NCTT groups the students into teams and encourages them to write down their reflections on a flip chart, chalkboard or transparency. Theoretically, the students could fill in the charts as suggested or even edit a word document on a classroom computer. One word document could be merged from several edits or emailed to a teacher who could cut and paste responses. These methods limit the students' opportunity to view each others work.

I believe the use of a wiki can enhance the problem solving aspects of this language arts assignment. By posting a thinking map in the beginning of the wiki, the teacher can establish guidelines for critical thinking and problem solving .

The lesson plan presented on the NCTT site contains a chart entitled “Skillful Problem Solving.” A modified version of this chart has been represented on my [s][h][a][r][e] literature wiki to allow the students to enter the possible solutions to a problem presented in The True Confessions of Charlotte Doyle. The students can work collaboratively to arrive at a list of consequences, pros and cons and the value of each consequence. The team can work toward arriving at a final solution. All of these steps would require active discussions. The first section of possible solutions can be input as homework from home or public library if the student does not have a home computer. The verbal discussion of solutions, consequences, pros and cons could take place in classroom team meetings.

By providing an online wiki forum, I believe that the quality of a student’s work would increase. By observing the thoroughness of students’ answers, children would be encouraged to give more thought to their own answers. They might review another team’s response and observe a different solution that they had not considered. Sharing of ideas and solutions would become exponential.

Cooperative Learning Aspects of the Wiki Software:

Jonassen describes cooperative learning in the following manner: “When given the opportunity, students of all ages readily experiment with technologies, articulate their own beliefs, and construct, co-construct and criticize each other’s ideas. When learners

are allowed to assume ownership of the product, they are diligent and persevering builders of knowledge.”(David H. Jonassen 2003)

Within the wiki environment, the students could post their reflections as a team or individually from either school or home. The team members could read each member’s response and develop a consensus from all of the entries. They are co-constructors of ideas and knowledge. While a flip chart, chalkboard or transparency might work, the wiki provides much more flexibility.

Cooperative Learning Groups, as defined by Johnson in Circles of Learning lists nine attributes(Johnson 1984) which I believe are fulfilled in the wiki environment:

- ✓ Positive interdependence – The students must successfully navigate and learn the new wiki syntax together. The wiki has a simple word processing format. The students rely on one another to successfully update and maintain their team’s portion of the wiki. They could teach one another about the added features such as including hyperlinks.
- ✓ Individual accountability – Each team member engages in discussions and problem solving skills. By contributing to the discussion and the successful editing of the wiki, they have sustained their group’s efforts.
- ✓ Heterogeneous – In this context, heterogeneous meaning mixed, or dissimilar, refers to the various learning styles of the students. The wiki provides an opportunity for all learning styles. One type of student might not be quick enough to express their thoughts verbally in a classroom setting. The wiki provides them with the opportunity to think about their response and add it to the wiki forum.

- ✓ Shared leadership – Each student is responsible for contributing toward solving the problem and reporting on the solution.
- ✓ Shared responsibility for each other – The maintenance of an education wiki mirrors the Wikipedia credo. Wikipedia has never had to revert to a read only status.(Twomey 2006) The members of the wiki share the responsibility for its integrity.
- ✓ Task and maintenance – The tasks are clearly outlined in the wiki. Maintenance is a class effort. Once the wiki is set up, the teacher can monitor history logs to observe progress and let the students become the constructors of their knowledge.
- ✓ Social skills taught – Students must work well together and share the responsibility of their work.
- ✓ Teacher observes and intervenes – The wiki has a history log which can be observed by the teacher without looking over the shoulders of the students. The teacher could quietly listen to group discussion and monitor the wiki at home or in class.
- ✓ Groups process their differences – The teams actively listen to the pros and cons of a suggested solution and arrive at a consensus before including it in the wiki. If the wiki entries are reviewed by a student at home or in class, then the student could challenge an entry during a group meeting or post a thought on the wiki.

The wiki is different from any other media in its ability to be modified by each student. Hosting the wiki at a site such as edublogs.com gives complete access to all students and the teacher from **any** internet connection. Students can easily observe other team's progress. It is also different in that it gives students with different learning styles more opportunities to participate. If a student is reluctant to speak up, then editing the wiki with thought filled comments could enhance their learning opportunities.

A Proposed Curriculum Using the Wiki

Role of the Teacher:

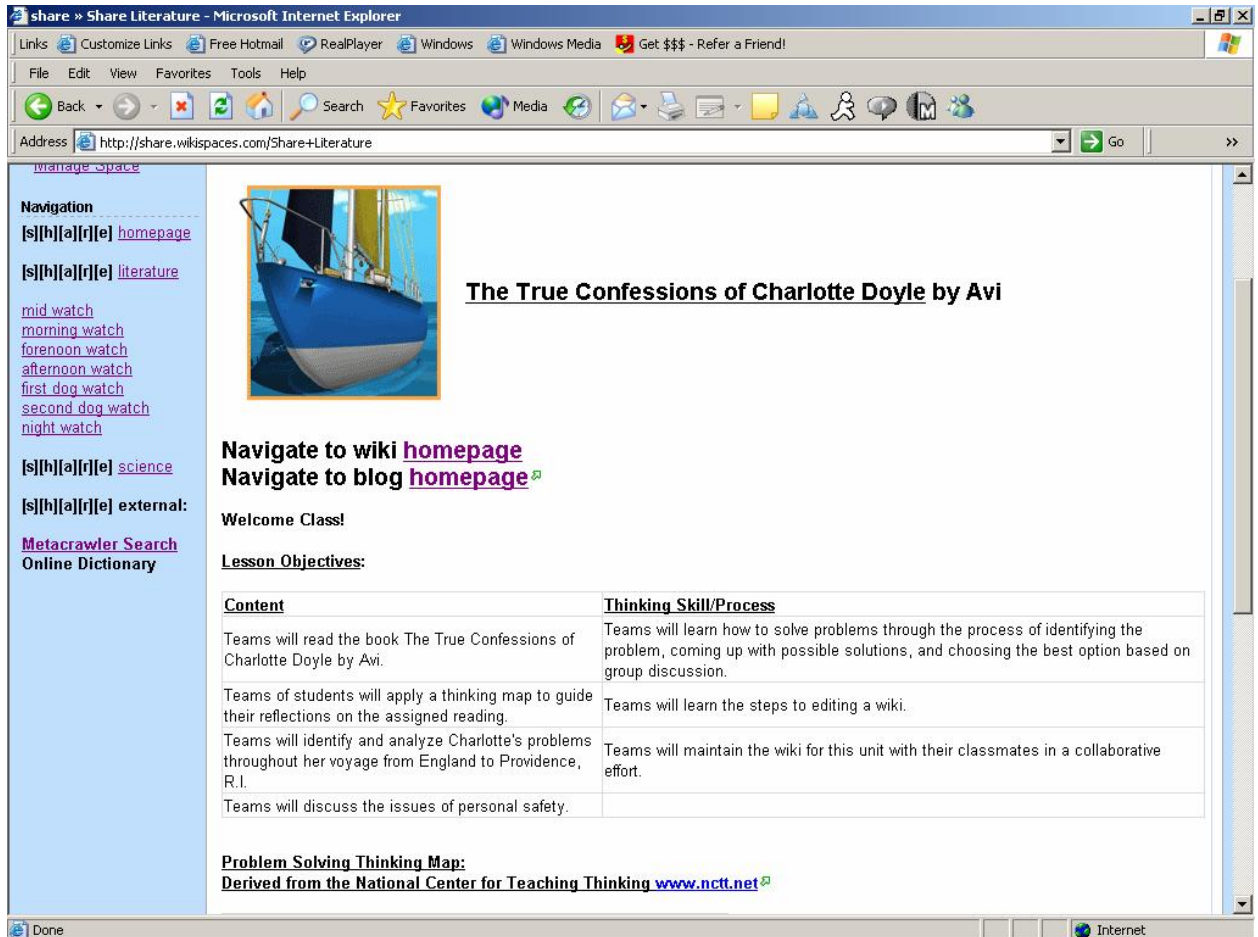
The following screen shots of my [s][h][a][r][e] literature wiki lists my Lesson Objectives for a Language Arts unit, the Thinking Map I have established for the students to use and one example of a student team page. The role of the teacher would be to set up the wiki as a forum for cooperative learning. The wiki provided through edublogs.com provides very simple editing functionality. The most complicated feature that a teacher would have to learn is how to establish hyperlinks to either another wiki page within your site or an external link to a site on the internet. Otherwise, all that is available to you is bold, italics, underline, tables, insert picture or special characters. Simple editing is what works best.

As in any data processing tool, saving frequently is all important. If you navigate away from your edit without saving, you lose your edits. I found that out the hard way.

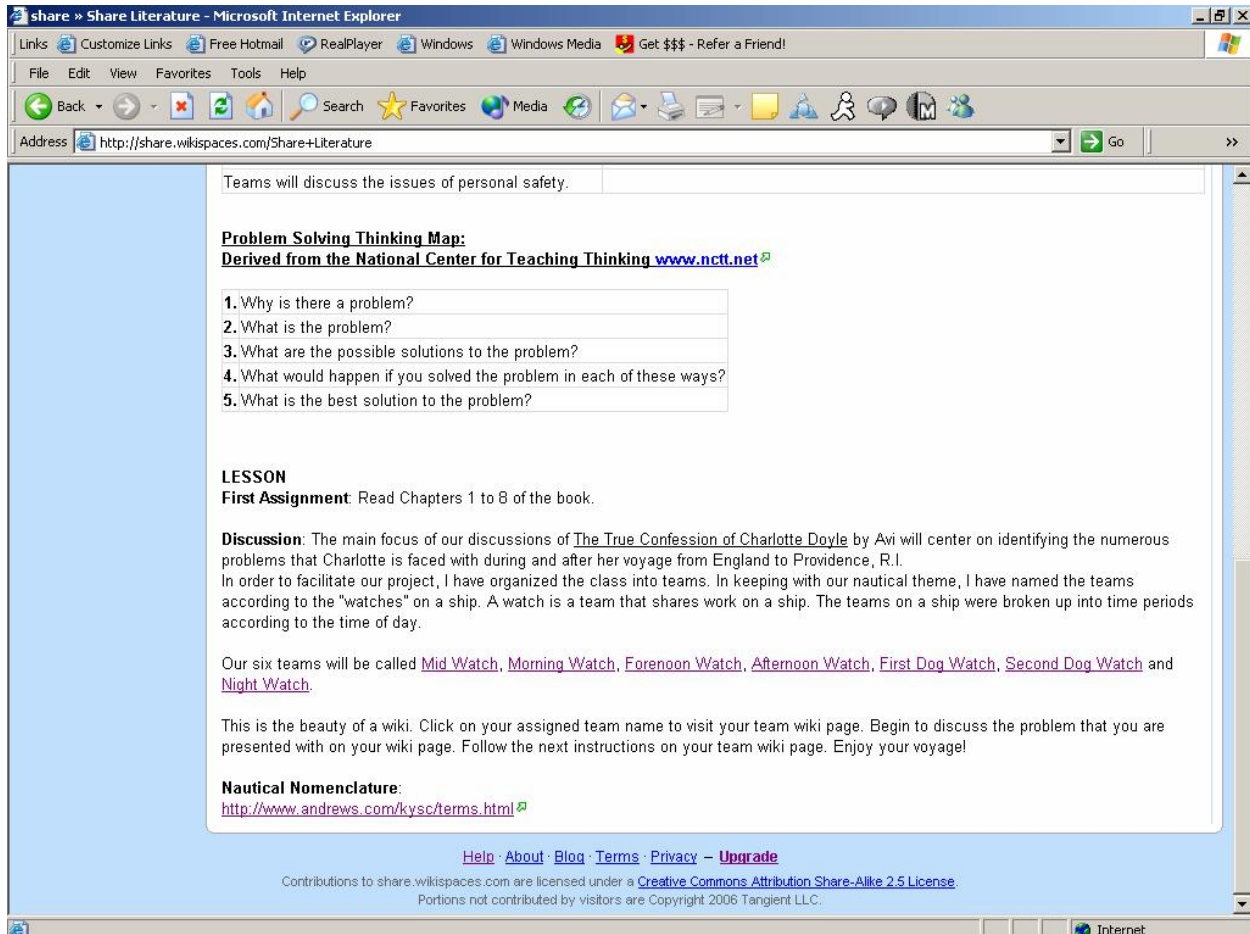
You also have the ability to insert animated gifs. I subscribe to the web site AnimationFactory.com. This site provides an outstanding selection of animated gifs. I have included one on each page to add interest.

Adding new wiki pages is very simple. I have set up six new pages which provide one page for each student team. I named the teams according to the “watches” on a ship to reinforce the nautical theme of The True Confessions of Charlotte Doyle. I did not have to edit six pages individually. I simply created one new page containing the discussion topic and problem solving methodology. Then, I copied that page over to five new pages and simply changed the “watch name” on each page. The content is identical.

As a teacher of problem solving, I would first review a sample problem with the students. Then, I would review key terms with the students. The teams must know how to examine Charlotte’s circumstances and her character traits. Then I would review the concept of consequences. By teaching the students to think ahead about choices, I believe that a valuable life lesson is being taught. This is why I included “personal safety” as one of the lesson objectives. I believe that this is a very important topic we must discuss with our children and students in this fast paced, complicated world.



Here is the screen shot showing the [s][h][a][r][e] literature home page. On this page, I have listed the Lesson Objectives. Since our Final Individual Project expands on the curriculum aspects of using computers for problem solving and cooperative learning, I will be expanding the curriculum map unit within the context of my final report. Within the context of this report, I am concentrating on the attributes of the software. In my Final Individual Project, I will be adding additional details including an instructional wiki page on the fine points of editing a wiki. Additional problems that Charlotte Doyle encounters will be introduced to further examine the wiki as a problem solving and cooperative learning tool.



This screen shot shows my [s][h][a][r][e] literature wiki homepage where I list the Problem Solving Thinking Map to be used by the student teams and the beginning of the First Assignment. Look at the links to the student teams. The Mid Watch, Morning Watch, Forenoon Watch, Afternoon Watch, First Dog Watch, Second Dog Watch and Night Watch can be accessed by any team, any student or the teacher to provide internal links to all work in progress. I have been very cautious by not listing any of the


student's names on this site. I believe that it is unsafe to list identities on the internet. Only the teacher has a paper list of team members.

The screenshot shows a Microsoft Internet Explorer browser window with the address bar displaying `http://share.wikispaces.com/mid+watch?token=901249255f75dd0936a438f7ac891fc0`. The page content is as follows:

share » mid watch guest · [Join](#) · [Help](#) · [Sign In](#)

mid watch [edit](#) · [discussion](#) · [history](#) · [details >>](#)

[s][h][a][r][e] literature wiki: mid watch team page!



The True Confessions of Charlotte Doyle by Avi

Navigate to wiki [homepage](#)
 Navigate to blog [homepage](#)²
Welcome mid watch team!
Your watch would have run from midnight to 4:00 A.M.!

Here is your first problem to discuss:

Learning From Your Reading
 Describe Charlotte's character traits in the space provided after each question. Take the facts from the book and draw conclusions as to what this tells us about Charlotte.

Topic: Charlotte must travel from England to Providence, R.I. by ship without her family

Here is a screen shot of the mid watch team page, which is identical to the other watches until the students start to fill in their reflections. This page identifies the topic for discussion.

share » mid watch - Microsoft Internet Explorer

Address: <http://share.wikispaces.com/mid+watch?token=901249255f75dd0936a438f7ac891fc0>

Topic: Charlotte must travel from England to Providence, R.I. by ship without her family

1. Charlotte's father must relocate to Providence from England. He decides to leave Charlotte behind to finish her school year at Barrington School for Better Girls. Charlotte's mother agrees with her husband. The family leaves Charlotte behind.

(edit here to describe Charlotte's character traits and how you believe Charlotte feels about this)

2. Charlotte finishes her year at school and is taken to the docks by Mr. Grummage. He is very impatient with her many questions. Even though he learns that the other families have backed out of the voyage, Mr. Grummage decides to leave Charlotte on the ship.

(edit here to describe Charlotte's character traits and how you believe Charlotte feels about this)

3. Charlotte sees a man climbing the ship's ropes to secretly board the ship.

(edit here to describe Charlotte's character traits and how you believe Charlotte feels about this)

Skillful Problem Solving

The Problem: Charlotte has been taken from the safe environment of Barrington School for Better Girls and dropped off at the dock of a ship. She must travel across the Atlantic with a ship full of strangers and is the only female on this long voyage. She was supposed to travel with two other families, including other women. This is the age before phones, much less a cell phone. Discuss the possible solutions that Charlotte has to this problem with your team and record them below. You can record as many solutions as you wish.

(this is where you should edit your suggested solutions)

- 1.
- 2.
- 3.

As the students scroll down within their team page, they will find key topics to discuss. It is here that they will learn from their reading by examining the facts in the book. They are invited to draw conclusions about Charlotte's character traits. Space is clearly provided for the team to edit their reflections.

share » mid watch - Microsoft Internet Explorer

Links Customize Links Free Hotmail RealPlayer Windows Windows Media Get \$\$\$ - Refer a Friend!

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites Media Print Mail News RSS

Address <http://share.wikispaces.com/mid+watch> Go

Skillful Problem Solving

The Problem: Charlotte has been taken from the safe environment of Barrington School for Better Girls and dropped off at the dock of a ship. She must travel across the Atlantic with a ship full of strangers and is the only female on this long voyage. She was supposed to travel with two other families, including other women. This is the age before phones, much less a cell phone. Discuss the possible solutions that Charlotte has to this problem with your team and record them below. You can record as many solutions as you wish.

(this is where you should edit your suggested solutions)

- 1.
- 2.
- 3.

The solution our team would consider: Think about what would happen if Charlotte chooses this solution and what the consequences would be. Then decide whether this is a pro (a positive consequence) or a con (a negative consequence) Describe how important each consequence is.

(type the solution that your team has chosen here)

(type several alternatives about what could happen if Charlotte chooses your solution)

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Done Internet

In this section, the students are invited to choose a solution and describe the consequences of this solution.

Role of the Student:

The role of the student would be to grasp the functionality of the wiki edit and to work cooperative with their team. By setting the nautical tone of the ship's "watches", I have provided the ownership that Jonassen talks about in Learning to Solve Problems with Technology. "When learners are allowed to assume ownership of the product, they are diligent and persevering builders of knowledge."(David H. Jonassen 2003)

The edit functionality of the wiki is very simple. The most complicated concept that the team must grasp is the frequent saving of their data. I believe that teams will “take off” with this wiki tool by utilizing solid problem solving techniques and arriving at thought filled conclusions.

Working well and building a rapport with their team is crucial to the success of the wiki.

Conclusion:

I recently completed a course at Columbia entitled Technology and School Change. Within that course, we learned about the diffusion of innovations and the adoption of change which I am able to apply to many other courses that I am taking. Everett M. Rogers, in his book Diffusion of Innovations, has studied change in diverse areas and has categorized the “adopters” of a new innovation into five categories. The percentages next to the categories represent the rates of adoption of an innovation in any system. The categories are, Innovators (2.5%), Early Adopters (13.5%), Early Majority (34%), Late Majority (34%) and Laggards (16%). (Rogers 2003)

Jimmy Wales, the founder of Wikipedia, is an Innovator. The innovator, according to Rogers is a person who can “more easily deviate from the norms of the system by being the first to adopt new ideas.” (Rogers 2003) The educators and students using wikis on edublog.com today are the Early Adopters. An Early Adopter, according to Rogers, is a person who “decreases uncertainty about a new idea by adopting it, and then conveying a subjective evaluation of the innovation to near peers through interpersonal networks.” (Rogers 2003)

Diffusion is defined by Rogers as “the process by which an innovation is communicated through certain channels over time among the members of a social system.” (Rogers 2003) The diffusion of this innovation, the wiki, must undergo the communication of the wiki, through certain channels (educators, students), over time, among members of a social system (educators). I believe that educators and students will gradually demonstrate the flexibility and cooperative learning aspects of the wiki to their peers. After this communication takes place over time, then the Early and Late Majority will adopt this innovation. The innovation of the wiki has been adopted by some educators, as witnessed by the links to new wikis provided in edublog.com. This website hosts wikis being developed by teachers, librarians and students for educational purposes. The educators already developing wikis can be categorized as “Early Adopters” by Rogers in his book Diffusion of Innovations.(Rogers 2003)

Jonassen suggests that parents, students and teachers demand change to reform the educational process. In doing so, Jonassen states that , “Technologies will not be the cause of social change that is required for a renaissance in learning, but they can catalyze that change and support it if it comes.(David H. Jonassen 2003) Jonassen further states that “Using technologies as constructivist tools assumes that our conceptions of education will change, that schools or classrooms...will reform the educational process.” (David H. Jonassen 2003)

While the demand for change might come from parents, students, and teachers, the reality of change has been shown to progress through certain predictable phases. I will further examine the wiki as web based, educational software in my Final Individual Project for this class. Wiki on!

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