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Repackaging for the 21st Century: Teaching Copyright and Computer Ethics in Teacher Education Courses

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In today's world it is quite common to see old ideas repackaged and presented to consumers in sleek new containers. This repackaging also occurs in the educational realm. For example, the violence seen in schools has prompted the call for character education, media literacy, and conflict resolution training. Many of these instructional programs, although possibly called by a different name, have been in the curriculum of schools for years. Regardless of the fact that these programs have been operational in some schools for extended periods of time, recent violence in schools dictate that the effectiveness of these programs must be questioned. This need to reflect upon the effectiveness of existing practices reached our own teaching experiences in similar ways. Fortunately, we were not exposed to violence at our educational institutions but the need for reflection and re-evaluation was still needed. The issue: Copyright and Computer Ethics.

In the spring of 2000, a geographically disparate colleague and I were discussing events in the nation's school systems and the need for best practices in many areas of education. Our conversation turned to a discussion of events occurring in our own teacher education classrooms. Students were very interested in the Napster case, and we were pleased to provide class time for a discussion on this issue. We both discovered that our students were extremely misinformed about copyright laws and fair use guidelines. We were equally concerned with our students' ideas of what was ethical regarding computers and their use in society. This situation caused us to question the effectiveness of our teaching and curriculum for these areas. Frequently, students and instructors alike are ready to get to the *fun stuff* associated with computing and neglect to consider issues such as copyright laws, fair use, and ethical behavior. Because students have one unit on computer ethics and copyright in a technology course during their educational program at our institutions, it is imperative that we provide the most effective and efficient unit possible. We decided to re-examine our Copyright and Computer Ethics units and look specifically at the following areas:

- What preexisting information/misinformation did students have about the topic prior to our instruction?
- What areas of the unit were successful and what areas needed improvement?
- What steps could we take to better address the misunderstandings or confusion about the topic?
- How could we promote a consciousness of thought about computer ethics and copyright that would permeate the teacher education program?
- How could we better promote discussion and student reflection about copyright and computer ethics?

We agreed that is impossible to determine the students' true ethical standards about computers and copyright issues when no one was looking over their shoulder but we believed that this reflection and revision of this instructional unit would greatly benefit our students. Computer ethics and copyright laws are certainly not new topics for educators, yet unless we structure learning environments around these issues, students will not gain experience and perspective in making ethical decisions with respect to computers (Hannah & Matus, 1984).

The need for 21st century teachers to be aware of copyright and computer ethics and to create a classroom environment of ethical and legal computer use is extremely important. We must assist future educators in fostering this attitude as well as making it a matter of practice. These efforts are long-term changes, and we recognize that our curricular reform will be ongoing. However, we wanted to share some of the interesting findings revealed in our first round of curricular revision for copyright and computer ethics. It is our firm belief that with effectively designed and implemented instruction, our students can work with us to promote an attitude of ethical computing practices for 21st century teachers.

Action Plan for the Reevaluation of the Instructional Unit

The initial stages of our plan were rather simplistic. We needed baseline data to determine areas, categories, and strategies for the redesigned curriculum and instruction. Therefore, we established an action plan to

1. Survey students to see what they knew when entering our class via survey instruments and class discussions.
2. Determine areas and categories that need additional instruction or redesigned instruction.
3. Create new or improved curricular lessons.
4. Implement new lessons.
5. Re-evaluate effectiveness of the lessons.
6. Continue to survey students to determine the effectiveness of the curricular revision.

Description of the Survey

During the summer of 2000, we designed a survey to accomplish the first step of our action plan. This study used a cohort survey design (as used in Babbie, 1990) along with information received in class discussions. This 46-item longitudinal cohort survey allowed us to use the same teacher education courses and gather data to determine the effectiveness of the instruction and how the instruction needed to be altered over time. Survey items were developed using topics referenced in the literature and from questions asked by our previous students about copyright and computer ethics. The survey contained 46 items divided into the following 5 categories:

- Understanding and Application of Basic Copyright Laws (10 items)
- Understanding and Application of Fair Use Guidelines (14 items)
- Ethical Situations involving Computers (10 items)
- Use of Questionable/Situational Material/Language (4 items)
- Appropriate use of Networks, Passwords, and E-mail (8 items)

The items in each category are described in more detail later in the article. The survey indexes are SA-*strongly agree*, A- *agree*, N- *no opinion*, D-*disagree*, and SD- *strongly disagree*. Most of the survey items were designed to allow students to have specific thoughts leading to a definitive response. This was done in an attempt to prevent an abundance of "N" 'no opinion responses. However, there were some items in the survey specifically designed without critical contextual pieces of information to determine whether students recognized the contextual aspects of copyright. In the fair use guidelines category, there was simply not enough information given to accurately assess the situations on some items.

Understanding and Application of Basic Copyright Laws (10 items)

These survey items were designed to assess the extent of the student's knowledge about basic copyright issues. Topics in this category include knowing what can be copyrighted, whether you must register a work for it to be protected, whether you can copy consumables (workbook pages, etc.), copying materials on the Web, and copying software from various sources (school network, from floppies, CDs, etc.).

Understanding and Application of Fair Use Guidelines (14 items)

Items in this category of the survey assessed the extent of students' understanding of the contextual complexity associated with fair use guidelines. The items range from having a basic understanding of the fair use guidelines to the complexities associated with the guidelines. Topics include the use of videotaped television programs in the classroom, the need for advance planning when videotaping television programs, the use of videos in instruction, using copyrighted images in student and teacher web pages and presentations, the acceptability of claiming fair use with software, and whether crediting an author is enough under fair use guidelines.

Ethical Situations Involving Computers (10 items)

These items assessed students' ideas of what is appropriate or inappropriate when presented with different scenarios. A sample of the topics in this category are the use of cookies by companies and schools to track users' viewing patterns, the downloading of copyrighted and public domain music, and obtaining information from online book reviews to use in a book review assignment. Students were also asked whether ethical situations involving computers were different from other ethical situations and whether they used different ethical standards when using a computer at home versus a computer at school.

Use of Questionable/Situational Material/Language (4 items)

Items in this category assessed the use of questionable materials and language. The category items dealt with the appropriateness of using strong language in private computer discussions and whether it is acceptable to access questionable material at school, from an office, or on a computer in general.

Appropriate Use of Networks, Passwords, and E-mail (8 items)

The items in this category assessed students' ideas about e-mail, passwords, files, and networks. Topics included whether e-mail is anonymous and private the appropriateness of forwarding confidential e-mail, using someone else's password with and without his/her permission, exploring a school's network, and attempting to circumvent a school or individual's security system.

Instructional Procedure

The survey (pre-lesson) was administered to students two weeks before the instruction on copyright and computer ethics. For the lesson, the instructors covered the same objectives and used the same instructional materials and teaching strategies. The instructors' teaching styles are very close, so the presentation of the lesson and the sense of community within the classrooms were similar. Two weeks following the completion of the instruction, a post lesson survey was administered to students. Abiding by the requirements of the Institutional Review Board (IRB) at each institution, these surveys were strictly voluntary and could not influence the grades of the students in any manner.

Demographic Information

The University of Florida is one of the institutions participating in this study. UF is the flagship public institution in the state, with an enrollment of over 45,000 students. Undergraduate and graduate students from the College of Education and the College of Liberal Arts and Sciences participated in this study. Students enrolled in the undergraduate course (EME 4406) are in the College of Arts and Sciences obtaining a baccalaureate degree in their academic discipline and a minor in Secondary Education. The graduate course (EME 5403) is an introductory course required for Educational Technology majors in the College of Education at the masters and doctoral level. A few doctoral students from other disciplines within the College of Education who are obtaining a minor in Educational Technology also participated in the class and study.

Texas Wesleyan University is a small (2,800 students) private urban institution serving a large population of average to lower-income students from the surrounding community. The undergraduate students participating in the study were exclusively from the School of Education. Students enrolled in the undergraduate education course (3,338) are obtaining a baccalaureate degree in either elementary or secondary education.

Additional information on the students in each course can be found in Table 1. In this survey a majority of the participants were female. Lack of males in these courses was atypical for both institutions.

Table 1. Survey Participants

University of Florida		Texas Wesleyan University	
EME 4406	N=49	EDU 3338	N=28
Male	6	Male	5

Female	42	Female	23
EME 5403	N=27		
Male	6		
Female	21		

Survey Results

We realized going into our study that this initial survey data would only provide us with a starting point that would allow us to determine what categories needed attention, what categories to add to the instructional unit, and how best to devote our time and attention. Students entered the last four digits of their student ID on each survey. This was done in an attempt to accurately record the same students' perceptions and knowledge before and after the instructional lesson. The number of complete matching pre and post surveys was 58.

Frequency tables were run on each item. This enabled us to observe the difference in participants' responses from pre to post lesson. We also ran percentages on correct answers. Responses of 'A' or 'SA' were counted as correct if the appropriate response was either selection. The same was the case for 'D' or 'SD' responses. Because some of the items dealt with ethical issues, we were aware that there truly are no right and wrong answers. For these items, we relied exclusively on the frequency tables to interpret the data.

Student Knowledge Before Instruction

Basic Copyright and Fair Use

Pre-lesson survey results showed that students were extremely uninformed about copyright laws for traditional and electronic materials. For example, 54.6% of the students believed that only materials with a copyright notice (by word or symbol) are protected. Copyright surrounding software was also an area that needed instruction. Many students (37.9%) believed it was acceptable to copy single-user software. Half of the students (50%) responded that it was acceptable for a teacher to copy a single-user program on all the computers in a school lab. Comments made by the students when brainstorming about copyright prior to the lesson indicated they believed that as long as they were doing something educational and not making a profit on the situation, copyright laws and fair use were being followed.

Ethical Situations Using Computers

Pre-lesson results indicated that students did not have hard and fast rules to consistently apply in ethical situations involving computers. Overall, students felt it was appropriate to download copyrighted music from Napster without paying for it (48.2%) but inappropriate to claim a paper found on the Internet as his/her own (98.3%). There were two items in the survey that indicated students' situational approach to ethics. A majority of students (77.6%) stated that they used a different set of ethical standards when using a computer at home versus a computer at school. The frequency table data for this item can be found in Figure 1.

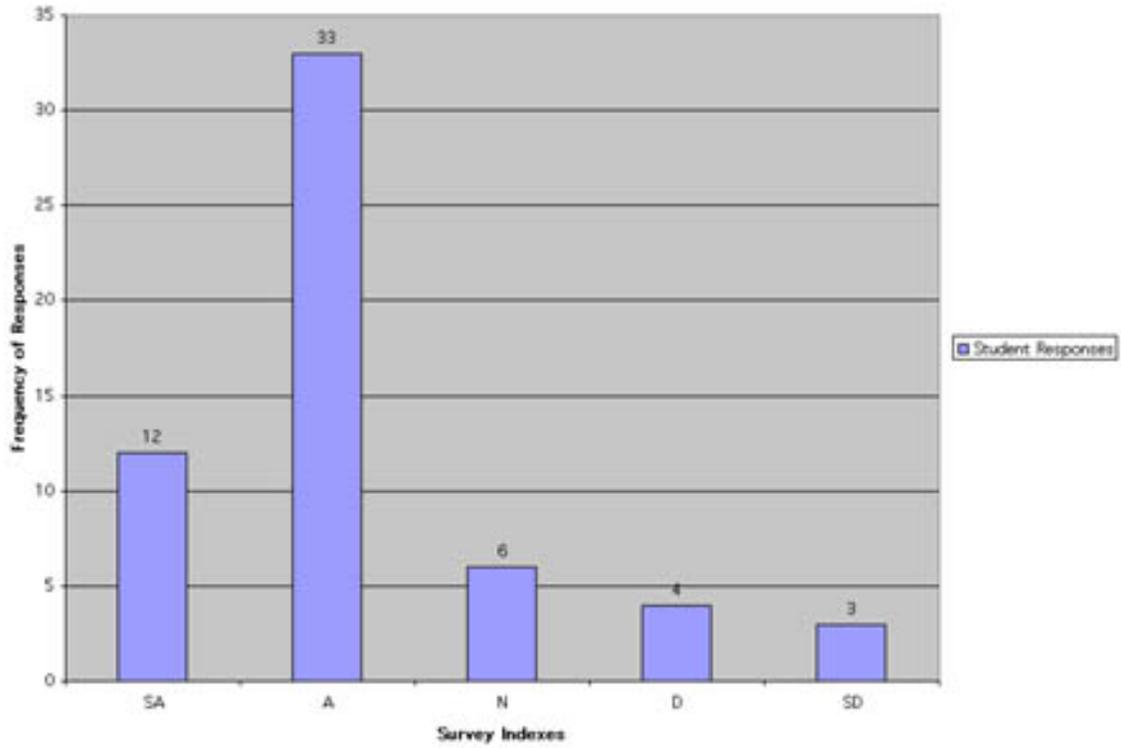


Figure 1. There is a different set of ethical issues when using a computer at home versus a computer at school.

The other telling item asked students whether ethical situations involving computers were different than other ethical situations. On this item, a majority of the students (65.5%) disagreed with this statement. Data from this item are also provided in Figure 2.

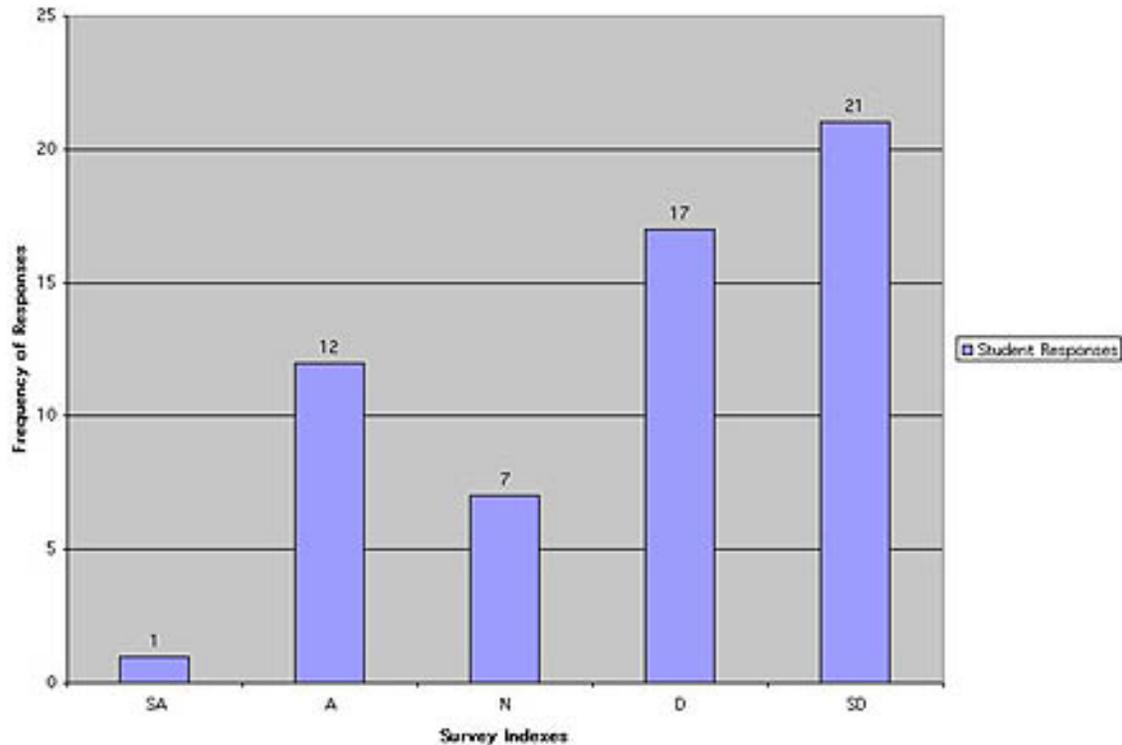


Figure 2. Ethical situations involving computers are different than other ethical situations.

Use of Questionable/Situational Material/Language and Use of Networks, Passwords, and E-mail

Prelesson results showed these two categories to be ones of extreme. Overall, students either felt very strongly about the item or were hesitant to make a choice beyond "N." For instance, students were firm in their convictions that it is unacceptable to access pornography or other questionable material at school (96.5%) or at work (98.3%). The highest percentage of neutral responses (22.2%) was about whether e-mail could be anonymous. Overall, students had strong ideas about items in these two categories.

Student Knowledge After Instruction

As would be expected, there was a difference in students' knowledge following instruction. Results showed the instructional lesson was beneficial to students and made a difference in their knowledge base about copyright and computer ethics. We also noted that students refined their opinions about the items presented. There was a 7.6% decline in students selecting 'N' to remain neutral about an item. Thoughts and ideas were influenced. What was most interesting, however, was to again divide the survey items into categories and examine the results.

Results by Categories

Basic Copyright

Basic copyright was an area in which student knowledge drastically improved. From the pre-instruction survey and our class discussions with students, we validated our belief that students assumed that material found on the Internet is *free game* unless there is explicit wording against copying or unless a copyright symbol is found. Students also shared with us that some professors tell them this assumption is true. This concerned us in that not only were our students uninformed about the topic of copyright, specifically on the Internet, but many of our colleagues were as well.

Following the instruction, students demonstrated more accurate ideas about fundamental copyright issues. For example, prior to instruction only 17.2% of students realized that works do not need a copyright notice to be protected under copyright law. After instruction, this percentage rose to 72.4%. Knowledge in the area of copyright associated with software also improved. Eighty-six percent of students responded that it was inappropriate to copy computer programs from the school network. This is an increase of 34.5% in accurate responses from the pre-lesson survey results.

Fair Use

Results from the fair use section documented that students gained enough knowledge to realize the context surrounding the claim of fair use must be examined. Students learned during instruction that there is currently no fair use applied to the duplication of software programs for instructional purposes. There was a 63.9% increase in correct responses to this item as compared to the pre-lesson response. Several survey items did not present enough information for students to make an educated response so they frequently responded with a cautious response (it is not appropriate) or with a response of "N." For example, one item dealt with the acceptability of taping a television program to show a class. In order to make a well-informed decision, students needed additional details. Students responded conservatively, displaying the idea of "play it safe and do not do it" 31.1% of the time, while 10.3% of students selected "N." Survey items that did contain specifics about a potential fair use situation showed a 69% increase of correct responses.

Ethical Situations Involving Computers

Overall, the results from this section indicated that the instruction was effective in challenging student beliefs/actions in various ethical situations. Instruction regarding materials that can be downloaded and used for pleasure or work was effective. Students were able to identify situations where it was legal to download and use music and situations where it was not legal. These two items showed a gain of 26.6% and 31% from the pre-lesson results. Students were also able to discern appropriate use of materials (graphics, papers, music) downloaded from the Internet for classroom activities or student assignments.

Again, the two items that dealt with whether situations involving computers were different from other situations and whether there is a different set of standards for home and school proved interesting. After instruction on the item that asked students whether ethical situations involving computers were different than other ethical situations, 76% of students disagreed with that statement. This was a 10.4% change in responses from the pre-lesson results. On the item to determine whether there was a different set of ethical issues used at home versus school, the number of students agreeing with this statement declined by 15.6% after instruction.

Use of Questionable/Situational Material/Language

The use of pornographic and questionable material was one category where student responses varied little from pre to post instruction. The greatest change was seen on the item stating it was acceptable to use strong language in private computer discussion. After the instructional unit, more students (8.7%) felt that strong language was not appropriate even in private discussions. Otherwise, student responses remained relatively unchanged about accessing pornography/questionable materials in different locations (school, home, office). Again, students overwhelmingly expressed the thought (98.3%) that in a school or office, the highest level of standards should be followed. However, at home, it appeared that students did not feel bound by these same high standards.

Use of Networks, Passwords, E-mail

This category was another area where student responses changed little with instruction. Items in this area dealt with the use of others' passwords, circumventing security systems, and basic e-mail facts. The largest change (10.3% of response) occurred on the item determining whether students felt that e-mail was personal regardless of who owns the server.

Implications of Results

As mentioned previously, we knew our instruction was somewhat effective, but we needed to determine areas of strength and weakness to improve this instructional unit. Although the instructional areas of copyright and computer ethics are frequently grouped and taught together, we wanted to be open to the fact that the strategies for teaching these topics might need to significantly differ.

The survey results indicated our instruction helped students recognize the contextual complexity associated with copyright. We began to brainstorm strategies that would allow students to increase their knowledge about the area of copyright and fair use, while allowing them to see the messiness of this real-world topic. We discussed how this ill-defined concept is a perfect area to use Spiro's Cognitive Flexibility Theory (Kearsley, 2001) in a hypertext environment. Basic principles of copyright and fair use could be stated, and then students could examine contextual examples presenting confounding, contextual variables. Again, this teaching strategy has been used before (Weller, Repman, Rooze, & Parker, 1992), but with *so much* to cover, the topics of copyright and computer ethics are frequently skimmed over in computing courses. We believe this is an area where students need to delve deeply into the content. We discussed how we could go out in the schools and videotape situations involving ethical situations and create a library of school-based case studies dealing with copyright and ethical issues. Our idea is to create a learning environment in which groups of students can access a plethora of examples and discuss, whether in person or using computer mediated communication (CMC), the copyright and computer ethics associated with the scenario.

We also focused on what was effective in our current instruction. One of the articles used to teach the copyright lesson was by Davidson (1999), containing a series of 20 scenarios for students to determine whether the situation was an acceptable claim of fair use. Students found this helpful, because we could dissect the scenarios to determine whether the four cases of fair use were met. The more examples and situations we covered, the more students seemed to clarify that aspect of fair use and copyright. We concluded that we would continue to use this article and find more examples to develop richer experiences for students.

Another idea we will implement is to develop a *new and improved* Copyright and Fair Use brochure for students and faculty. Although both institutions had documents available for use, they were not

seen as effective tools. In our discussions with students and other faculty members, we realized that this was not just an area of confusion for students but also for faculty. The information brochure will have fundamental copyright information along with URLs to web pages providing a variety of examples and counterexamples. It is intended that the brochure will cover several objectives. First, it will help students and faculty become more informed about copyright. Second, it will help develop an attitude of responsibility and accountability regarding computer use. This topic should permeate all aspects of the teacher education program—not just the technology courses.

Dealing with computer ethics in realistic and meaningful situations can be a difficult learning environment to create. Again, we discussed the power of a video library with vignettes about ethical situations. It would also be acceptable to show different clips of current movies and television to spark discussions about different ethical computer situations. This would be done in a manner that conformed with the copyright laws and fair use guidelines associated with this situation. Another option we considered was having students work in a CMC environment. Students could research various areas dealing with computer ethics (software copyright laws, freedom of speech vs. viewing of pornography, etc.) and then participate in a series of online debates. We considered this option to keep students from feeling attacked or uncomfortable presenting their views in a face-to-face environment.

An interesting factor apparent in our review of the survey data and class discussions was that students do have situational standards of ethics for computer use. Students expressed very different ideas and opinions of what is acceptable for computer use at home versus computer use at school. This was extremely interesting to us and is deserving of consideration for future research.

Overall, we determined that copyright and computer ethics is another area in which we can demonstrate the use of Cognitive Flexibility Theory to our students. This advanced knowledge acquisition theory lends itself to electronic learning environments. The complexity and varying context of each situation surrounding copyright, fair use, and ethical considerations make it a perfect candidate for implementation of Spiro's theory. We will continue to use traditional text articles to spark the discussion and allow students to recognize the complexity of the topic while we develop various types of materials in a digital format.

Conclusion

We will continue to survey our classes to determine how to improve the instruction to foster a stronger learning experience and environment for students. Although we predict students will always be more interested in learning new computer skills and creating instructional learning environments utilizing technology, copyright and computer ethics must be effectively presented to ensure that our future teachers are modeling appropriate behavior for learners in an electronic information age. As we examined the questions that guided our study, there were positive steps made. We discovered that our students were initially uninformed about copyright laws and fair use guidelines and that we did need to challenge their ideas about the ethics surrounding computer use. We learned that some of our instructional units were effective (copyright, using the Davidson article, etc.) and some instructional units and tools needed improvement. We will strive to develop a video case-study library about copyright and fair use in the classroom. In addition we will develop a new brochure about copyright and fair use for faculty and students at our institutions. It is hoped that bringing these issues to the faculty's attention will serve as a catalyst for this topic to permeate the teacher education programs in our colleges of education. Copyright and computer ethics are certainly not new issues for the 21st century, but the contextual complexities associated with new technologies demand that we redesign and repackage this content to effectively prepare our students to deal with these issues. Our classrooms and learning environments are becoming increasingly digital, so we must provide future educators with as many of the packages as they will need—two of which are Copyright and Computer Ethics.

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