



# College students' misunderstandings about copyright laws for digital library resources

Copyright laws  
for digital library  
resources

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## Abstract

**Purpose** – This paper has two primary purposes: to explore common copyright-related problems that arise when librarians promote the use of digital library resources; and to investigate college students' misconceptions of copyright laws that arise when the students use these resources.

**Design/methodology/approach** – Four librarians in charge of the management of digital library resources were interviewed regarding student-users' problematic copyright-infringement behaviors that these librarians often encountered when they promoted the use of digital library resources. Also, a semi-structured questionnaire with nine questions about copyright-related behaviors was developed and distributed to college students. Students needed not only to identify whether the behavior was acceptable, but also to explain the reasons for their identification. A total of 109 valid sets of data were collected from 18 universities or colleges, the sets comprising responses from 48 undergraduate, 56 postgraduate, and five doctoral students.

**Findings** – The librarian-interview results indicate that students' problematic behaviors included systematic downloading, distribution to unauthorized users, and going beyond the purpose and character of academic use. The student-survey results indicate that students had four major areas of misunderstanding about copyright laws when using digital library resources: the digital resources should be shared; the downloaded digital resources are all legitimately authorized and permitted; all educational use is fair use; and any downloading is permitted as long as students are paying tuition.

**Originality/value** – This paper explores students' understanding and misunderstandings that arose when students used the school digital library resources and discusses implications of these results for librarians and libraries with regard to the design of related instruction. The paper also presents interpretations of students' thoughts and conduct, as well as some future possible research topics.

**Keywords** Digital libraries, Resources, Copyright law, Colleges, Students, Taiwan

**Paper type** Research paper



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**Introduction**

With the prevalence of network and digital publication techniques, nowadays almost all libraries have made great efforts to effectively develop and promote digital activities, services, and resources in relation to their users (e.g. Sharifabadi, 2006; Patra, 2006). On college campuses, such developments in libraries have indeed benefited students' academic work and professional development. However, just as digital technology creates new opportunities for students to have convenient access to massive digital library resources, this technology at the same time helps open up the possibility of students' problematic behavior, such as massive downloading or even copyright-law violation.

From the perspective of publishers, present copyright law seems unable to guarantee their rights (and profits) sufficiently, and therefore, the publishers often "rent" their products to libraries with specific licensing agreements (statutes and contracts). The content of the licensing agreements may vary among different publishers (licensors). Compared with present copyright laws, most licensing agreements rigorously define authorized users, impose heavy usage restrictions, and thus provide formidable protection for publishers.

From the perspective of the end-users (such as college students), however, the major function of a digital library is to provide them easy and timely access to the digital resources wherever and whenever a need for them arises. The end-users' main concern may be whether this access is efficient and complete, rather than whether this access and their behaviors are legitimate or authorized. Even though some students may already have general knowledge about copyright law, they usually do not know about the publishers' specific licensing agreements for individual databases. Consequently, college students may violate copyright law or a given licensing agreement when, in their school life, they use the digital library resources. For example, some students might download an e-book and then e-mail it to their many friends in other schools. Students not only are unaware of these behaviors' possible violation of a licensing agreement, but also consider these behaviors to be good deeds – a selfless sharing of information with peers. Regarding a library's management of digital resources, how to attain a balance between the rights of the publishers and the full access of end-users, and how to protect publishers and libraries as well as end-users in terms of legality, are important issues worth further investigation.

Abundant information and library resources on the internet are necessary for both learning and research (Sharifabadi, 2006). In addition to the collections of traditional print materials, it is a very important task for libraries to build an information-technology infrastructure and to integrate all kinds of digital library resources and services (Patra, 2006). However, there are some major issues, which libraries should tackle when they develop their digital library resources and services. For example, Patra (2006) pointed out four areas in which e-journals affect library operations: management of e-journal access, library budgets, user training/awareness, and library services. In her study, publishers' different interfaces or search engines would easily confuse or frustrate end-users. Thus, Patra suggested that libraries should provide users with resources according to the users' needs, clear and accurate links, and training programs on topics such as how to search and download.

In Kinengyere's (2007) study, two librarians and ten end-users (students and researchers) in Uganda were interviewed regarding the effects of information literacy on how people use their electronic information resources. The results indicate that

providing resources and using them are two different issues. Even with abundant digital library resources, end-users may not be equipped with adequate literacy, so they would not understand how to use the resources or, indeed, which resources to use. Consequently, there is a need for training programs that advance end-users' cognition and skills. Kinengyere also suggested that general information-literacy programs should cover such topics in e-resources as restricted databases, open-access journals, and bibliographic databases. In addition, among other recommended steps, workshops should help researchers, policy makers, educators, and librarians obtain relevant references, and training programs should facilitate people's use of the provided e-resources. The studies of both Patra (2006) and Kinengyere (2007) highlight the importance of digital libraries, and the need for related instructional programs, for the libraries' users. These programs should meet the needs of different target users, which typically revolve around finding and using various digital library resources.

However, the previously mentioned studies seem to lack a proper emphasis on either the legality of access or the use of digital library resources in any instructional programs. As discussed previously, in the age of the internet and digital libraries, end-users are most concerned about whether or not they can obtain resources quickly and completely (McCulloch, 2006; Patra, 2006; Young, 2002). The internet seems to be the largest library in the world and is technically like a super photocopier and fax machine in one. Users can effortlessly reproduce and distribute all kinds of information (Godwin, 2000) to any internet user, and these copies are as perfect as the originals, without any (re)production cost. College students nowadays can acquire many digital library resources via an internet connection and search engines to fulfill their self-learning and professional-development goals. However, because of this easy-to-use, non-stop internet access, and because of the abundant information on web sites, many college students seem to have unclear ideas about the online information itself and how one can legitimately use that information (Chou, Chan and Wu, 2007). This abundant information source is also why teachers often have found that some students directly copy material from the web and simply turn it in as their own homework without any paraphrasing or citing of sources. Many students do not realize that most of the information on the internet is protected under copyright laws. Even though some students may have general ideas about copyright laws, these students often do not realize that much of their online behavior is illegal or unethical.

The way most college students see it, digital library resources are simply a part of internet resources, and therefore, the students surely have legitimate and full access to them. However, students may not be aware, that most digital library resources are protected by copyright laws as well as licensing agreements – a point mentioned previously and worth repeating here. Thus, a critical question arises: what do most college students already know or not know about cyberspace copyright laws? Using a total of 123 college and 121 high school students in Taiwan, Chou, Chan and Wu (2007) identified three great student misconceptions about internet resources and copyright laws: all internet content is open for the public to use; the internet is always free; and all educational use is fair use. It should be noted, however, that Chou, Chan and Wu's study focused on general web content, yet there seems at present no study investigating whether these same three misunderstandings also apply to how students use digital library resources. Inspired by Chou, Chan and Wu's findings, the current study's researchers conducted exploratory research to shed some light on this issue. The twin

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purposes of the present study are to explore students' copyright-related problematic behaviors when librarians promote the use of digital library resources and to discover college students' understanding and misunderstandings about copyright laws when the students use these collections.

### Methods

Two methods were used to collect data to fulfill the two purposes of this study. The focus-group interview method was used to explore student users' problematic behaviors. Four librarians with experience in managing digital libraries were interviewed face-to-face for 90 minutes. The interview questions focused on the problems related to copyright infringement that these librarians often encountered when they promoted the use of digital library resources.

The second method was a survey of college students. The previously mentioned interview results were used accordingly for the development of a semi-structured questionnaire. Nine questions (see Table I) were arranged to explore students' understanding of the concept of copyright/fair use of digital library resources. For example, question one was "Can I manually download one article from a digital resource at my university's digital library?" Students were required to choose "yes" or "no" to each question and then write down the reason(s) why they thought so underneath the choice. Surveyed students were instructed that the terms of digital "publications" or "resources" in the questionnaire corresponded to licensed products, such as those provided by IEEE, Elsevier, and EBSCO, and that the terms did not correspond to open-access products. In addition, the instructions on the questionnaire expressly asked students to answer sincerely and intuitively, but not to search for correct answers online or offline. The correct answers to the yes/no questions, as well as the reasons given, were graded on the basis of the 2004 Taiwan Copyright Act, which, of course, may differ from the corresponding legislation of other countries. To assess the questionnaire's validity, one law professor and one high-ranking manager of a digital library in charge of licensing were invited to review the questions, check correct yes/no choices, and provide possible correct text answers.

The questionnaires were sent either in print or in Microsoft Word file to convenient samples in Taiwan colleges/universities, and taken into consideration were three important factors: school type (technical vs comprehensive); geographic location (north, central, or south Taiwan); and grade level (undergraduate vs postgraduate). A total of 109 valid data samples were collected with 48 undergraduates, 56 postgraduates, and five doctoral students from 18 colleges and universities in Taiwan.

In order to analyze students' answers to the nine questions, the yes/no part was graded first. Only if students answered the yes/no part correctly were their answers to the reasoning part graded as either correct or incorrect. That is, as long as students wrote down one correct reason (in plain or legal language), without any other incorrect reasons added, that part was graded as correct. Likewise, if students wrote down any one incorrect reason, this part was graded as incorrect, no matter how many other correct reasons were given. In other words, the grading was strictly bipolar with no "grey area" in between. The reason for such a grading system rests on an important assumption of the current study: a judgment (the yes-or-no choice) and the reason(s) justifying this judgment should be consistent. There should be no contradictory reasons for one judgment.

Students' problematic behaviors	Possible infringement of copyright/licensing agreement	Questions for students' questionnaire
Systematically downloading (manually or by software) a large number of e-journal articles	Such use may not be fair (the amount, the effect on potential market value)	Can I manually download one article from a digital resource at my university's digital library? Can I manually download one whole issue/volume from a digital resource at my university's digital library? Can I download one whole issue/volume from a digital resource at my university's digital library via any software or program?
Transmitting (by e-mail, ftp, etc.) downloaded digital library resources to friends in other schools	May violate the copyright law (reproduction, public transmission, distribution) May also violate the licensing agreement (friends in other universities are not the authorized users for these digital library resources)	Can I deliver digital resources, downloaded from my university's digital library, to my friends in other universities? Can I deliver digital resources, downloaded from my university's digital library, to my schoolmates? Can I access digital resources by borrowing my friend's library account at a university with which I am unaffiliated?
Passing downloaded digital library resources to companies where students work full-time or part-time	Such use may not be fair (the purpose and character of, and the effect on, potential market value) May also violate a licensing agreement (companies are not the authorized users for these digital library resources)	Can I deliver digital resources, downloaded from my university's digital library, to my friends in companies? Can I deliver digital resources, downloaded from my <i>alma mater's</i> digital library, to my own company for the purpose of commercial development? Can I download digital resources from my <i>alma mater's</i> digital library for the purpose of personal professional development?

**Table I.**  
Students' problematic behaviors, possible infringement, and questions for questionnaire

## Results

### *Findings from the librarian interviews*

The librarians in our focus-group interviews first explained that the licensing agreements regarding digital library resources are between the university and publishers, and are thus established on the basis of copyright-law doctrine. Therefore, any digital library users (faculty, researcher, or student) should observe these laws and regulations. However, research has posited that the idea of fair use under copyright laws is an indefinite concept without clear, concrete indicators and criteria (Schockmel, 1996), and that, thus, the distinction between fair use and infringement may be unclear and not easily defined (US Copyright Office, 2006). This lack of clarity helps explain why digital librarians have been somewhat confused about users' problematic behaviors or about plausible interpretations of the laws and the regulations.

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The results of our interviews indicate that, as far as students' violations of copyright laws and licensing agreements are concerned, there are three major problems or cases that those librarians often encountered during their promotion of digital library resources: systematic downloading, distribution to unauthorized users, and going beyond the purpose and character of academic use (see the left two columns in Table I). For example, the librarians often noticed that some students liked to systematically download (manually or by software) every article in recent issues of specific e-journals (while ignoring the warning signs shown on the web site of e-journals or libraries). Students might explain that they would do so not for other students or for a profitable sale but for their own collection or for an academic purpose. However, this problematic behavior might violate the practice of fair use (the amount of the portion, and the effect on potential market value), and would definitely violate the licensing agreements of those e-journals. The second case concerned students' transmission of downloaded e-journal articles (downloaded from the university's digital library) to the students' friends in other universities. Many of the students did not know that this kind of behavior perhaps violated not only copyright laws (reproduction, public transmission, distribution) but also licensing agreements (friends in other universities are not authorized users of these e-journals). The last case concerned students who were passing the digital library resources to companies where the students were working full-time or part-time. In these cases, such use definitely cannot be justified as fair.

It was also found that, although libraries – on their portal web pages – had kept reminding users to cautiously follow e-resource downloading guidelines, few of the libraries had developed any instructions to promote users' better understanding of copyright laws and of related issues in reference to digital library resources. The librarians we interviewed spoke of the need to develop related learning materials and courses concerning both copyright laws and fair use of digital library resources. However, the librarians had encountered only a few problematic cases, and had no sufficient information about the larger population's alternative concept of laws and regulations. In other words, the current study was unable – by means of the librarian interviews alone – to develop a clear picture regarding students' understanding or misunderstanding of copyright laws relative to digital library resources; moreover, the librarian interviews shed little light on how to adapt related instructions to students' different needs.

#### *Findings from student questionnaires*

Based on the previous interview results, this study developed a nine-question questionnaire (see the right column of Table I) to cover the three major types of students' problematic behaviors. The first three questions focused on how much (one article or an entire volume) students would download and in what way (manually or by software). The next four questions dealt with the issues of authorized users. Questions 4 and 5 focused on the legitimacy of students' sending out their downloads to others (schoolmates or friends in other schools). Question 6 asked about the legitimate access to digital libraries in other schools. The last three questions (7, 8, and 9) probed into the purpose of the use, the character of the use, and the authorized users of digital library resources in different contexts (friends in companies, one's own company for commercial development, or for personal professional development).

An analysis of the students' returned questionnaires revealed that, for the nine questions, most of the students could describe their thoughts or reasons regarding whether pertinent behaviors were legitimate or not. There were two students who were majoring in Information and Library Science who could even state the reasons in legal language correctly. Meanwhile, some doctoral students had plausible justifications about the use of digital library resources. In other words, correct copyright ideas regarding the use of digital library resources could be effectively taught in professional disciplines but did not necessarily grow with years in school or research experience.

As shown in Table II, the percentages of students who answered correctly the yes/no part of each question ranged from 63.3 to 90.83 per cent. On average, 74.92 per

Question	Number of students and percentage (%) who answered correctly			
	Answer	Y/N question	The reason	Total
Can I manually download one article from a digital resource at my university's digital library?	Yes	99 (90.83)	55 (50.46)	55 (50.46)
Can I manually download one whole issue/volume from a digital resource at my university's digital library?	No	58 (53.21)	47 (43.12)	43 (39.45)
Can I download one whole issue/volume from a digital resource at my university's digital library via any software or program?	No	74 (67.89)	45 (41.28)	44 (40.37)
Can I deliver digital resources, downloaded from my university's digital library, to my friends in other universities?	No	69 (63.30)	54 (49.54)	51 (46.79)
Can I deliver digital resources, downloaded from my university's digital library, to my schoolmates?	Yes	90 (82.57)	69 (63.30)	68 (62.39)
Can I access digital resources by borrowing my friend's library account at a university with which I am unaffiliated?	No	89 (81.65)	62 (56.88)	61 (55.96)
Can I deliver digital resources, downloaded from my university's digital library, to my friends in companies?	No	91 (83.49)	68 (62.39)	65 (59.63)
Can I deliver digital resources, downloaded from my alma mater's digital library, to my own company for the purpose of commercial development?	No	87 (79.82)	50 (45.87)	48 (44.04)
Can I download digital resources from my <i>alma mater's</i> digital library for the purpose of personal professional development?	Yes	78 (71.56)	51 (46.79)	47 (43.12)
Average		81.67 (74.92)	55.67 (51.07)	53.56 (49.13)

Note:  $n = 109$

**Table II.**  
The number and percentage of students answering each question correctly

cent of the students answered the yes/no part of the questions correctly. However, for the reasoning part of the question, the percentages ranged from only 41.28 to 63.30 per cent. On average, a mere 51.07 per cent of the students answered the reasoning parts correctly. Altogether, on average, 49.13 per cent of the students answered both parts of the questions correctly.

Further analysis of the yes/no part of each question revealed that five questions (1, 5, 6, 7, and 8) had percentages over 75, meaning that more than three-quarters of the students could answer those questions correctly. That is, those students knew that, in terms of digital library resources, downloading one article (question 1) and transmitting it to schoolmates (question 5) are acceptable, whereas borrowing an account (question 6) or transmitting it to someone in a company (questions 7 and 8) is not. It is worth noting that while over 90 per cent of the students knew that it was acceptable to download one item from a digital resource, only about half of the students (53.21 per cent) considered it unacceptable to download many items (e.g. a volume or a large amount of digital library resources) (as in question 2). Moreover, about one-third of the students seemed not to have a clear concept about whether downloading by software (as in question 3), transmitting items to friends in other schools (as in question 4), and future use of digital resources after graduation (as in question 9) are acceptable or not.

From the analysis of the reasoning part of each question, it is clear that the percentage of students answering correctly for each question dropped greatly when compared with the yes/no questions. More than half of the students could identify correct reason(s) for four questions (1, 5, 6, and 7). This finding means that the students knew and could write down, whether in legal language or not, why downloading one article (question 1) and transmitting an item to schoolmates (question 5) would be acceptable, while borrowing an account (question 6) and transmitting an item to friends in companies (question 7) would be unacceptable. There are five questions (2, 3, 4, 8, and 9) with percentages between 40 and 50, meaning that less than half of the students might not know the correct reason(s) for their correct choices of yes or no.

## Discussion

### *Librarians' views of students' problematic use behaviors*

The first research question of this study was designed to study how librarians view college student users' problematic uses of digital library resources. Results indicate that systematic downloading, distribution to unauthorized users, and unfair use (the purpose and character of the use) is three major problematic areas of concern. In other words, the librarians observed that some students would choose inordinate amounts of resources to download, would transmit items to people in other schools or companies, or would use the resources for commercial purposes. As these librarians saw it, these students' behaviors were problematic and might infringe on copyright laws and licensing agreements. Therefore, related instructions on these issues should be developed and delivered.

### *Students' understanding and misunderstandings of copyright laws and related regulations*

To answer the second research question, a questionnaire composed of nine yes/no items with open-ended questions was developed and distributed to college students in Taiwan.



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Results indicate that about three-quarters of the students could answer the nine yes/no parts of the questions correctly, but that less than half could provide correct reasons to justify their choices. This finding suggests that the students were perhaps able to intuitively “sense” (or guess) “yes” or “no” for a statement (behavior), but were unable to give the exact reason behind the “yes” or “no” responses. In other words, this study indicates that the students lacked clear reasons for their identification of the (in)appropriateness or (il)legitimacy of the cases of “digital library resources” use.

Exactly what misunderstandings may college students have regarding digital resource-related copyright laws? Beyond the quantitative analysis of percentages of students answering correctly on the questionnaire, a qualitative analysis was conducted on the incorrect answers (reasons). Simply put, students in this study demonstrated four major misunderstandings:

- (1) *Digital resources should be shared.* Students expressed that, in order to gain academic development and greater personal knowledge, it is a quite reasonable to share digital library resources with friends. Furthermore, by doing so, the digital collection can be enjoyed by more people and have a greater impact. One student wrote, “Sharing is good and thus should be encouraged. In the future, I will also have digital library resources from them (friends from other schools). It is mutually beneficial”. Many students also stated that digital library resources, are produced, just to be shared easily. These students seemed not to know that copyright laws protect all digital works and the sharing of digital library resources may be good but under some constraints. Careless sharing clearly violates the regulations governing reproduction, public transmission, and distribution.
- (2) *Downloaded digital resources are legitimately authorized and permitted.* Students seemed to misinterpret the ideas of intellectual property or fair use under copyright laws. They considered the downloaded digital library resources as their own property and, thus, as open to any and all types of use. In other words, students’ ability to successfully download digital library resources meant that the students had legitimate authorization to reproduce, transmit in public, and distribute. One student wrote, “If downloading and related actions are not allowed, you (the publisher’s or library’s web sites) should block me technically from the start”. In fact, according to the present copyright laws or licensing agreements, the previously mentioned three rights need separate statements of permission; students cannot deliver or upload the related items online without previous permission from the copyright owners.
- (3) *All educational use is fair use.* Students indicated that their downloaded resources and sharing behaviors could be interpreted as fair use, as long as the resources and the behaviors were for educational and academic purposes and were not for any monetary gain. This finding is consistent with that of Chou, Chan and Wu (2007). This excuse explains why students transmitted downloaded digital library resources to friends in the same school or in other schools, without noticing whether these friends were authorized users or not. Some students perhaps had heard of fair use under copyright law, but thought that any seemingly fair use is indeed fair use (school is an educational institute), and that non-commercial use (not for sale) is invariably fair. Definitely, these students misapplied the idea of fair use to their problematic behaviors.

- (4) *Any downloading is permitted as long as you are paying tuition.* Some students stated that as they had paid tuition, which includes the library fee, so too did they have permission to whatever use of the library (digital) collections they wished. They stated that they had a perfect, legitimate right to download any amount of needed digital library resources in any way (manually or by software). One student wrote, “I use a robot to represent me to download; it (the robot) saves me time and energy. Why not?” Some students stated that they would not infringe on any copyright law if they did not distribute or sell the resources. This statement may be a misapplication of the idea of fair use. Students may have gone beyond the principles of “the amount and substantiality of the portion used in relation to the work as a whole” and “the effect of the use on the potential market for or value of the copyrighted work”.

### **Implications**

This study has given some insight into students’ (mis)understandings of digital library-related copyright-law issues. As Patra (2006) declared, the introduction of e-resources has improved library services and enhanced access to library resources, but sometimes the management is not trouble-free. The results of the current study suggest that college-student users, in general, may have some plausible conceptions of – and may engage in problematic behaviors relative to – use of digital library resources; it was these conceptions and these behaviors that librarians had observed and were concerned about. So that such management challenges can be faced successfully, relevant instructions should be designed for and delivered to student users. The content can include the general concepts of copyright law and licensing agreements, the applications of fair use, library users’ rights, and appropriate-use behaviors. What is a good method for designing rigorous instructions and for identifying the most important topics to cover? Chou, Chan and Wu (2007) suggested that one first identify the major purpose(s) of the instructions. If the major instructional purpose is to stimulate the students’ awareness and help students develop a sense of legitimacy, then the instructions should present appropriate behaviors in real cases. On the other hand, if the major purpose is to help would-be users reason and argue, and thus make informed behavior-related decisions, then the instructions should discuss laws and agreements themselves along with empirical cases. In either of these two scenarios, this instruction can follow a varied length and format (workshops, individual programs, courses, see also Kinengyere, 2007), and should be delivered along with or imbedded in the general library-use education or information-literacy programs.

Besides the previously mentioned content areas, the results of this study suggest specific topics to be included in the instructions, especially topics concerning those concepts and rules that students misunderstood, such as how much of a digital library resource can be downloaded at once. In fact, just as there is no specific number of words or lines that may safely be taken from an article without permission under fair use, there is no specific number of e-books or articles of an e-journal that can be downloaded at one time. In a typical licensing agreement, “substantial or systematic reproduction” is expressively prohibited. However, the definitions of these terms are not well stated. Is there an approximate number for reference so that users can follow stated rules with a clear conscience? In addition, any software (programs, robots) that

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helps systematically download a large amount of resources is definitely prohibited. Regardless of the general content or the specific topics to be covered in the instructions, the ultimate goal of the instructions is, as Chou, Chan and Wu (2007) stated, to instill in students the understanding that when they use any digital library resources, they must think about the consequences at the same time; their decisions deal not only with copyright laws, but also with ethics.

The results of this study also lead us to contemplate why students think the way they do in terms of their use of library resources. Anyone who is aware of the trends of digital libraries should have also noticed that the online access has reduced the physical presence of users in the library. Instead, searching, browsing, and downloading of available digital library resources, which students have paid tuition for, can be done by a few clicks of a mouse in front of their personal computers at home or a residence hall. In such a private environment, users are probably more likely than in a public environment to consider:

- downloading to be a private activity; and
- the downloaded resources to be their property; therefore, these users would feel that they can do whatever they wish with their own property (reading, taking notes, making copies, distributing, and so on).

Clearly, many students misunderstand the concept of intellectual property, that is, the concept according to which students may use a resource but do not, and cannot, “own” this intellectual property.

In a Web 2.0 Age, which encourages personal expression, uploading, sharing, and cooperation, students may think that sharing digital library resources with others is a form of altruism long encouraged in the cyberworld. Even before the popularity of the internet, students helped friends from other schools collect library resources by laboriously photocopying and mailing the resources. But now, the internet has helped simplify the process enormously at almost no cost to the student. Some students in our samples claimed that they actually helped maximize the value and impact of the digital resources by sharing them with friends, regardless of whether they attended the same school, a different school, or any other institution (public or private sector). Thus, the overall use of the digital library resources will help advance human knowledge and improve personal as well as societal benefits. However, how about the reasonable benefits or profits of the publishers who own these digital library resources?

Are these students’ existing concepts and related behaviors absolutely “wrong”? Along with the evolution of society’s views regarding copyright laws and other laws governing intellectual property, the open access movement (e.g. Suber, 2003; McCulloch, 2006; Fernández-Molina and Guimarães, 2009) seems to provide possible solutions to fulfill students’ needs. Although the copyright laws or the open access progress themselves are not the focus of this study, students’ (mis)conceptions of digital resource-related copyright laws, as the results presented in this study, lead us to critically rethink and reflect on these issues.

Therefore, future research should continually update the study of students’ copyright knowledge, attitudes, behaviors, and learning relative to the use of digital library resources. Since the definition of ‘digital library resources’ in this study limits the term’s scope to resources with licensing agreements, the current study suggests that future studies should explore students’ understanding of open access resources

and of resources under creative commons. In addition, because of both this study's exploratory nature and the study's convenient sample, the results should be interpreted conservatively and the generalizations of the results are limited. Therefore, an improvement of the questionnaire design (such as the "two-tier test," see Chou, Tsai and Chan, 2007; Chou, Chan and Wu, 2007) and a large probability sample are suggested for future studies. In this way, differences between grade level (undergraduate or graduate), gender, school type (resource-rich or resource-poor), discipline (information technology-related or not), use-experiences, and other variables can be further studied.

### Concluding remarks

As digital libraries have become increasingly popular, the management of them has also become more complicated. One of the major challenges that digital libraries face is how to manage the remote-access use of their collections. In a place such as Taiwan, where digital libraries have become common, the major concern in the promotion of digital libraries is not only "use", but also "appropriate use" or "avoiding abuse". Consequently, it is important to understand how users conceive of and behave toward digital library resources. In particular, it is important to understand how users have learned true or false ideas about copyright laws and other regulations of digital library resources. In this study, we found that students' inappropriate use includes systematic downloading and internet transmitting. Their misunderstanding underlying these inappropriate uses rests mainly on the belief that any downloaded digital resource is legitimately authorized and may be shared over the internet as long as both the retrieval and the exchange are for educational purposes and are covered by tuition.

As Ludlow (2003) stated, educators should both respect the copyrights of others and teach students to understand and comply with copyright laws. Librarians are also educators. Understanding what student users have (mis)understood regarding the appropriate use of (digital) library resources, and thus providing these student users with solid instruction that promotes correct concepts and legitimate behaviors, are important tasks for librarian educators. The research efforts demonstrated in this study are a first and much-needed step toward constructing related instruction.

### References

- Chou, C., Chan, P.S. and Wu, H.C. (2007), "Using a two-tier test to assess students' understanding and alternative conceptions of cyber copyright laws", *British Journal of Educational Technology*, Vol. 38 No. 6, pp. 1072-84.
- Chou, C., Tsai, C.C. and Chan, P.S. (2007), "Developing a web-based two-tier test for internet literacy", *British Journal of Educational Technology*, Vol. 38 No. 2, pp. 369-72.
- Fernández-Molina, J.C. and Guimarães, J.A.C. (2009), "The WIPO development agenda and the contribution of the international library community", *The Electronic Library*, Vol. 27 No. 6, pp. 1010-25.
- Godwin, W. (2000), "Wild, wild web", in Baird, R.M., Ramsower, R. and Rosenbaum, S.E. (Eds), *Cyberethics: Social and Moral Issues in the Computer Age*, Prometheus, Amherst, NY, pp. 215-21.
- Kinengyere, A.A. (2007), "The effect of information literacy on the utilization of electronic information resources in selected academic and research institution in Uganda", *The Electronic Library*, Vol. 25 No. 3, pp. 328-41.

- Ludlow, B.L. (2003), "Understanding copyright and intellectual property in the digital age: guidelines for teacher educators and their students", *Teacher Education and Special Education*, Vol. 26 No. 2, pp. 130-44.
- McCulloch, E. (2006), "Taking stock of open access: progress and issues", *Library Review*, Vol. 55 No. 6, pp. 337-43.
- Patra, C. (2006), "Introducing e-journal services: an experience", *The Electronic Library*, Vol. 24 No. 6, pp. 820-31.
- Schockmel, R.B. (1996), "The premise of copyright, assaults on fair use and royalty use fees", *The Journal of Academic Librarianship*, Vol. 22 No. 1, pp. 15-25.
- Sharifabadi, S.R. (2006), "How digital libraries can support e-learning", *The Electronic Library*, Vol. 24 No. 3, pp. 389-401.
- Suber, P. (2003), "Removing the barriers to research: an introduction to open access for librarians", *College & Research Libraries News*, Vol. 64, pp. 92-4, available at: <http://eprints.rclis.org/archive/00001027.01/acrl.htm> (accessed 6 October 2008).
- US Copyright Office (2006), *Fair Use*, US Copyright Office, Washington, DC, available at: [www.copyright.gov/fls/fl102.html](http://www.copyright.gov/fls/fl102.html). (accessed 21 October 2008).
- Young, J.A. (2002), "From the inside out: an organizational view of electronic resources and collection development", in Lee, S.H. (Ed.), *Electronic Resources and Collection Development*, Haworth Information Press, Binghamton, NY, pp. 28-9.

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