

## **Linking to Journal Articles and the Creation of Online Coursepacks Using Persistent Links, DOIs, and the OpenURL**

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‘The linking revolution is well underway.’(Grogg & Ferguson, 2004)

The increasing availability of online journal literature in academic libraries, in combination with the development and widespread adoption of new standards and linking technologies, offers educators new ways of presenting journal content to their students. These include the means of constructing online coursepacks. This paper will focus on how faculty can produce coursepacks from their library’s subscription databases using three linking methods: (a) persistent links (b) DOIs (c) OpenURL. Additional methods of linking to journal content will also briefly be discussed.

A question usually arises when faculty are first confronted with the possibility of online coursepacks: “Why should I bother constructing my own online coursepacks when it probably means more work for me than using traditional paper coursepacks?” This is a reasonable question that all faculty must weigh and answer for themselves. However, for faculty teaching online, the reasons to offer journal content online might be more compelling. For distance education students, online coursepacks offer the advantages of immediate 24/7 access, and avoid the delays and the costs of printing and mailing materials. In addition, the growth of online journal content raises the likelihood of populating an online coursepack with library resources in lieu of paper packets. This may also save your students money, not an insignificant consideration at a time when students face constantly rising tuition and textbook costs. Finally, the evolution of information technologies and services has improved the reliability of linking technologies to a degree that online coursepacks are now a viable option.

### **Persistent Links**

Copying an article’s URL from the address bar of a Web browser is the most familiar method of creating links to online content. The advantages of this method are ease and simplicity. The disadvantage of using these links in coursepacks is that they are not always stable and must be regularly checked and updated. Anyone who has surfed the Web has experienced the dreaded error message, “404 Document Not Found.” The location of a journal article may change for a variety of reasons. Articles can be moved to a new server or sold to another publisher or aggregator of journal content, and if they are not updated, the links fail.

To complicate matters, the URLs found in the address bar of many databases are dynamically generated for each specific search session. These links cannot be copied and reused. Fortunately, many companies such as EBSCOhost, ProQuest and JSTOR have recognized the demand for reusable URLs and have provided tools that allow users to generate persistent links. Unfortunately some dynamic databases like LexisNexis and Factiva do not provide such tools, so often the best approach is to provide links to that database’s homepage, rather than direct links to a journal or article. Finally, other databases may have their own peculiarities. Emerald Fulltext, for example, recommends that customers replace the name of the server in their links with Emerald’s domain name, since search queries sent to them can then be directed to whatever server is available. For example, <http://gessler.emeraldinsight.com/...> would be changed to <http://emeraldinsight.com/...> (Here gessler is the name of the server).

As you have just seen, copying URLs may not be as simple and straightforward as first appears. If in doubt, contact your librarian or database publisher for advice on copying URLs for linking to journal articles. A caveat: most database license agreements limit access to access to a school’s enrolled students, faculty and staff, so take measures to control the access to your online coursepacks.

## Digital Object Identifier

An alternative method of linking to journal articles available to faculty is the Digital Object Identifier, or DOI. Digital Object Identifiers are unique alphanumeric strings that provide persistent identifiers or “names” for a resource or entity. (CrossRef, 2003b) (Grogg, 2004) DOIs have been called the “bar codes of for intellectual property.” (Kennedy, 2004) They are most often used to cite or link to electronic documents such as electronic journal articles. Because they are *permanently* assigned to an object and paired to a URL in an updatable central directory, DOIs offer distinct advantages over the standard URL. If the location of a journal article with a DOI changes, e.g. it is purchased by another publisher, the new owner will update the URL and the metadata for that article’s DOI in the central directory. This means the links don’t perish by neglect. Since CrossRef is the primary DOI registration agency for scholarly publications, the minimal response page for a DOI query should be a full bibliographic citation that is displayed to a user, and a mechanism for the user to gain access to the full text. This is what CrossRef requests of publishers who use their system. CrossRef reports that most of their publishers provide more than the minimum requirements, take users to an abstract page, and give authenticated users automatic access to full text materials (CrossRef, 2003a)

### Architecture of a DOI

Each DOI has a prefix and suffix separated by a slash (/). All DOI prefixes begin with “10” to distinguish the DOI from other systems, followed by a four digit number to indicate the publisher or organization that registered the item. (CrossRef, 2003a) The suffix indicates information that the publisher assigned to that prefix, such as a journal title and volume.

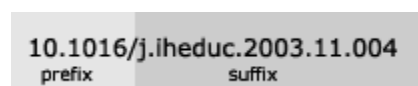


Figure 1

To construct a URL with this DOI you just add <http://dx.doi.org/> which results in: <http://dx.doi.org/10.1016/j.iheduc.2003.11.004>

### Where to Get DOIs

There are three principle methods for faculty to obtain DOIs.

(a) Faculty can get DOIs for journals as *guests* at the CrossRef website: <http://www.crossref.org> Look for the “free DOI lookup” links on this page. In the drop down menu for “researchers” the link for free single query lookups is [http://www.crossref.org/05researchers/37guest\\_login.html](http://www.crossref.org/05researchers/37guest_login.html) If you aren’t successful finding a DOI, double check the [browsable journal list](#) under the “Researchers” tab on the CrossRef homepage to see if your journal is in the database.

(b) As a member of *CrossRef* one has several search options for DOIs, but these are much more technical and complex than the free guest search feature described above. Although members can search for books and conference proceedings as well as journals, and can submit large batch or automated queries, and can perform reverse searches, it is recommended that faculty use the simpler guest search interface. Those who enjoy technical challenges, and would like to try the membership DOI search features, should inquire whether their library or institution is a member, and whether they will share their user name and password.

(c) The third way to get DOIs is from the web pages produced by publishers and aggregators. DOIs are starting to appear in citations and articles from publishers registered with the DOI system. For example, Science Direct and Wiley InterScience include DOIs with each article citation.

Once you have obtained a DOI that you want to use as a link, append the DOI proxy address, <http://dx.doi.org> to the front of the DOI. For example the DOI 10.1016/j.iheduc.2003.11.004 would be made an active link as <http://dx.doi.org/10.1016/j.iheduc.2003.11.004>

Are DOIs worth the extra effort? They probably are if you plan on using the links in your course for a long time period. Otherwise it is much simpler to cut and paste URLs. Often you will not have a choice anyway. DOIs are relatively new and aren't available for all publications. Many journals are not yet in the CrossRef database or the publisher/aggregators are not using them in their system. DOI also suffer from the limitation that they point all users to the same articles, regardless of a user's affiliation. DOIs, as well as most HTML links, are therefore not "context sensitive," leading to what is known as the "appropriate copy" problem. (Sadeh, 2001) A single publication like Time is often available from multiple sources in a library, such as directly online from the publisher, from aggregator databases like EBSCOhost, or from local print holdings. If a library only offers Time from EBSCOhost and in print, but doesn't have licensed access directly from the publisher, a DOI would have no way of steering a user to the available, appropriate copy because it is not context sensitive.

### OpenURLs

Largely in response to the issues of context sensitive linking and the appropriate copy problem, a new standard called the OpenURL has been developed and is currently on the path to accreditation by the National Information Standards Organization (NISO). As described by NISO, the OpenURL standard supplies "a syntax to create web-transportable packages of metadata and/or identifiers about an information object." (NISO, 2003) In other words, OpenURLs provide a standard method of delivering metadata such as volume and issue of a journal, and identifiers like DOIs. When paired with a link resolver like SFX, context sensitive linking is possible.

If your library subscribes to the services of a company providing link resolvers, you should also have access to an OpenURL link generator. It can be used to produce context sensitive links for your online coursepack. If your institution doesn't subscribe to one of these services, Dahl (2004) offers information on how to build your own OpenURL resolver.

Besides addressing the "appropriate copy" problem, there are several other advantages in generating and using OpenURLs with a linking service like SFX: (a) It is easy to find a persistent URL.; (b) One need not update URLs. The staff maintaining your resolver will update the metadata on the resolver, which should ensure that your links remain alive; (c) Users can be given a choice of more than one source; and (d) Users can be directed to sources such as Interlibrary Loan for articles not available in their libraries.

Disadvantages: Those seeking direct links to articles are better served by a plain persistent link or a DOI than by using an OpenURL link resolver, since a user must negotiate extra steps, such as a menu of choices, to get access to an article.

### OpenURL Generator

CSU, Chico uses the SFX linking service that supplies an OpenURL generator. With this generator we can produce OpenURLs to use with our SFX Server. This generator can be viewed at <http://sfx.calstate.edu:9003/chico>. Notice that in the "Base URL" box it automatically inserts "/chico"

There is also a check box in the bottom left corner to see the OpenURL from the generator page. Otherwise you just view the SFX menu choice screen. The menu screen is handy tool to verify whether the URL you generated works or not.

### Accessing Full-Text Databases From Off Campus

Keep in mind that full-text database license agreements usually require that users are authenticated as members of the licensed group before content is made available. Many universities use proxy servers to authenticate members of their community. CSU, Chico, for example, uses EZproxy to authenticate remote users. This requirement also means that our faculty must add the following proxy server login address to fronts of their links if they are to be accessed by off campus students. Here is our proxy address:

<http://mantis.csuchico.edu:2048/login?url>= When added to a DOI link for an article it looks like this: [http://mantis.csuchico.edu:2048/login?url=http://dx.doi.org/10.1016/S0098-7913\(02\)00221-6](http://mantis.csuchico.edu:2048/login?url=http://dx.doi.org/10.1016/S0098-7913(02)00221-6) Consult your librarians or tech support staff for information about your authentication system and how to incorporate it into your links.

### Alternatives

There are alternative sources and solutions for journal content in online coursepacks that isn't available through your library. Before turning to these alternatives, please consider copyright laws. Although faculty do have extraordinary privileges to use copyright protected materials under fair use and other exemptions, there are limits to what they can do. The safest course of action is to use online coursepacks like paper coursepacks, for materials not available from your library. Some alternatives are:

- Post your materials in eReserves. Many libraries now offer electronic reserve services that faculty can use in the same way that they have used library print/book reserve services. A library may even scan materials and post course materials on a server that faculty can link to. Again, keep in mind that this service should only be used as a short term solution for materials not in a library's collections. It is not meant to be a way to avoid coursepack fees that students normally would pay for.
- Obtain copyright permissions from the Copyright Clearance Center (CCC) for a fee, for text based materials. You will then have to post the materials yourself.
- Contact the author/publisher for copyright permission.
- Build a hybrid of online and paper coursepacks.
- Use a commercial coursepack providers like XanEdu (see [xanedu.com](http://xanedu.com)) who will obtain copyright permissions and host online journal content for you. This will save the labor of scanning or copying and posting the materials yourself.

### Conclusion

In the near future standard URLs will probably remain the link of choice for faculty constructing online coursepacks. They are simple, easy to use, and provide a direct path to content. DOIs should grow in visibility in the publishing world and in use by faculty linking to content online since they offer a more stable method of linking to journal content. For faculty whose library offers a link resolver service like SFX, OpenURLs offers a much smarter linking technology that gives students a choice of "appropriate" copies available to them. These resolver services should also become more popular with faculty since they remove the burden of maintaining the links.

Faculty have a variety of other options to provide online coursepacks for materials not available in their library. These include commercial companies like Xanedu.com that provide full services.

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