Kalamazoo College Digital Archive

DSpace Procedures Manual

Version 1.0
Revised: July 28, 2008

Table of Contents

1 Organization and Functions of DSpace

1.1 Kalamazoo College DSpace Implementation

The Kalamazoo College Digital Archive is a digital repository intended to capture, distribute, and preserve scholarly work created by faculty, staff, and students at Kalamazoo College as well as materials of historical value to the College. By offering a central location for depositing these materials, the Kalamazoo College Digital Archive makes them available to a wider audience and helps assure long-term preservation. The Kalamazoo College Digital Archive is maintained by Kalamazoo College Information Services, under the coordination of the Library Director (DSpace Administrator).

Using open-source software called DSpace created at the Massachusetts Institute of Technology, the Kalamazoo College Digital Archive provides stable, long-term storage needed to house the digital products of Kalamazoo College faculty and researchers. For more information about the technology platform, visit: http://www.DSpace.org. The Kalamazoo College Digital Archive project is part of the DSpace Service (http://tinyurl.com/y4x5qx) sponsored by the National Institute for Technology and Liberal Education (NITLE) with back-end services provided by the Longsight Group (http://www.longsight.com/).

1.2 Organization

DSpace is organized into Communities and Collections.

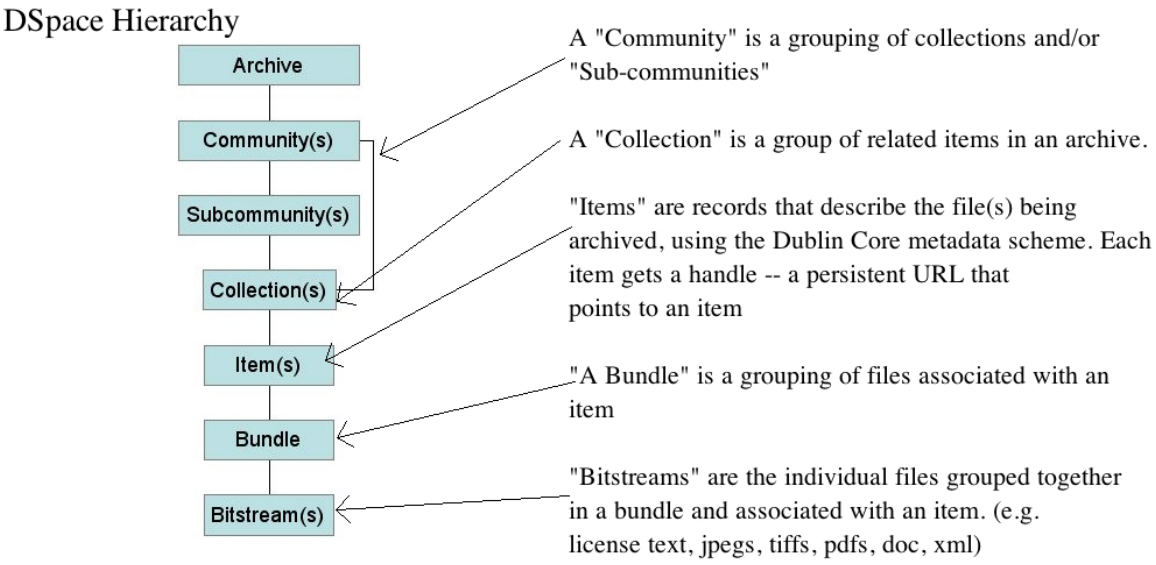
Generally, **Communities** correspond to administrative entities such as departments, offices, or projects. In the NITLE DSpace Service, Kalamazoo College is a top-level Community, and everything in Kalamazoo College's part of DSpace is a Sub-Community. Communities and Sub-Communities work the same way. The designation "Sub-Community" just signifies that the Sub-Community is part of a larger Community within the hierarchy.

Collections are a specific Group of submissions within a Community or Sub-Community. Collections are where the materials in DSpace reside.

For example,

Sub-Community = *Kalamazoo College Department of Psychology*
Collection = *Kalamazoo College Psychology Student Theses*

Within each Community there can be an unlimited number Sub-Communities and an unlimited number of Collections.



Graphic courtesy of Scott Hamiln, Wheaton College

For our implementation, the hierarchy is:

Level 1: NITLE DSpace Implementation
Level 2: Individual Colleges are their own Communities (*Kalamazoo College*)
Level 3: Each College includes their own Sub-Communities and Collections
For example: *Kalamazoo College Department of Chemistry* (Community)
Kalamazoo College Chemistry SIPs (Collection)

1.3 Handles

DSpace has a persistent identifier for every Item, Collection, and Community stored in DSpace. DSpace uses the CNRI Handle System for creating these identifiers. Handles look like URLs; however, unlike URLs, Handles are not dependent on an electronic document's location.

Handles are resolved by a Handle Server. As long as the Handle Server knows where the digital document is, it will point the Handle to it. That is, if a digital document moves from one location in DSpace (or from one server) to another, the Handle Server just needs to know that in order to point the Handle to the right place. The Handle itself never changes, so the user does not need to be bothered with where the digital document actually resides.

Handles are assigned to Communities, Collections, and Items. Bundles and Bitstreams are not assigned Handles, since over time, the way in which an Item is encoded as bits may change, in order to allow access with future technologies and devices.

NITLE has registered a numerical prefix (also called the "naming authority") with the Global Handle Registry that is unique to our DSpace implementation with NITLE. Our prefix is: *10090*. Every Item, Community, and Collection in our DSpace implementation will have the handle prefix *10090*.

Each Item, Community, and Collection also have unique numbers, called the handle suffix (or "local name"). Every Item, Community, and Collection will have a different handle suffix, though they will all have the same handle prefix. For example, the Community *Kalamazoo College Archives* is called *10090/25* (*10090* as the handle prefix and *25* as the handle suffix). The entire Handle for the Kalamazoo College Archives Community is, therefore: http://dspace.nitle.org/handle/10090/25. The Handle for the Collection *Kalamazoo College Catalogs* within the *Kalamazoo College Archives* Community is http://dspace.nitle.org/handle/10090/4251. (The number *4251* is this Collection's unique handle suffix.)

It is easy to confuse Handles with the DSpace Internal ID Number. There is a separate section in this manual that describes Internal ID Numbers.

1.4 Internal ID Numbers

DSpace uses a numbering system called "Internal ID Numbers." The Internal ID is a database primary key. A database primary key is a number that uniquely identifies each record in a relational database. Since DSpace is essentially a huge database, each record (Item, Collection, and Community) is assigned an Internal ID.

Internal ID numbers are assigned consecutively according to when a Community or Collection is created within the entire NITLE DSpace implementation (regardless of which school creates the Community or Collection). Communities have their own set of Internal ID numbers, and Collections have a separate set of Internal ID numbers (therefore, an unrelated Community and Collection can have the same Internal ID number). If a Community or Collection is deleted, the Internal ID number is not used for a new Community or Collection.

Community Internal ID Numbers

Administrators can find the **Internal ID of a Community** by following these steps:

1. Log in to DSpace
2. Navigate to the Community page
3. Click the EDIT button on the upper right corner of the screen
4. At the bottom of the next page, click the EDIT button next to "Community's Authorizations." This page will give both the Community's Handle and its Internal ID (or DB ID). For example:

   "Kalamazoo College Archives" (hdl:10090/25, DB ID 15)

Collection Internal ID Numbers

Administrators can find the **Internal ID of a Collection** by following these steps:

1. Log in to DSpace
2. Navigate to the Collection page
3. Click the EDIT button on the upper right corner of the screen
4. At the bottom of the next page, click the EDIT button next to "Collection's Authorizations." This page will give both the Collection's Handle and its Internal ID (or DB ID). For example:

   "Kalamazoo College Photographs" (hdl:10090/26, DB ID 7)

A person logged in to DSpace can see the Collections for which they are authorized to perform certain functions. To do this, they should log into DSpace and click the My Submissions link on the left side. On the next screen they will see "Authorization Groups I'm a Member Of" with Collection authorizations listed by Internal ID and the action they are entitled to perform, like this:

COLLECTION_442_SUBMIT

In this case, the person is authorized to submit to the Collection with Internal ID 442. **At this time, there is no way for a Site Administrator to determine the name of a Collection if you only know the Internal ID number.**

NOTE that the number in brackets beside a Collection name is the number of Items in that Collection, NOT THE INTERNAL ID. For example, "Kalamazoo College Photographs : [105]" means that there are 105 Items in the Collection "Kalamazoo College Photographs."

Item Internal ID Numbers

Administrators can find the **Internal ID of an Item** by following these steps:

1. Log in to DSpace
2. Navigate to the Item
3. Click the EDIT button next to the Item's handle at the top of the page. The Item's information is at the top of the Edit Metadata page, and includes the Internal ID. For example:

   Item internal ID: 4949
   Handle: 10090/4744
   Last modified: 25-Apr-2008 02:00:21
   In Collections: Kalamazoo College Photographs
   Item page: http://dspace.nitle.org/handle/10090/4744

You must know the Item's Handle or Internal ID to retrieve a withdrawn Item! See section 7.13 for more information.

1.5 Extracted Text Files

DSpace automatically makes an "extracted text" .txt file of all the content of the materials uploaded to DSpace (an image file won't have an extracted text file to go with it because there's no text to extract). This means that for other kinds of files, such as a PowerPoint file, DSpace takes the text from the original file and makes a plain .txt file out of it. This .txt file is keyword searchable by the system. Anyone with metadata editing privileges for an Item can open the extracted text file.

Extracted text files are automatically created by the system overnight. If an extracted text file is deleted, a new extracted text file will appear the next day.

Extracted text files have default READ permissions for the ANONYMOUS Group so they can be searched within DSpace as well as by Google. However, a Site Administrator can change the permissions on the extracted text file. If the READ permission on the extracted text file is changed to ADMINISTRATOR or another Group that requires a login, the bitstream will still be keyword searchable within the DSpace implementation, but it will not be searched by Google since Google will not be able to crawl the extracted text file and index it. If the permissions on the original extracted text file were changed by a Site Administrator and the file is then deleted, the new extracted text file will default to READ permission for the ANONYMOUS Group (it will not inherit the permissions of the deleted file).

1.6 Keyword Search

DSpace uses the **Jakarta Lucene** search engine.

How to Use Keyword Search

To search all of DSpace, use the search box at the top of the navigation bar on the left (or the search box in the middle of the home page). To limit your search to a specific Community or Collection, navigate to that community or collection and use the search bar on that page.

The word(s) you enter in the search box will be searched against the title, author, subject abstract, series, sponsor, and identifier fields of each item's record as well as the extracted text of the record.

> **What is Not Searched (Stop Words)**
> The search engine ignores certain words that occur frequently in English, but do not add value to the search. These are:
>
> "a", "and" , "are" , "as" , "at" , "be" , "but" , "by" , "for" , "if" , "in" , "into",

"is" ,"it" ,"no" , "not" , "of" , "on" , "or" , "such", "the" , "to" , "was"

Truncation
Use an asterisk (*) after a word stem to get all hits having words starting with that root, for example:

select* will retrieve selects, selector, selectman, selecting.

Stemming
The search engine automatically expands words with common endings to include plurals, past tenses ...etc.

Phrase Searching
To search using multiple words as a phrase, put quotation marks (") around the phrase.

"organizational change"

Exact word match
Put a plus (+) sign before a word if it MUST appear in the search result. For instance, in the following search the word "training" is optional, but the word "dog" must be in the result.

+dog training

Eliminate items with unwanted words
Put a minus (-) sign before a word if it should not appear in the search results. Alternatively, you can use **NOT**. This can limit your search to eliminate unwanted hits. For instance, in the search

training -cat or training NOT cat

you will get items containing the word "training", except those that also contain the word "cat".

Boolean searching
The following Boolean operators can be used to combine terms. Note that they must be CAPITALIZED !

> **AND** - to limit searches to find items containing all words or phrases combined with this operator, e.g.

cats AND dogs will retrieve all items that contain BOTH the words "cats" and "dogs".

OR - to enlarge searches to find items containing any of the words or phrases surrounding this operator

cats OR dogs will retrieve all items that contain EITHER the words "cats" or "dogs".

NOT - to exclude items containing the word following this operator, e.g.

training NOT cat will retrieve all items that contain the word "training" EXCEPT those also containing the word "cat".

Parentheses can be used in the search query to group search terms into sets, and operators can then be applied to the whole set, e.g.

(cats OR dogs) AND (training OR discipline)

1.7 Advanced Search

DSpace includes an advanced search feature (http://dspace.nitle.org/advanced-search) that allows users to search in all of the NITLE DSpace implementation, or within each college's discrete Community, for the following types of searches:

- Keyword
- Author
- Title
- Subject
- Abstract
- Series
- Sponsor
- Identifier
- Language

The following chart indicates which Dublin Core fields are searched when each type of search is performed.

Type of Search	Dublin Core Searched
Keyword	dc.contributor dc.contributor.advisor dc.contributor.author dc.contributor.illustrator

	dc.contributor.other dc.creator dc.identifier dc.identifier.citation dc.identifier.govdoc dc.identifier.isbn dc.identifier.issn dc.identifier.sici dc.identifier.ismn dc.identifier.other dc.identifier.uri dc.description.sponsorship dc.description.statementofresponsibility dc.description.tableofcontents dc.language.iso dc.relation.ispartofseries dc.subject dc.subject.classification dc.subject.ddc dc.subject.lcc dc.subject.lcsh dc.subject.mesh dc.subject.other dc.title dc.title.alternative NOTE: Keyword also searches the Extracted Text file of bitstreams
Author	dc.contributor.author dc.contributor.advisor dc.contributor.editor dc.contributor.illustrator dc.contributor.other dc.contributor dc.description.statementofresponsibility
Title	dc.title dc.title.alternative
Subject	dc.subject.classification dc.subject.lcsh dc.subject.mesh dc.subject.other dc.subject
Abstract	dc.description.abstract dc.description.tableofcontents
Series	dc.relation.ispartofseries
Sponsor	dc.description.sponsorship

Identifier	dc.identifier.citation dc.identifier.govdoc dc.identifier.isbn dc.identifier.ismn dc.identifier.issn dc.identifier.other dc.identifier.sici dc.identifier.uri dc.identifier
Language	dc.language.iso

The following fields are NOT searched in Advanced Search:

- dc.coverage.spatial
- dc.coverage.temporal
- dc.date.accessioned
- dc.date.issued
- dc.date.available
- dc.date.copyright
- dc.description
- dc.description.provenance
- dc.description.uri
- dc.language
- dc.publisher
- dc.relation.isformatof
- dc.relation.ispartof
- dc.relation.haspart
- dc.relation.hasversion
- dc.relation.isbasedon
- dc.relation.replaces
- dc.realtion.requires
- dc.relation.uri
- dc.relation
- dc.rights
- dc.rightsuri
- dc.type

Using Advanced Search

Select the field to search in the left hand column and enter the word or phrase you are searching in the right hand column. You can select the Boolean operator to combine searches by clicking on the arrow to the right of the "AND" box.

Note: You must use the input boxes in order. If you leave the first one blank your search will not work.

1.8 Manakin

Manakin is a user interface developed by Texas A&M University that enables each Community and Collection in DSpace to establish a unique look-and-feel. Manakin utilizes CSS and XSL. For more information, see:

http://di.tamu.edu/projects/xmlui/manakin/

and

http://www.dlib.org/dlib/november07/phillips/11phillips.html

1.9 User Workspace (My DSpace)

An E-Person who signs in with their Kalamazoo College username and password will have a My DSpace page (called the Workspace). This page includes:

- A list of the E-Person's in-progress submissions. From this list an E-Person can resume the submission process where they left off, or remove the submission and cancel the item.
- A list of the submissions on which the E-Person is supervising or collaborating
- A list of submissions that are awaiting the E-Person's action (if they have a collection workflow role)
- A link to a list of Items that the E-Person has submitted and that have already been accepted into DSpace
- A list of Authorization Groups the E-Person is a member of (the authorizations they have in DSpace for various Collections)

1.10 E-Mail Alerts

Users can subscribe to receive daily e-mail alerts of new items added to Collections. Users may subscribe to as many Collections as they wish.

To Subscribe to E-mail Alerts:

1. Log on to DSpace
2. Navigate to a collection for which you would like to receive e-mail alerts
3. Click on the SUBSCRIBE button

To Unsubscribe from E-mail Alerts:

1. Log on to DSpace
2. Click the "See Your Subscriptions" link

3. Click the UNSUBSCRIBE button next to the Collections from which you want to unsubscribe.

You can also navigate to the Collection to which you would like to unsubscribe from e-mail alerts and click on the SUBSCRIBE button.

2 Administration

Administrators are a Group of super-users who decide how DSpace will be run and carry out the actions required to implement these decisions.

There are two kinds of Administrators in our DSpace implementation: Site Administrators (section 2.2) and Collection Administrators (section 2.3).

2.1 Administration Tools Page

When doing certain tasks in DSpace, a Site Administrator will be taken automatically to Administration Tools page (called the "Administration User Interface" or "Administration UI" in DSpace). Site Administrators can access the Administration Tools Page directly though this link:

http://dspace.nitle.org/dspace-admin/

Login is required. Site Administrators already logged in will not be asked to log in again.

The Administration User Interface gives different options on the left side navigation menu than the regular user interface, including:

- **Communities/Collections:** Links to the Communities and Collections browse page from which you can start creating Communities and Collections
- **E-People**: Create, edit or delete registered users
- **Groups:** Create, edit or delete Groups of E-People
- **Items:** Edit or delete Items and their Bitstreams
- **Metadata Registry:** Add new metadata fields
- **Bitstream Format Registry:** Update the list of Bitstreams (files) and their support levels recognized by DSpace
- **Workflow:** Abort currently active workflow Items
- **Authorization:** Create, edit or delete authorization policies at all levels
- **Edit News:** Edit the news section and the list of local links on the homepage
- **Edit Default License:** Edit the default distribution license used throughout DSpace [this will edit the licenses for ALL SCHOOLS!]
- **Supervisors:** Administer supervision orders
- **Statistics:** View repository statistics

Keep in mind that, as a shared implementation through NITLE, **some administrative changes may be reflected throughout the entire implementation**, not just the Kalamazoo College section of the repository.

2.2 Site Administrators

Site Administrators manage the DSpace implementation (except for hardware and software). Site Administrators can:

- Submit to any Collection
- Access any restricted document or Collection
- Create, edit, or delete Communities, Collections, Items, and Bitstreams
- Set up authorizations and permissions for all Communities and Collections
- Create, edit, and delete E-People, Groups, and additional Administrators

Creating a Site Administrator

1. Log in to DSpace (you must be a Site Administrator)
2. In any Community or Collection, click the EDIT button on the upper right.
3. On the menu on the left hand side of the page, click on GROUPS
4. Click the EDIT button next to the Administrator Group
5. Click the SELECT E-PEOPLE button
6. In the popup window, find the person to add, and click ADD next to their name
7. Click the UPDATE GROUP button

2.3 Collection Administrators

In DSpace, some users must be able to administer Collections in order to assign people who upload, catalog, and do other work. A Collection Administrator is assigned to a particular Collection – they do not have permissions over every Collection in a Community unless a Site Administrator assigns these permissions individually. Only a Site Administrator can make a Collection Administrator.

A Collection Administrator has certain permissions that deal with Collections. Collection Administrators can:

- Edit Collection description
- Edit submitters
- Map and un-map Items
- Edit Item metadata
- Withdraw Items

Collection Administrators cannot:

- Edit authorization policies at the Collection, Item, or Bitstream levels
- Edit the workflow
- Edit Groups
- Create or delete Collections
- Delete Items

A person with Collection Administrator privileges will have COLLECTION_XYZ_ADMIN in their Authorization Groups list when they log in to DSpace (where XYZ is the internal ID of the Collection).

2.4 Creating a Collection Administrator

If "**This Collection will have delegated Collection administrators**" is checked with the Collection is created, then E-People or Groups can be assigned to be Collection Administrators at that time. Otherwise, use these steps to create a Collection Administrator:

Process 1:

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Collection for which you want to assign a Collection Administrator
3. On the Collection home page, click the EDIT button on the upper right.
4. On the bottom of the next page, click the button next to Collection Administrators (this button could say either CREATE or EDIT)
5. Choose SELECT E-PEOPLE or SELECT GROUP (depending on whether you're making a person or a Group the administrator)
6. In the popup window, find the person or Group to add, and click ADD next to their name.
7. Click the UPDATE GROUP button.

Or you can use Process 2:

1. Log in to DSpace (you must be a Site Administrator)
2. Go to the Administration Tools Page: http://dspace.nitle.org/dspace-admin/
3. Click on Groups on the left hand side of the Administration Tools Page
4. Choose the Group for which you want to add an administrator. For example: COLLECTION_474_ADMIN
5. Click the EDIT button next to the Group
6. Click the SELECT E-PEOPLE button
7. In the popup window, find the person to add, and click ADD next to their name.
8. Click the UPDATE GROUP button.

2.5 Authorization Policies (Permissions)

Authorizations determine what actions certain E-People and Groups can take in DSpace. Collection Authorizations are discussed in more depth in section 4. Item Authorizations are discussed are discussed in more depth in section 7.

The following list describes what authorizations (also called "Permissions") can be set at each level in DSpace. These authorizations apply to non-administrators.

- *Default setting*: lists the default policy setting
- *Policy options listed*: lists the actions that appear in the authorization menu
- *Policies to apply*: lists which of those actions can be used

Communities
Communities contain no direct content, so access cannot be restricted at the Community level.

- *Default setting*: Anonymous READ (applied to the logo).

- *Policy options listed*: READ / WRITE / ADD / REMOVE.

- *Policies to apply*: WRITE. Non-administrators can be allowed to edit the community details but nothing else.

Collections
Collection homepages cannot be restricted, but the content within a Collection can.

- *Default setting*: Anonymous READ / DEFAULT_ITEM_READ / DEFAULT_BITSTREAM_READ

- *Policy options listed*: READ / WRITE / ADD / REMOVE / DEFAULT_ITEM_READ / DEFAULT_BITSTREAM_READ / COLLECTION_ADMIN

- *Policy to apply*: WRITE / DEFAULT_ITEM_READ / DEFAULT_BITSTREAM_READ / COLLECTION_ADMIN. Access can be restricted to the content of a collection, either for all items or for the bitstreams. Collection Administrators can also be set up through the Authorization tool in this case.

Items
Items are sub-divided into various Bundles.

- *Default setting*: Anonymous READ

- *Policy options listed*: READ / WRITE / ADD / REMOVE.

- *Policy to apply*: READ. Access restrictions should only be applied to Items.

3 Communities and Sub-Communities

The materials in DSpace are organized within Communities and Sub-Communities. Communities and Sub-Communities work the same way. The designation "Sub-Community" just signifies that the Sub-Community is part of a larger Community within the hierarchy. Generally, Communities and Sub-Communities correspond to administrative entities such as departments, offices, or projects.

Communities contain Collections, which in turn contain Items. It is useful to create a Community in order to better organize materials. For example, the Collection *Kalamazoo College Student Newspaper* could contain hundreds of items, each of which is an issue of the student newspaper. But a better organizational structure might be to have a Community called *Kalamazoo College Student Newspaper* with several Collections delineated by year (*1998-1999 Issues, 1999-2001 Issues,* etc.). This makes browsing and searching easier because there are fewer items to contend with in each Collection.

3.1 Creating a Community or Sub-Community

1. Log in to DSpace (you must be a Site Administrator)
2. Make sure you are in the Kalamazoo College Community
3. Click the CREATE SUB-COMMUNITY button on the upper right corner.
4. Enter Name, Short Description, Introductory Text, Copyright Text, and Sidebar Text (see Communities and Sub-Communities: Default Text).

    a. The text for Name should begin with **Kalamazoo College**.
        i. Example: *Kalamazoo College Department of Psychology*

    b. The text for Short Description and Introductory Text is at the discretion of the Collection Administrator. **Short Description** appears as a bullet point under the Community name in the list of Kalamazoo College Communities. **Introductory Text** appears on the Community page.

    c. For the Copyright Text, see **Copyright Text** in section 3.3.

5. Click NEXT.

3.2 Metadata for Communities and Sub-Communities

Metadata is "data about data." In this case, Community (and Sub-Community) metadata describes the Community or Sub-Community.

To ensure consistency, each Sub-Community should include:

- Name
- Short Description

- Introductory Text
- Copyright text
- Sidebar Text

Each of these elements means something. For example:

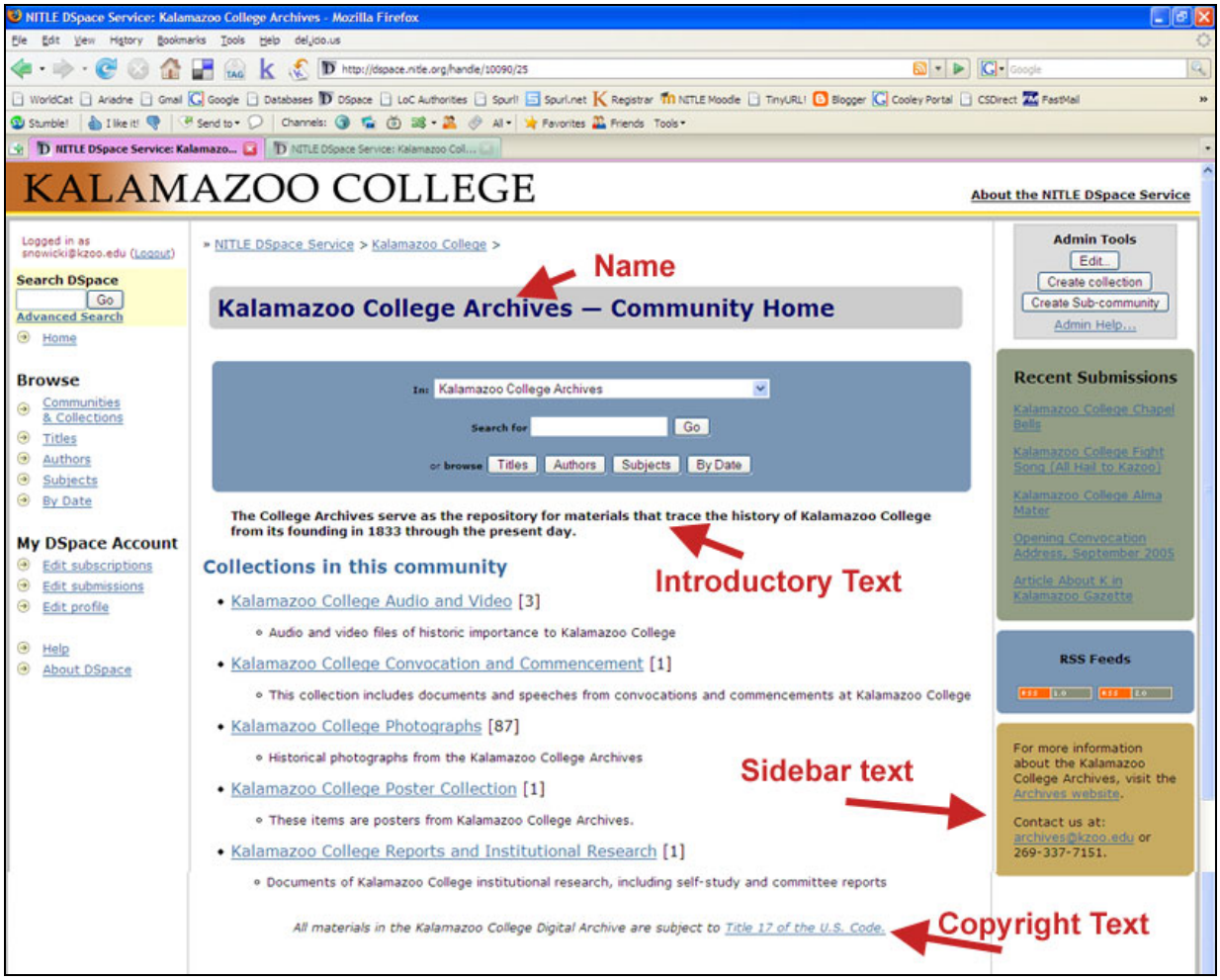
Element	**Content**
Name	Title of Community. The text for Name should begin with **Kalamazoo College**. Example: *Kalamazoo College Department of Psychology*
Short Description	One sentence providing a basic description of the Community. **Short Description** appears as a bullet point under the Community name in the list of Kalamazoo College Communities.
Introductory text	A paragraph describing the goals and purpose of the Community. **Introductory Text** appears on the Community page.
Copyright text	A short policy statement regarding copyrighted material. See the **Copyright Text** in section 3.3 for the content of the copyright text.
Sidebar text	Content at the discretion of the Community. **Sidebar Text** appears in the sidebar on the right side of the Community page. It can contain things like information about the Community, or a link back to a Department Home Page on the Kalamazoo College website. *This element is optional*.

3.3 Copyright Text

For each Community and Collection, the **copyright text** should read:

> All materials in the Kalamazoo College Digital Archive are subject to Title 17 of the U.S. Code.

3.4 Community Page Screen Shot



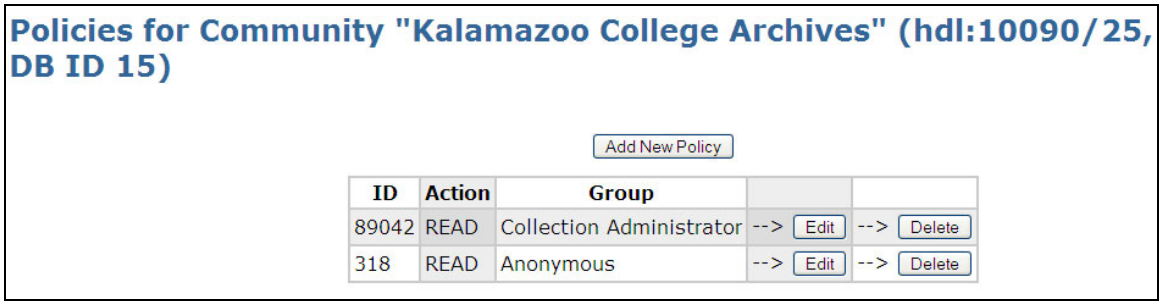
3.5 Community and Sub-Community Authorizations

Community Authorizations (also called “Policies” or “Actions”) determine what permissions various users have in DSpace in each Community and Sub-Community. Site Administrators can adjust each Community’s Authorizations.

To adjust Community Authorizations:

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Community you want
3. Click the EDIT button on the top right side of the page
4. Scroll down to the bottom of the page
5. Click the EDIT button next to “Community’s Authorizations”

This should take you to a page that looks something like this:



The column under “Action” lists each permission level. The column under “Group” lists which Group of E-People in DSpace is allowed to perform that particular Action. Community Authorizations are only assigned to Groups.

The Actions (also called Policies or Authorizations) available for Communities are:

- Read
- Write
- Add
- Remove

ACTION NAME	WHAT IT DOES
ADD	Unknown
REMOVE	Unknown
READ	Permission to read a logo attached to a Community. This Action is automatically assigned to the Anonymous Group, but must be assigned manually to any other Group. To do this, follow the directions above to adjust Community

	Authorizations and click the EDIT button in the row in which the Action appears. NOTE: Removing READ permissions does NOT remove access to a Community. It only removes access to the logo used on the Community.
WRITE	Permission to edit the description of the Community. This Action is automatically assigned to the Site Administrator, but must be assigned manually to any other Group. To do this, follow the directions above to adjust Community Authorizations and click the EDIT button in the row in which the Action appears.

3.6 Deleting Communities and Sub-Communities

To delete a Community, all Items in the Community must be deleted (expunged) first. The Collections within the Community will automatically be deleted when the Community is deleted, but all Items in the Collections must be deleted before the Community can be deleted.

Deleting a Community will delete:

- Any Collections in the Community that are not contained in other Communities
- Any incomplete submissions in those Collections
- All associated authorization policies

To delete a Community or Sub-Community:

1. Log in to DSpace (you must be a Site Administrator)
2. From the Community homepage, click the EDIT button on the upper right side
3. Click the DELETE THIS COMMUNITY button at the top of the page
4. Check you are sure and click the DELETE button to confirm

There is also a quick way to delete unwanted Communities and Sub-Communities. On the Kalamazoo College Community page there is a list of all Sub-Communities. These have a small bin-shaped symbol next to them that looks like this:

This is a quick delete button. Click on this button to delete a Community, then click the DELETE button on the next page.

4 Collections

Collections reside within Communities and Sub-Communities and contain the materials (files) archived in DSpace.

4.1 Collection Set-Up Wizard

Creating a Collection is done with a Set-Up Wizard tool. The Wizard is a series of screens that work through the process of creating a Collection. After you've completed the Wizard, you will be able to edit the Collection later, so decisions you make here are not permanent.

The first page of the Set-Up Wizard will ask you some questions about the new Collection. These options determine what screens will appear later in the Set-Up Wizard. These options are:

> **New Items should be publicly readable**. This box is pre-checked by default. This means that the content will be open access and readable by all. If you uncheck this, you will be asked to choose E-People you want to be allowed to read the Items. Generally this option should be checked.
>
> **Some users will be able to submit to this Collection**. This box is pre-checked by default. You will be asked to choose E-People who should have submission rights for this Collection. Unchecking the box ensures that no one (other than administrators) can submit to this Collection. Generally this box should be checked.
>
> **The submission workflow will include an accept/reject step**. This is the first step of the submission workflow. A reviewer can accept or reject the Item only.
>
> **The submission workflow will include an accept/reject/edit metadata step**. This is the second step of the submission workflow. A reviewer can accept or reject the Item and also edit the Item's metadata.
>
> **The submission workflow will include an edit metadata step**. This is the third step of the submission workflow. A reviewer can edit the Item's metadata and must then accept it into the archive.
>
> **This Collection will have delegated Collection administrator.** This allows you to choose someone to have limited administrative powers for that Collection alone. These users are called Collection Administrators. Collection Administrators can be used to handle Collection level policies that a Site Administrator may not wish to deal with. A Collection Administrator will be able to view some sections of the Administration Tools page and have access to some

of the administrative tools. See section 2.3 for more information on Collection Administrators.

New submissions will have some metadata already filled out with defaults. This allows you to pre-fill fields in that Collection's submission form. You will need to know which Dublin Core fields you want to pre-fill and enter the information at the end of the Collection Set-Up Wizard.

4.2 Creating a Collection

1. Log in to DSpace (you must be a Site Administrator)
2. Make sure you are in the Kalamazoo College Community
3. Click on the name of the Sub-Community in which the Collection will reside
4. Click the CREATE COLLECTION button in the upper right corner
5. The Describe the Collection page asks you to choose a number of options (described in section 4.1 above).
6. Select the options to be checked. When done, click the NEXT button. Generally, you will want to check:

    a. **New Items should be publicly readable** (this will make all Items automatically publicly readable; the ANONYMOUS Group will be assigned READ permission)

    b. **Some users will be able to submit to this Collection** (this will allow you to choose submitters during the Set-Up Wizard)

    c. **New submissions will have some metadata already filled out with defaults** (this will allow you to create an Item Template, so every Item submitted to the Collection will have some of the same metadata).

7. Enter Name, Short Description, Introductory Text, Copyright Text, and License Text.

    a. The text for Name should begin with **Kalamazoo College**.
        i. Example: *Kalamazoo College Psychology Student Theses*

    b. The text for Short Description and Introductory Text is at the discretion of the Collection Administrator. **Short Description** appears as a bullet point under the Collection name on the Community page. **Introductory Text** appears on the Collection page.

    c. For the Copyright Text, see **Copyright Text** in section 4.4.

    d. For the License Text, see **License Text** in section 4.5.

e. Click NEXT.

8. If "**Some users will be able to submit to this Collection"** was checked at the beginning of the Set-Up Wizard, you may now choose submitters. If you want certain people to be able to submit to this Collection, click SELECT E-PEOPLE.

    a. Choose the people from the list you would like to be submitters to this Collection and click ADD next to their names.

    b. You can also give Groups submission privileges by clicking SELECT GROUPS and going through the same steps.

    c. When finished, click NEXT.

9. If "**New submissions will have some metadata already filled out with defaults"** was checked at the beginning of the Set-Up Wizard, you may now enter default Item metadata (the information you want all submissions to include). When finished, click NEXT.

    a. **For SIP Collections**:

        i. dc.type: Thesis

        ii. dc.relation.ispartofseries: Senior Individualized Projects. [Name of department or major].
        Example: *Senior Individualized Projects. Chemistry.*

        iii. dc.rights: U.S. copyright laws protect this material. Commercial use or distribution of this material is not permitted without prior written permission of the copyright holder.

10. Create authorizations for the Items in this Collection. **For SIP Collections** (to make the Bitstream restricted to K College logins but the Item record public):

    a. On the Edit Collection screen, click the EDIT button next to COLLECTION'S AUTHORIZATIONS at the bottom of the screen

    b. Click the EDIT button next to DEFAULT_BITSTREAM_READ

    c. Choose KALAMAZOO COLLEGE from the list. Click SAVE.

    d. Make sure DEFAULT_ITEM_READ is ANONYMOUS (if not, repeat a-c above and choose ANONYMOUS from the list)

4.3 Metadata for Collections

Metadata is “data about data.” In this case, Collection metadata describes the Collection. To ensure consistency, each Collection must include:

- Name
- Short Description
- Introductory Text
- Copyright text
- License

Each of these elements means something. For example:

Element	**What it Means**
Name	Title of the Collection
Short Description	One sentence providing a basic description of the Collection. **Short Description** appears as a bullet point under the Collection name on the Community page.
Introductory Text	A paragraph describing the specific goals and purpose of the Collection. **Introductory Text** appears on the Collection page.
Copyright text	A short policy statement regarding copyrighted material. See **Copyright Text** (section 4.4) for the content of the copyright text.
Sidebar text	Content at the discretion of the Community. **Sidebar Text** appears in the sidebar on the right side of the Community page. It can contain things like information about the Community, or a link back to a Department Home Page on the Kalamazoo College website. *This element is optional*.
License	A short policy statement regarding licensing. See **License Text** (section 4.5) in this manual for the content of the copyright text.
Provenance	A short description of the origin of the material. (e.g. The material in this Collection is email that Dr. Smith received as a professor at Kalamazoo College). *This element is optional*.

4.4 Copyright Text

For each Community and Collection, the **copyright text** should read:

> All materials in the Kalamazoo College Digital Archive are subject to Title 17 of the U.S. Code.

4.5 License Text

For each Collection, the **license text** should read:

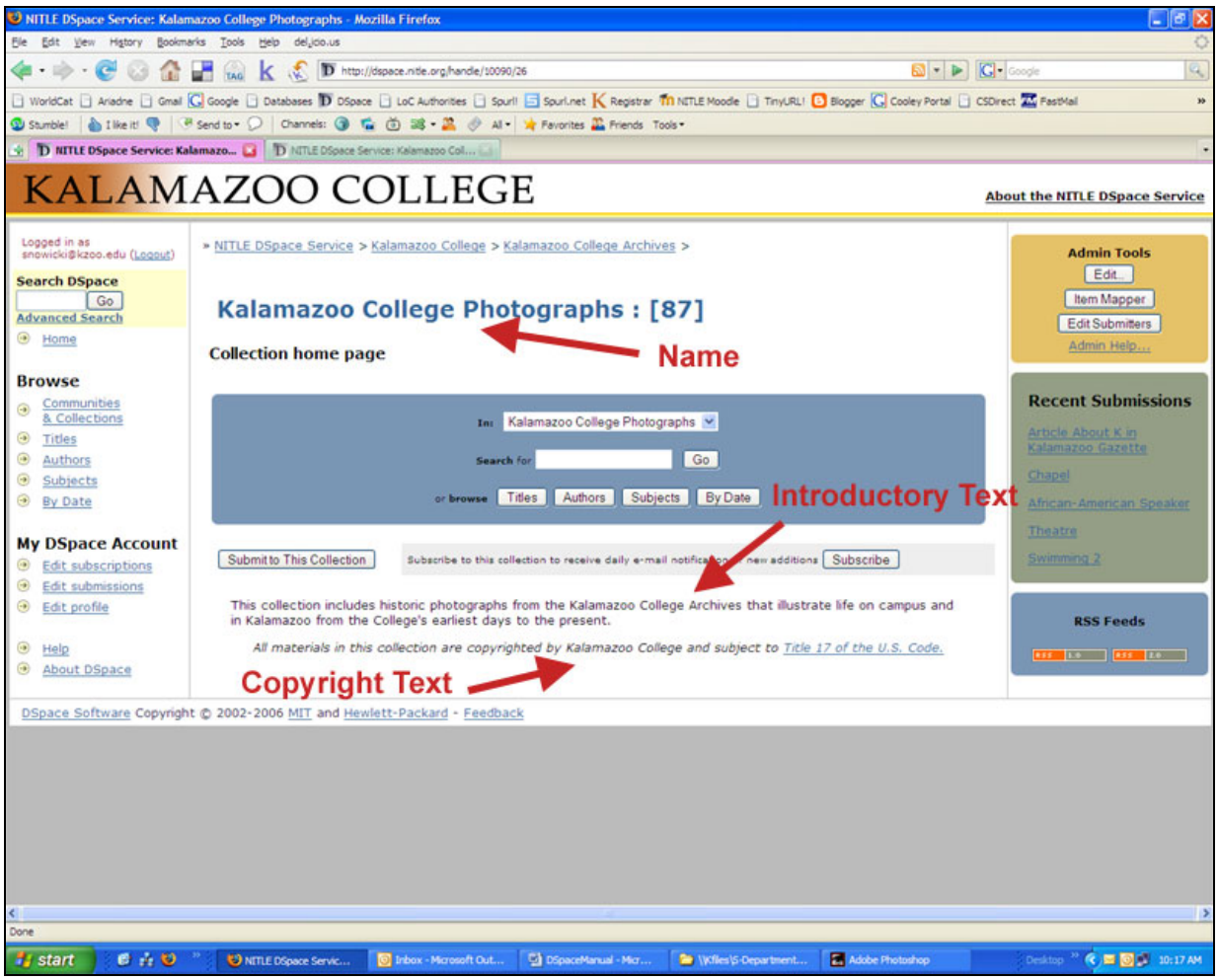
KALAMAZOO COLLEGE NON-EXCLUSIVE DISTRIBUTION LICENSE

> By submitting this license, you (the author(s) or copyright owner) grant to Kalamazoo College the non-exclusive right to reproduce, convert (as defined below), and/or distribute your submission (including the abstract) worldwide in print and electronic format and in any medium.
>
> You agree that Kalamazoo College may, without changing the content, convert the submission to any medium or format for the purpose of preservation.
>
> You also agree that Kalamazoo College may keep more than one copy of this submission for purposes of security, back-up and preservation. Kalamazoo College Information Services will make a good faith effort to preserve and distribute this submission. In the event that Information Services is unable to continue to maintain this submission as part of the institutional repository, Information Services reserves the right to return the content to the submitting departments/units/individuals whenever possible. If the entity is no longer in existence, or if the individual is untraceable, Information Services may move the materials to the Kalamazoo College Archives.
>
> You represent that the submission is your original work, and that you have the right to grant the rights contained in this license. You also represent that your submission does not, to the best of your knowledge, infringe upon anyone's copyright.
>
> If the submission contains material for which you do not hold copyright, you represent that you have obtained any necessary permission from the copyright owner to grant Kalamazoo College the rights required by this license, and that such third-party owned material is clearly identified and acknowledged within the text or content of the submission.
>
> IF THE SUBMISSION IS BASED UPON WORK THAT HAS BEEN SPONSORED OR SUPPORTED BY AN AGENCY OR ORGANIZATION OTHER THAN KALAMAZOO COLLEGE, YOU REPRESENT THAT YOU HAVE FULFILLED ANY RIGHT OF

REVIEW OR OTHER OBLIGATIONS REQUIRED BY SUCH CONTRACT OR AGREEMENT.

Kalamazoo College will clearly identify your name(s) as the author(s) or owner(s) of the submission, and will not make any alteration, other than as allowed by this license, to your submission.

4.6 Collection Page Screen Shot



4.7 Collection Authorizations

Collection Authorizations (also called “Policies” or “Actions”) determine what permissions various users have in DSpace in each Collection. Collection Administrators and Site Administrators can adjust each Collection’s Authorizations.

To adjust Collection Authorizations:

1. Log in to DSpace
2. Navigate to the Collection you want
3. Click the EDIT button on the top right side of the page
4. Scroll down to the bottom of the page
5. Click the EDIT button next to “Collection’s Authorizations”

This should take you to a page that looks something like this:

Policies for Collection "Kalamazoo College English Senior Individualized Projects" (hdl:10090/3752, DB ID 406)

Add New Policy

ID	Action	Group		
123249	COLLECTION_ADMIN	COLLECTION_406_ADMIN	Edit	Delete
ID	**Action**	**Group**		
121426	DEFAULT_BITSTREAM_READ	Kalamazoo College	Edit	Delete
ID	**Action**	**Group**		
121427	ADD	COLLECTION_406_SUBMIT	Edit	Delete
ID	**Action**	**Group**		
121425	DEFAULT_ITEM_READ	Anonymous	Edit	Delete
ID	**Action**	**Group**		
121424	READ	Anonymous	Edit	Delete

The column under “Action” lists each permission level. The column under “Group” lists which Group of E-People in DSpace are allowed to perform that particular Action. Collection Authorizations are only assigned to Groups.

The Actions (also called Policies or Authorizations) available for Collections are:

- Read
- Write
- Add
- Remove
- DEFAULT_ITEM_READ
- DEFAULT_BITSTREAM_READ
- COLLECTION_ADMIN

ACTION NAME	WHAT IT DOES
ADD	Permission to submit Items to the Collection. This can be adjusted by editing the Submitters in the Collection (click EDIT on the Collection Home Page and then click EDIT next to “Submitters”). E-People with ADD permission for a Collection are members of the COLLECTION_XYZ_SUBMIT Group (where XYZ is

	the internal ID of the Collection). This Group is automatically created when an E-Person is made a submitter, or if “Some users will be able to submit to this Collection” is checked when the Collection was created. ADD permission is NOT inherited by Subcommunities. Also note that submitters cannot edit Item metadata after the Item has been submitted and accepted into the Archive.
REMOVE	Permission to withdraw Items. When an Item is withdrawn, it is remains in DSpace but is completely hidden from view. NOTE that this is different than deleting an Item! This Action is automatically assigned to the Collection Administrator, but must be assigned manually to any other Group. To do this, follow the directions above to adjust Collection Authorizations and click the EDIT button in the row in which the Action appears. REMOVE permission is NOT inherited by Subcommunities.
READ	Permission to read a logo attached to a Collection. This Action is automatically assigned to the Anonymous Group, but must be assigned manually to any other Group. To do this, follow the directions above to adjust Collection Authorizations and click the EDIT button in the row in which the Action appears. NOTE: Removing READ permissions does NOT remove access to a Community. It only removes access to the logo used on the Community.
WRITE	Permission to edit the description of the Collection and metadata of any Items. This Action is automatically assigned to the Collection Administrator, but must be assigned manually to any other Group. To do this, follow the directions above to adjust Collection Authorizations and click the EDIT button in the row in which the Action appears. WRITE permission IS inherited by Subcommunities.
DEFAULT_ITEM_READ	By default all Items in a Collection are readable by this Group. All submitted Items will inherit this level of permission. If the Items in the Collection should be publicly readable, the Group assigned to this Action should be “Anonymous.” If only Kalamazoo College users should be able to see the Items, the Group should be “Kalamazoo College.”

	If “New Items should be publicly readable” is checked when the Collection was created, this Action is assigned to the Anonymous Group. Otherwise, when the Collection is created, the Group COLLECTION_XYZ_DEFAULT_ITEM_READ is created (where XYZ is the internal ID of the Collection)., and E-People (or a Group) must be added to this Group in order to read Items in this Collection. Alternatively, the Collection Administrator could assign a Group manually (like “Kalamazoo College”).
DEFAULT_BITSTREAM_READ	By default all Bitstreams submitted to a Collection are readable by this Group. All submitted Bitstreams (files) will inherit this level of permission. If the files in the Collection should be publicly readable, the Group assigned to this Action should be “Anonymous.” If only Kalamazoo College users should be able to see the files, the Group should be “Kalamazoo College.” If “New Items should be publicly readable” is checked when the Collection was created, this Action is assigned to the Anonymous Group. Otherwise, when the Collection is created, the Group COLLECTION_XYZ_DEFAULT_BITSTREAM_READ is created (where XYZ is the internal ID of the Collection)., and E-People (or a Group) must be added to this Group in order to read Items in this Collection. Alternatively, the Collection Administrator could assign a Group manually (like “Kalamazoo College”).
COLLECTION_ADMIN	Collection Administrator(s). See the section in this manual on Collection Administrators for their permissions and how to create Collection Administrators. The Group assigned to this action is COLLECTION_XYZ_ADMIN (where XYZ is the internal ID of the Collection). If “This Collection will have delegated Collection administrators” is checked with the Collection is created, then E-People or Groups can be assigned to be Collection Administrators at that time.

4.8 Moving Collections

DSpace Collections can be moved from one Community to another. This is a process that requires the help of Longsight support. Contact NITLE for more information.

4.9 Deleting Collections

To delete a Collection, all Items in the Collection must be deleted (expunged) first.

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Collection you want to delete
3. From the Collection homepage, click the EDIT COLLECTION button on the upper right side
4. Click the DELETE THIS COLLECTION button at the top of the page
5. Check you are sure and click the DELETE button to confirm

5 E-People

Although many functions (such as searching and retrieval) can be used anonymously, some features and documents are only available to "privileged" users. E-People and Groups are the way DSpace identifies users with certain privileges. Both E-People and Groups are granted privileges through authorizations assigned by the Site Administrator.

At Kalamazoo College, we use LDAP Authentication to allow current Kalamazoo College students, faculty, and staff into privileged areas of DSpace. Once a person has logged in to DSpace with their Kalamazoo College username and password, DSpace creates the E-Person record and automatically adds that person to the "Kalamazoo College" Group. Any person not logged on is part of the "Anonymous" Group.

DSpace holds the following information about each E-Person:

- E-mail address
- First and last names
- A list of Collections for which the E-Person wishes to be notified of new Items
- The network ID for the corresponding LDAP record

Once a user has logged on to DSpace, their details can be accessed via the E-People link in the Administration Tools Page (http://dspace.nitle.org/dspace-admin/). The user can now be added to Groups and assigned permissions.

5.1 Adding E-People

E-People are administered from the **Administer E-People** page, which is accessed using the E-People link on the Administration Tools Page (http://dspace.nitle.org/dspace-admin/). Though you can add E-People through this link, it is not necessary since Kalamazoo College users automatically create E-People records when they log in the first time with their Kalamazoo College username and password.

5.2 Editing E-People

1. Log in as a Site Administrator
2. Go to the Administration Tools Page: http://dspace.nitle.org/dspace-admin/
3. Click on E-People on the left hand side of the Administration Tools Page
4. Click the SELECT E-PERSON button
5. In the pop-up box, click the SELECT button next to the record you wish to edit
6. Click the CLOSE button at the bottom of the pop-up box
7. Click the EDIT button
8. Make the necessary changes and click the SAVE button

5.3 Deleting E-People

1. Log in as a Site Administrator
2. Go to the Administration Tools Page: http://dspace.nitle.org/dspace-admin/
3. Click on E-People on the left hand side of the Administration Tools Page
4. Click the SELECT E-PERSON button
5. In the pop-up box, click the SELECT button next to the record you wish to delete
6. Click the CLOSE button at the bottom of the pop-up box
7. Click the DELETE button
8. Confirm by clicking the DELETE button, or click the CANCEL button

6 Groups

Although many functions (such as searching and retrieval) can be used anonymously, some features and documents are only available to "privileged" users. E-People and Groups are the way DSpace identifies users with certain privileges. Both E-People and Groups are granted privileges through authorizations assigned by the Site Administrator.

Groups are sets of E-People that are authorized for specific functions in DSpace. For example, when a Kalamazoo College person logs in to DSpace with their Kalamazoo College username and password, they automatically become members of the "Kalamazoo College" Group. This Group has permission to access certain Kalamazoo College materials that need special permission (such as SIPs).

Groups are administered from the **Group editor** page, which is accessed using the Groups link on the Administration Tools Page (http://dspace.nitle.org/dspace-admin/).

6.1 Common Groups

Site Administrators can make Groups to perform certain functions or access various areas of DSpace.

- The **Anonymous** Group represents every person using the system. This Group exists so that authorization policies can be specified for anonymous access ("everyone in the world can read this Item"). Any person not logged on is part of the "Anonymous" Group.

- Members of the **Administrator** Group are allowed to perform any action in the system. This Group is created manually.

- Members of the **Kalamazoo College** Group have permission to access some restricted content. Every person who has signed into DSpace with their Kalamazoo College username and password is a member of the "Kalamazoo College" Group (all current students, faculty, and staff). This Group is created automatically when a person signs in to DSpace with their K username and password.

- Members of the **Collection Administrator** Group for a particular Collection are allowed to submit, edit metadata, add/reject, and delete Items in that Collection. This Group is shown as COLLECTION_ XYZ _ADMIN in the Group Editor (where XYZ is the Collection internal ID). This Group is created manually when a Site Administrator adds someone as a Collection's Administrator.

- Members of the **Add** Group for a particular Collection are allowed to submit to that Collection. These people are also called "Submitters." This Group is shown as COLLECTION_XYZ_SUBMIT in the Group Editor. This Group is created

manually when an Administrator adds someone as a Collection's Submitter.

- Each **workflow step** for each Collection also has a Group. These Groups are automatically created when an Administrator assigns someone to a workflow step. For example:

    - Members of COLLECTION_ XYZ _WORKFLOW_STEP_1 can **Accept/Reject** for Collection XYZ only.

    - Members of COLLECTION_ XYZ _WORKFLOW_STEP_2 can **Accept/Reject/Edit Metadata** for Collection XYZ only.

    - Members of COLLECTION_ XYZ _WORKFLOW_STEP_3 can **Edit Metadata** for Collection XYZ only.

6.2 Group Names

Group names automatically created by DSpace follow a convention depending on what the Group is for. The general form of this is:

```
OBJECTTYPE_OBJECTID_ACTION
```

For example, the Group of E-People who are authorized to submit to Collection XYZ would be called:

```
COLLECTION_XYZ_ADD
```

Note that XYZ in this case is the *internal* ID (the database primary key) of the Collection, rather than the Handle. See the section in this manual on Internal ID Numbers for more information.

Groups may contain other Groups. For example, the Kalamazoo College Group may contain the COLLECTION_XYZ_SUBMIT Group. That means only Kalamazoo College users may be members of the COLLECTION_XYZ_SUBMIT Group.

6.3 Creating a Group

To manually create a Group:

1. Log in as a Site Administrator
2. Go to the Administration Tools Page: http://dspace.nitle.org/dspace-admin/
3. Click on Groups on the left hand side of the Administration Tools Page
4. Click the CREATE NEW GROUP button
5. Enter a name for the Group that indicates what the Group is for
6. Add E-People or other Groups as required
7. Click the UPDATE GROUP button to save

The Group can now be associated with an action within a Collection using the Administer Authorization Policies tool from the Administration Tools Page.

6.4 Editing a Group

To change the Group name, or to add or remove E-People from specific Groups:

1. Log in as a Site Administrator
2. Go to the Administration Tools Page: http://dspace.nitle.org/dspace-admin/
3. Click on Groups on the left hand side of the Administration Tools Page
4. Click the EDIT button next to the Group you wish to edit.
5. Add or remove E-People or Groups as required or change the Group name.
6. Click the UPDATE GROUP button to save changes.

It is NOT recommended that you change the Group names for any Groups that have been automatically created by the system.

6.5 Deleting a Group

1. Log in as a Site Administrator
2. Go to the Administration Tools Page: http://dspace.nitle.org/dspace-admin/
3. Click on Groups on the left hand side of the Administration Tools Page
4. Select the Group you wish to delete by clicking the DELETE button next to the Group name
5. Confirm this is the Group you wish to delete.

If a Group will not delete, it may be that one of the E-People within the Group still has a task in progress associated with that Group.

7 Items

An Item is a bibliographic record that describes files in DSpace using Dublin Core metadata.

7.1 Creating Items (Submitting Materials)

1. Go to: http://dspace.nitle.org/handle/10090/6

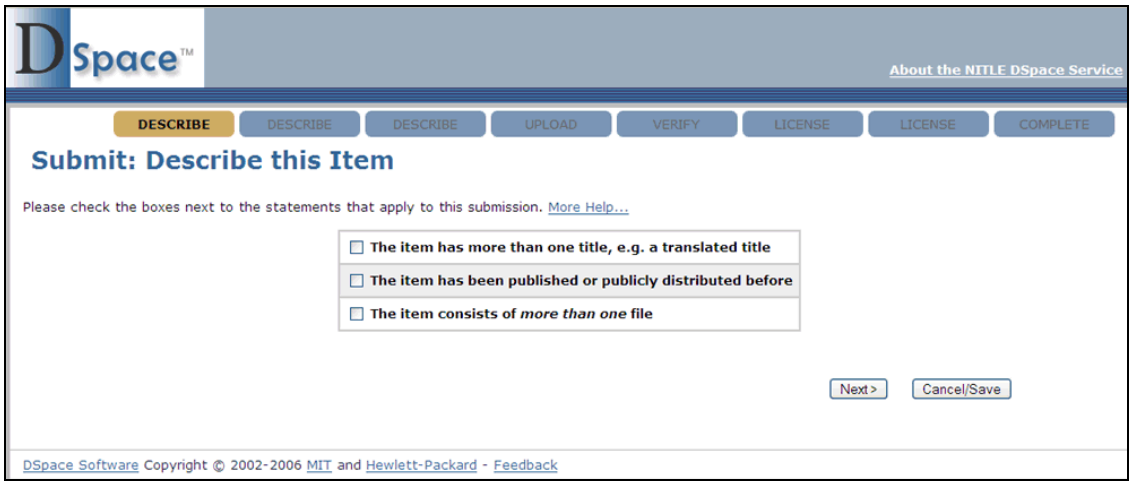
2. Click SIGN ON on the left. Log in to the Kalamazoo College Digital Archive with your Kalamazoo College username and password.

3. Click the START A NEW SUBMISSION button.

4. From the drop down menu, click on the name of the Collection to which you are submitting materials. Click the NEXT button.

5. Click on the SUBMIT TO THIS COLLECTION button

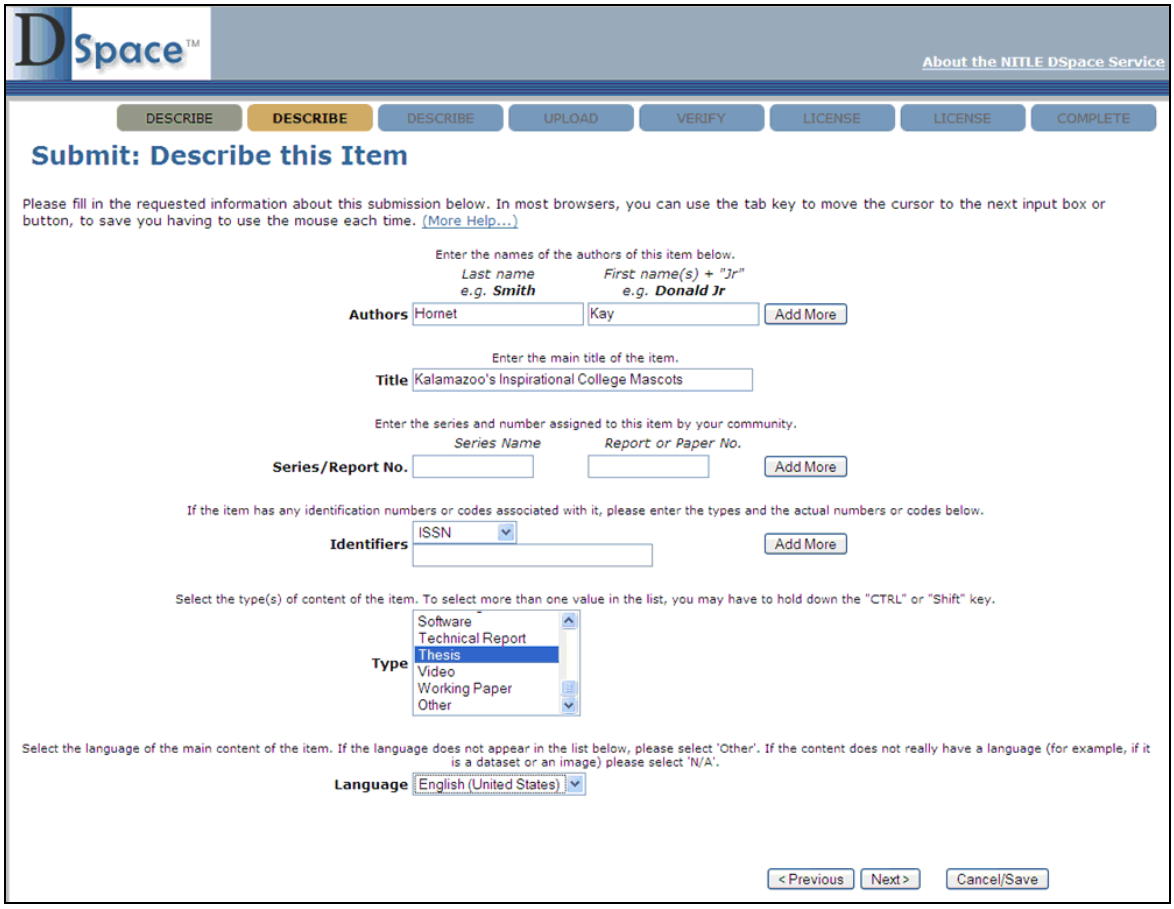
6. Check the appropriate box or boxes that describe your material. You may proceed without selecting any option, or by selecting one, two or all three of the options. If you want to have an earlier date of presentation or publication appear as part of your work, be sure to check that "The Item has been published or publicly distributed before." Then click the NEXT button.



7. Continue supplying information about the submission, filling in the appropriate boxes. **It's normal NOT to have a Series/Report Number or an Identifier**. If you don't have information for those fields, just skip them and go on. **Required fields are:**

   - **Last Name**
   - **First Name** (consider adding a birth year if this is a common name that might be confused with another person's name)
   - **Title**
   - **Type** (if you don't find the exact Type you would like, select the closest matching category or "Other")
   - **Language** (this defaults to English – United States)

   When you have filled in all the data on this page, click the NEXT button.



8. Keywords are like subject terms – they describe the contents of an Item in a few words or phrases. If you need to add more terms, click on the ADD MORE box to open up boxes for entering more terms.

   The abstract should be informative – it is your opportunity to tell the world what is significant about your submission. Be sure that you spell words correctly -- the information that you input here will determine how people will be able to search for and find your submission.

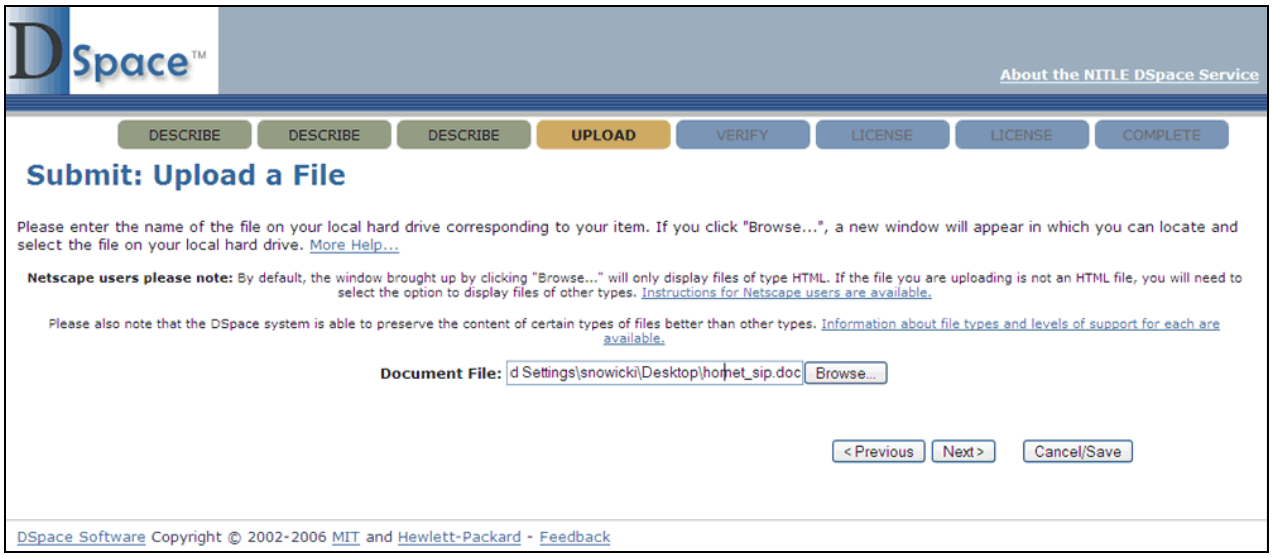
   Complete any other information in the remaining boxes, as appropriate. If there is nothing additional to add, skip these boxes. When you have supplied all information for this page, click on the NEXT button.

9. Supply the source for the document file by clicking on the BROWSE button and finding the file. The file must be named with an appropriate file extension (.pdf, .doc, .ppt) to correspond to the file type.

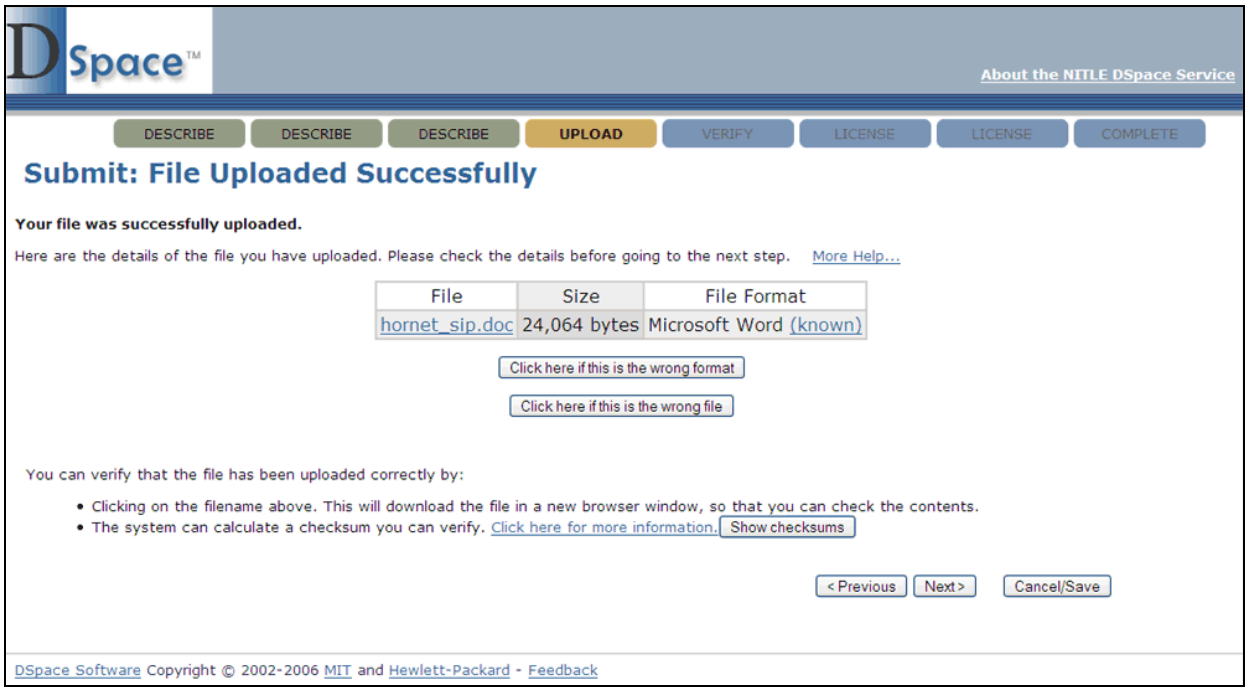
   For example: something.pdf (for Adobe Acrobat Portable Document format)

   If you selected the option at the beginning for having multiple files to submit, you will see an ADD ANOTHER FILE button. Choose more files as appropriate.

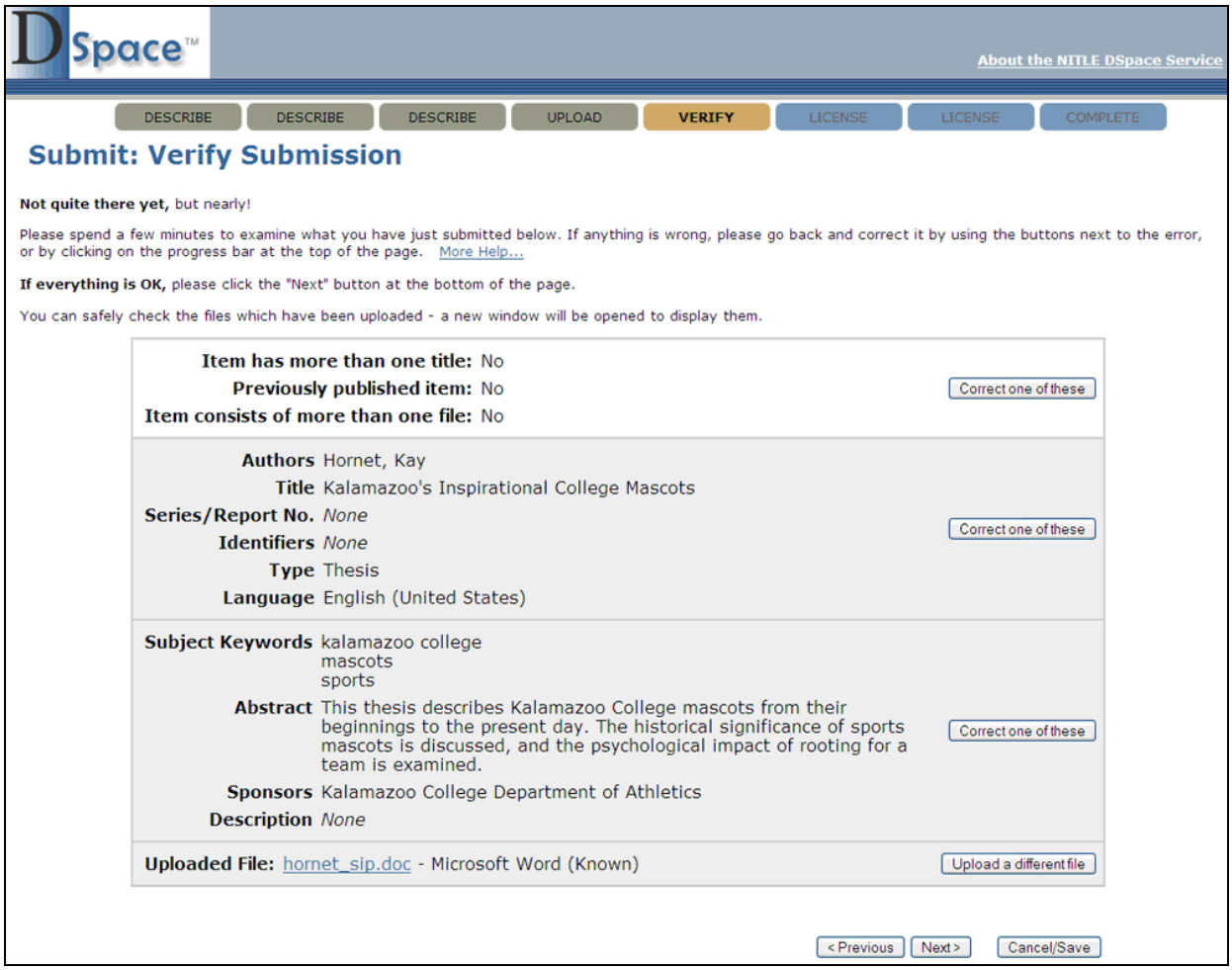
   When done, click on the NEXT button.



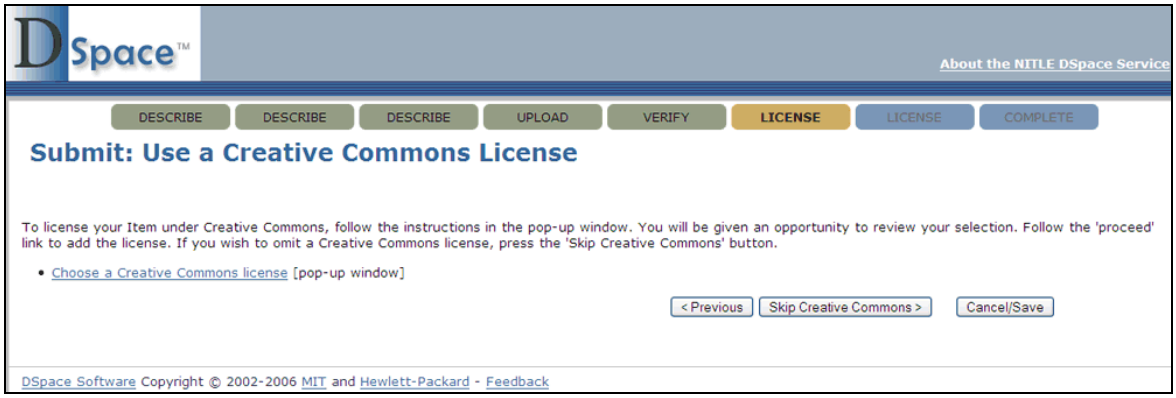
10. If your submission uploaded successfully, a screen like this will appear.



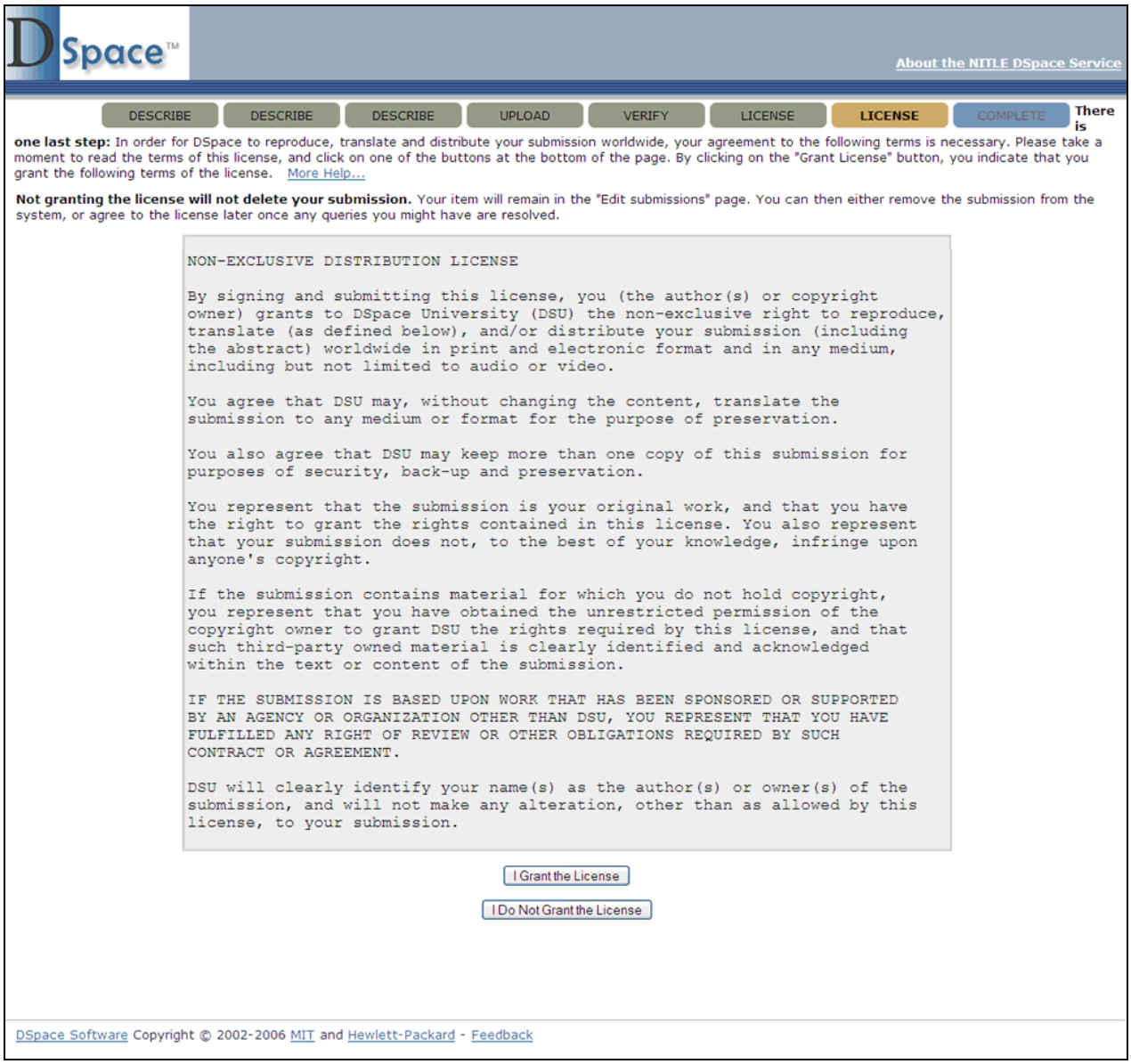
11. You may modify some of the information you supplied by clicking on the CORRECT ONE OF THESE buttons. You are provided another opportunity to check your submission and add or correct anything that needs revision. This is a good place to check that you didn't make any typographical errors. When you are sure that you have no further changes to make, click NEXT to proceed.



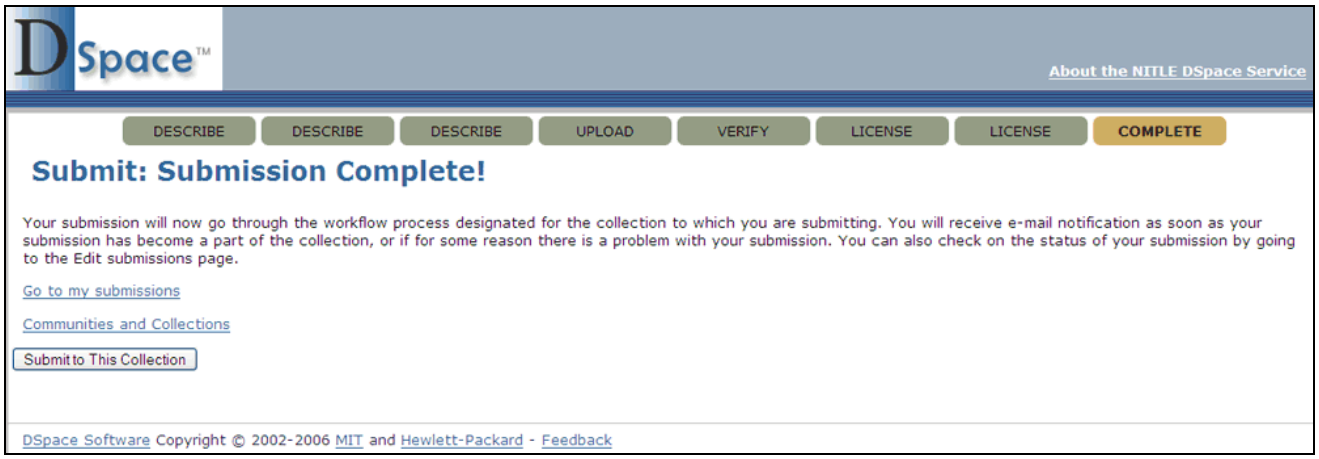
12. The next screen asks whether you want to license your submission under Creative Commons. If so, choose a license. Otherwise, click SKIP CREATIVE COMMONS.



13. The next screen presents a license agreement to be reviewed and accepted. If you agree, click on I GRANT THE LICENSE to proceed. If you grant the license, the submission process is complete and you will no longer be able to modify any of the descriptive or other data about the submission.



14. This screen informs you that the submission process is complete. The Site Administrator will approve the submission.



When your submission has been accepted, you will receive an email with the URL of the Item and can view it. At this point, your submission is now complete and available to the public. Anyone entering the Kalamazoo College Digital Archive site will be able to find your submission by searching on your name, the title, or any of the keywords or abstracts that you provided to accompany your submission. The Kalamazoo College Digital Archive is also indexed periodically by Google and submissions can be searched and found via Google.

7.2 Cataloging Items (Adding Metadata)

To catalog a submission already in DSpace (no workflow assigned):

1. Go to: http://dspace.nitle.org/handle/10090/6

2. Click SIGN ON on the left. Log in to the Kalamazoo College Digital Archive with your Kalamazoo College username and password.

3. The most recently added submissions appear under “Recent Submissions” on the right side of the home page. If you know information about the submission to be cataloged, search for it in DSpace by title, author, or keyword.

4. Once you find the submission to be cataloged, click on the title.

5. If you are authorized to edit the submission, an EDIT button will appear on the top of the page next to the Handle.

6. Edit appropriate fields:

   - To edit existing fields, change the data within the **Value** boxes.
   - To remove a field, click the REMOVE button.

- To add a field, scroll down to the bottom of the page and choose a field name from the drop-down list.

See the **Metadata Chart for Submissions** chart (section 7.4) for required and optional fields.

When a submission is first submitted, these are added automatically:

- Accession date
- "Date.available" value to the Dublin Core metadata record of the Item
- Issue date
- Provenance message (including Bitstream checksums). NOTE: This field is only automatic for the original submission (regardless of how many bistreams/files there are). Other bistreams (files) that are added do not include the provenance field automatically.
- Handle
- Item added to the target Collection, with appropriate authorization policies
- New Item added to the search and browse indices

To catalog a submission in the DSpace workflow:

1. Go to: http://dspace.nitle.org/handle/10090/6

2. Click SIGN ON on the left. Log in to the Kalamazoo College Digital Archive with your Kalamazoo College username and password.

3. Depending on what an E-Person has been assigned to do in the workflow process (accept/reject, accept/reject/edit metadata, or edit metadata), they will be asked to perform functions on the Items that show in their workspace. See section 8.1 on Workflow Steps to determine the permissions the E-Person has in the workflow.

7.3 Metadata Format

There are certain metadata elements that must have a consistent format in order to be interpreted correctly by the database.

Dates

Date format should be:

YYYY-MM-DD

Example: **2008-12-25** for December 25, 2008

If no month or day is indicated on the work, use January 1.

Example: **1963-01-01** for 1963

If no month or day is indicated on the work, but a quarter is, use the first day of the month that usually begins the quarter (Winter = January; Summer = June; Fall = September).

Example: **1982-09-01** for Fall 1982

Personal Names

In order to ensure uniform personal names in DSpace, it is important to check for previous entries of the name in the Archive as well as the Library of Congress Name Authority File. Before entering a name:

1. Use the BROWSE AUTHORS function in DSpace to create our "local authority file" to see how a name might have been entered.

    a. Go to http://dspace.nitle.org/handle/10090/6/browse-author, or click the AUTHORS button on the Kalamazoo College Digital Archive home page (http://dspace.nitle.org/handle/10090/6).

    b. If a name has been entered a certain way in the Archive, use this format.

2. If there is no previous entry for the name, check the Library of Congress Authority File to determine if there is a standard format for the person's name.

    a. Go to http://authorities.loc.gov

    b. Click "Search Authorities"

    c. Choose "Name Authority Headings" from the Search Type box

    d. Type in the name, last name first (it is not necessary to use a comma)

    e. Use the Library of Congress Name Authority File format for the person's name (if it exists).If the Library of Congress Name Authority File requires a format that includes less information than what we have (for example, we know the death date of an author, a middle name, etc., but the Library of Congress does not use it), add the extra information to the author's name according to the rules below. For example, if the Name Authority File has this:

    Walton, Alfred, 1887-

    And we know that Walton died in 1970 and his middle name is Grant, the DSpace entry of the name would look like this:

Walton, Alfred Grant, 1887-1970

Add information only according to the rules below.

When entering names during the submission process, the system asks for a Last Name and First Name. Generally, only last names and organization names should be entered in the Last Name field, and everything else in the First Name field. When entering names during the submission process, the system will automatically enter a comma and space between the first and last names. When entering names in the metadata editing page, each person must have their own field (such as <dc.contributor.author>).

All names should be entered LASTNAME, FIRSTNAME with a comma and space separating the names.

Example: **Jones, Alan** for Alan Jones

Personal names with middle names or initials should have the middle name after the first name with a comma and space separating them from the last name: LASTNAME, FIRSTNAME, MIDDLENAME. When entering names during the submission process, enter both the first and middle name in the First Name field.

Example: **Jones, Alan Burman** for Alan Burman Jones

Personal names with titles (Dr., Rev., etc.) should include the title after the first name with a comma and space separating the title and name. When entering names during the submission process, enter both the first name, middle name, and title in the First Name field.

Example: **Jones, Alan B., Dr.** for Dr. Alan B. Jones

Personal names with suffixes should include the suffix after the first name. When entering names during the submission process, enter both the first name and suffix in the First Name field.

Example: **Jones, Alan Burman, Jr.** for Alan Burman Jones, Jr.

Unless a name is hyphenated, there should be only one last name. When entering names during the submission process, a hyphenated last name should be entered in the Last Name field.

Example: Scott, Susan Helgeson for Susan Helgeson Scott
Example: Helgeson-Scott, Susan for Susan Helgeson-Scott

Birth years should follow names with a comma and space. There should be a hyphen after the birth year, whether the death year is used or not. When entering names during the submission process, birth years should be entered in the First Name field.

Example: **Walton, Alfred, Dr., 1887-**

If the author is an organization, use the full name of the organization. In the submission form, enter the organization's name in the Last Name field.

Example: **Kalamazoo College**

Advisors and Sponsorship

SIPs, posters, and other student works often have advisors. Advisors are different than authors! Author names show up in results lists (the list retrieved when doing a keyword search); advisor names do not. However, advisor names do appear when browsing author names (click the AUTHORS button on a search page to browse author names), so advisor name format must comply with the rules for personal names. Add advisors in the <dc.contributor.advisor> field according to the rules above. Each advisor must have their own <dc.contributor.advisor> field.

Sometimes works have multiple advisors, some of whom are not associated with Kalamazoo College. Add advisors in the <dc.contributor.advisor> field according to the rules above. If the advisor is associated with another college or other entity, or there is a sponsoring organization mentioned in the work, include that information in the <dc.description.sponsorship> field. For example, if a SIP was done with the assistance of Dr. Alan Jones of the Kellogg Biological Station, the fields would read:

<dc.contributor.advisor>: Jones, Alan, Dr.

<dc.description.sponsorship>: Kellogg Biological Station

If a person is simply listed on a work and the work does not indicate that the person is an advisor, treat the person as an author and use the <dc.contributor.author> field for their name.

7.4 Metadata Chart for Submissions

Item Level Metadata: Required Elements

DC Field	Element	Qualifier	Content
dc.contributor.author	Contributor	Author	Creator
dc.title	Title		Title of the work (Articles like "A," "An," and "The" at the beginning of a title are not indexed in DSpace)

dc.date.accessioned	Date	Accessioned	Date DSpace takes custody of material (automatic)
dc.date.available	Date	Available	Date or date range Item becomes available to the public (automatic)
dc.date.copyright	Date	Copyright	Date of original copyright assignment (NOTE: date format should be: YYYY-MM-DD Example: 2008-12-25 for December 25, 2008)
dc.date.issued	Date	Issued	Date of publication or distribution (automatic)
dc.date.created	Date	Created	Date that the digital file was created (NOTE: date format should be: YYYY-MM-DD Example: 2008-12-25 for December 25, 2008)
dc.description	Description		Physical description. Includes page numbers if applicable. Use the AACR2 MARC standard.
dc.type	Type of work		Category or genre of a work. Thesis, article, book, etc.
dc.format.extent	Format	Extent	The extent of the original Item being described. Can be in number of pages or linear feet, dimensions, size, duration, etc. Example: *32 Power Point slides.*
dc.format.medium	Format	Medium	The physical manifestation of the original object represented by a controlled vocabulary term.
dc.format.mimetype	Format	MIME types	Registered MIME type identifiers

Item Level Metadata: Recommended Elements (if applicable)

DC Field	**Element**	**Qualifier**	**Content**
dc.contributor.editor	Contributor	Editor	Editor for any published article

dc.contributor.illustrator	Contributor	Illustrator	Photographer or illustrator
dc.contributor.advisor	Contributor	Advisor	Advisor
dc.contributor.other	Contributor	Other	Any collaborator
dc.coverage.spatial	Coverage	Spatial	Spatial characteristics of the content
dc.coverage.temporal	Coverage	Temporal	Temporal characteristics of the content
dc.description.abstract	Description	Abstract	Abstract or summary
dc.description.sponsorship	Description	Sponsorship	Information about advisors, sponsoring agencies, individuals, or contracting agencies for the Item
dc.description.tableofcontents	Description	Table of Contents	Table of Contents
dc.description.provenance	Description	Provenance	The history of custody of the Item since its creation, including any changes successive custodians made to it.
	Format	Original	Format of the original if the physical medium is a reproduction
dc.publisher	Publisher		Entity responsible for publication, distribution, or imprint
dc.relation.ispartofseries	Series	Ispartofseries	Name of series Example: *Senior Individualized Projects. Chemistry.*
dc.relation.haspart	Relation	Haspart	References physically or logically contained Item
dc.relation.hasversion	Relation	Hasversion	References later version
dc.relation.isbasedon	Relation	Isbasedon	References Source, or original version
dc.relation.isformatof	Relation	Isformatof	References addition

			physical form
dc.relation.ispartof	Relation	Ispartof	References physically or logically containing Item
dc.relation.isversionof	Relation	Isversionof	References earlier version
dc.rights	Rights	URI	References terms governing use and reproduction. The text should read: *U.S. copyright laws protect this material. Commercial use or distribution of this material is not permitted without prior written permission of the copyright holder.*
dc.title.alternative	Title	Alternative	Varying form of title (Articles like "A," "An," and "The" at the beginning of a title are not indexed in DSpace)

7.5 Metadata for SIPs

SIPs have required metadata elements and specific formatting for their contents. Most SIP Collections will have an Item Template already created that will fill in some fields with standard entries (such as <dc.type>, <dc.rights>, and <dc.relation.ispartofseries>). See section 7.8 for more information on Item Templates.

Metadata Element	Content	Format
dc.contributor.author	SIP author's name.	Enter as: Last Name, First Name (see section 7.3 for format)
dc.contributor.advisor	SIP advisor's name. There may be more than one SIP advisor, and each should have their own <dc.contributor.advisor> field. If an advisor is not listed, do not use this field.	Enter as: Last Name, First Name (see section 7.3 for format)

dc.date.accessioned	Automatically generated by DSpace	
dc.date.available	Automatically generated by DSpace	
dc.date.copyright		
dc.date.issued	Date of SIP	Enter as: *YYYY-MM-DD* (see section 7.3 for format) Example: *2001-05-03*
dc.description	Description of the physical SIP.	Example: *21 leaves.*
dc.description.abstract	This can be cut-and-pasted from the PDF file itself	
dc.description.sponsorship	This is the name of an organization affiliated with an advisor if different than Kalamazoo College (see section 7.3 for format)	
dc.relation.ispartofseries	Use "Senior Individualized Projects" with a period and space, then the department.	Example: *Senior Individualized Projects. Anthropology and Sociology.*
dc.rights	Copyright statement.	Example: *U.S. copyright laws protect this material. Commercial use or distribution of this material is not permitted without prior written permission of the copyright holder.*
dc.title	Use the title as it appears on the title page of the SIP.	
dc.type	Type of work	Example: *Thesis*

7.6 Dublin Core

DSpace uses Dublin Core, a metadata standard developed as a simple and standardized set of conventions for describing things online in ways that make them easier to find.

For example:

The Simple Dublin Core Metadata Element Set consists of 15 metadata elements:

1. Title
2. Creator
3. Subject
4. Description
5. Publisher

6. Contributor
7. Date
8. Type
9. Format
10. Identifier
11. Source
12. Language
13. Relation
14. Coverage
15. Rights

Each Dublin Core element is optional and may be repeated.

Dublin Core elements can have qualifiers that better describe metadata. For example, the <dc.contributor> field is generic, but <dc.contributor.illustrator> refers to a certain kind of contributor. The term “illustrator” is the qualifier.

It is possible to add custom Dublin Core fields in DSpace. Go to “Metadata Registry” in the Administration Tools page and add a new Metadata Schema name. However, custom fields are not automatically indexed in the Keyword search. Contact NITLE to arrange indexing of custom fields.

7.7 Dublin Core Registry

This table lists all the qualified Dublin Core metadata fields currently available in our DSpace implementation. Not all fields are used. New fields can be added, but note that new fields will show up for all colleges in the NITLE DSpace implementation.

Dublin Core Field: (The first part of the field is the main element, the second is the qualifier)	**Description:** (What the field represents)	**Displayed As:** (How the field is displayed in the public interface)	**Available in Submission Form**	**Available for Browsing**	**Included in Advanced Search**
contributor.advisor	Used primarily for thesis advisors				✔
contributor.author	Author	Author	✔	✔	✔
contributor.editor	Editor				✔
contributor.illustrator	Illustrator				✔
contributor.other	Non-specific contributor				✔
contributor	A person, organization, or service responsible for content. Catch-all for unspecified contributors.				
coverage.spatial	Spatial characteristics of				

	content				
coverage.temporal	Temporal characteristics of content				
creator	Do not use; only for harvested metadata.				
date.accessioned	Date DSpace takes possession of item				
date.available	Date item first made available in archive				
date.copyright	Date of original copyright assignment				
date.created	Date of creation or manufacture of intellectual content if different from date.issued (date digital file was created)				
date.issued	Date of publication or distribution	Issue Date	✔	✔	
date.submitted	Date item was first submitted internally	Date Submitted	✔		
date	Non specific date				
degree.discipline	The name of the department				
degree.grantor	The institution of granting the degree				
degree.level	Primarily for theses				
degree.name	The name of graduate's degree				
description.abstract	Abstract or summary	Abstract	✔		✔
description.provenance	The history of custody of the item since its creation, including changes successive custodians made				
description.sponsorship	Information about sponsoring agencies, individuals, or contractual arrangements for the item.	Sponsor	✔		✔
description.statementof responsibility	Preserves statements of responsibility from MARC records				
description.tableofconte nts	TOC for an item				

description.uri	Uniform Resource Identifier pointing to description of this item				
description	Catch-all for any description not defined by qualifiers	Description	✔		✔
format.extent	Size or duration				
format.medium	Physical medium				
format.mimetype	Registered MIME type identifier				
format	Catch-all for any format information not defined by qualifiers				
identifier.citation	Human-readable, standard bibliographic citation of non-DSpace format of this item	Citation	✔		✔
identifier.govdoc	Government document number	GovtDoc#	✔		✔
identifier.isbn	International standard book number	ISBN	✔		✔
identifier.ismn	International standard music number	ISMN	✔		✔
identifier.issn	International standard serial number	ISSN	✔		✔
identifer.other	Local identifier	Other	✔		✔
identifier.sici	Serial items and contributions identifier				
identifier.uri	Uniform Resource Identifier (Handle)	URI	✔		✔
identifier	Catch-all for unambiguous identifiers not defined by qualified form; use identifier.other for a known identifier common to a local collection instead of unqualified form				
language.iso	ISO standard for the language of intellectual content, including country codes (e.g. "en_US").	Language	✔		✔

language	Catch-all for non-ISO forms of the language of the item, accommodating harvested values.				
publisher	Entity responsible for publication, distribution, or imprint.	Publisher	✔		
relation.haspart	References physically or logically contained item				
relation.hasversion	References later version				
relation.isbasedon	References source				
relation.isformatof	References additional physical form				
relation.ispartof	References physically or logically containing item				
relation.ispartofseries	Series name and number of part of a series	Series / Report No.	✔		
relation.isreferencedby	Pointed to by referenced resource				
relation.isreplacedby	References succeeding item				
relation.isversionof	References earlier version				
relation.replaces	References proceeding item				
relation.requires	Referenced resource is required to support function, delivery, or coherence of item				
relation.uri	References Uniform Resource Identifier for related item				
relation	Catch-all for references to other related items				
rights.uri	References terms governing use and reproduction				
rights	References terms governing use and reproduction				

source.uri	Do not use; only for harvested metadata				
source	Do not use; only for harvested metadata				
subject.classification	Local classification system				✔
subject.ddc	Dewey Decimal classification number				✔
subject.lcc	Library of Congress classification number				✔
subject.lcsh	Library of Congress subject heading			✔	✔
subject.mesh	Medical Subject heading	MeSH Term		✔	✔
subject.other	Local controlled vocabulary	Local Subject Classification		✔	✔
subject	Uncontrolled index term	Keywords	✔	✔	✔
title.alternative	Varying (or substitute) form of title proper appearing in item, e.g. abbreviation or translation	Other Title	✔	✔	✔
title	Item title	Title	✔	✔	✔
type	Document type	Type	✔		

7.8 Item Template

An Item Template ensures that every Item submitted to a Collection has consistent metadata for certain fields. If "**New submissions will have some metadata already filled out with defaults"** was checked at the beginning of the Collection Set-Up Wizard, the Item Template could have been created then. However, the Item Template can be created or edited after the Collection was created. This will apply the Item Template metadata to new Item submissions to the Collection, but not Items already in the Collection.

To create or edit an Item Template after a Collection has been created:

1. Log in as a Site Administrator
2. Navigate to the Collection you want to edit
3. Click the EDIT button on the top right side of the screen
4. Scroll down to the "Submission Workflow" section and click on the CREATE button next to "Item Template." (If there is already an Item Template, this button will say EDIT.)
5. Choose the Dublin Core field you want from the drop-down menu.
6. Add the metadata in the "Value" box

7. Click the ADD button

You may add as many default metadata fields and values as appropriate for the Collection. One field that should be in all Collections is *dc.rights*. This conveys a copyright statement for each item. The wording may be changed as appropriate, but in general it should read:

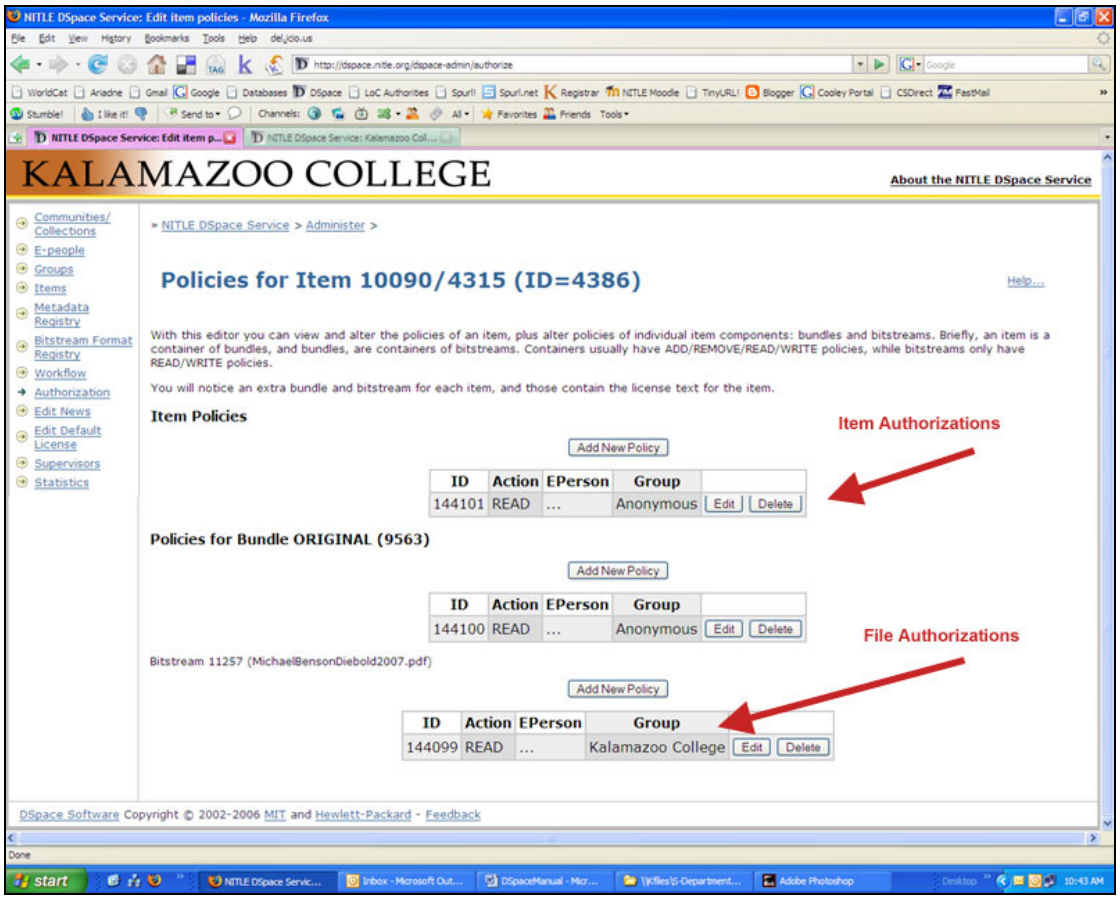
> U.S. copyright laws protect this material. Commercial use or distribution of this material is not permitted without prior written permission of the copyright holder.

7.9 Item Permissions

In DSpace, some materials should be public, and others may be accessible only to current Kalamazoo College students/faculty/staff with a Kalamazoo College network login, or only to Administrators or other Groups.

Access permissions (called "Policies" in DSpace) that can be set at the **Item level** (the bibliographic record, which includes all the information about the file, such as title, author, abstract, etc.), or the **Bitstream level** (the file itself). Two or more Bitstreams are Grouped into **Bundles**. Only Site Administrators can set Item and Bitstream permissions.

Permissions can be **public** (Anonymous), set to the **Kalamazoo College** Community (Kalamazoo College), **Administrators** only (Administrator), or any other Group in DSpace. Permissions must be explicit; lack of an explicit permission results in the default policy of "deny." Permissions also do not "commute"; for example, if an E-Person has READ permission on an Item, they might not necessarily have READ permission on the Bundles and Bitstreams in that Item.



Item permissions deal with the bibliographic records to which files (Bitstreams) are attached. There are four levels of Item permissions:

PERMISSION	WHAT IT DOES
READ	Permission to view Items. When READ permission is restricted, no one can see the Item (bibliographic record) without logging in, and even the Item thumbnail (if a JPG file) is hidden.
WRITE	Permission to modify Items
ADD	Permission to add Bundles to this Item
REMOVE	Permission to remove Bundles from this Item

Each of these permissions is assigned to individual E-People or Groups of E-People. The READ permission is the most used one in our DSpace implementation. This determines who can see the Item (bibliographic record).

To set **Item level** READ permissions:

1. Log in to DSpace and find the Item for which you want to set permissions.

2. Click the EDIT button next to the Item handle on the Item page.

3. Click the EDIT button next to Item's Authorizations.

4. Under ITEM POLICIES there is a box with the Action READ. If the GROUP is "Anonymous," then the Item (bibliographic record) is public. If you want to change it so only people with a Kalamazoo College network login can see the Item record, click the EDIT button, choose the "Kalamazoo College" Group, and click SAVE.

NOTE that Item permissions are NOT RETROACTIVE. Once Item permissions are changed, they only change for NEW ITEMS added to the Collection! To change permissions for all Items already in a Collection, use the Wildcard Policy Admin tool.

Bitstream Permissions

Bitstream permissions deal with the actual computer files (Bitstreams). There are two levels of Bitstream permissions:

PERMISSION	WHAT IT DOES
READ	Permission to view a Bitstream
WRITE	Permission to modify a Bitstream

There may be several Bitstreams (files) attached to an Item. Each Bitstream can have its own permission level. For instance, one file could be publicly readable, while another could be for Kalamazoo College users only.

To set **Bitstream (file) level** READ permissions:

1. Log in to DSpace and find the Item for which you want to set permissions.

2. Click the EDIT button next to the Item handle on the Item page.

3. Click the EDIT button next to Item's Authorizations.

4. Under POLICIES FOR BUNDLE ORIGINAL there is a file name, such as **Bitstream 11257 (MichaelBensonDiebold2007.pdf)**. *Under the file name* there is a box with the Action READ. If the GROUP is "Anonymous," then the

Bitstream (file) is public. If you want to change it so only people with a Kalamazoo College network login can see the file, click the EDIT button, choose the Group "Kalamazoo College," and click SAVE.

NOTE that Bitstream permissions are NOT RETROACTIVE. Once Bitstream permissions are changed, they only change for NEW BITSTREAMS added to the Collection! To change permissions for all Bitstreams already in a Collection, use the Wildcard Policy Admin tool.

7.10 Advanced/Item Wildcard Policy Admin Tool

The Advanced/Item Wildcard Policy Admin Tool allows you to create and change Collection-wide policies for multiple Items or Bitstreams.

To get there:

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Administration Tools Page (http://dspace.nitle.org/dspace-admin/)
3. Choose Authorization from the links on the left
4. Click the ADVANCED/ITEM WILDCARD POLICY ADMIN TOOL button under "Choose a resource to manage policies for"

To use the tool:

1. Select a Collection for which you want to change Item or Bitstream permissions.
2. From the drop-down menu labeled Content Type, select either Item or Bitstream.
3. Select the Group you want to have the permissions.
4. From the drop-down menu labeled Action, select the relevant action, preferably either DEFAULT_ITEM_READ or DEFAULT_BITSTREAM_READ.
5. Click the ADD POLICY button.

You can clear all policies and return them to the default setting READ by selecting the Collection and clicking the CLEAR POLICIES button.

7.11 Mapping Items

Mapping an Item makes an Item appear in more than one Collection without submitting it multiple times.

When an Item is mapped, a reference to the Item is placed in the new Collection so that the Item appears to be part of that Collection. In other words, the Item will appear in the new Collection's Item count as well as its search and browse listings.

The Item will not be replicated; it will not 'physically' exist in the new Collection. It will still remain part of the originating Collection and will retain any authorization policies from that originating Collection. Therefore the Item will only appear once in a site search

and will only have the one Handle. Collection administrators who do not have READ access to an Item will not be able to map them to other Collections.

Mapping an Item to a Collection:

1. Log in to DSpace (both Collection Administrators and Site Administrators can map Items)
2. Navigate to the Collection to which you want to map Items
3. Click the ITEM MAPPER button on the upper left corner of the page
4. Enter the author of the Item to be mapped and click SEARCH AUTHORS
5. A list of Items by that author will appear. Click the checkbox next to the Item(s) to be mapped and click the ADD button at the top of the last column
6. On the confirmation page, click the CONTINUE button

Removing a Mapped Item from a Collection

If you want to remove a mapped Item you must un-map it. **If you delete the Item from the mapped Collection you will delete the Item itself!** When deleting a Collection, you should make sure beforehand that there are no Items mapped from it. If there are, un-map them from their new Collections first.

1. Log in to DSpace (both Collection Administrators and Site Administrators can un- map Items)
2. Navigate to the Collection to which you want to map Items
3. Click the ITEM MAPPER button on the upper left corner of the page
4. Under “Browse Items Imported From Collections,” a list of Collections that have Items mapped to the current Collection will be displayed at the bottom of the page. Click on a Collection name to browse for Items to remove that were mapped in from that Collection.
5. Check the check box to the right of the Item you want to remove and then click the REMOVE button
6. On the confirmation page click the CONTINUE button

7.12 Moving Items

If an Item needs to be moved from one Collection to another, the easiest way (unfortunately) is to remove them and add them again. A more streamlined functionality should be coming in new versions of DSpace.

7.13 Batch Ingest (Importing Several Items)

Several Items at a time can be imported into DSpace through a process called Batch Ingest. Item metadata is entered into an Excel spreadsheet, converted to XML, and uploaded into the system. This process requires the help of NITLE. Contact NITLE for more information.

7.14 Withdrawing and Deleting Items

Items can be removed from DSpace in one of two ways:

- They may be **withdrawn**, which means they remain in the archive but are completely hidden from view. If a user attempts to access the withdrawn Item, they will see the Item's metadata, but clicking on the View/Open link will take them to a "tombstone" page that indicates the Item has been removed.

- An Item may also be **deleted (expunged)**, in which case all traces of it are removed from DSpace.

See the Kalamazoo College Digital Archive Policies (http://dspace.nitle.org/handle/10090/104) to determine when it is appropriate to withdraw or delete an Item.

To avoid loss of the historical record, all withdrawn items will be traced in the form of a note in the <Description.provenance> field of the Dublin Core record. Note that search engines such as Google may continue to include a cached copy of the item in their database.

To withdraw an Item:

1. Log in to DSpace (both Site Administrators and Collection Administrators can withdraw items)
2. Navigate to the Item to be withdrawn
3. Click the EDIT button next to the Item's Handle
4. Choose description.provenance from the drop down menu
5. Add one of the following reasons for withdrawal in the text box
    a. "Removed from view at the request of the author"
    b. "Removed from view at Kalamazoo College's discretion"
    c. "Removed from view by legal order"
6. Click ADD button
7. At the top of the Edit Item page, click the WITHDRAW button
8. On the page that asks, "Are you sure this Item should be withdrawn from the archive?" click the WITHDRAW button

To retrieve a withdrawn Item:

Note: You must know the Item's Handle or Internal ID!

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Item to be reinstated (Google may have cached it, or click on the Items link from the Administration Tools Page and enter the Item's Handle or Internal ID).
3. Click the EDIT button next to the Item's Handle

4. At the top of the Edit Item page, click the REINSTATE button
5. The Item will be reinstated to the Collection from which it was withdrawn

To permanently delete (expunge) an Item:

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Item to be deleted
3. Click the EDIT button next to the Item's Handle
4. At the top of the Edit Item page, click the DELETE (EXPUNGE) button
5. On the page that asks, "Are you sure this Item should be completely deleted?" click the DELETE button

Once an Item has been permanently deleted, search engines such as Google may still keep a cached copy. Contact NITLE when an Item has been deleted so they can make sure all traces of the Item have been removed.

8 Workflow

DSpace is capable of “workflow steps” that are specific to each Collection. A Collection’s workflow can have up to three steps. Each Collection may have an associated E-Person or Group for performing each step; if no E-Person or Group is associated with a certain step, that step is skipped. If a Collection has no E-People or Groups associated with any step, submissions to that Collection go directly into the main archive.

The sequence is this: The Collection receives a submission. If the Collection has a Group or E-Person assigned for workflow step 1, that step is invoked, and the Group or E-Person is notified. Otherwise, workflow step 1 is skipped. Likewise, workflow steps 2 and 3 are performed only if the Collection has a Group or E-Person assigned to those steps.

When a step is invoked, the task of performing that workflow step put in the “task pool” of the associated Group or E-Person. If a Group has the task, one member of that Group takes the task from the pool, and it is then removed from the task pool, to avoid the situation where several E-People in the Group may be performing the same task without realizing it.

8.1 Workflow Steps

The member of the Group who has taken the task from the pool, or a single E-Person, may then perform one of three workflow steps.

1. **Accept/Reject Step**:
    a. The E-Person assigned this step can:
        i. Accept submission for inclusion, or
        ii. Reject submission

2. **Accept/Reject/Edit Metadata Step**:
    a. The E-Person assigned this step can:
        i. Edit metadata provided by the user with the submission
        ii. Accept submission for inclusion, or
        iii. Reject submission
    b. The E-Person assigned this step can NOT:
        i. Change submitted files
        ii. Edit metadata once Item is accepted into Archive

3. **Edit Metadata Step**:
    a. The E-Person assigned this step can:
        i. Edit metadata provided by the user with the submission,
    b. The E-Person assigned this step can NOT:
        i. Change the submitted files

ii. Reject submission (edited files MUST be committed to Archive)
iii. Edit metadata once Item is accepted into Archive

The workflow steps are always performed in the order they are listed.

Application Only to Newly Added Items

These steps only apply to Items *newly added* to a Collection; they do not apply retroactively (to Items already in a Collection). So if an administrator assigns a person to be a "metadata editor," for example, that metadata editor can only edit metadata for materials *newly added* to the Collection; they will not have permission to edit materials *already in* the Collection. To do this, the Site Administrator would have to make them a Collection Administrator.

8.2 Assigning Workflow Steps

To assign an E-Person or Group to workflow steps for a Collection, a Site Administrator can add workflow when the Collection is created, or add workflow to the Collection later.

To add workflow steps when the Collection is created:

1. Follow the directions for creating a Collection in section 4.1 (you must be a Site Administrator to create a Collection)
2. Click the checkboxes next to the appropriate workflow steps on the first page of creating a new Collection

To edit a Collection later:

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Collection you want to edit
3. Click the EDIT button on the top right side of the screen
4. At the bottom of the "Edit Collection" screen is a section for "Submission Workflow." From here the Collection administrator can create, delete, or edit any step in the workflow. Creating a step at this point allows the Collection administrator to choose "E-People" or Groups to add to each step.

8.3 Email to Submitter

When workflow steps are implemented in a Collection, the submitter is emailed when the materials is put into the Collection. For example:

- **Accept/Reject step**: the submitter is emailed by DSpace once the submission is accepted. If a submission is rejected, the reason (entered by the workflow participant) is emailed to the submitter, and it is returned to the submitter's "My DSpace" page. The submitter can then make any necessary modifications and re-

submit, and the process starts again.

- **Accept/Reject/Edit Metadata step**: the submitter is emailed by DSpace once the submission is accepted. If a submission is rejected, the reason (entered by the workflow participant) is emailed to the submitter, and it is returned to the submitter's "My DSpace" page. The submitter can then make any necessary modifications and re-submit, and the process starts again.

- **Edit Metadata step**: DSpace emails the submitter once the editor commits the file to the archive (the file is out of the editor's task pool)

- **No workflow steps:** the submitter is emailed when the Item is submitted (since it's already automatically added to the Collection)

If a submission is accepted, it is passed to the next step in the workflow. If there are no more workflow steps with associated Groups, the submission is installed in the main archive.

8.4 Aborting Workflow

A workflow can be "aborted" by a DSpace Site Administrator. If an Item has been submitted and is in any stage of the workflow process, a Site Administrator can take it out of the workflow and send it back to the submitter as an unfinished submission.

To abort a workflow:

5. Log in to DSpace (you must be a Site Administrator)
6. Navigate to the Administration Tools Page (http://dspace.nitle.org/dspace-admin/)
7. Choose Workflow from the links on the left
8. Click the ABORT button next to the Item you want to remove from the workflow
9. On the page that asks, "Are you sure you want to abort this workflow?" click ABORT

Aborting a workflow will not delete an Item. It will remove the Item from the workflow and return it to the submitter as an unfinished submission, as if the Item had been rejected during the workflow process.

8.5 Supervision Orders

A Supervision Order allows Groups of E-People to follow an Item through the workflow. This Group becomes the Item's Supervisors. Supervisors see the Item in their own workspaces and can also edit the Item if given that permission. If an Item is in the workflow but hasn't been accepted into DSpace yet, a Supervision Order may be added to the Item.

Adding a Supervision Order

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Administration Tools Page (http://dspace.nitle.org/dspace-admin/)
3. Choose Supervisors from the links on the left
4. Click the ADD A SUPERVISION ORDER button
5. Choose the Group from the drop-down menu that you want to be the Supervisors
6. Choose the level of permissions for the Group from the Initial Policy Settings drop-down menu. There are three options:

    a. **None -** No policies will be applied. For the Supervisor to be able to see the Item, the DSpace Site Administrator must use the Administration Tools Page to manually apply the desired policies (see 7.5 Item Permissions).

    b. **Editor -** The supervising Group will have the same policies as the author (except for REMOVE). This will allow any of the Supervisors in that Group to do nearly everything that the author can do.

    c. **Observer -** The supervising Group will only have permission to view the Item record

7. Select the radio button next to the Item to be supervised
8. Click the SUBMIT SUPERVISION ORDER button at the bottom of the page

Note: Default policies are applied only to the Item, and not any associated Bundles or Bitstreams. If there are any Bundles or Bitstreams attached to the Item when a Supervision Order is created, they will not have policies applied to them, and any policies must be applied manually. If there are no Bundles or Bitstreams attached to the Item when the Supervision Order is created, the policies from the Item will be applied to them when they are attached to the Item.

View Current Supervision Orders

To see a list of all the Supervision Orders currently in place:

1. Log in to DSpace (you must be a Site Administrator)
2. Navigate to the Administration Tools Page (http://dspace.nitle.org/dspace-admin/)
3. Choose Supervisors from the links on the left
4. Click the VIEW CURRENT SUPERVISION ORDERS button

You will see the supervising Group, Item Author (the Submitter), and Item Title of each Item being supervised. There are two buttons in this area:

- **Policies -** This is a quick link directly to the policy settings for the Item. It is simply to aid finding the Item policies, since it has not yet been assigned a handle, and must therefore be identified via its Internal ID. Use this to add new policies

for cases where the default policies are not ideal.

- **Remove** - This removes the link between the Supervisory E-Person Group and the Item. Neither the Group nor the Item will be affected. This operation also removes all the policies the Group has regarding the Item (hence, care should be used when making this Group a workflow Group also).

Supervisor Workspace

Supervisors have other people's work appear in their workspaces if they are supervising the submission of Items. Depending on the permissions granted to Supervisors when the supervision settings were created, Supervisors will be able to perform any of the actions that they could perform on their own submissions.

If Supervisors have submissions of their own in progress, their workspace will be split into two sections: Authoring and Supervising. Under "Authoring," the Supervisor's own Items will appear, and under "Supervising," Items the Supervisor is supervising will appear. These headings only come into effect if a Supervisor is supervising at least one Item, otherwise no headings will appear.

9 Materials in DSpace

The DSpace implementation at Kalamazoo College includes many kinds of files, including image, audio, video, and documents. A complete list of acceptable file formats is included in the Kalamazoo College Digital Archive Policies found at:

http://dspace.nitle.org/handle/10090/104

9.1 Bitstream Format Registry

The Bitstream Format Registry determines which types of file formats DSpace recognizes. Site Administrators can access the Bitstream Format Registry from the Administration Tools page. The list contains a default setting of the most common file formats and has the following columns:

- **ID:** The database ID number (sequential)
- **MIME type:** Multipurpose Internet Mail Extension, an Internet standard for recognizing file formats.
- **Name:** The common name for the bitstream format
- **Long description:** Usually the full name for the bitstream format
- **Support level:** The level of preservation support you give to that bitstream format
- **Internal?:** Tick this box to indicate a format that is used internally within the repository. These will not appear on the Item view page although they will be part of the various bitstream bundles
- **Extensions:** The file extension used for this bitstream format, used by the system to associate the MIME type

If an unrecognized file format is uploaded during submission, the submitter will have the opportunity to add the format to the Bitstream Format Registry.

Each bitstream format has an ID number. If DSpace does not recognize a file format it should (for example, a JPEG file), you can:

1. Login to DSpace
2. Choose the item to edit
3. Click the EDIT button at the top right of the screen
4. Scroll down to the end of the Edit Item screen
5. If the Format number on the Edit Item screen is 1 (Unknown), delete the number and add the number of the file type it should be according to the Bitstream Format Registry (in this case, 12 for JPEG)

Support levels

Support levels indicate the NITLE DSpace Service outlook towards long-term preservation support for that file type.

Supported. The format is recognized and the hosting institution is confident it can make bitstreams of this format useable in the future, using whatever combination of techniques (such as migration, emulation, etc.) is appropriate given the context of need.

Known. The format is recognized, and the hosting institution will promise to preserve the bitstream as it is, and allow it to be retrieved. The hosting institution will attempt to obtain enough information to enable the format to be upgraded to the 'supported' level.

Unsupported. The format is unrecognized, but the hosting institution will undertake to preserve the bitstream as is, and allow it to be retrieved.

9.2 Image Files: Thumbnails

A nightly batch process runs in DSpace that creates thumbnails from JPG images. Thumbnails are small versions of the JPG image that displays in the Item's record as well as title browse lists. Thumbnails are only created when a primary Bitstream is a JPG file with a ".jpg" suffix.

If the user does not have READ access to an Item (that is, if the Item level permission is not set to READ), they will not see the thumbnail image because they will not be able to see any of the Item's metadata. If a user's permissions are set to DEFAULT_BITSTREAM_READ, the thumbnail will be visible.

9.3 Scanning Materials

Some materials will not be born digital, so they will have to be scanned before submission into DSpace. These directions are a starting point and are based on scanning documents in the Archives; changes may need to be made based on each individual document.

1. Open Adobe Acrobat
2. Click on "Create PDF from Scanner"
   Settings:
   - Input: Scanner should be automatically recognized. Sides depends on document: front side is best for Archives. Color Mode should be black and white for most documents. Resolution should be 300 dpi.
   - Output: Choose New, or Append pages to an existing file as needed. Always choose Make PDF/A Compliant.
   - Document Optimization: Use default setting (slightly to the left of the midpoint on the slider). In Options, use Automatic.

    - Text Recognition and Metadata: Make Searchable; Make Accessible; Add Metadata. In Options, choose English unless another language is the primary one in the document.
3. Click on Scan
4. Make a filename that makes sense—either obvious document title or some type of number/code that refers to an existing inventory, catalog, etc.—and make sure the file goes somewhere you can find it later.
5. Scan pages.
    - On Archives scanner, best results for older documents come from scanning one page at a time on the glass, rather than through the document feeder. With Acrobat, pages can be scanned more than once, and incorrect pages deleted later.
6. Acrobat will OCR process the text, which can take a while.
7. In Metadata main dialog, add full title and author. Click on "Additional Metadata" and choose Public Domain in the copyright menu if applicable.
8. Click on the white page icon in upper left. Using Options menu, pages can be rotated, cropped, etc. Make sure to set appropriate page numbers for document.
9. Click somewhere on the document, and then choose "Select All" from the Edit menu. Scroll through to see that a majority of the text has been recognized. Then try keyword searching to see if important terms have been recognized. If not, Acrobat has some built in tools for editing the OCR text, but these have not been fully explored.
10. Save and exit.

Notes:
If a document has an attractive or interesting cover, it should be scanned in color or grayscale in Photoshop as an image file (web display settings only) and added as a separate bitstream in the DSpace item.

9.4 Non-Printable PDFs

There are some instances where access to certain documents must be restricted. Though authorizations can solve some of these issues, there are some documents that should be created as non-printable PDFs.

Creating Non-Printable PDFs

These directions are up to date for Adobe Acrobat Standard version 8.

1. Open the PDF file to be made non-printable

2. Save it with a different file name (e.g. whatever_nonprint.pdf)

3. Choose PROPERTIES from the FILE menu at the top of the window

4. The Document Properties dialog box will pops up. Click the SECURITY tab.

5. In the SECURITY METHOD drop down menu, choose PASSWORD SECURITY

6. The Password Security dialog box will appear. At the bottom of this box, under PERMISSONS, click the box next to “Restrict printing and editing….”

7. Enter the Permissions Password (the Kalamazoo College Site Administrators will have this password)

8. Be sure the two drop down menus below the Permissions Password are both set to NONE.

9. Under the two drop down menus, make sure the box next to “Enable copying of text, images, and other content” is UNCHECKED

10. Under this, make sure the box next to “Enable text access for screen reader devices for the visually impaired” is CHECKED

11. Click OK to leave the Password Security dialog box

12. Click OK to leave the Document Properties dialog box

10 Statistics

Statistics in DSpace are gathered through Google Analytics. Sign in to Google Analytics by signing in to Google with the Reference Google username and password (this is the same username and password for Blogger/the IS Connections blog).

Google Analytics provides a detailed way of tracking visitors to your repository, where they came from, what they view, how long they stayed on the site and whether or not they return.

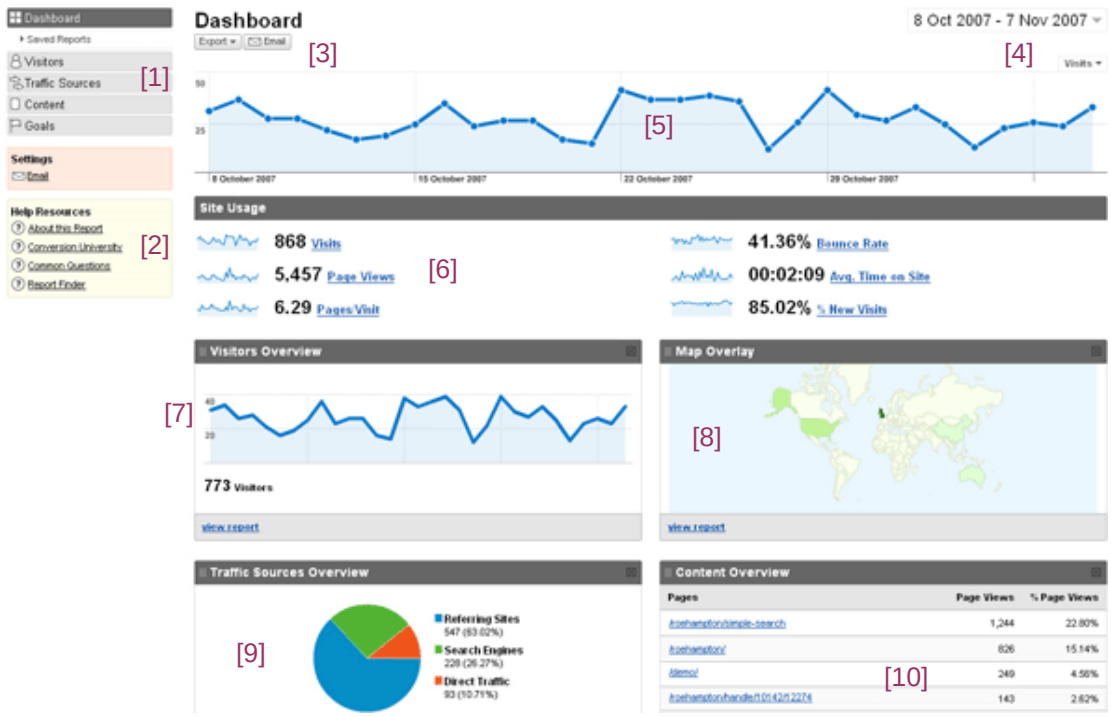


Figure 10.1: Google Analytics Dashboard

There are five main sections to Analytics:

- Dashboard or homepage (section 10.1)
- Visitors (section 10.2)
- Traffic Sources (section 10.3)
- Contents (section 10.4)
- Goals (section 10.5)

10.1 Dashboard

The Dashboard (see figure 10.1) is your Analytics homepage. The default Dashboard presents a number of the most basic reports, although some of the page is configurable.

The dashboard consists of a number of sections:

Reports menu bar [1]: from which you can move between the five main Analytics sections described above.

Help resources [2]: from any page you can click on the About this Report or Common Questions links for more information about the report you are currently looking at.

Email & Export [3]: reports can be saved and exported in PDF, XML, CSV or TSV formats. Reports can also be emailed to a list of nominated recipients in any of these formats and scheduled reports can be created that will be emailed either daily, weekly, monthly or quarterly.

Date range [4]: the range of dates over which you are currently reporting.

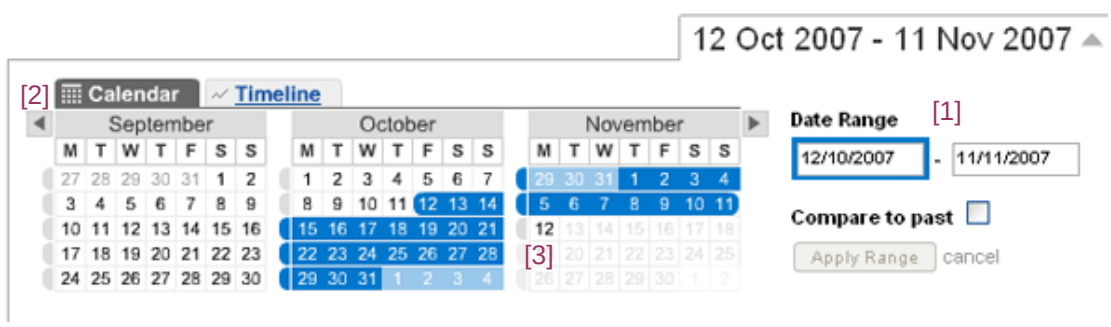


Figure 10.2: Changing the Analytics date range

You can change the date range by clicking on arrow beside the listed date range. You can (numbering refers to figure 10.2 above):

- Change the date range [1].
- Move the timescale slider [2].
- Double click a day, week or use shift and click to connect two dates on the calendar [3].

Timeline [5]: shows the timeline graph for the dates you have set. Each point represents a day and you can mouse-over for details. The default setting for the timeline is Visits but you can use the arrow to the top right of the timeline to select a different report from the basic site usage stats menu (described below).

Basic Site Usage Stats [6]: basic figures for the date range you have selected. Each heading can be clicked for a full report with a daily / hourly breakdown of the statistics.

- Visits – total number of visits to the repository.
- Page Views – total number of page views.
- Pages / Visit – average number of pages viewed per visit.
- Avg. Time On Site – average amount of time spent on the site.
- Bounce Rate – the percentage of visitors who exited the site from the page they arrived at without visiting any other pages.
- % New Visits – the percentage of visitors who are new to the site.

Visitors Overview [7]: timeline for the total number of unique visitors, and link to the report.

Map Overlay [8]: a world map highlighting the numbers of visitors from each country. The darker the green, the more visitors. Click through for a full report, or on a country for a national breakdown.

Traffic Sources [9]: a pie chart showing the percentage of visitors that either arrived directly at the site, were referred through another site or were referred through a search engine, and a link to the full report.

Content Overview [10]: the top 5 viewed pages with a link through to the full report.

The four lower sections [7 – 10] can be moved or deleted, and other reports added in their place. Use the 'Add to Dashboard' button where you see one. Drag and drop the report boxes to move them around the page.

Analytics allows you to drill down through reports, changing views, or timelines as required.

Each of the main sections has a similar format to the Dashboard page, with a main overview page displaying a top-level timeline, and basic reports. The menus for the various reporting options can be expanded from the left hand menu bar.

10.2 Visitors

The Visitors section allows you to discover more information about who is visiting your repository, what systems they use, where they come from, visit trends, and loyalty patterns.

- **Visitor Trending** covers the same basic site usage patterns seen on the Dashboard and also appears on the Visitors overview page: visits, absolute unique visits, page views, average site views, time spent on the site, bounce rate and percentage of new visitors.

- **Visitor Loyalty** covers how many times each user has visited the site, how recently they last visited, how long they stay, and how many pages they read.

Trending and Loyalty reports use bar graphs for their reports (see figure 10.3)

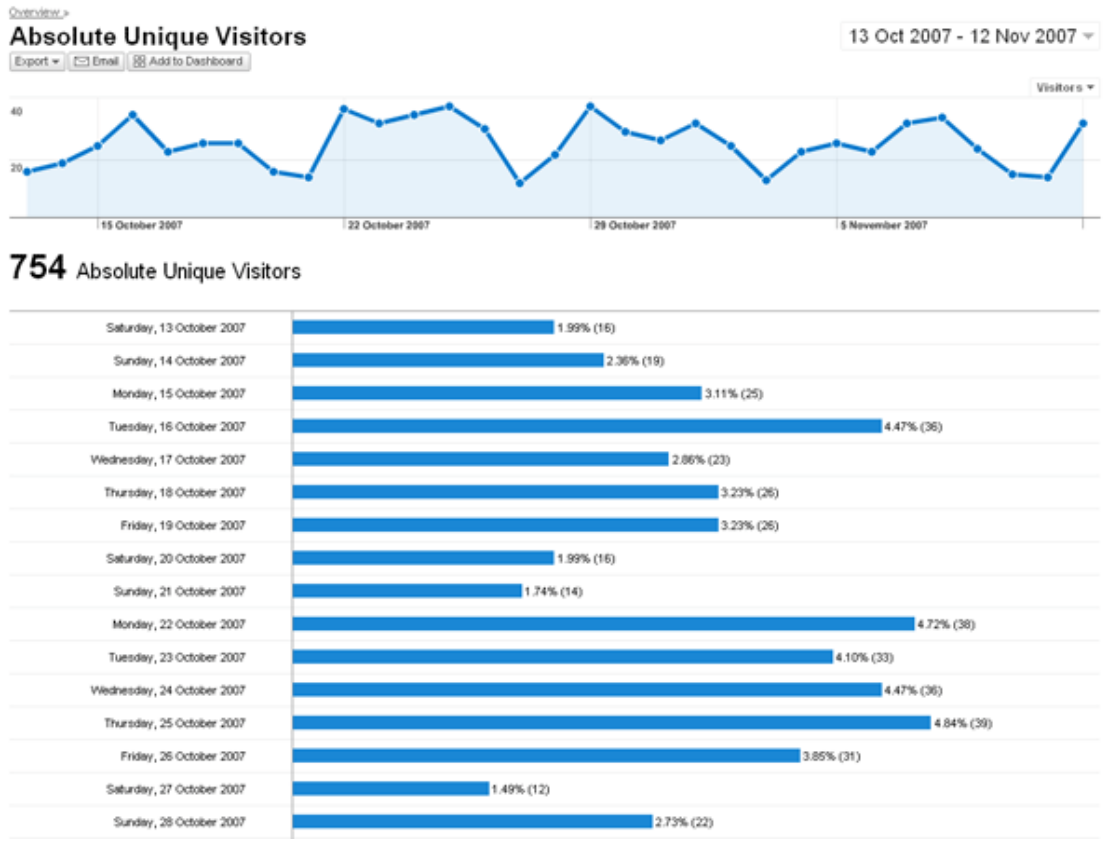


Figure 10.3: Analytics Visitors view

- **Browser Properties** details information about user browsers such as: browser types, operating systems, screen colours, screen resolutions, and Flash and java support.

- **Network Properties** details information about connection speeds, hostnames and network locations. You can also use the Languages link from the menu to view which languages are set as browser defined, and by association the language spoken by users.

Browser properties and network properties reports offer a number of views [1] for each report: columns, pie charts, bar graphs and average usage graphs (see figure 10.4 below). The column view, as illustrated, shows all the main sub-reports for the report you are looking at. You can search within each query by looking for results that include or exclude specified values [2] and set the number of results displayed [3].

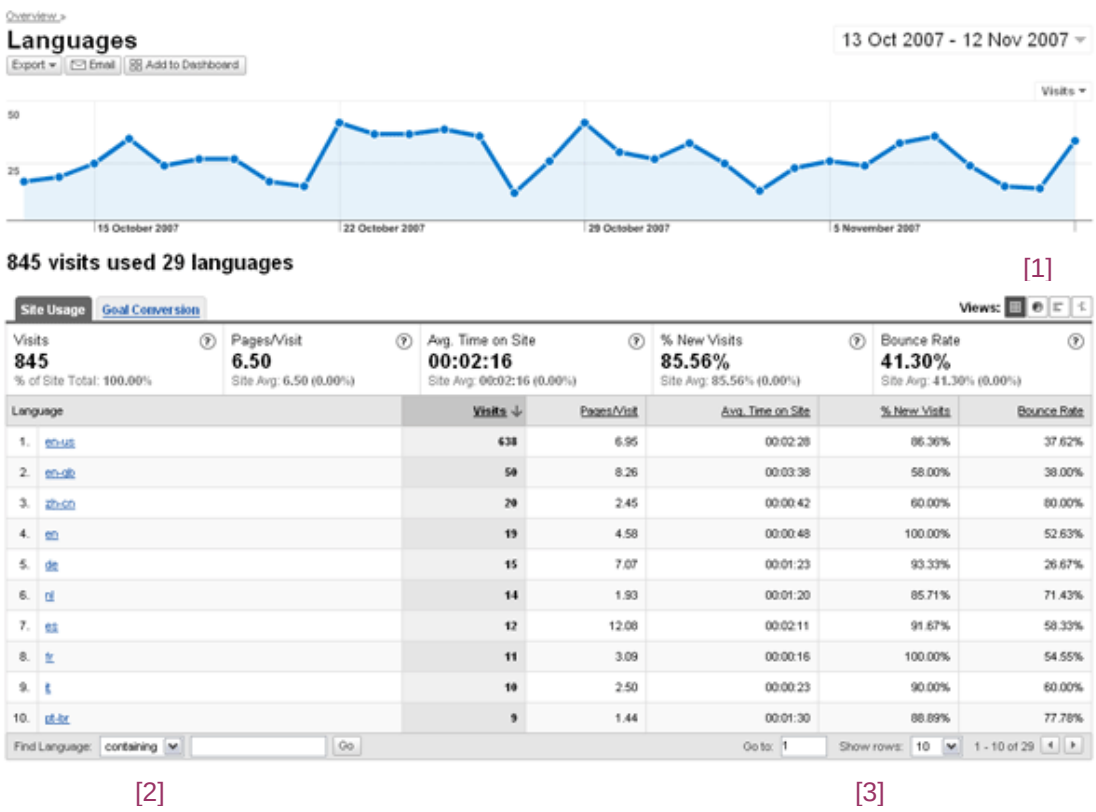


Figure 10.4: Analytics Languages column view

10.3 Traffic Sources

The Traffic Sources section allows you to discover more about how visitors reached your repository.

- **Direct Traffic** is traffic that came through either a bookmark or typed the URL in directly.
- **Referring Sites** are where the user clicked a link through to the repository from another site and in the overall listings are marked as (referral).
- **Search Engines** are where the user has come to the repository via a search engine and in the overall listings are marked as (organic). A detailed report for each search engine will also display the search terms used.
- **Keywords** lists all the search terms used across the various search engines.

10.4 Content

The Content section tracks the actual pages visited on your repository and allows you to see the most visited pages and further details about them. The individual reports within the Contents section use the same format illustrated in figure 10.4.

- **Top Content** ranks the pages visited (as a URL) in your repository by number of visits.

- **Content by Title** ranks the pages visited (as the page name) in your repository by number of visits. A useful way to see what the most visited item pages are, and hence the most popular articles within your repository is to refine the report by searching for titles containing the word Item.

- **Content Drilldown** allows you to drill down through the site, starting at the top level and moving through each level of the repository as defined by the slashes in the URL (/).

- **Top Landing Pages** ranks the pages visitors entered your repository (as a URL) by number of visits.

- **Top Exit Pages** ranks the pages visitors entered your repository (as a URL) by number of visits.

- **Site Search** looks at what search terms and phrases are being used across the repository.

- **Site Overlay** opens your repository in a new window and displays a small information bar over each link detailing the number of times that link has been clicked.

10.4.1 Item Views and Bitstream Views

When using the Top Content reporting tool, you can distinguish item views and distinguish bitstream views (or full text downloads). Each can be done using the search capabilities (see figure 10.4 [2]).

Item Views

For item views use: Find URL / containing / **handle**

This will return all pages with handle in the URL. These pages are primarily item view pages, although community and collection homepages and search / browse pages also have handles and so will be listed too.

You can click on a listed URL to see further details of that URL's usage in the site and a link to the page itself.

Alternatively, if you are looking for a specific item page, then look for the full handle in the search, for example: 'handle/2384/2367'. This will also return any bitstream views for that item as they share the same handle value in their URL.

Bitstream Views (Downloads)

For file downloads use: Find URL / containing / **bitstream**

This will return all pages with bitstream in the URL. These pages are primarily item file downloads.

You can refine your search further. For example, if you wanted to look for PDF downloads only, search for .pdf.

Remember: when clicking through to view the bitstreams, Google Analytics will replace white spaces in file names with code and so the links may not work. It is best to go the item page using the handle and follow the download link from there.

10.4.2 Site Search

The Site Search menu allows you to see what search terms have been used and which filters, if any, have been used. The following reports are available:

- **Overview**: standard section overview.
- **Usage**: percentage of visits where search was used against percentage of visits where it wasn't.
- **Search Terms**: What search phrases were used.
- **Start Pages**: From which pages searches were made.
- **Destination Pages**: To which pages the searches led to.
- **Categories**: Which types of search were run:
    - (not set) = standard site search box
    - ANY = advanced search across ANY
    - Any other search limiters (keywords, journal, author etc) will then be listed separately
- **Trending**: percentage of searches per day.

10.5 Goals

The Kalamazoo College Digital Archive is not currently using the Goals conversion tracking within Analytics, as this is more of an e-commerce feature.

Glossary

Administrator - Provides logistical, marketing, and policy oversight for the entire Kalamazoo College Digital Archive. The Administrator customizes the Kalamazoo College Digital Archive Community home page, manages all aspects of Sub-Community and Collection set-up, trains and assigns permissions to Collection Administrators, and configures metadata defaults.

Authorizations – Also called Permissions or Policies. Authorizations allow certain people or groups of people to perform various actions in DSpace, such as adding materials, editing materials, and viewing materials.

Bitstream - Individual file. Files may be Grouped together in a Bundle and associated with an Item (e.g. license text, .jpegs, .tiffs, pdfs, xml, etc.)

Bundle - A Grouping of files associated with an Item.

Collection - Specific Group of Submissions within a Sub-Community.

Community - Top level unit within the NITLE DSpace Pilot Service. Each of the participating institutions have been established as a Community within the pilot service.

Collection Administrator - Contact person selected by a Sub-Community to act as a liaison with the Kalamazoo College Digital Archive Administrator.

DSpace - The DSpace digital repository system collects, preserves, indexes, and distributes digital research material.

E-Person – An individual registered with DSpace. Once someone logs in to DSpace with their Kalamazoo College username and password, they become an E-Person.

Group – Several E-People authorized to perform one or more functions in DSpace.

Handle - A persistent URL that points to an Item.

Item - A (bibliographic) record that describes the file using Dublin Core metadata

Internal ID – Each Collection has an internal ID number (also called the primary key) that is different from the Collection's Handle. The internal ID is used in the Group Editor to identify Collections. You can find out the internal ID of a Collection by clicking on 'Communities/Collections' in the Administrative Pages. The second number in brackets beside a Collection name is that object's internal ID.

NITLE - The National Institute for Technology and Liberal Education (NITLE).

Permissions – Also called Authorizations or Policies. Permissions allow certain people or groups of people to perform various actions in DSpace, such as adding materials, editing materials, and viewing materials.

Policies – Also called Authorizations or Permissions. Policies allow certain people or groups of people to perform various actions in DSpace, such as adding materials, editing materials, and viewing materials.

Sub-Community - An academic or administrative unit within Kalamazoo College that houses individual Collections.

Submission - Material that is added to a specific Collection.

Thanks to Christopher Raab from Franklin and Marshall College for most of the definitions in this glossary.

Acknowledgements

This manual is made possible by the contributions of others who have worked with DSpace. Portions of this manual were made possible by:

Christina Richison, NITLE

Christopher Raab, Franklin and Marshall College

DSpace documentation from http://www.dspace.org/

Mark Merifield, *Open Repository 1.4.9 Administrators Manual*
http://demo.openrepository.com/demo/handle/2384/15132

Scott Hamlin, Wheaton College

Index