



LON-CAPA Author Users Usability Evaluation Report

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Table of Contents

Acknowledgements.....	2
I. Summary.....	3
II. Background.....	5
Introduction.....	5
Objectives	5
Product	5
Participant Profile.....	5
Hardware and Settings	6
Severity Ratings	6
III. Experimental Design	7
Evaluation session protocol	7
Testing room setup	7
Metrics.....	8
IV. Results	9
Task Summary Table.....	9
Task 1 Results – Multiple-Choice Problem	11
Task 2 Results – Adding a Co-Author	13
Task 3 Results – Adding an Image to a Problem	15
Task 4 Results – True/False Problem	17
Task 5 Results – Create folder and Move File	19
Task 6 Results – Adding a Custom Rights File	21
V. Conclusion and Next Steps.....	22
Appendix 1 – Moderator’s Guide	23
Appendix 2 – Consent Form	24
Appendix 3 - Demographic Questionnaire	25
Appendix 4 – Demographic Questionnaire Information.....	27
Appendix 5 – LON-CAPA Author Evaluation Task Scenarios.....	29
Appendix 6 – Results by Task.....	34
Appendix 7 – Post-study Questionnaire Results.....	36
Appendix 8 – Selected Screen Shots from the LON-CAPA System	39

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I. Summary

This document describes usability testing results for the LON-CAPA course management and learning content management system. This evaluation was conducted April 23-27, 2007, at the MSU Usability & Accessibility Center (UAC). The application was evaluated in one-on-one usability sessions with 12 participants who were faculty members at Michigan State University, including experienced and inexperienced LON-CAPA users.

Overall, participants, regardless of experience level, had difficulty understanding the workflows, especially regarding problem creation, understanding system terminology, and navigating between the author and course coordinator roles. Experienced participants easily completed common tasks, but had trouble performing new or unfamiliar ones, finding workflows of tasks that they had not performed before confusing.

The most difficult tasks were (in order of severity¹):

1. Image Problem (task 3; severity rating 4; # of participants successful: 1/12; successful avg. time: 8:44 minutes);
2. Adding a Co-Author (task 2; severity rating 4; # of participants successful: 1/12; successful avg. time: 5:25 minutes);
3. Multiple Choice Problem (task 1; severity rating: 3, # of participants successful: 7/12; successful avg. time: 10:16 minutes);
4. True/False Problem (task 4; severity rating: 3; # of participants successful: 7/12; successful avg. time: 7:10 minutes); and
5. Create folder and move file (task 5; severity rating: 3; # of participants successful: 5/10; successful avg. time: 4:50 minutes).

The major issues, and subsequent recommendations, that need to be addressed for users to fully benefit from the application's capabilities, included:

- Participants had difficulty navigating between their course-coordinator and author roles, and understanding under which role to accomplish tasks.
 - Perform work-flow analyses to re-architect the navigation and distinctions between the author and course-coordinator role spaces, making them more intuitive representative of real-world workflows.
 - Make links between the two more simple apparent and use descriptions and help topics to aid users in the initial understanding of the distinctions between the two roles.
- Participants had difficulty understanding the role of publishing within the tasks.
 - Along with conducting work-flow analyses to make the task of publishing more intuitive and streamlined with other tasks, also reconsider navigation and architecture to more easily link authored material to courses: there should be a more simple and direct way for authors to link material that they have created to their courses.
- Participants, especially inexperienced ones, had problems understanding the workflow of problem creation and expected to be able to edit their problems immediately after choosing a template.

¹ Severity ratings are as follows: 1 = Low Priority, 2 = Medium Priority, 3 = High Priority, 4 = Very High Priority

- Also use analyses to re-consider the workflow of problem creation: allow users to choose options and create problems based on their initial choices instead of requiring them to change and/or remove default options.
- Participants could not choose a problem template to apply to a problem they wanted to create.
 - Make problem template names more user-oriented with simple, task-oriented language (e.g. “multiple-choice” along with or instead of “radio response”), and use descriptions in a link to a help topic to aid users in choosing between problem templates
- Participants had difficulty navigating between the system and help topics, and expressed a desire to be able to view Help while also having access to the system.
 - Open help topics and manual in a new window (while providing visual and/or textual warnings to users that this will occur) so that they can access assistance alongside the LON-CAPA system.
- Participants had difficulty understanding error messages, and making choices to correct their errors and recover from them.
 - Make error messages descriptive and specific to the error that has occurred, using plain, user-friendly language, and include links to relevant help topics and contact information to support services in the error messages.
- Participants wanted the ability to upload files directly to problems and not into their construction space first.
 - Allow users the ability to associate files like images directly with a problem instead of requiring files be uploaded to the construction space first. Create a simple and direct “browse and upload” style function associated with all problems to enable this.
- Participants were unaware of the need to click the “update display” button in order to view updated contents of their resources.
 - Update/refresh the information in the import published documents window automatically so that users are not required to do so by clicking a button. In the mean time, make the button stand out more and include test and a link to a help topic to explain its function to users.

II. Background

Introduction

This document describes usability testing results for the LON-CAPA course management and learning content management system. This evaluation was conducted April 23-27, 2007, at the MSU Usability & Accessibility Center. The website was evaluated in one-on-one usability sessions with 12 participants who were faculty members at Michigan State University, including experienced and inexperienced LON-CAPA users.

The value of conducting the tests was to identify usability issues with the current site using a systematic performance-based approach.

Objectives

This evaluation was designed to answer the following questions:

- What aspects of the LON-CAPA user interface are hard to understand?
- How difficult is it for experienced and inexperienced LON-CAPA users to accomplish typical tasks?
- How do LON-CAPA users identify and perceive existing user assistance (help) features while performing tasks?

Product

We tested the LON-CAPA course management system at (<http://loncapa.msu.edu/>), using courses developed by the LON-CAPA Support Coordinator for the evaluation. See [Attachment 8](#) for selected screen shots of the evaluation-course site.

Participant Profile

The LON-CAPA Support Coordinator recruited participants for the evaluation. The participants were current Michigan State University faculty members and were not offered compensation, but were given free parking near the Usability & Accessibility Center.

There were a total of 12 participants. All participants were current faculty members at Michigan State University. Six were classified as experienced LON-CAPA author users (having used the system for authoring in more than one class) and 6 were classified as inexperienced LON-CAPA author users (having never used the system or only having used it for course-coordinator features).

All of the participants indicated they use the web daily for research, for e-mail or to find information on products, educational tools and school-related information, new, information, research, and shopping.

The majority, 7 participants, were more familiar with the Windows system than the Macintosh system, 2 were equally familiar with both, and only 1 was more familiar with a Macintosh system. Eight participants used Google as their primary search engine.

With respect to their typical behavior when visiting a website, 10 participants scan the headings to find relevant information; 9 participants immediately access “search” and type in a keyword; 2 read all the navigation items then make a decision how to proceed; 2 access the site map if one is available; and 2 participants read the content on the homepage, then decide how to proceed. Many use combinations of these actions.

Regarding other course management systems used, 8 participants had used LON-CAPA; 8 had used MSU’s core course management system, Angel; 5 had used Blackboard; 1 had used Web CT; 3 had used a personal website; and 4 had used other course management or web tools, like Moodle, blogs, or authoring their own course or a neighborhood websites

For more detailed information about each participant, refer to [Attachment 3](#).

Hardware and Settings

Computer: Dell Optiplex, 6x280, Intel (R) Pentium (R) 4 CPU 2.80 GHz 7.79 GHz, 513 MB of RAM, 17” monitor, Windows XP Edition. The default screen resolution was 1024x768 pixels. The site was displayed in Internet Explorer 6.0 running over a T3 Internet connection.

Severity Ratings

The ratings are adapted from those defined by Mark Pearrow in his Web Site Usability Handbook.

Rating	Definition
1	Low Priority - a problem which effected less than 20% of Participants tested; need not be fixed unless extra time is available on project – should be given low priority.
2	Medium Priority – a problem which affected 20-35% of Participants tested; less important to fix– should be given medium priority.
3	High Priority - a problem which affected 36-50% of Participants tested; very important to fix – should be given high priority.
4	Very High Priority - a problem which effected over 50% of Participants tested – imperative to fix this before the product is released.

III. Experimental Design

Evaluation session protocol

One-on-one sessions lasted an hour for each participant, and included:

- Verbal overview of study – Participants were given a description of the general nature of the study, and the order of activities for the session. See [Appendix 1](#) for the moderator’s script.
- Informed consent form for human subjects – Participants were asked to sign a Consent Form before they participate. See [Appendix 2](#).
- Demographic questionnaire – We administered a brief questionnaire to gather background information on participant work and Internet experience. See [Appendix 3](#).
- Task scenarios performance – Participants were asked to perform several tasks using the LON-CAPA system. The tasks were in the context of fulfilling an assignment to provide a realistic context for testing. Participants were asked to think aloud and describe any confusion while performing tasks. This was used to identify areas of difficulty, as well as usage patterns and types of participant errors. See [Appendix 5](#) for the listing of tasks with associated probe questions and success criteria.
- Post-study questionnaire – A post-study questionnaire was administered to address specific aspects of the task scenarios, and obtain satisfaction ratings. See [Appendix 7](#) for post-study questionnaire results.
- Post-study debriefing -- Participants were debriefed at the end of the session and given a hard copy of the usability-evaluation information.

NOTE: Selected screenshots can be found in [Attachment 8](#).

Testing room setup

Usability evaluations were conducted at the state-of-the-art Usability & Accessibility Center, within University Outreach and Engagement at Michigan State University, East Lansing, Michigan. The facility incorporates cutting-edge technologies and multipurpose spaces within an aesthetically appealing and accessible business environment. Each of the rooms in the facility has multiple purposes and capacities, and all spaces protect the privacy of individuals and accommodate those with disabilities. The usability testing room is equipped with three computers; digital video, audio, and screen recording equipment; a document camera; Internet connectivity; and white boards. The space includes an adjustable height workstation, and all computers have JAWS for Windows and Zoomtext assistive technologies for blind and low vision users. Mixing and other production equipment are used to create picture-in-picture output for live viewing, as well as recordings for later analysis and reporting. Clients observe the test activities from an observation room through live video and audio feeds to a projection screen.



Metrics

Key usability goals included effectiveness, which refers to how well a system does what it is supposed to do; efficiency, or the way a system supports users in carrying out their tasks; and satisfaction, which relates to the subjective responses users have to the system.

The quantitative measures included:

- percentage of tasks completed successfully
- types of errors
- mean time to perform a particular task

The qualitative measures included:

- participant satisfaction ratings (post-study questionnaire)
- verbal feedback during and after the session
- written feedback on the demographic and post-study questionnaires

IV. Results

In some tasks (task 1, task 4, task 5), inexperienced users took significantly more time to complete each task or did not have comparable success to experienced users. For this reason, the task results will be discussed by user group in the summaries below, while including overall outlines and recommendations.

Task Summary Table

Task	Exp. - Successful Task Completion	Exp. – Mean time to complete task successfully (in minutes)	Inexp. - Successful Task Completion	Inexp. - Mean time to perform task successfully (in minutes)	Combined - Successful Task Completion	Combined - Mean time to perform task successfully (in minutes)	Usability Severity Rating (1-4 with 4 = very high severity)
Task 1 (multiple-choice problem)	5/6; 83%	9:36	2/6; 33%	11:57	7/12; 58%	10:16	3
Task 2 (add co-author)	0/6; 0%	N/A	1/6; 17%	5:25	1/12; 8%	5:25	4
Task 3 (image problem)	1/6; 17%	8:44	0/6; 0%	N/A	1/12; 8%	8:44	4
Task 4 (true/false problem)	6/6; 100%	6:37	1/6; 17%	10:29	7/12; 58%	7:10	3
Task 5 (create folder and move file)	4/6; 67%	4:48	1/4; 25%	4:58	5/10; 50%	4:50	3
Task 6 * (add custom rights)	0/2; 0%	N/A	0/0; 0%	N/A	0/2; 0%	N/A	N/A

* The data for Task 6 is insufficient, as only two participants had time to attempt the task. However, task details and recommendations will be discussed in the Task 6 details section.

Refer to [Appendix 6](#) for detailed performance results by task.

Post-Study Questionnaire Results

In the post-study questionnaire, participants rated the LON-CAPA system as a whole. Overall, participants gave the system’s ease of use an average rating of 3 on a scale from 1-7, where 1 was ‘very difficult’ and 7 was ‘very easy.’ However, there was variation between experienced and inexperienced participant ratings. Inexperienced participants rated the system’s ease of use an average of 1.83 while experienced participants rated it an average of 4.17. When asked to rate how the system’s features met their expectations, participants gave an average rating of 4.6 on a scale from 1-7, where 1 was ‘did not meet’ and 7 was ‘very much met.’ Here there was also a significant variation between the two participant groups, with experienced participants giving a higher average rating of 6.2 to the

inexperienced participants' 3. When asked to rate how easy LON-CAPA's organization was to understand, participants gave an average rating of 2.75 on a scale where 1 was 'very difficult' and 7 was 'very easy,' experienced participants rating it higher, with an average of 4, than inexperienced participants, with an average of 1.7. Regarding ease of navigating through the site, an average rating of 3.42 was given for the same scale, with a moderate variation between the two participant groups; experienced participants gave a rating of 4.5 and inexperienced participants gave a rating of 2.33. And finally, when asked to rate how useful they found the LON-CAPA system to be, participants gave an average rating of 5.91 on a scale from 1-7 where 1 was 'not at all' and 7 was 'very useful.' For this rating, the experienced participants' average rating was 7 and the inexperienced rating was 5.

These results show that although participants did not find LON-CAPA particularly useable; they did find it to be useful. This was true for even inexperienced users, who had a much less satisfactory time with LON-CAPA by every measure and failed many of the tasks. There is considerable opportunity for improvement, especially in the areas of application organization and features.

For detailed results from the Post-study Questionnaire, refer to [Appendix 7](#).

Task 1 Results – Multiple-Choice Problem

Exp. – Successful Task Completion	Exp. – Mean time to perform task successfully	Inexp. – Successful Task Completion	Inexp. – Mean time to perform task successfully	Combined - Successful Task Completion	Combined - Mean time to perform task successfully	Usability Severity Rating
5/6	9:36	2/6	11:57	7/12	10:16	3

For the first task, participants were asked to create a homework question based on a paper-based multiple-choice quiz question and then put the question into a homework set in their course.

- Seven of 12 participants successfully completed the task, with an average task time of 10 minutes and 16 seconds.
- Five participants gave up (1 experienced and all 4 inexperienced participants) after an average time of 13 minutes and 9 seconds.

Experienced

- Five of 6 experienced participants successfully completed the task, with an average task time of 9 minutes and 36 seconds.
- Only one of these participants did not successfully complete the task, giving up after being going to Navigate Contents instead of Course Documents to publish their problem:
 - Two participants (this participant and another), when in course-coordinator space to put their problems into a homework set, initially went to Navigate Contents instead of Course Documents. One of these participants nearly gave up before realizing the mistake, stating “I would ask a colleague how to do it” and the other experienced participant did give up due to this error.
- Two experienced participants cited difficulty deciding between the problem templates: they stated, “I was looking for ‘multiple choice’ then I got ‘radio response,’” and “The descriptions of the problems—there’s a ton of choices which are not very clear. I’ve always found I don’t know which one I want.”
- Two of these participants also forgot to publish their problems, only realizing it when they tried to import the problems in their course-coordinator role, thus necessitating a return to their author roles.
- Three experienced participant stated that they used template or previously created problems in the past to aid in problem creation: “If it’s a problem like this I’ve never done before I’ll often copy a problem I know exists sometimes Felicia will send me one.”
- Another participant stated, regarding the default number of foils in the problem template that “The options are confusing, you should have right and wrong and having to delete one of the choices, it should be easy to put in as many as needed.”

Inexperienced

- Two of 6 inexperienced participants successfully completed the task, with an average task time of 11 minutes and 57 seconds.
- One inexperienced participant had enough course coordinator experience and knowledge of the LON-CAPA system to understand the role of the authoring space versus the course coordinator space.
 - However, 4 other inexperienced participants attempted to begin this task in their course-coordinator space (the facilitator re-directed all of them to their author space). All of these

participants eventually gave up, three of them stating that they would seek help through a colleague or by reading a manual and the fourth stating that they would “go back to pencil and paper.”

- Two inexperienced participants also had difficulty choosing between problem templates: “Because it’s a multiple choice I’m adding, I assume it would be option response of some sort” (this participant also gave up after attempting to create the problem, stating that they would seek help from a colleague) and “Radio button, there we are, would have expected option response.”
- One participant failed to publish the problem after creating it.
- Another participant had difficulty moving the problem into the correct homework set folder (as they had initially imported it at a higher level). They chose to “cut” the problem using the option from a drop-down menu adjacent to it, but were unable to “paste” it into the folder, thus requiring them to import it again: “Is there a paste option now that I’ve cut it?”
 - This participant used help before this to find out how to import a problem, and stated, “I’m just trying to remember what I just read. It would be nice to be able to have both [the help and LON-CAPA] open at the same time.”
- One participant also stated, regarding errors in attempting to use the back button, “It would be nice to be able to go back, I don’t know when you’re allowed to hit it or not.” Most of the participants experienced these errors throughout the tasks.

Recommendations

- Perform work-flow analyses to re-architect the navigation and distinctions between the author and course-coordinator role spaces, making them more intuitive representative of real-world workflows.
 - Make links between the two more simple apparent and use descriptions and help topics to aid users in the initial understanding of the distinctions between the two roles.
- Along with conducting work-flow analyses to make the task of publishing more intuitive and streamlined with other tasks, also reconsider navigation and architecture to more easily link authored material to courses: there should be a more simple and direct way for authors to link material that they have created to their courses.
 - In the mean time, use help topics and descriptions to make the purpose of publishing more understandable to new users.
- Also use analyses to re-consider the workflow of problem creation: allow users to choose options and create problems based on their initial choices instead of requiring them to change and/or remove default options.
- Make problem template names more user-oriented with simple, task-oriented language (e.g. “multiple-choice” along with or instead of “radio response”) and use descriptions in a link to a help topic to aid users in choosing between problem templates
- When providing users the option to “copy” and “cut,” create an obvious and accessible method of then “pasting” that material in a different location.
- Open help topics and manual in a new window (while providing visual and/or textual warnings to users that this will occur) so that they can access assistance alongside the LON-CAPA system.
- Allow users to be able to use the Back button.

Task 2 Results – Adding a Co-Author

Exp. – Successful Task Completion	Exp. – Mean time to perform task successfully	Inexp. – Successful Task Completion	Inexp. – Mean time to perform task successfully	Combined - Successful Task Completion	Combined - Mean time to perform task successfully	Usability Severity Rating
0/6	N/A	1/6	5:25	1/12	5:25	4

For the second task, participants were asked to give a teaching assistant full access to edit their LON-CAPA resources.

- Only 1 of 12 participants successfully completed the task, with a task time of 5 minutes and 25 seconds.
- Six participants, 3 each experienced and inexperienced, committed an error, unsuccessfully completing the task in an average time of 7 minutes and 53 seconds.
- Five participants, 3 experienced and 2 inexperienced, gave up after an average time of 5 minutes and 55 seconds.

Experienced

- No experienced participants successfully completed this task. 3 of these committed an error, unsuccessfully completing the task, and 3 gave up.
- All experienced participants began this task in their course-coordinator space.
- Four experienced participants first tried to enroll the teaching assistant initially before using the CUSR function in their course-coordinator roles.
 - Two of these gave the teaching assistant a “teaching assistant” role.
 - Another participant in gave the teaching assistant both a “teaching assistant” role and an “instructor” role, stating: “She also needs to be able to edit my resources and I don’t think as a TA she can do this so I’ll choose instructor as well.”
 - Two of these participants mentioned above also then went to the custom role editor, assuming that if all options were checked the teaching assistant she would have enough access
- One participant, who also first tried to enroll the teaching assistant, gave that person an “instructor” role in CUSR then navigated to their author role, saying, “Now I want to allow her to edit resources, but I don’t know how to do that for all problems.” This participant eventually gave up, stating that they would submit a help ticket in order to accomplish the task.
- One participant also used Help to discover that the teaching assistant needed to be given a co-author role, but was unable to discover how to do that: “Even an instructor doesn’t have authoring privileges so I’ve somehow got to make her a co-author. That’s not one of my choices. Maybe LON-CAPA has to add the authors.”
- Two of these participants also did not choose any server options when attempting to create a user role, resulting in error messages.

Inexperienced

- Only 1 out of 6 inexperienced participants successfully completed that task with a time of 5 minutes and 25 seconds. 3 participants committed an error, unsuccessfully completing the task, and 2 participants gave up.
- Three inexperienced participants each began this task in their course-coordinator space and in their author space.

- One participant (the only participant who completed the task successfully), when entering information into the create a new user fields under CUSR (in their author space), navigated back and noted that all information previously entered in the fields had been lost. This participant then noted that the colors of the form boxes had changed (some were white and some yellow) and did not know if this indicated whether some fields were optional and some required.
 - This participant also indicated a desire for confirmation after submitting the form: “I can’t confirm if I did it. Maybe I gave her too much privilege. Maybe assistant co-author would have been better?”
- Three participants received error messages when they did not choose any server information in the CUSR form options. One stated, regarding the error message, “I don’t know why that’s an invalid login mode or password. I wish I could click on a help link right under the error code to be taken there. Getting the error and not having an easy way to figure out how to fix it is difficult.” Another stated, “Home server...no idea.”
- Two participants gave the teaching assistant a “teaching assistant” role, thus committing an error. One of these attempted using the custom role editor, like many of the experienced participant, before they gave up.
- One participant who started in their author space chose the “asst. co-author” role, thus committing an error, while also receiving error messages due to the server fields.
- Two other participants (along with the successful participant) also cited a desire for a confirmation message before giving up. One stated, “I don’t know if I did it, so I would try again. I would look for a button that said ‘give someone full access.’”

Recommendations

- Perform work-flow analyses to re-architect the navigation and distinctions between the author and course-coordinator role spaces, making them more intuitive representative of real-world workflows.
- Add descriptions of what each role can do in both author and course coordinator spaces.
- Give information on what information in the forms is required and what is optional.
- Make the server options more transparent using plain language, and add descriptions and links to help topics to aid users in making their choices.
- Ensure that all information entered in form is not lost when a user navigates back to it.
- Add confirmation messages when a user has successfully created a new role, offering further information.
- Make error messages descriptive and specific to the error that has occurred, using plain, user-friendly language and include links to relevant help topics and contact information to support services in the error messages.

Task 3 Results – Adding an Image to a Problem

Exp. – Successful Task Completion	Exp. – Mean time to perform task successfully	Inexp. – Successful Task Completion	Inexp. – Mean time to perform task successfully	Combined - Successful Task Completion	Combined - Mean time to perform task successfully	Usability Severity Rating
1/6	8:44	0/6	N/A	1/12	8:44	4

For the third task, participants were asked to add an image to a previously created problem and add that problem to a homework set in their course.

- Only 1 of 12 participants successfully completed the task, with a task time of 8 minutes and 44 seconds.
- Ten participants, 5 each experienced and inexperienced, gave up after an average time of 7 minutes and 2 seconds.
- Only 1 participant, inexperienced, committed an error, unsuccessfully completing the task in an average time of 10 minutes and 6 seconds.

Experienced

- Only 1 out of 6 experienced participants successfully completed that task with a time of 8 minutes and 44 seconds. 5 experienced participants gave up.
- The majority of these participants, 4, navigated to the problem first, expecting to be able to accomplish the task directly at the problem.
 - All of these participants used “insert image” drop down menu. However, three of them were unable to understand how to get the image once this had been selected, stating, “but how do I get the image?” and, “I’m thinking it ought to be telling me more directions like, ‘put your image here.’”
 - One of these participants, the only participant who successfully completed the task, used Help documents to aid in their completion of the task from this point.
- Two participants uploaded the image file immediately to their construction space before navigating to the problem.
 - Then, 1 of these was unable to understand how to insert it into problem: “Here’s insert image but now I need to know how I access that file and that’s not really obvious.”
 - The other participant successfully published and inserted the image into the problem, but upon viewing the problem to see if it worked, discovered that the image did not appear. This appears to have been a system error.
 - This participant also had difficulty locating the published image file because they had failed to click the “update display” button.

Inexperienced

- No inexperienced participants successfully completed this task. 5 of these gave up, and 1 committed an error, unsuccessfully completing the task.
- All of the inexperienced participants navigated to the problem initially to accomplish this task.
 - Here, 3 participants located the “insert picture” function, expecting to be able to upload the picture by using it directly. Some made statements like, “Let’s see if it asks me for my picture now? No.” and, “I was hoping a dialogue would com up and ask me what picture I wanted to insert.”

- Two participants had difficulty choosing between the options, “import a file” and “insert a picture.”
- Two participants were also able to understand the need to upload the image to their construction space by using Help. However, one stated that, “Help tells me to upload it to the Construction Space but it is not giving me clear info on how to do that.”
 - Both of these participants, after uploading and publishing the images, were unable to locate them because they had not clicked the “update display” button. One stated, “This is not what I expected to see. I expected to see it here. I would have thought it would be here.” and, “This is baffling to me. I thought if I published it, it would appear here.”

Recommendations

- Allow users the ability to associate files like images directly with a problem instead of requiring files be uploaded to the construction space first. Create a simple and direct “browse and upload” style function associated with all problems to enable this.
- Update/refresh the information in the import published documents window automatically so that users are not required to do so by clicking a button. In the mean time, make the button stand out more and include test and a link to a help topic to explain its function to users.
- All help topics should include simple and direct step by step instructions to complete a task along with explanatory information.
- Fix the system error.

Task 4 Results – True/False Problem

Exp. – Successful Task Completion	Exp. – Mean time to perform task successfully	Inexp. – Successful Task Completion	Inexp. – Mean time to perform task successfully	Combined - Successful Task Completion	Combined - Mean time to perform task successfully	Usability Severity Rating
6/6	6:37	1/6	10:29	7/12	7:10	3

For the fourth task, participants were asked to create a homework question based on a paper-based quiz question made up of multiple true/false statements and then put the question into a homework set in their course.

- Seven of 12 participants successfully completed the task, with an average task time of 7 minutes and 10 seconds.
- Two participants, both inexperienced, committed errors and were unable to complete the task. Their average task time was 8 minutes and 47 seconds.
- Three inexperienced participants gave up after 7 minutes and 37 seconds.

Experienced

- All of the experienced participants successfully completed the task after an average time of 6 minutes and 37 seconds.
- Three experienced participants had difficulty choosing a problem template. Two chose the correct template but were not confident that it would work for their purposes. One stated, “That’s not going to work. Oh, maybe it is. I might try this.” and another said, “It give me what I need for one question, so I would copy and paste for the other parts...so, maybe it’s easier than I thought.”
- One experienced participant went to Navigate Contents first, then said, “Oh, no, I’ve got to go to Course Documents.”
- One participant stated that they like to edit problems using the XML view because, “it’s easier to delete the extra foils here.”
- Another participant made a comment about the system terminology: “I’ve always hated calling homework problems documents because I’ve always thought of documents as files that I load on to it. I think of other things as documents, like pictures and readings, but not problems.”

Inexperienced

- Only 1 inexperienced participant successfully completed the task, doing so in 10 minutes and 29 seconds.
- Two inexperienced participants committed errors, finishing the task in an average time of 8 minutes and 47 seconds.
- Three inexperienced participants gave up after 7 minutes and 37 seconds.
- Three participants were unable to understand how to edit the problem template. Regarding the problem template view and sample “type question here” text they commented: “‘Type question here?’ But I can’t type anything here so what’s the deal? Why can’t I type there, or click to somewhere where it takes me to type it?”; “‘Type question here?’ Nope, can’t type question here.”; and, “Type the question in this little box? Type the question here? Where, here? So where to you type it?”
- Two participants here difficulty understanding the true/false template. Both expected the need to add multiple true/false statements (instead of creating one statement in each foil) and saw no method of doing so. Both of these participants gave up.

- 3 inexperienced participants also had difficulty choosing a problem template. Some stated: “It’s not clear if it is option response true/false or option response matching. Is this the correct problem or not?...an explanation of the templates would have been useful” (this participant gave up when they couldn’t find what they what they thought was the correct template) and “I’m expecting something here that says true/false.”
- One participant received an error message because he put unacceptable characters into his problem name.
- Another participant had difficulty locating the published file because they had failed to click the “update display” button.
- Another participant attempted to use the back button and was unable to, commenting that “not being able to hit ‘back’ is an aggravation.”
- One participants made another comments about the system terminology stating, “So, creating a new directory is basically creating a problem...I would never go to new directory—I don’t associate it with a problem, it seems huge and a problem seems small. The title of it is all wrong.”

Recommendations

- Perform work-flow analyses aid in the re-architecture of the system, esp. for the navigation and distinctions between the author and course-coordinator role spaces, system labels, and making the system more intuitive and representative of real-world workflows.
- Also use analyses to re-consider the workflow of problem creation: the problem creation workflow should mimic user expectations and real-world workflows. For example, three inexperienced participants expected to be taken directly to a problem editing area or wizard upon choosing a problem template. More research on user workflow would enable the system to match user expectations.
- Make problem template names more user-oriented with simple, task-oriented language (e.g. “multiple-choice” along with or instead of “radio response”) and use descriptions in a link to a help topic to aid users in choosing between problem templates.
- Give instructions by the problem name field as to what characters/naming conventions are acceptable.
- Update/refresh the information in the import published documents window automatically so that users are not required to do so by clicking a button. In the mean time, make the button stand out more and include test and a link to a help topic to explain its function to users.
- Allow users to be able to use the Back button.

Task 5 Results – Create folder and Move File

Exp. – Successful Task Completion	Exp. – Mean time to perform task successfully	Inexp. – Successful Task Completion	Inexp. – Mean time to perform task successfully	Combined - Successful Task Completion	Combined - Mean time to perform task successfully	Usability Severity Rating
4/6	4:48	1/6	4:58	5/10	4:50	3

The fifth task asked participants to create a folder and move a file, already placed in their construction space, to the folder. *NOTE: This problem was intended to capture the methods of users creating folders within their construction space. While 5 participants felt they had successfully completed the task, all of these participants created the folder in their course space rather than their construction space. Reasons for this and corresponding recommendations will be discussed below.*

- Five of 10 participants successfully completed the task, with an average task time of 4 minutes and 50 seconds.
- Five participants gave up (three inexperienced and two experienced), doing so in an average time of 4 minutes and 50 seconds.
- Two participants (both inexperienced) did not have time to attempt this task.

Experienced

- Four out of 6 experienced participants successfully completed the task after an average time of 4 minutes and 48 seconds.
- Two experienced participants gave up, doing so in 5 minutes and 39 seconds.
- All six of these experienced participants began the task in their course coordinator space.
- Three participants had difficulty locating the published file because they had failed to click the “update display” button. They made comments like: “Oh, there it is. The file wasn’t showing up because I kept refreshing in the browser and didn’t hit ‘update display.’”; “I don’t see why it doesn’t update anyway. I was surprised that what I had created wasn’t there so it’s just saving what was there before.”; and “I think it has to be refreshed but it doesn’t tell you.”
- One participant commented, “Why not just put it in your course directly?”

Inexperienced

- Five out of 6 inexperienced participants successfully completed the task after an average time of 3 minutes and 17 seconds.
- Four inexperienced participants did not have time to attempt this task.
- Three inexperienced participants gave up, doing so in an average time of 4 minutes and 17 seconds.
- Two participants began this task in their author role, but moved to their course coordinator roles after looking around for a place to accomplish the task after a few brief moments.
- Two other participants began this task in their author space, but were unable to find a place to create a folder, looking at the portfolio before giving up. One stated: “Maybe in the portfolio? This doesn’t seem right. I clicked on it because it seemed like the least troublesome option.”
- One participant had difficulty locating the published file because they failed to click the “update display” button, stating: “When I couldn’t see the box to select the problems in the last box I should have clicked update display. It doesn’t stand out, it’s not at the top and buried in the middle so I didn’t notice it.”

Recommendations

- *It appears that, while the majority of the participants began this task in their course coordinator space, none of them saw a purpose in this task for creating the folder in their author space, nor a place for doing so. More directly, some participants did not see a purpose for storing files in their author space, instead of uploading them and storing them directly in their course space.*
- Update/refresh the information in the import published documents window automatically so that users are not required to do so by clicking a button. In the mean time, make the button stand out more and include test and a link to a help topic to explain its function to users.

Task 6 Results – Adding a Custom Rights File

Exp. – Successful Task Completion	Exp. – Mean time to perform task successfully	Inexp. – Successful Task Completion	Inexp. – Mean time to perform task successfully	Combined - Successful Task Completion	Combined - Mean time to perform task successfully	Usability Severity Rating
0/2	N/A	0/0	N/A	0/2	N/A	N/A

For this task, participants were asked to give their course access to a file and publish it so that only their course could have access to it.

- Only two participants (both experienced) had time to attempt this task. Neither of them was successful.
- Because only two participants would attempt this task, the data is insufficient. The task details will be discussed below but none of the findings here are significant.
- One participant gave up after 1 minute and 47 seconds.
- The other participant committed an error, unsuccessfully completing the task, after one minute and two seconds.
- Both participants attempted to accomplish this task by re-publishing the file.
 - However, one participant was confused by the options under the “Copyright/ Distribution” field. After considering these options, this participant stated that they would submit a help ticket in order to find out how to accomplish this task.
 - The other participant chose the “domain only” option under the “Copyright/Distribution” field and assumed that this action had successfully completed the task.
- The participant who gave up navigated to their construction space from the course coordinator role, commenting, “This is nice, you didn’t have the option to navigate this way before.”

Recommendations

- Perform work-flow analyses aid in the re-architecture of the system, esp. for the navigation and distinctions between the author and course-coordinator role spaces, system labels, and making the system more intuitive and representative of real-world workflows.

V. Conclusion and Next Steps

This evaluation yielded much useful information on the usefulness and usability of the current LON-CAPA system interface for authors both with experience and no experience in authoring.

Similar to recommendations given in the previous usability study report on course-coordinator users, we recommend that research be done comparing LON-CAPA to other competitive products regarding: 1) requirements for training, 2) usability, and 3) features and capabilities.

We also recommend that developers review the system's navigation and features through evaluations such as a card sort and a user task analysis prior to revising the application to develop the optimal information architecture and label scheme from a user perspective.

Appendix 1 – Moderator’s Guide

I. Overview of Study (3 minutes)

Thank you for agreeing to participate in our study. We are very interested in obtaining your feedback about the LON-CAPA course management AND LEARNING CONTENT MANAGEMENT system. AS A course management system, LON-CAPA is a web-based application that allows faculty to organize course information and facilitate course interaction so that students to retrieve information about their assignments, download course materials, participate in online discussions, and so forth. AS A LEARNING CONTENT MANAGEMENT SYSTEM, LON-CAPA ALLOWS FACULTY TO CREATE, UPLOAD, AND SHARE CONTENT WITH EACH OTHER. We are trying to understand how people interact with the system doing typical CONTENT MANAGEMENT tasks.

In this session, you will first fill out a questionnaire that asks how you use the Internet in your daily life and how you might use course management systems, like this one, in particular. Then I’ll ask you to complete several tasks using the system. As you are completing each task, please speak aloud to let me know what you are doing. Be sure to point out anything you encounter that is unexpected or surprising. When you have completed each task, I’ll ask you a series of questions about the system and how you interacted with it. I’ll also ask you some questions after you have tried all of the tasks and have you fill out a brief feedback questionnaire. Remember that this is an evaluation of the system’s ease of use and not of your individual performance. Do you have any questions at this point?

II. Before we get started, we have some paperwork to get through.

- Consent form (2 minutes)
- Demographic questionnaire (5 minutes)

III. Task Instructions and Task Performance (45 minutes)

1. Open LON-CAPA from the favorites list to start the session by logging the participants into LON-CAPA.
2. Adjust the webcam for the participant and turn on the Morae software.
3. Read the first task to the participant.
4. After reading the instructions, ask participant to inform you when they have completed the task or when they would like to give-up.
5. During the task observe where participants began and any problems they had locating the information. Remind them to speak aloud, as necessary.
6. After the first task ask the probe questions.
7. Repeat steps three to six for each subsequent task.

IV. Post-study Questionnaire (3 minutes)

Facilitator asks participants to fill out the post-study questionnaire.

V. Closing questions (2 minutes)

Give participants a hard copy of the usability test information. Ask them to stop by the reception area to receive their compensation and parking pass.

Appendix 2 – Consent Form

Consent Form

MSU's Office of University Outreach & Engagement is conducting research to evaluate the usability a website. User testing sessions of the website are being conducted to gather this information. These sessions will be video taped to ensure accuracy of comments and to assist in application of the findings. The findings from these sessions will be used to guide changes to improve the usability of the website.

If you agree to participate in the research, you will be asked to review the website in the presence of a researcher, while being video taped, and share your thoughts and insights as you move through the site. Through this review, you will be asked to respond to an initial brief questionnaire. You will then be asked to verbally provide your first impressions of some web pages and will be presented with some tasks for reviewing the website. Finally, you will be asked to complete a brief questionnaire evaluating your overall experience. Your participation will take approximately one and a half hours. No risk from participation is anticipated. The information that you provide, along with information from other people, will be used to improve the website.

Any information you share will be kept confidential; your name will not be associated with your data. The full videotapes will be seen only by the website evaluation team. However, highlight video clips may be shared with the website evaluation team and/or used for informational materials about usability and accessibility testing. Your privacy will be protected to the maximum extent allowable by law.

Your participation is completely voluntary. You may choose not to participate at all, may refuse to participate in certain procedures or answer certain questions, or may discontinue your participation at any time without penalty. Your decision to participate will not affect your relationship with Michigan State University, University Outreach and Engagement, or the person who identified you as a potential participant. Agreeing to participate and signing this form does not waive any of your legal rights.

If you have any questions about this study, contact the researcher Sarah J. Swierenga by phone: (517) 353-8977, or mail: Michigan State University, Kellogg Center, Garden Level, East Lansing, MI 48824-1022. If you have questions or concerns about your rights as a research participant, please feel free to contact Peter Vasilenko, Ph.D., Director of the Human Subject Protection Programs at Michigan State University: (517) 355-2180, fax: (517) 432-4503, email: irb@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

If you voluntarily agree to participate in this research, having your comments video taped, and have had all your questions answered, please sign below.

Participant's Signature

Date

Researcher's Signature

Date

Appendix 3 - Demographic Questionnaire

Name: _____ Phone: _____

E-mail: _____

College/Field of instruction: _____

How often do you use the Internet?

never less than once/week 1-2 times/week
 2-5 times/week every day

Which web search engine do you use most often? _____

Which other web search engines do you use regularly? _____

Are you more familiar with Windows or Macintosh computers? _____

What do you typically look for on the Internet?

What do you usually do when you visit a website? (select all that apply)

- read all the navigation items then make a decision how to proceed
- scan the headings to find relevant information
- read the content on the homepage, then decide how to proceed
- access the site map if one is available
- immediately access the "search" and type in a keyword
- other

What course management systems have you tried?

- LON-CAPA
- Michigan State's Core System (Angel)
- Blackboard
- Web CT
- personal website
- other(s) _____
- none
- I don't know

In how many classes have you used LON-CAPA as a faculty member?

- none
- one
- two
- three
- four
- more than four

How often do you use a course management system, LON-CAPA or otherwise?

- never
- once a month
- 2-3 times a month
- once a week
- 2-3 times a week
- 4-5 times a week
- every day

Have you ever used testbank software? Yes No (please circle one)

If yes, what testbank software have you used?

Do you have a website? Yes No (please circle one)

If yes, where did you publish your site?

- website on personal MSU AFS space
- website hosted by department
- personal server space
- other(s) _____

Which tools do you use to edit and publish your website? (select all that apply)

- Macromedia Dreamweaver
- Adobe GoLive
- Netscape Composer
- Mozilla Composer
- Microsoft Word
- WS FTP
- WinFTP
- other(s) _____

Have you ever participated in any sort of training to use LON-CAPA?

Yes No (please circle one)

If yes, please describe what types of training you have participated in?

Appendix 4 – Demographic Questionnaire Information

User	College/ Field of Instruction	How often do you use the internet?	Which web search engine do you most often use?	Which other web search engines do you use regularly?	Are you more familiar with Windows or Macintosh computers?	What do you typically look for on the internet?
Participant 1 Exp., Male	ACCTG	Every Day	Google		Yes	E-mail; Angel, LON-CAPA
Participant 2 Exp., Female	Chemistry	Every Day	Google		Windows	Products, Reviews
Participant 3 Exp., Female	CEM/Anato my	Every Day	Google	Pubmed		Educational Tools
Participant 4 Inexp., Male	Inst. Tech.	Every Day	Google		Windows	Everything
Participant 5 Inexp., Female	Chemistry	Every Day	Mozilla		Windows	News
Participant 6 Inexp., Female	CHM	Every Day	Explorer	N/A	Windows	Everything
Participant 7 Inexp., Female	CHM	Every Day	Internet Explorer		Windows	Information— e-mail
Participant 8 Inexp., Male	WRAC	Every Day	Safari	Firefox/ Mozilla Suite	Mac (both)	Intuitive Info. Arch.—fast—info easily discovered. High contrast for text (color blind)
Participant 9 Exp., Female	Business/ Finance	Every Day	Google		Windows	E-mail info, school-related info, shopping
Participant 10 Inexp., Female	CAS DMAT	Every day	Google	Ask	Equal	Research material and books
Participant 11 Exp., Male	Nat. Sci./ Biochemistry	Every day	Google		Windows	Current content for classes
Participant 12 Exp., Male	Geology	Every day	Google		Mac	Citations, articles

User	What do you usually do when you visit a website?	What course management systems have you tried?	In how many classes have you used LON-CAPA as a faculty member?
Participant 1 Exp., Male	scan the headings to find relevant information; read the content on the homepage, then decide how to proceed	LON-CAPA; Angel; other(s): <i>Neighborhood Website (I'm the author)</i>	73
Participant 2 Exp., Female	scan the headings to find relevant information	LON-CAPA; other(s): <i>course websites</i>	at least 4
Participant 3 Exp., Female	read all the navigation items then make a decision how to proceed; scan the headings to find relevant information; immediately access the "search" and type in a keyword	Angel; Blackboard	1
Participant 4 Inexp., Male	scan the headings to find relevant information; access the site map if one is available; immediately access the "search" and type in a keyword	LON-CAPA; Angel; Blackboard; Web CT; personal website; other(s): <i>Moodle</i>	None
Participant 5 Inexp., Female	scan the headings to find relevant information	LON-CAPA	1
Participant 6 Inexp., Female	read all the navigation items then make a decision how to proceed; scan the headings to find relevant information; immediately access the "search" and type in a keyword	Angel	None
Participant 7 Inexp., Female	immediately access the "search" and type in a keyword	Angel; Blackboard	None
Participant 8 Inexp., Male	scan the headings to find relevant information; read the content on the homepage, then decide how to proceed; access the site map if one is available (<i>when lost</i>); immediately access the "search" and type in a keyword (<i>as needed</i>)	personal website	None
Participant 9 Exp., Female	scan the headings to find relevant information; immediately access the "search" and type in a keyword	LON-CAPA	3
Participant 10 Inexp., Female	scan the headings to find relevant information; immediately access the "search" and type in a keyword	LON-CAPA; Angel; personal website; other(s): <i>Blogs</i>	None
Participant 11 Exp., Male	scan the headings to find relevant information; immediately access the "search" and type in a keyword	LON-CAPA; Angel; Blackboard; personal website	4
Participant 12 Exp., Male	immediately access the "search" and type in a keyword	LON-CAPA; Angel; Blackboard	3

Appendix 5 – LON-CAPA Author Evaluation Task Scenarios

The following tasks will be attempted by experienced and inexperienced faculty users using the LON-CAPA system. Note: Data collection for each task was made on a separate form.

Observations and Probe Questions:

- Observation: Where do they go first?
- Observation: Problems locating this information?
- Probe: How was that task?
- Probe: Was it clear to you how to get the information you needed?
- Conditional Probe: If users access help, ask: How was the help feature in completing the task?

You are an instructor who has been assigned to teach a course in the History of Michigan. You will use the LON-CAPA system to both author your course materials and deliver it to your students.

1. Create a new homework question in LON-CAPA that is based on **this** paper-based quiz question. When you are finished, put this question into **Homework Set 3** in your **History of Michigan** course.

Time limit: 10 minutes

Success criteria:

Part 1 – Create problem:

1. On the Roles screen, click the Select button for Author (user may have a time delay and hit a link called Continue)
2. Choose the action "New Problem" from the drop-down box under the "Create a new directory or LON-CAPA document" heading.
3. Type a file name into the text box next to the drop-down box. Filename can either have no extension or have the extension .problem.
4. Click the Go button. Click Continue.
5. Select the problem template "Radio Button Response"
6. Click the "Create problem" button.
7. Click Edit
8. Replace the question text and foil text with that on the handout (foil is our term for the multiple-choice statement).
9. Choose the correct option, true or false, for each foil.
10. For foil5, either set the Delete in the purple area to yes or set the correct option to unused. *(Steps 7-10 can be replaced by clicking the EditXML button and coding the XML directly as well)*
11. Click the Submit Changes and View button.
12. Optionally test out the problem.
13. Publish the problem by clicking the PUB button or by clicking the LIST button and selecting Publish from the Actions drop-down link in front of the button.
14. Optionally fill in the metadata. Click Finalize Publication button.

Part 2 – Add problem to course:

- Click the Roles link to switch Roles and become a Course Coordinator
- Select the Course Coordinator Role.
- Go to the Course Documents screen
- Select the Homework Set 3 folder.
- Click the Import button
- Browser to your username
- Check the problem you want to upload. If it was published and does not appear, click the Update Display button.
- Click the import button.
- Optionally click the re-initializing Course button.

2. Give your graduate TA full access to edit your LON-CAPA resources. Her name is **Carla Walker** and her e-mail address is walkerc00@msu.edu. Carla's user name is *walcerc[p#]*.

Time limit: 5 minutes

Success criteria:

- 1) Click Roles and become an Author
- 2) Click the Main Menu link
- 3) Click the CUSR button
- 4) Type the username into the Username textfield
- 5) Optionally enter Carla's First and Last name.
- 6) Choose the option "Kerberos authenticated with domain MSU.EDU"
- 7) Check the box for the Co-author role.
- 8) Optionally set start and end times for Carla's access to your construction space.
- 9) Click the Modify User button.

3. Add the image file, which is located on your desktop (the file name is **picture.jpg**), to the **incomplete** problem called **picture.problem**. After you complete the problem by adding the image, put this problem in **Homework Set 3** in your course.

Time limit: 10 minutes

Success criteria:

Part 1 – Upload image:

- Return to your construction space by clicking the Main Menu and clicking the CSTR button.
- Click the Browse button and browse your filesystem to find picture.jpg.
- Click Upload File button
- Click the Store button
- Click Back to Directory
- In the Select Action drop-down in front of the image file, choose publish.
- Optionally fill in the metadata and click the Finalize Publication button.
- Click the Back to Source Directory link.

Part 2 – Add image to problem:

- 1) Click on the picture.problem filename and then click Edit or click the Edit link under the file name.
- 2) Choose either the insert drop-down box before the yellow question text box or after the yellow question text box.
- 3) Select Image
- 4) Click the button Submit Changes and Edit

- 5) Click the Select link and select your image. If image does not appear, click the Update Display button to update your view of your filesystem.
- 6) Click Submit Changes and View
- 7) Publish the file by either clicking PUB or going to the directory view and choosing Publish from the Action drop-down.
- 8) Optionally fill in the metadata and click Finalize Publication.

Part 3 – Add problem to your course:

- 1) Click the Roles link to switch Roles and become a Course Coordinator
 - 2) Select the Course Coordinator Role.
 - 3) Go to the Course Documents screen
 - 4) Select the Homework Set 3 folder.
 - 5) Click the Import button
 - 6) Browser to your username
 - 7) Check the problem you want to upload. If it was published and does not appear, click the Update Display button.
 - 8) Click the import button.
 - 9) Optionally click the re-initializing Course button.
4. Create a new homework question in LON-CAPA that is based on **this** paper-based quiz question. When you are finished, put this question into **Homework Set 3** in your course.

Time limit: 10 minutes

Success criteria:

Part 1 – Create problem:

- 1) Return to your home folder.
- 2) Choose the action "New Problem" from the drop-down box under the "Create a new directory or LON-CAPA document" heading.
- 3) Type a file name into the text box next to the drop-down box. Filename can either have no extension or have the extension .problem.
- 4) Click the Go button. Click continue.
- 5) Select the problem template "Option Response – True/False"
- 6) Click the "Create problem" button.
- 7) Click Edit
- 8) Replace the question text and foil text with that on the handout.
- 9) Choose the correct option, true or False, for each foil.
- 10) For foils 4-6, either set the Delete in the purple area to yes or set the correct option to unused. (*Steps 7-10 can be replaced with clicking the EditXML button and coding the XML directly as well.*)
- 11) Click the Submit Changes and View button.
- 12) Optionally test out the problem.
- 13) Publish the problem by clicking the PUB button or by clicking the LIST button and selecting Publish from the Actions drop-down link in front of the button.
- 14) Optionally fill in the metadata. Click Finalize Publication button.

Part 2 – Add problem problem to your course:

- 1) Click the Roles link to switch Roles and become a Course Coordinator
- 2) Select the Course Coordinator Role.
- 3) Go to the Course Documents screen
- 4) Select the Homework Set 3 folder.

- 5) Click the Import button
 - 6) Browser to your username
 - 7) Check the problem you want to upload. If it was published and does not appear, click the Update Display button.
 - 8) Click the import button.
 - 9) Optionally click the re-initializing Course button.
5. You want to create a new folder for the course to keep your course readings in. Create this folder and call it **Course Readings**. Then, move the file **michiganfacts.html** from its current location to the **Course Readings** folder.

Time limit: 5 minutes

Success criteria:

Part 1 – Create the folder:

1. Switch roles and return to your construction space.
2. Under the "Create a new directory or LON-CAPA document" heading, select New Subdirectory from the Select Action drop-down menu.
3. Type in a name for your new folder
4. Click Go
5. Click Done

Part 2 – Move the file:

1. Return to your construction space top-level directory by using the breadcrumb trail at the top or choosing the Parent Directory link.
2. In the Select action drop-down menu before the michiganfacts.html file, select move or rename.
3. Type the foldername into the little window that pops up.
4. Click the Continue button
5. Click the Done link

6. You now want to give your course access to the file **michiganfacts.html**, *that you just moved to your **Course Readings** folder*. Publish this file such that only your course can have access to it.

Time limit: 5 minutes

Success criteria:

Part 1 – Create a custom rights file:

- 1) Click on the folder name you created to enter that folder.
- 2) Under the Create a new directory or LON-CAPA document heading, select "new custom rights file" form the drop-down menu.
- 3) Enter a name for your rights file in the textfield.
- 4) Click Go
- 5) Click Continue
- 6) Choose the option to Insert Rule Below in the Edit action field.
- 7) Click Store
- 8) In the second line, Click the Select Course link and search for your course.
- 9) Click Store
- 10) Publish this file by either click PUB or viewing the directory and choosing Publish from the Actions.
- 11) Fill in the optional metadata and publish this file.
- 12) Click the Back to Source Directory Link

Part 2 – Publish the michiganfacts.html file customized:

- 1) Either view the file and click PUB or choose Publish from the Select Action drop-down menu.
- 2) Optionally fill-in metadata
- 3) For the Copyright/Distribution field, select Customized right of use.
- 4) After the Custom Distribution File text field, click the select link.
- 5) Browse to your rights file and click the select button.
- 6) Click finalize publication.

Appendix 6 – Results by Task

TASK 1	Successfully Completed?	Error or Gave Up?	Time to Complete or Give Up
P1 - Experienced	yes		08:05.2
P2 - Experienced	yes		14:50.2
P3 - Experienced	yes		09:33.9
P4 - Inexperienced	yes		09:05.3
P5 - Inexperienced	yes		14:48.1
P6 - Inexperienced	no	gave up	10:47.7
P7 - Inexperienced	no	gave up	12:29.6
P8 - Inexperienced	no	gave up	20:03.9
P9 - Experienced	yes		08:54.0
P10 - Inexperienced	no	gave up	11:17.7
P11 - Experienced	yes		06:35.3
P12 - Experienced	no	gave up	11:04.7

TASK 2	Successfully Completed?	Error or Gave Up?	Time to Complete or Give Up
P1 - Experienced	no	error	09:25.2
P2 - Experienced	no	error	07:34.9
P3 - Experienced	no	gave up	03:56.8
P4 - Inexperienced	yes		05:25.0
P5 - Inexperienced	no	gave up	04:12.9
P6 - Inexperienced	no	error	07:29.6
P7 - Inexperienced	no	error	05:19.3
P8 - Inexperienced	no	error	08:07.8
P9 - Experienced	no	error	09:19.6
P10 - Inexperienced	no	gave up	07:21.1
P11 - Experienced	no	gave up	06:20.8
P12 - Experienced	no	gave up	07:44.5

TASK 3	Successfully Completed?	Error or Gave Up?	Time to Complete or Give Up
P1 - Experienced	no	gave up	05:54.0
P2 - Experienced	no	gave up	03:28.0
P3 - Experienced	no	gave up	06:11.9
P4 - Inexperienced	no	gave up	10:43.8
P5 - Inexperienced	no	error	10:05.8
P6 - Inexperienced	no	gave up	05:53.0
P7 - Inexperienced	no	gave up	07:31.5
P8 - Inexperienced	no	gave up	06:36.5
P9 - Experienced	yes		08:44.2
P10 - Inexperienced	no	gave up	04:49.4
P11 - Experienced	no	gave up	05:49.9
P12 - Experienced	no	gave up	13:22.1

TASK 4	Successfully Completed?	Error or Gave Up?	Time to Complete or Give Up
P1 - Experienced	yes		05:32.7
P2 - Experienced	yes		06:07.8
P3 - Experienced	yes		05:01.9
P4 - Inexperienced	no	gave up	10:50.0
P5 - Inexperienced	yes		10:29.1

P6 - Inexperienced	no	errors	08:16.6
P7 - Inexperienced	no	errors	09:15.9
P8 - Inexperienced	no	gave up	06:12.2
P9 - Experienced	yes		06:43.0
P10 - Inexperienced	no	gave up	05:49.6
P11 - Experienced	yes		08:35.9
P12 - Experienced	yes		07:38.8

TASK 5	Successfully Completed?	Error or Gave Up?	Time to Complete or Give Up
P1 - Experienced	yes		04:16.6
P2 - Experienced	no	gave up	05:37.4
P3 - Experienced	yes		08:05.6
P4 - Inexperienced			
P5 - Inexperienced	yes		04:58.1
P6 - Inexperienced	no	gave up	02:43.5
P7 - Inexperienced	no	gave up	04:53.7
P8 - Inexperienced			
P9 - Experienced	yes		03:04.1
P10 - Inexperienced	no	gave up	05:15.1
P11 - Experienced	yes		03:44.6
P12 - Experienced	no	gave up	05:41.3

TASK 6	Successfully Completed?	Error or Gave Up?	Time to Complete or Give Up
P1 - Experienced	no	error	01:02.3
P2 - Experienced			
P3 - Experienced			
P4 - Inexperienced			
P5 - Inexperienced			
P6 - Inexperienced			
P7 - Inexperienced			
P8 - Inexperienced			
P9 - Experienced			
P10 - Inexperienced			
P11 - Experienced	no	gave up	01:46.8
P12 - Experienced			

Appendix 7 – Post-study Questionnaire Results

1. Overall, how easy was it for you to use LON-CAPA?

	1 - Very Difficult	2 - Difficult	3 – Somewhat Difficult	4 - Neutral	5 - Somewhat Easy	6 - Easy	7 – Very Easy	MEAN
Experienced		n=1	n=2		n=1	n=2		4.17
Inexperienced	n=2	n=3	n=1					1.83
Combined	n=2	n=4	n=3		n=1	n=2		3

Why?

Experienced:

- P2 – Somewhat Difficult – I was asked to do things I hadn’t done in a while or had never done. I’m also used to using the remote control and having access to my old problems.
- P3 – Somewhat Difficult – The tasks I don’t perform all the time are not always easy to do initially.
- P9 – Easy – Several years of practice.
- P11 – Somewhat Easy – Lots of past experience. It is hard to use at first.
- P12 – Difficult – I couldn’t remember several important steps.

Inexperienced:

- P4 – Difficult – Many places in which context-sensitive help needed.
- P5 – Somewhat Difficult – I have not had a lot of experience authoring problems and creating courses.
- P6 – Difficult – It is unfamiliar to me.
- P7 – Very Difficult – No training.
- P8 – Very Difficult – Required a “vocabulary” with which I was unfamiliar.
- P10 – Difficult – Navigation labels not clear tasks did not follow a clear or familiar pattern.

2. To what extent did the features of the LON-CAPA system meet your expectations?

	1 – Did Not Meet	2 – Met Very Little	3 – Met a Little	4 - Neutral	5 – Slightly Met	6 – Somewhat Met	7 – Very Much Met	MEAN
Experienced				n=1		n=1	n=3	6.2
Inexperienced		n=2	n=1	n=2				3
Combined		n=2	n=1	n=3		n=1	n=3	4.6

Why?

Experienced:

- P3 – NO RATING – We did not test this today—the features of LON-CAPA problems far exceed those of Angel and the course management system probably does also.
- P9 – Very Much Met – I manage to do all that I want to help my teaching.
- P11 – Very Much Met – It will do almost anything you want, you just have to know how.
- P12 – Neutral – Seems like it has always been.

Inexperienced:

- P4 – Met a Little – Tasks I knew something about I could figure out but help was insufficient to do those I don’t know.
- P6 – Neutral – It was what I expected—I don’t know what it can do.
- P7 – Met Very Little – Never seen LON-CAPA prior to today.
- P8 – Met Very Little – Again—navigation too new to me.
- P10 – Met Very Little – Steps to complete a task seemed excessive and illogical, navigation labels were not intuitive to me.

3. How easy was it to understand the way the site was organized?

	1 - Very Difficult	2 - Difficult	3 – Somewhat Difficult	4 - Neutral	5 - Somewhat Easy	6 - Easy	7 – Very Easy	MEAN
Experienced			n=4		n=1	n=1		4
Inexperienced	n=3	n=2	n=1					1.7
Combined	n=3	n=2	n=5		n=1	n=1		2.75

Why?

Experienced:

- P3 – Somewhat Difficult – The organization is not as transparent as Angel.
- P9 – Somewhat Difficult – I had no experience with this kind of “course software” at all. (I think it would have been as difficult with Angel...)
- P11 – Somewhat Easy – The concept of Author Space vs. Course Space is a little confusing at first.

Inexperienced:

- P4 – Difficult – Several times going to help back returned re-post of data.
- P5 – Somewhat Difficult – It became easier after I had completed the first few tasks and became used to the system.
- P6 – Very Difficult – Everything that is new is difficult to understand at first.
- P8 – Very Difficult – See above #1 and #2.
- P10 – Very Difficult – Navigation labels obscure.

4. How easy was it to navigate through the site?

	1 - Very Difficult	2 - Difficult	3 – Somewhat Difficult	4 - Neutral	5 - Somewhat Easy	6 - Easy	7 – Very Easy	MEAN
Experienced			n=3			n=3		4.5
Inexperienced	n=3		n=2		n=1			2.33
Combined	n=3		n=5		n=1	n=3		3.42

Why?

Experienced:

- P11 – Easy – Transitions between Author Space and Course Space is better now with the CSTR button.
- P12 – Somewhat Difficult – But I was completely stumped a few times.

Inexperienced:

- P4 – Somewhat Difficult – See above.
- P5 – Somewhat Difficult – I am not used to having to search for everything. Maybe if it was my own author space I could organize it differently.
- P6 – I didn’t know where I was going and the terms were unfamiliar.
- P8 – Very Difficult – Ditto.
- P10 – Navigation labels obscure.

5. How useful do you find the LON-CAPA system to be?

	1 – Not at All	2 – Of Little Use	3 – Mostly Un-useful	4 - Neutral	5 - Somewhat Useful	6 – Mostly Useful	7 – Very Useful	MEAN
Experienced							n=5	7
Inexperienced			n=1	n=1	n=2	n=1	n=1	5
Combined			n=1	n=1	n=2	n=1	n=6	5.91

Why?

Experienced:

- P3 – NO RATING – We did not test this—(see 2) the LON-CAPA is not as obvious for some tasks but is likely to be superior in its long term flexibility.
- P9 – Very Useful – I love it!
- P11 – Very Useful – Randomized homework and tests.
- P12 – Very Useful – Once I remember how to use it I can author great homework.

Inexperienced:

- P4 – Somewhat Useful – Difficult to find help and not intuitive for several tasks because have to know how LON-CAPA is organized.
- P5 – Somewhat Useful – It is a good way to give students randomized homework problems.
- P6 – Mostly Un-Useful – I’m hoping it will be very useful—it’s not very friendly.
- P7 – Neutral – More useful with training.
- P8 – Mostly Un-useful – IA.
- P10 – Very Useful – I was very frustrated with the navigation and labeling and sequencing of tasks. However, the capabilities built into the LON-CAPA system are very useful. If it can just become more intuitive in its architecture and user-friendly.

Additional Comments:

- P2 – Experienced – Problems asked to create were different than problems I typically create. Most questions above are not that relevant because I’m a LON-CAPA user—I’m familiar with it and like it.
- P7 – Inexperienced – I believe more training or usage the system would be very useful. Hard to get away from verbiage that other systems use. First time seeing software, seemed confusing.
- P8 – Inexperienced – I know many students have become familiar with the interface—god bless them.

Appendix 8 – Selected Screen Shots from the LON-CAPA System

Homepage/User Roles (what you get when signing in)

LON-CAPA User Roles - Microsoft Internet Explorer

Address: <http://template23.lite.msu.edu/adm/roles>

Main Menu Launch Remote Control Roles Help Exit

User Roles

author1.msu
No Role, Cumulative Privileges

Your home server is template23.lite.msu.edu
Author and Co-Author roles are not available on servers other than their respective home servers.
Show all roles: Display

User Role	Extent	Start	End
Construction Space			
Select Author	Domain: msu Server: template23.lite.msu.edu	Thu Apr 19 11:44:30 2007 (EDT)	
Course			
Select Course Coordinator	History of Michigan Syllabus Domain:msu		
No role specified			Currently selected.

This is LON-CAPA CVS_HEAD-20050831
[Logout](#)

Author Role Construction Space page

Address: <http://template23.lite.msu.edu/priv/author1/>

Main Menu Launch Remote Control Roles Help Exit

Construction Space: /priv/author1/ author1:msu
Author /msu/

— Recent —

Actions for current directory Upload a new document Create a new directory or LON-CAPA document

Select Action Browse... Upload file New problem: task1 Go

Directory Contents:

Type	Actions	Name	Title	Status	Last Modified
<n>	Select action	index.html (Edit) (Clean Up)		Unpublished	Sun Apr 22 20:12:04 2007 (EDT)
<n>	Select action	michiganfacts.html (Edit) (Clean Up)		Unpublished	Sun May 13 18:50:22 2007 (EDT)
?	Select action	picture.problem (Edit) (EditXML) (Clean Up)		Unpublished	Sun Apr 22 19:52:21 2007 (EDT)

Author Role Construction Space File Operation

The screenshot shows a Microsoft Internet Explorer browser window. The title bar reads "LON-CAPA Construction Space File Operation - Microsoft Internet Explorer". The address bar contains the URL "http://template23.lite.msu.edu/adm/cfile". The browser's menu bar includes "File", "Edit", "View", "Favorites", "Tools", and "Help".

The main content area has a light green background. At the top, there is a navigation bar with links for "Main Menu", "Launch Remote Control", "Roles", "Help", and "Exit". On the right side of this bar, the user's identity is displayed as "author1.msu", "Author", and "/msu/".

The main heading is "Construction Space File Operation". Below it, the "Location:" is set to "/priv/author1/". A section titled "New Resource" asks the user to "Make new file /priv/author1/Task 1.problem?". At the bottom of this section are two buttons: "Continue" and "Cancel".

Author Role Creating a New Problem

The screenshot shows a Microsoft Internet Explorer browser window titled "LON-CAPA Construction Space". The address bar contains the URL `http://template23.lite.msu.edu/priv/author1/Task%201.problem`. The browser's menu bar includes "File", "Edit", "View", "Favorites", "Tools", and "Help". The page content is displayed on a light green background and includes a navigation bar with "Main Menu", "Launch Remote Control", "Roles", and "Help Exit". Below this, the path `/priv/author1/Task 1.problem` is shown, along with a "Recent" dropdown menu and a user role indicator for "author1:msu" (Author /msu/).

Five action buttons are visible: "LIST" (List current directory), "DEL" (Delete this resource), "RTRV" (Retrieve old version), "PRT" (Prepare a printable document), and "PUB" (Publish this resource).

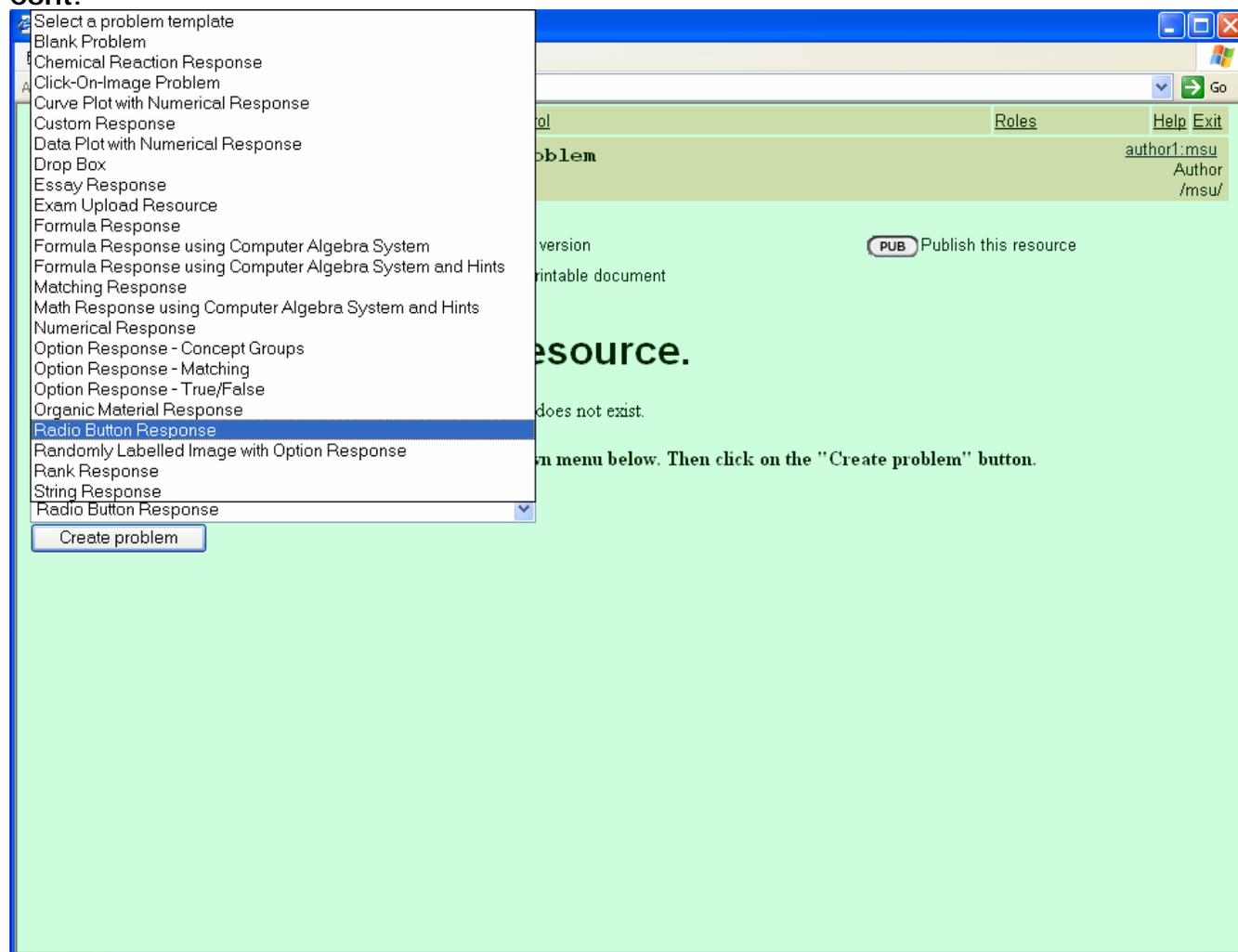
Creating a new problem resource.

The requested file `/priv/author1/Task 1.problem` currently does not exist.

To create a new problem, select a template from the pull-down menu below. Then click on the "Create problem" button.

Below the instructions, there is a pull-down menu labeled "Select a problem template" and a "Create problem" button.

Cont.



Author Role create problem with Radio button responses

LON-CAPA Construction Space - Microsoft Internet Explorer

Address: http://template23.lite.msu.edu/priv/author1/Task%201.problem

Main Menu Launch Remote Control Roles Help Exit

Construction Space: /priv/author1/Task 1. problem author1:msu
Author /msu/

— Recent —

LIST List current directory RTRV Retrieve old version PUB Publish this resource
DEL Delete this resource PRT Prepare a printable document

Edit EditXML New Randomization Reset Submissions Change Random Seed To: 1179423688 Show All Foils

Testing Problems ?

Problem Status: Problem Type: Feedback Mode: Change

Calculate answers for 20 versions of this problem. ?

Enter the text of the question here.

This is foil Five, and it is currently set to "false."

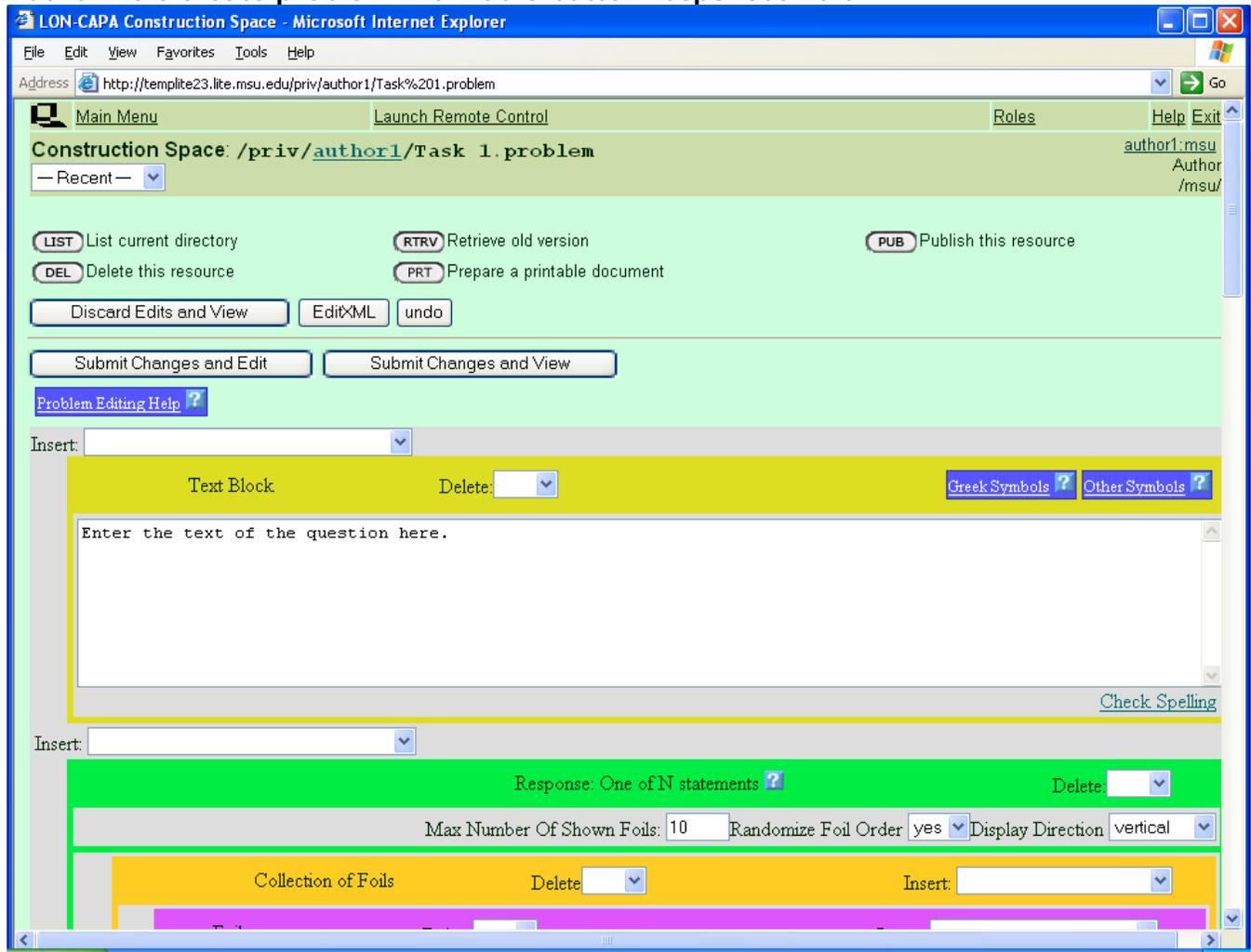
This is foil Three, and it is currently set to "false."

This is foil Four, and it is currently set to "false."

This is foil One, and it is currently set to "true." Only one true foil is selected.

Submit Answer Tries 0

Author Role create problem with radio button responses Edit



Author Role create problem with radio button responses EditXML

The screenshot shows the LON-CAPA Construction Space interface in Microsoft Internet Explorer. The address bar shows the URL: `http://template23.lite.msu.edu/priv/author1/task1.problem`. The page title is "Construction Space: /priv/author1/task1.problem". The interface includes a navigation menu with "Main Menu", "Launch Remote Control", "Roles", and "Help Exit". A "Recent" dropdown menu is visible. Below the navigation, there are several action buttons: "LIST" (List current directory), "RTRV" (Retrieve old version), "PUB" (Publish this resource), "DEL" (Delete this resource), and "PRT" (Prepare a printable document). There are also buttons for "Discard Edits and View", "Edit", "undo", "Submit Changes", and "Submit Changes and View". Below the buttons, there are links for "Problem Editing Help", "Greek Symbols", and "Other Symbols". The main content area displays XML code for a problem with radio button responses:

```
<problem>
<startouttext />Enter the text of the question here.<endouttext />
<radiobuttonresponse direction="vertical" max="10" randomize="yes">
  <foilgroup>
    <foil location="random" value="true" name="foil1">
      <startouttext />This is foil One, and it is currently set to "true." Only one true foil is selected.<endouttext />
    </foil>
    <foil location="random" value="true" name="foil2">
      <startouttext />This is foil Two, and it is currently set to "true." Only one true foil is selected.<endouttext />
    </foil>
    <foil location="random" value="false" name="foil3">
      <startouttext />This is foil Three, and it is currently set to "false."<endouttext />
    </foil>
    <foil location="random" value="false" name="foil4">
      <startouttext />This is foil Four, and it is currently set to "false."<endouttext />
    </foil>
  </foilgroup>
</radiobuttonresponse>
</problem>
```

The screenshot shows the LON-CAPA Construction Space interface in Microsoft Internet Explorer. The address bar shows the URL: `http://template23.lite.msu.edu/priv/author1/task1.problem`. The page title is "Construction Space: /priv/author1/task1.problem". The interface includes a navigation menu with "Main Menu", "Launch Remote Control", "Roles", and "Help Exit". A "Recent" dropdown menu is visible. Below the navigation, there are several action buttons: "LIST" (List current directory), "RTRV" (Retrieve old version), "PUB" (Publish this resource), "DEL" (Delete this resource), and "PRT" (Prepare a printable document). There are also buttons for "Discard Edits and View", "Edit", "undo", "Submit Changes", and "Submit Changes and View". Below the buttons, there are links for "Problem Editing Help", "Greek Symbols", and "Other Symbols". The main content area displays XML code for a problem with a hint group and a radio button response:

```
<foil location="random" value="false" name="foil5">
  <startouttext />This is foil Five, and it is currently set to "false."<endouttext />
</foil>
</foilgroup>
<hintgroup showoncorrect="no"><startouttext /><endouttext />
</hintgroup>
</radiobuttonresponse>
</problem>
```

Author Role create problem with radio button responses after submit & view changes

The screenshot shows a Microsoft Internet Explorer browser window titled "LON-CAPA Construction Space - Microsoft Internet Explorer". The address bar contains the URL "http://template23.lite.msu.edu/priv/author1/task1.problem". The page header includes navigation links: "Main Menu", "Launch Remote Control", "Roles", and "Help Exit". The main content area is titled "Construction Space: /priv/author1/task1.problem" and includes a "Recent" dropdown menu. Below this, there are several action buttons: "LIST" (List current directory), "DEL" (Delete this resource), "RTRV" (Retrieve old version), "PRT" (Prepare a printable document), and "PUB" (Publish this resource). The page also displays "Making Backup to /home/author1/public_html/task1.problem.bak" and "Saving Modifications to /home/author1/public_html/task1.problem". A row of buttons includes "Edit", "EditXML", "New Randomization", "Reset Submissions", "Change Random Seed To:" (with a text input field containing "1179424696"), and "Show All Foils". A "Testing Problems ?" link is also present. The "Problem Status:" dropdown is set to "Problem Type:" dropdown is set to "Feedback Mode:" dropdown is set to "Change". Below this, there is a "Calculate answers" button for "20" versions of this problem. The main question text is "Enter the text of the question here." followed by four radio button options: "This is foil Five, and it is currently set to 'false.'", "This is foil Three, and it is currently set to 'false.'", "This is foil Four, and it is currently set to 'false.'", and "This is foil One, and it is currently set to 'true.' Only one true foil is selected." Below the question is a "Submit Answer" button and "Tries 0". At the bottom, there is an "Answer for Part 0" field with four input boxes containing "false", "false", "false", and "true".

Author Role create new problem/Publish problem

LON-CAPA Resource Publication - Microsoft Internet Explorer

Address: <http://template23.lite.msu.edu/adm/publish>

Main Menu Launch Remote Control Roles Help Exit

Resource Publication author1:msu
Author
/msu/

Publishing Problem Document task1.problem

Target: /res/msu/author1/task1.problem

[Diffs with Current Version](#)

Dependencies

Metadata Information ?

No file: /priv/author1/default.meta

Finalize Publication

Title:

Author(s):

Subject:

Cont....end of page

LON-CAPA Resource Publication - Microsoft Internet Explorer

Address: <http://template23.lite.msu.edu/adm/publish>

Obsolete:

Suggested Replacement for Obsolete File:

 [Select Search](#)

Finalize Publication

Course Coordinator Role Course Actions Items page

LON-CAPA Course Action Items - Microsoft Internet Explorer

Address: <http://template23.lite.msu.edu/adm/whatsnew?refpage=start>

Main Menu | Return to Last Location | Navigate Contents | Course Documents | Groups | Launch Remote Control | Roles | Help | Exit

Course Action Items author1.msu
Course Coordinator
History of Michigan
What's New?

[History of Michigan](#) -> Display Action Items

Go to first resource
Page set to be displayed after you have selected a role in this course.
Currently: *What's New?* page (user preference). **Change** for just [this course](#) or for all [your courses](#)

[Hide all](#) | [Show all](#)

Problems requiring handgrading Hide	Unread course discussion posts Hide
<i>No problems require handgrading</i>	<i>No unread posts in course discussions</i>

Problems with errors Hide	New course messages Hide
<i>No problems with errors</i>	<i>No new course messages</i>

Problems with av. attempts ≥ 2 or deg. difficulty ≥ 0.5 and total number of students with submissions ≥ 2 Hide	New critical messages in course Hide
<i>No problems satisfy threshold criteria</i>	<i>No unread critical messages in course</i>

Resources in course with version changes since last week Hide
<i>No updated versions since last week</i>

Internet

Course Coordinator Course Documents page

LON-CAPA Course Documents - Microsoft Internet Explorer

Address http://template23.lite.msu.edu/adm/coursedocs

Main Menu Return to Last Location Navigate Contents Course Documents Groups Launch Remote Control Roles Help Exit

Course Documents

author1.msu
Course Coordinator
History of Michigan

Verify Content Check/Set Resource Versions Dump Course DOCS to Construction Space Export Course to I

Editing the Table of Contents for your Course

Main Course Documents

(1)	Remove Cut Rename Copy	Syllabus	<input type="checkbox"/> Hidden	<input type="checkbox"/> URL hidden	
(2)	Remove Cut Rename Copy	Homework Set 1	<input type="checkbox"/> Hidden	<input type="checkbox"/> URL hidden	Randomly Pick: <input type="text"/> Store
(3)	Remove Cut Rename Copy	Homework Set 2	<input type="checkbox"/> Hidden	<input type="checkbox"/> URL hidden	Randomly Pick: <input type="text"/> Store
(4)	Remove Cut Rename Copy	Homework Set 3	<input type="checkbox"/> Hidden	<input type="checkbox"/> URL hidden	Randomly Pick: <input type="text"/> Store

Upload a new main course document

Import a document

Special documents

File: Browse...

Title:

If HTML file, upload embedded images/multimedia files?

Upload Document

Published documents

Search

Import

Import Bookmarks

All documents out of a published map into this folder

Select Map Load Map

Recover Deleted Resources

New Folder

New Composite Page

Syllabus

Navigate Contents

Simple Page

Simple Problem

Drop Box

Score Upload Form

Bulletin Board

My Personal Info

Course Coordinator Homework Set 3 Folder page

The screenshot shows a Microsoft Internet Explorer browser window displaying the LON-CAPA Course Documents interface. The address bar shows the URL: http://templite23.lite.msu.edu/adm/coursedocs?folderpath=default%26Main%2520Course%2520Documents%26default_1176774858%26Homework%2520Set%2520. The browser title is "LON-CAPA Course Documents - Microsoft Internet Explorer".

The page header includes navigation links: [Main Menu](#), [Return to Last Location](#), [Navigate Contents](#), [Course Documents](#), [Groups](#), [Launch Remote Control](#), [Roles](#), [Help](#), and [Exit](#). The user's role is identified as "author1.msu Course Coordinator History of Michigan".

The main content area is titled "Course Documents" and contains several utility buttons: [Verify Content](#), [Check/Set Resource Versions](#), [Dump Course DOCS to Construction Space](#), and [Export Course to I](#). Below these is a link: [Editing the Table of Contents for your Course](#).

The primary section is "Main Course Documents->Homework Set 3", which currently shows "Currently no documents." It is divided into three columns:

- Upload a new main course document:** Includes fields for "File:" (with a "Browse..." button), "Title:", and a checkbox for "If HTML file, upload embedded images/multimedia files?". An [Upload Document](#) button is at the bottom.
- Import a document:** Features a "Published documents" section with a search box, an [Import](#) button, and an [Import Bookmarks](#) button. Below is a section for "All documents out of a published map into this folder" with a text input, [Select Map](#), and [Load Map](#) buttons. Further down are [Recover Deleted Resources](#), [External Resource](#), and [Import IMS package](#) buttons.
- Special documents:** A vertical list of document types, each with a button and a help icon: [New Folder](#), [New Composite Page](#), [Syllabus](#), [Navigate Contents](#), [Simple Page](#), [Simple Problem](#), [Drop Box](#), [Score Upload Form](#), [Bulletin Board](#), [My Personal Info](#), [About User](#), and [Group Files](#).

The browser's status bar at the bottom shows "Done" and "Internet".

Course Coordinator Browse Resources page

LON-CAPA Browse Resources - Microsoft Internet Explorer

Address: http://template23.lite.msu.edu/res/msu/?acts=

Main Menu | Return to Last Location | Navigate Contents | Course Documents | Groups | Launch Remote Control | Roles | Help | Exit

Browse Resources

author1.msu
Course Coordinator
History of Michigan

All versions
 Title Author Keywords Language
 Size Last access Last modified Source Available
 Statistics Linked/Related Resources Show resource

Update Display Close Import

/res/msu/
 - Recent - Home

Name
Up
albertel (Guy D Albertelli II)
ander501 (Vaughn W Anderson)
andya (Andy Anderson)
apcalc (Adv Credit Calculus)
apollock (Amy Pollock)
asquith (Peter Asquith)
astro (Astro Resources)
atlee (Kirstin Atlee)
author1 (author1.msu)
author11 (author11.msu)

Author 1 Browse Resources page

The screenshot shows a Microsoft Internet Explorer browser window titled "LON-CAPA Browse Resources - Microsoft Internet Explorer". The address bar contains the URL "http://template23.lite.msu.edu/res/msu/author1/?acts=". The browser's navigation bar includes buttons for Back, Forward, Stop, Home, Search, Favorites, and Go. Below the navigation bar, there are several menu items: Main Menu, Return to Last Location, Navigate Contents, Course Documents, Groups, Launch Remote Control, Roles, Help, and Exit. The main content area is titled "Browse Resources" and features a search bar with the text "author1.msu" and the role "Course Coordinator History of Michigan". Below the search bar, there are several checkboxes for filtering resources: All versions, Title, Author, Keywords, Language, Size, Last access, Last modified, Source Available, Statistics, Linked/Related Resources, and Show resource. There are also buttons for "Update Display", "Close", and "Import". The current path is "/res/msu/author1/" and the current view is "Home". A table with the following content is displayed:

Name	
	Up
<input type="checkbox"/>	? task1.problem (metadata)

The status bar at the bottom of the browser window shows "Done" and "Internet".

Author 1 Import task 1 document Re-initialize Browse Resources page

LON-CAPA Course Documents - Microsoft Internet Explorer

Address <http://template23.lite.msu.edu/adm/coursedocs>

Verify Content Check/Set Resource Versions Dump Course DOCS to Construction Space Export Course to I...

Editing the Table of Contents for your Course

Main Course Documents->Homework Set 3

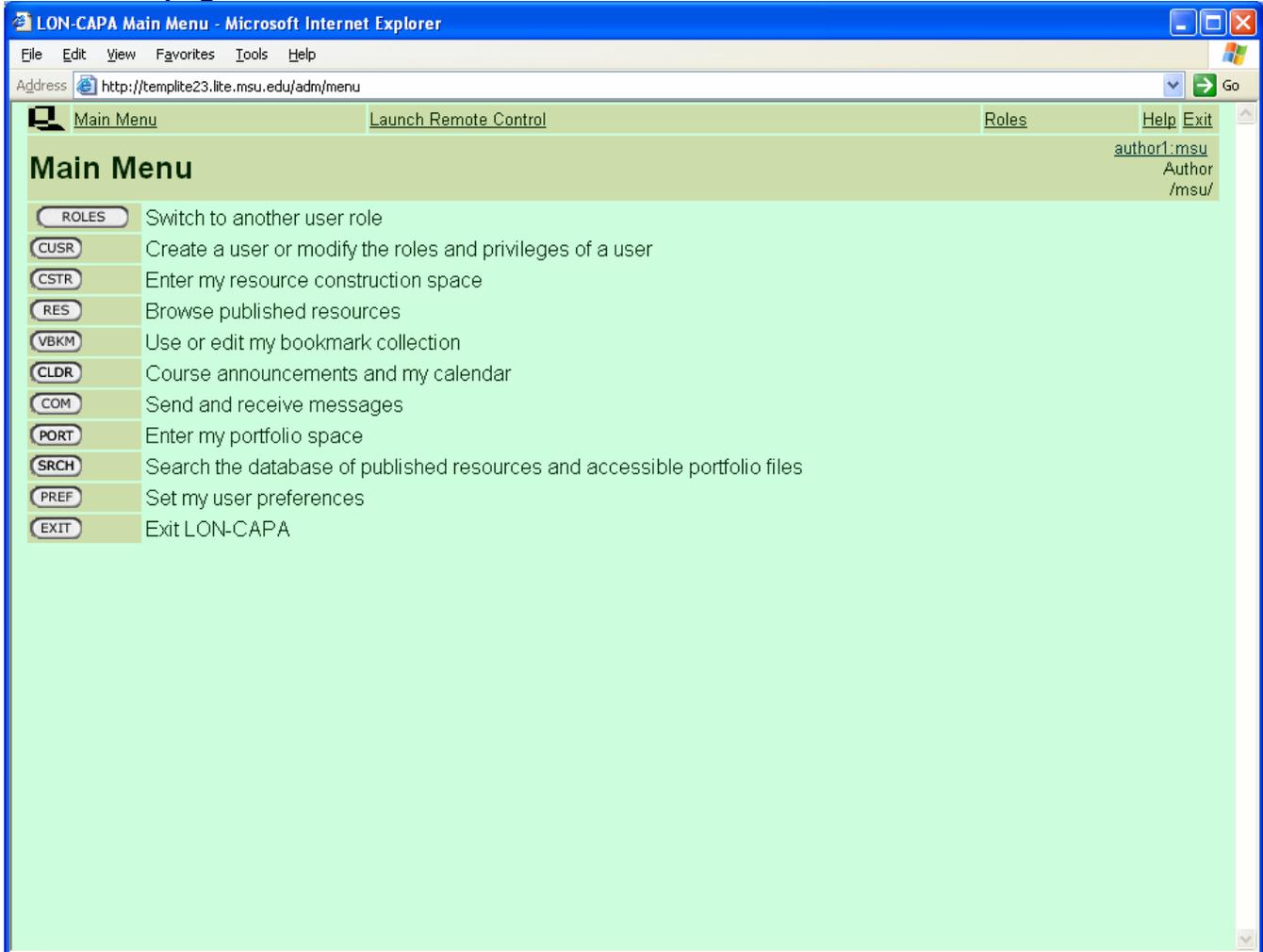
task 1 (re-initialize course to access) Hidden URL hidden

Changes will become active for your current session after re-initializing Course, or the next time you log in.

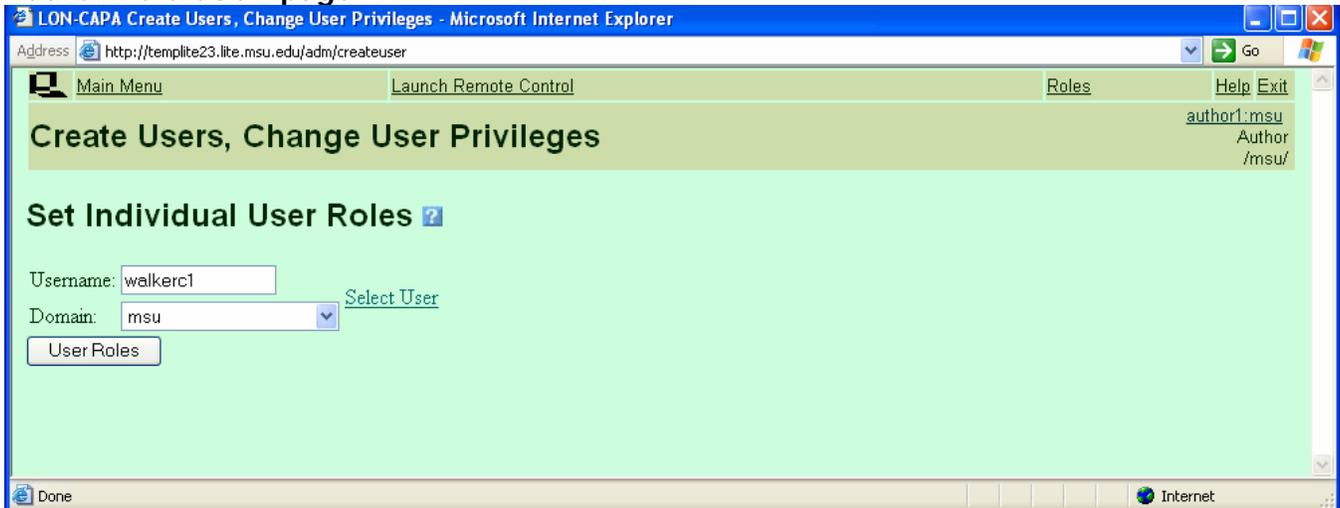
Upload a new main course document	Import a document	Special documents
File: <input type="text"/> <input type="button" value="Browse..."/>	Published documents <input type="button" value="Search"/> <input type="button" value="Import"/> <input type="button" value="Import Bookmarks"/>	<input type="button" value="New Folder"/> <input type="button" value="New Composite Page"/> <input type="button" value="Syllabus"/> <input type="button" value="Navigate Contents"/> <input type="button" value="Simple Page"/> <input type="button" value="Simple Problem"/> <input type="button" value="Drop Box"/> <input type="button" value="Score Upload Form"/> <input type="button" value="Bulletin Board"/> <input type="button" value="My Personal Info"/> <input type="button" value="About User"/> <input type="button" value="Group Files"/>
Title: <input type="text"/> If HTML file, upload embedded images/multimedia files? <input type="checkbox"/>	All documents out of a published map into this folder <input type="text"/> <input type="button" value="Select Map"/> <input type="button" value="Load Map"/> <input type="button" value="Recover Deleted Resources"/> <input type="button" value="External Resource"/> <input type="button" value="Import IMS package"/>	
<input type="button" value="Upload Document"/>		

Internet

Main Menu page



Author Role CUSR page



Author Role Change User Privileges page

Address <http://template23.lite.msu.edu/adm/createuser>

Main Menu Launch Remote Control Roles Help Exit

Create Users, Change User Privileges

author1.msu
Author
/msu/

Change User Privileges

User "walkerc1" in domain "msu"

first name	middle name	last name	generation
Carla		Walker	

Add Roles

Construction Space

Activate	Role	Extent	Start	End
<input checked="" type="checkbox"/>	Co-Author	msu_author1	Set Start Date	Set End Date
<input type="checkbox"/>	Assistant Co-Author	msu_author1	Set Start Date	Set End Date

Modify User

Internet

Author Role Modify User Privileges page

Address <http://template23.lite.msu.edu/adm/createuser>

Main Menu Launch Remote Control Roles Help Exit

Modify User Privileges

author1.msu
Author
/msu/

User "walkerc1" in domain "msu"

Carla Walker

Generation:

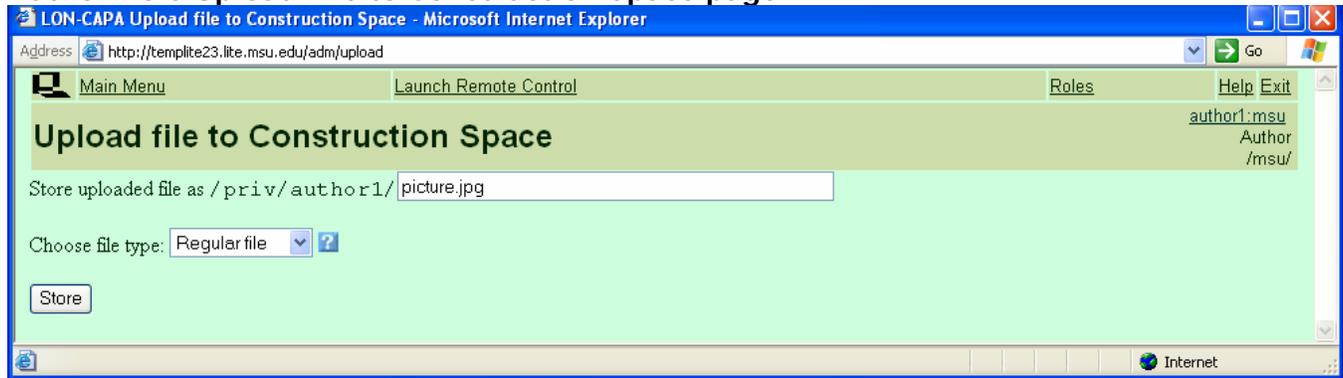
Modifying Roles

Assigning ca in /msu/author1, starting Thu May 17 14:30:22 2007: ok

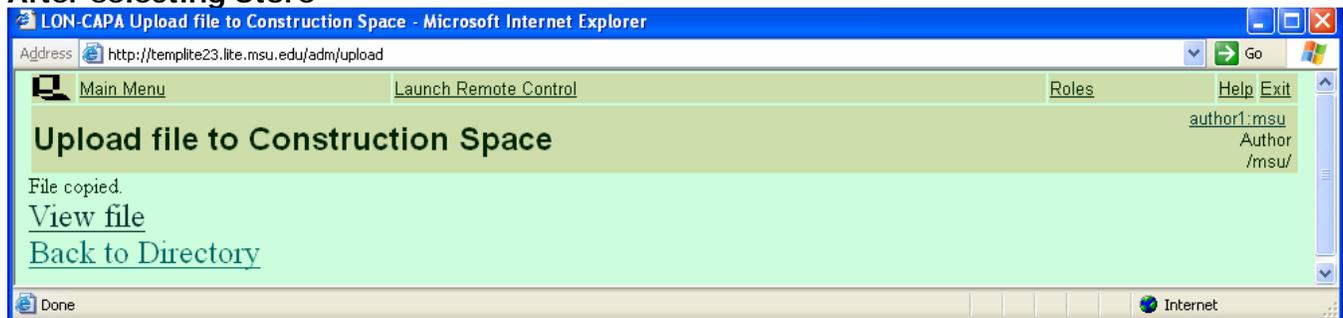
[Create/Modify Another User](#)

Done Internet

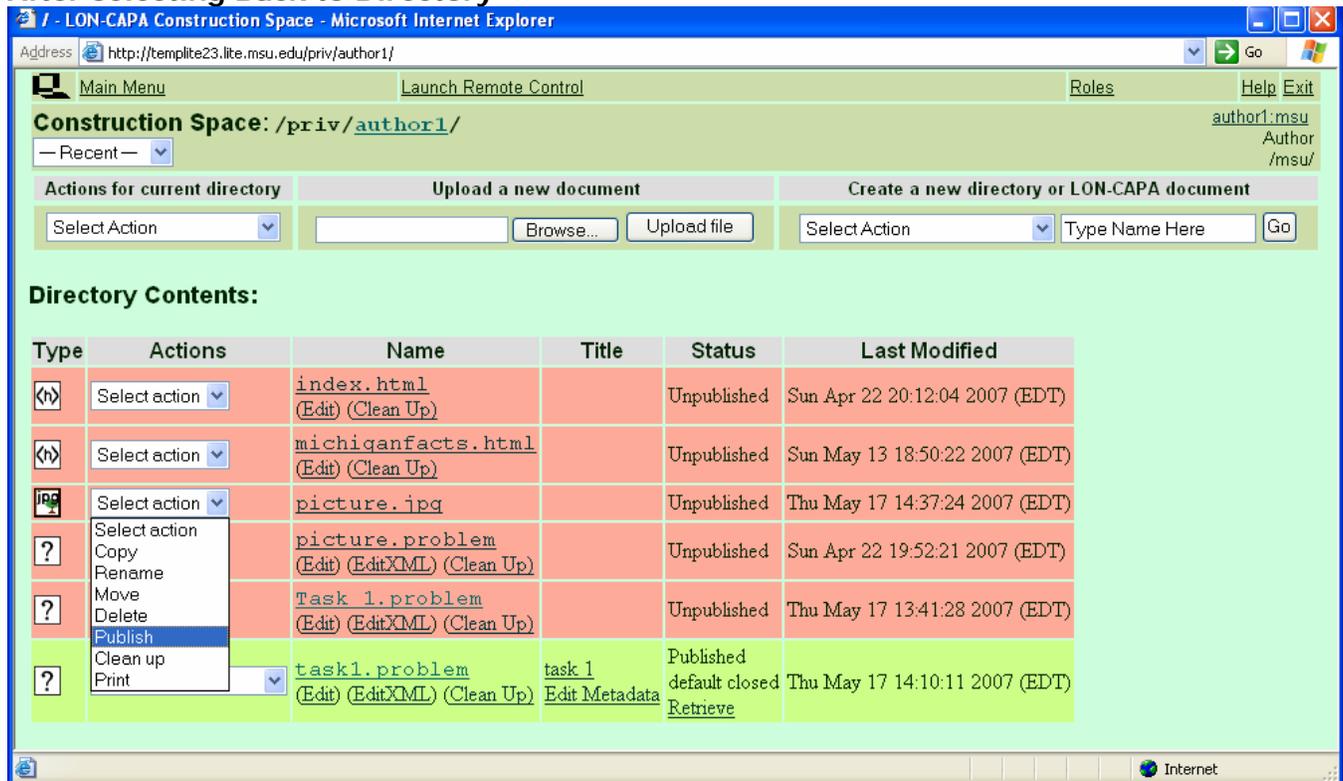
Author Role Upload File to Construction Space page



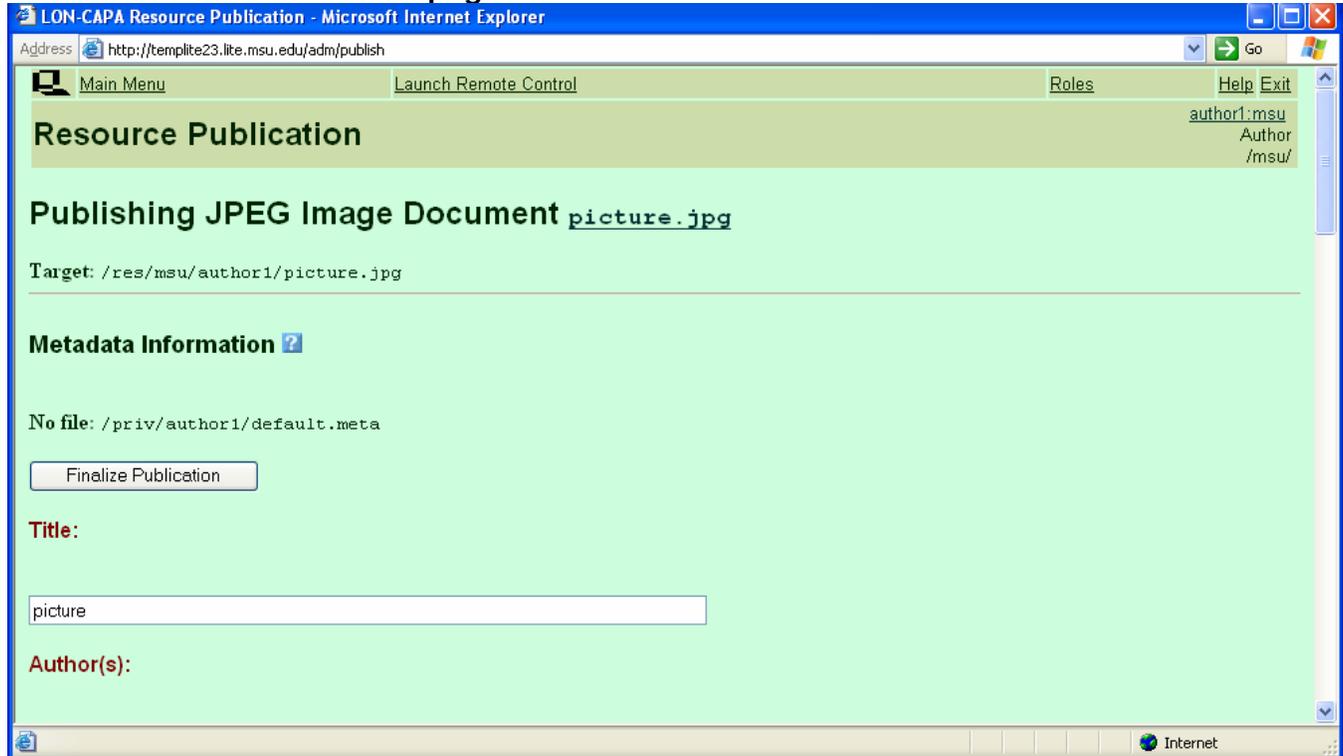
After selecting Store



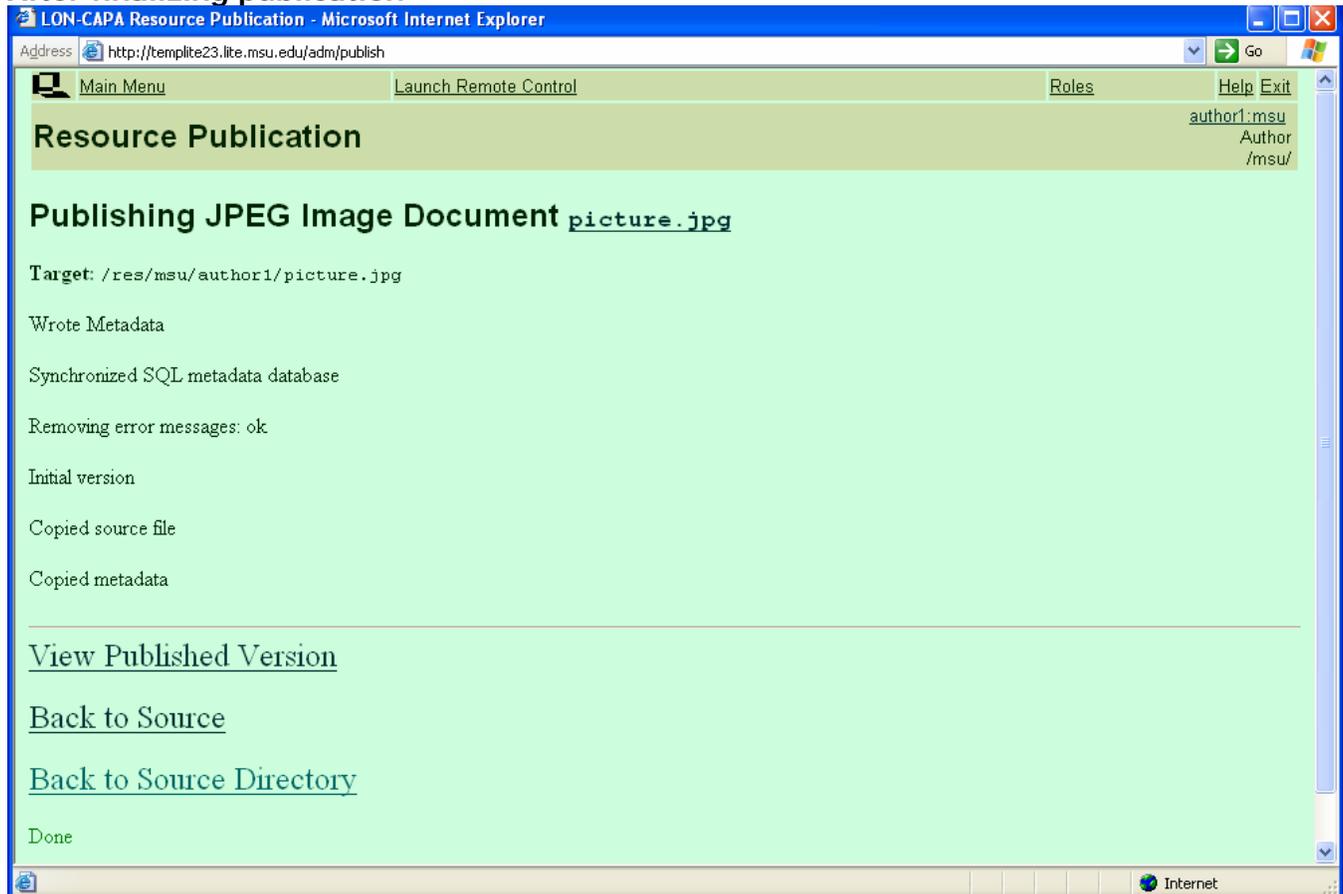
After selecting Back to Directory



Author Role Publish Picture page



After finalizing publication



Author Role Edit Picture Problem insert image

Address: <http://template23.lite.msu.edu/priv/author1/picture.problem?forceColoredit=1>

picture.problem

author1:msu
Author
/msu/

Retrieve old version (RTRV) Publish this resource (PUB)

Prepare a printable document (PRT)

Undo

It Changes and View

Delete: [Greek Symbols ?](#) [Other Symbols ?](#)

Check Spelling

Response: One of N statements ? Delete:

Max Number Of Shown Foils: Randomize Foil Order: Display Direction:

Collection of Foils Delete: Insert:

Select image page

LON-CAPA Construction Space - Microsoft Internet Explorer

Address: <http://template23.lite.msu.edu/priv/author1/picture.problem?forceColoredit=1>

Main Menu Launch Remote Control Roles Help Exit

Construction Space: /priv/author1/picture.problem

author1:msu
Author
/msu/

LIST List current directory RTRV Retrieve old version PUB Publish this resource
DEL Delete this resource PRT Prepare a printable document

Making Backup to /home/author1/public_html/picture.problem.bak
Saving Modifications to /home/author1/public_html/picture.problem

Discard Edits and View EditXML undo

Submit Changes and View Submit Changes and View

Problem Editing Help ?

Insert: [dropdown]

Image Delete [dropdown] Image Options ?

Image Uri: /res/msu/author1/picture.jpg Select Search
Description: picture
width (pixel): [input] height (pixel): [input]
TeXwidth (mm): [input] TeXheight (mm): [input] Alignment: [dropdown] TeXwrap: [dropdown] Encrypt URL: no [dropdown]

Insert: [dropdown]

Text Block Delete: [dropdown] Greek Symbols ? Other Symbols ?

This picture is

Internet

Cont.

LON-CAPA Browse Resources - Microsoft Internet Explorer

Address <http://template23.lite.msu.edu/res/msu/author1/?launch=1&catalogmode=interactive&mode=edit&form=lonhomew...> Go

Main Menu Launch Remote Control Roles Help Exit

Browse Resources

author1:msu
Author
/msu/

All versions

Title Author Keywords Language

Size Last access Last modified Source Available

Statistics Linked/Related Resources Show resource

Update Display Close

/res/msu/author1/

- Recent -

Name	
	Up
SELECT	 picture.jpg (metadata)
SELECT	 task1.problem (metadata)

Internet

Author Role Insert Image Submit Changes & View page

LON-CAPA Construction Space - Microsoft Internet Explorer

Address <http://template23.lite.msu.edu/priv/author1/picture.problem?forceColoredit=1> Go

Main Menu Launch Remote Control Roles Help Exit

Construction Space: /priv/author1/picture.problem author1:msu
Author
/msu/

— Recent —

List current directory Retrieve old version Publish this resource
 Delete this resource Prepare a printable document

Making Backup to /home/author1/public_html/picture.problem.bak
Saving Modifications to /home/author1/public_html/picture.problem

1179427769 Show All Foils

[Testing Problems ?](#)

Problem Status: Problem Type: Feedback Mode:

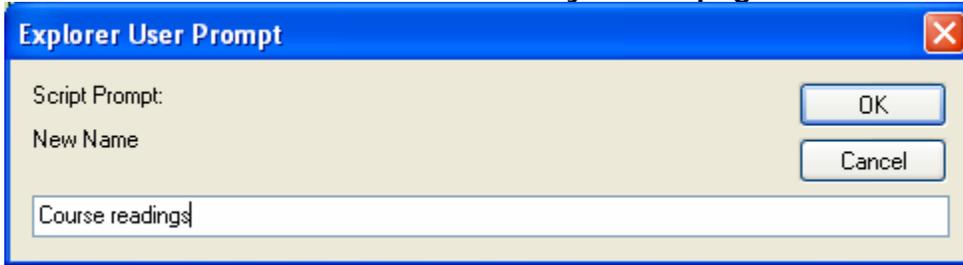
for versions of this problem. [?](#)



This picture is

Internet

Author Role Move File to Sub-directory Folder page



Explorer User Prompt

Script Prompt:

New Name

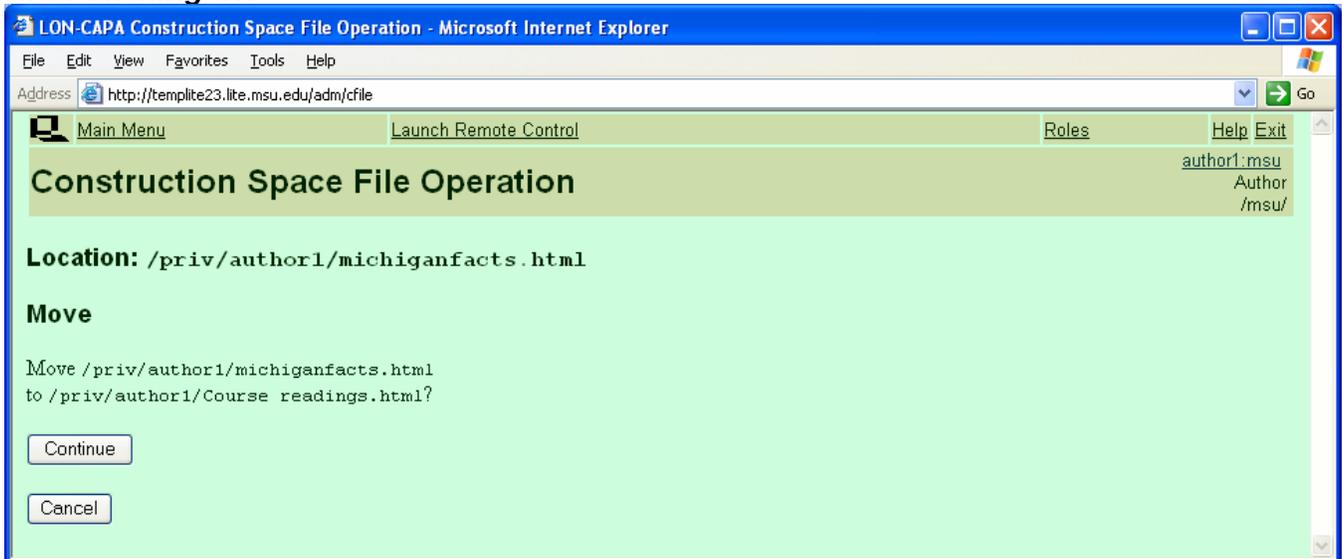
Course readings

OK

Cancel

Detailed description: A dialog box titled "Explorer User Prompt" with a close button in the top right. It contains a "Script Prompt:" label, a "New Name" label, and a text input field containing "Course readings". There are "OK" and "Cancel" buttons on the right side.

After clicking OK



LON-CAPA Construction Space File Operation - Microsoft Internet Explorer

Address: http://template23.lite.msu.edu/adm/cfile

Main Menu Launch Remote Control Roles Help Exit

author1:msu
Author
/msu/

Construction Space File Operation

Location: /priv/author1/michiganfacts.html

Move

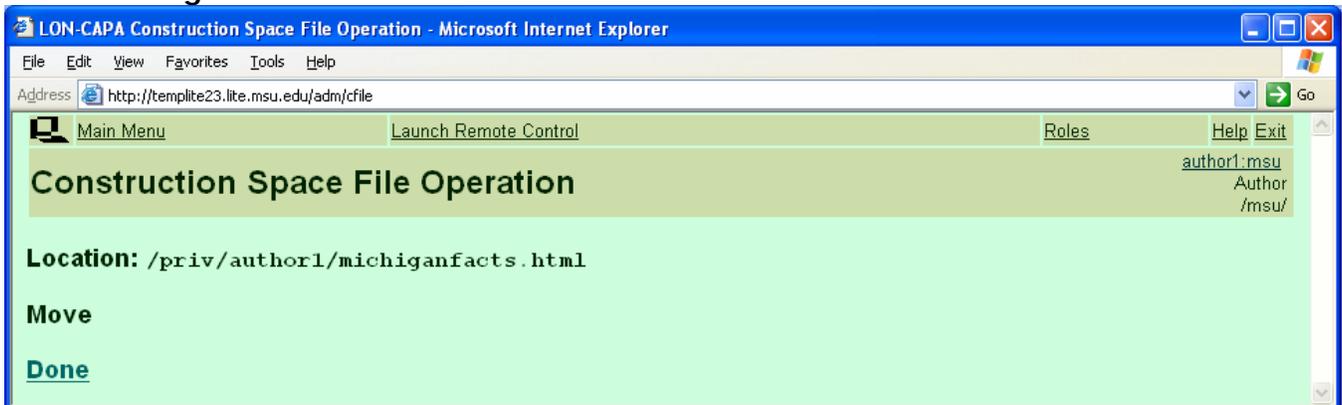
Move /priv/author1/michiganfacts.html
to /priv/author1/Course readings.html?

Continue

Cancel

Detailed description: A screenshot of a Microsoft Internet Explorer browser window. The title bar reads "LON-CAPA Construction Space File Operation - Microsoft Internet Explorer". The address bar shows "http://template23.lite.msu.edu/adm/cfile". The page content includes a navigation menu with "Main Menu", "Launch Remote Control", "Roles", "Help", and "Exit". Below the menu, the user "author1:msu" is identified as an "Author" with the path "/msu/". The main heading is "Construction Space File Operation". The "Location:" is "/priv/author1/michiganfacts.html". Under the heading "Move", a confirmation message asks to move the file to "/priv/author1/Course readings.html?". There are "Continue" and "Cancel" buttons at the bottom.

After clicking Continue



LON-CAPA Construction Space File Operation - Microsoft Internet Explorer

Address: http://template23.lite.msu.edu/adm/cfile

Main Menu Launch Remote Control Roles Help Exit

author1:msu
Author
/msu/

Construction Space File Operation

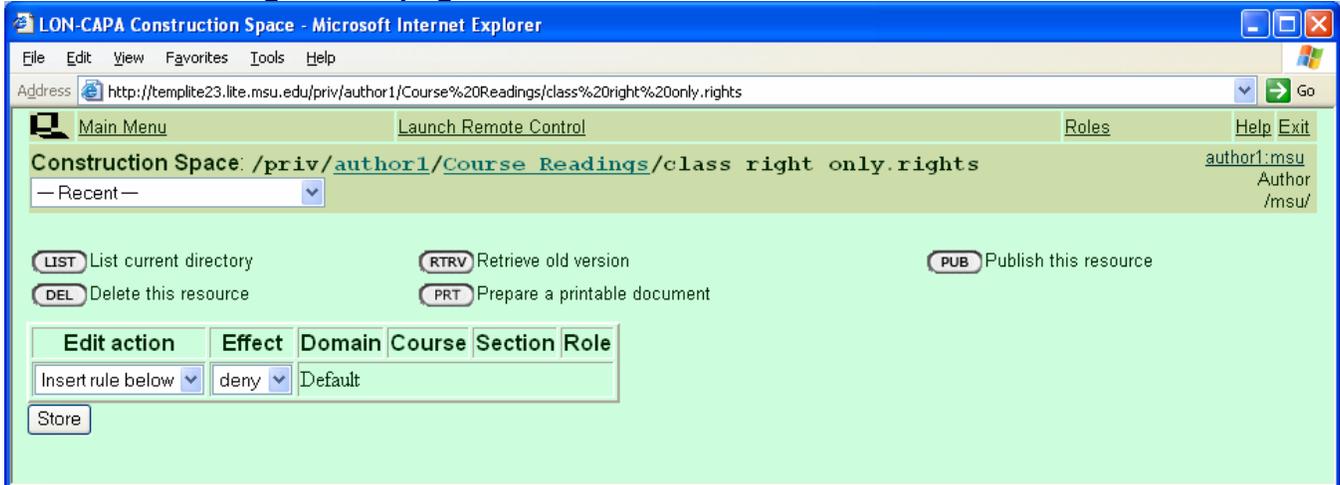
Location: /priv/author1/michiganfacts.html

Move

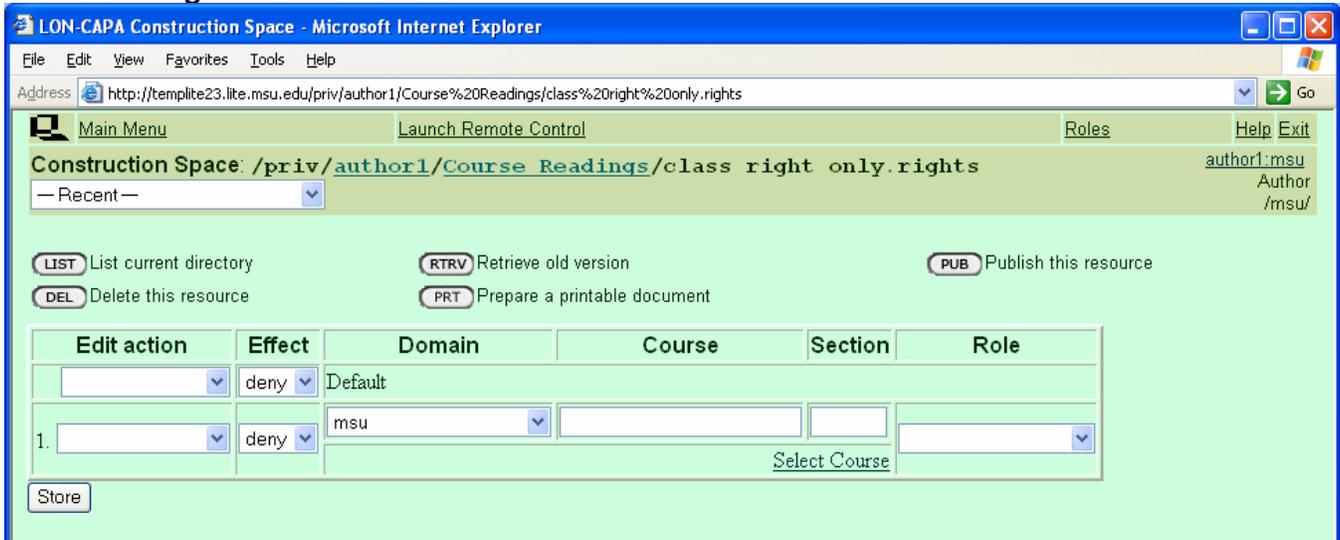
Done

Detailed description: A screenshot of a Microsoft Internet Explorer browser window, similar to the previous one. The title bar and address bar are the same. The page content is identical up to the "Move" section. However, the confirmation message is no longer present, and the word "Done" is displayed in a larger, bold font, indicating the operation is complete.

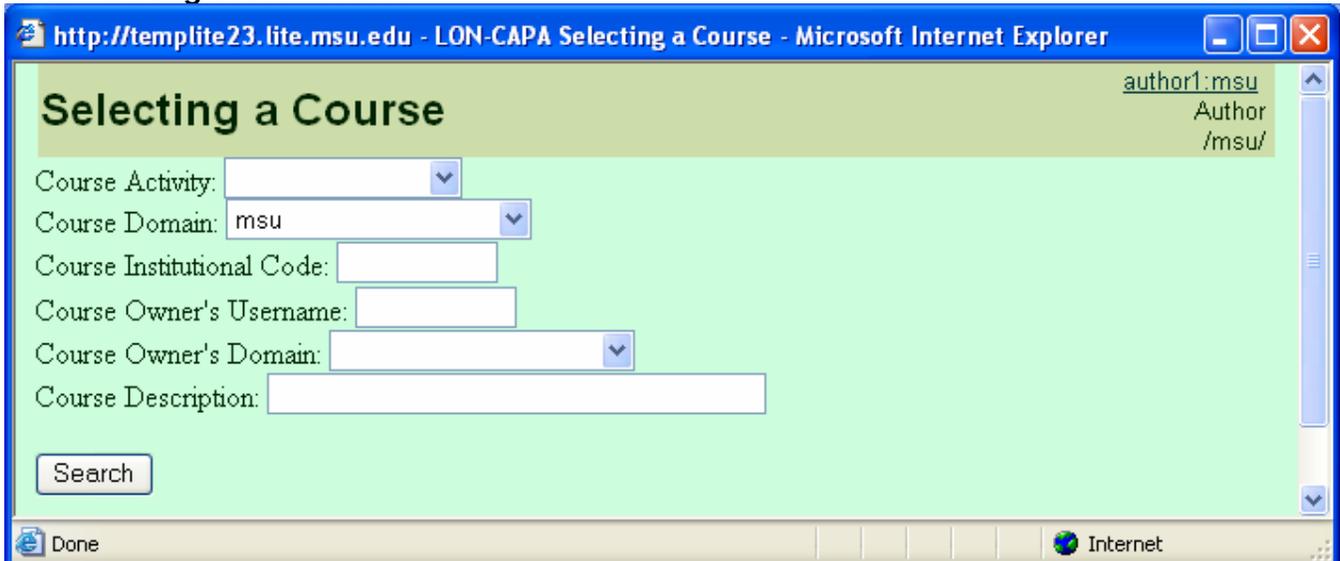
Create Custom Rights File page



After clicking Store



After clicking Select Course



Cont.

Address: <http://template23.lite.msu.edu/priv/author1/Course%20Readings/class%20right%20only.rights>

Main Menu Launch Remote Control Roles Help Exit

Construction Space: /priv/author1/Course Readings/class right only.rights author1:msu
Author
/msu/

— Recent —

List current directory
 Retrieve old version
 Publish this resource
 Delete this resource
 Prepare a printable document

Edit action	Effect	Domain	Course	Section	Role
	deny	Default			
1.	deny	msu	2a18232b9f32b4699msu1		

Select Course