

Digital Marketplace: Faculty and Student Use Case for Building and Buying Accessible Resources for Instruction and Personal Development

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1. Executive Summary

The Digital Marketplace functionality is designed to provide faculty progressive support for their decisions in:

1. Finding online resources to be used for their purposes.
2. Review qualities of resources in preparation for selection for use in a course
3. Selection, assembly, and annotation (contextualization) for content for students taking the course

And students choosing, rendering, and buying content.

Search/Browse for Finding – What materials are available that could satisfy my needs in teaching the course and my students’ needs in learning?

On demand search and browse services will provide users hitlists of materials for them to evaluate if the material(s) satisfy their “finding” requirements. From an initial request, the search/browse functionality must allow the user to easily navigate to the item level and the item-level metadata should allow the user to have a 70% confidence level that the materials will satisfy their requirement that the material can satisfy their teaching needs and their students’ learning needs.

Previewing for Use – Of the materials I’ve discovered, which ones do I want to evaluate more deeply for selection in my course?

Once users have created a limited collection of prospective course content, they will evaluate the resources in more detail. Previewing the content in preparation for the final selection is an important service for faculty. At the completion of previewing the materials, faculty will have information about the resource and about their own needs to support a confident decision to select materials and label them as “my materials for my course” – personalizing the materials in the process of reusing materials.

Selecting, Assembling, and Annotating for Use – How can I assemble and annotate selected materials that will help me and my students use the materials effectively and efficiently?

Selecting materials for teaching student use requires the faculty to review how the materials will be viewed/used from the students’ perspective. Additional criteria can be added to the selection process such as compliance with section 508 accessibility standards and the flexibility of rendering the materials in different ways and for different display devices. The faculty will have descriptive information about the content (metadata) that helps them select materials and have opportunities to add information about the content (annotations). A rich and usable metadata and annotation scheme

enable faculty to assemble materials into a coherent resource list easily and reliably with the right context of the course requirements and student success. Satisfying selection and annotation requirements means that faculty will be informed about and be provided mechanisms for choosing the ways to store, organize, and personalize materials in preparation for the student use.

Choosing, Rendering, and Buying content – How can my students acquire the right content in the format that meets their learning needs?

Both faculty and students will be able to acquire materials simply and less expensively. When acquiring materials, the students and faculty will need to “bring them home”. That is, users will need to: (a) decide how long they may want to “own” it (short term/throw-away after immediate use vs. long term/for repeated use at later times), (b) store it (metadata and/or materials) where they can find it easily when they need it, (c) organize it into their other home resources (how will the newly acquired materials be integrating into existing collection of resources or portfolio), and (d) personalize it for their individual use (how will I take the “public” materials and use it in my own personal way). The personalization can take on many forms from the rendering of the content (to be accessible), to annotations capturing the personal relevance of the content, to the display of the content in the devices I own.

2. Narrative of Use Case:

Phase I Digital Marketplace Use Case for Building and Buying Accessible Resources for Instruction and Personal Development

FACULTY ROLE

DISCOVERY:

Professor Plum logs into his LMS during the summer to begin to build the collection of resources he will want his students to use in the Biology 101 course he’s teaching in the fall (1). It’s been 3 years since he taught the introductory level course so he’s interested in reviewing what’s available in the field. Within the LMS website, he goes to the page for building his resource list and clicks on “Search for Resources”. He types in a key concept he’ll be covering in the course and a hit list of materials from 6 different publishers is generated along with free materials from MERLOT. The descriptions of the materials includes title, author, abstract, publisher collateral, type of resource (book, article, multimedia, etc), indication of its ability to be rendered in an accessible (section 508 compliant) format, and the different delivery formats and prices (hard copy text book, custom book, eBook to own, eBook to rent).

While looking for instructional content, Professor Plum also examines some of the professional development resources also presented that he can use help prepare to teach successfully. He finds a number of handbooks on teaching the net-generation and he selects one for his summer reading, which CSULB gets a discount because of a bulk purchase.

PREVIEW:

Professor Plum selects 10 different resources to review in more detail. He clicks on the PREVIEW button and a window pops up indicating that since he is a faculty in good standing at CSULB, he will have full electronic access to the eBook for a 72-hour period, starting whenever he wishes. After previewing 10 materials, he selects 5 for his course, a textbook, and a chapter from another book, a tutorial on using EXCEL, and 2 multimedia simulations. He also gets to preview the net-generation handbook as well.

SELECTION, ASSEMBLY, & ANNOTATION:

Professor Plum saves his selections of materials for his students and writes notes (annotations) about the resources he's selected to use. With the textbook, Professor Plum decides that only 8 of the 14 chapters will be used in the course so he chooses the custom publishing option to create a book that's more relevant to the course learning. He also adds the chapter from another book to create the custom course "textbook". As Professor Plum views the resource list he remembers that he created some content when last taught the course that students found especially useful. By using the Digital Marketplace Authoring / Assembly service, he adds this content to the CSU repository and then adds it to his resource list. He also allows other CSU faculty to view and use this content. He notices that the custom textbook, and tutorial can be rendered in an accessible format but the 2 multimedia simulations are only 80% accessible. Professor Plum contacts the campus Center for Students with Disabilities to learn what he needs to do to provide alternative curriculum to the visually impaired student he'll have in his class. Finally Professor Plum examines the "student view" of the resource list and sees that the textbook is offered in an eBook-to-own version for 50% of the hard copy text and the eBook-to-rent is only \$15.99 for the semester. With all these options for access to the materials, he's hoping all his students will use the materials.

BUY:

Professor Plum puts the net-gen book in his shopping cart and buys it with his credit card. He choose the e-book version and saves the book in his ePortfolio.

(1) NOTE: There will be additional content areas that will be tested in Phase 1. We will also use content/courses that support math and English remediation

STUDENT ROLE

CHOOSING, RENDERING, AND BUYING INSTRUCTIONAL RESOURCES

When Jane Student gets access to the LMS for her Biology 101 course, she navigates to the Resource List to check out what she'll need to buy. As a student with a vision disability, she has had a challenge of getting the materials in a format she can use in a timely manner. She reviews the resource list and sees that the textbook and tutorial are in an accessible format and is pleased. She then reviews the different types of style sheets CSULB has certified has rendering the content in an accessible manner. She likes the choices and decides on the size, contrast, colors, and layout that suits her needs. Jane is considering becoming a biology major so she decides to put the eBook-to-buy in her shopping cart and the tutorial in her shopping cart. She buys the resources online with her credit card and stores the resources in her campus ePortfolio. For the two multimedia resources, there's a note for her stating that the CSULB Center for Students with Disabilities will provide an aid to work with Jane on the portions of these resource that are not accessible to her.

In the 4th week of the semester, Jane realizes she's having trouble with one of the key concepts in biology. She goes to the Digital Marketplace in her LMS and searches for additional materials that might do a better job in helping her learn the concept. She finds a student workbook that has the background information she needs and it can be rendered in the accessible format she prefers. Jane buys it online.

CHOOSING, RENDERING, AND BUYING STUDENT DEVELOPMENT RESOURCES

While Jane was looking for her course materials, she saw that the resource list also include a collection of online materials that could help her learn more about the different jobs you can get with a biology degree, expected salaries, and different types of professional opportunities. She also sees that the State of California provides forgivable student loans for students who go into teaching in California schools. Being a CSULB student, she can preview the career development material for 3 hours. Jane likes to book and adds it to her shopping cart. She also sees an e-handbook on how to succeed in college without going broke. She also puts this in her shopping cart and buys the materials with her credit card.

Benefits to Stakeholders

CSU

1. Scalable strategy to deliver accessible (section 508 compliant) content to student that fits within normal faculty, student, and campus behavior
2. Lower cost options for student purchasing course content and more options for acquiring content that meet their needs.
3. Students more informed about making career and life decisions that facilitate graduation in a scaleable manner
4. Faculty have greater choice and more conveniences in researching content for their courses
5. Faculty provided timely faculty development resources at their fingertips

Publishers

1. Significant reduced expenditures of sampling materials
2. Increase market access to faculty through digital sampling
3. Increase market access to a wider range of their product line for both faculty and students
4. Improved market intelligence

Technology Companies

1. Applications and networks become more essential to core Higher Ed business practices

Testable Outcomes of Use Case for Phase 1:

- 1) Identify and Access Management/Trusted transaction Functionality
- 2) Federated Search/Interoperability functionality
- 3) Implementation of different business rules
- 4) Accessibility audit functionality
- 5) Accessible rendering functionality
- 6) Usability of functionality

3. User Characteristics of Faculty

There is a range of skills present in the faculty in higher education. The Digital Marketplace will focus on faculty employed within institutions of higher education (2-year community colleges and 4-year state and independent colleges and universities). Consequently, the use of technology is only part of the faculty's job description and competes with numerous demands for faculty's time and attention.

Previewing and selecting content for a course are viewed differently by faculty depending on their status. Adjunct faculty place a greater priority on ready-to-go course outlines while tenured faculty place a greater priority on creative or original development of the course.

3.1 Faculty Characteristics

- 1) Technical and Information Competencies:
 - a) Use of applications: Intermediate to Advanced in LMS's, browsers, online learning objects,
 - b) Desktop Configuration: Novice to Intermediate
 - c) Navigation: Intermediate to Advanced
 - d) Searching: Novice to Intermediate
 - e) Evaluating: Advanced on outcomes of searches and navigation, unskilled on system administration.
- 2) Content Competencies: Expert
- 3) Organizational Role:
 - a) Setting Task Goals: Predominately self-defined goals for the content of the course that has to align with course catalog descriptions and departmental expectations
 - b) Providing User Training: Faculty member received minimal formal training, technical staff (if exists) is typically on the job training. Within pilot study, users will receive formal training on the Digital Marketplace services.
 - c) Evaluating User Performance: Faculty member receives minimal and unreliable institutional evaluation of their performance as a user/integrator of educational material
 - d) Demanding User Productivity: Demands for faculty member's use of technology competes with many other faculty demands. Institutional demand is highly variable.
 - e) Scheduling User Workload: Controlled by faculty member.
- 4) Usage Rates:
 - a) Targeted products or services: Digital Marketplace is new service that provides access to all learning materials from all sources at one time. Expect weekly to monthly usage
 - b) "Competing" products or services: Services that provide access to some content some of the time, thus requiring faculty to search multiple sources to build resource lists. Expect close to daily use of the LMS, search services (Google),

- weekly use of campus library search services, semi-annual use of publisher's "digital marketplace services"
- c) Supporting products or services: daily use of browsers
- 5) Cognitive and Affective States of Users:
- a) Abilities to learn: Advanced
 - b) Motivations to learn: Advanced
 - c) Confidence/comfort in the use of technologies: Intermediate, but highly variable
 - d) Attitudes toward technologies: Intermediate, but variable

3.2 Faculty's Technology Infrastructure

- 1) Hardware: 1-4 years old, but variable (significant percentage still using Windows 98), Apple HW as well.
- 2) Software: variable on how up to date, most are up to date (over 60% browsers up to date), but a significant percentage still using Win98 MacOS X+ (20%).
- 3) Network: High speed, very reliable (at work), variable at home
- 4) Training: some training on software provided by IT, else on their own to find the information they need.
- 5) Support: Variable and typically at a low level. Rely on software that is supported by their IT organization.

4. User Characteristics of Students

There is a range of skills present in the students in higher education. The Digital Marketplace will focus on lower division students attending state colleges and universities.

4.1 Student Characteristics

- 1) Technical and Information Competencies:
 - a) Use of applications: Intermediate to Advanced in LMS's, browsers, online learning objects,
 - b) Desktop Configuration: Novice to Intermediate
 - c) Navigation: Intermediate to Advanced
 - d) Searching: Novice to Intermediate
 - e) Evaluating: Novice to intermediate on outcomes of searches and navigation, unskilled on system administration.
- 2) Content Competencies: Novice
- 3) Organizational Role:
 - a) Setting Task Goals: Faculty define course and learning goals. Students determine their own course grade goals (B) and level of effort (1 hrs per week for each class hour).
 - b) Providing User Training: Students received minimal formal training in using institutional technologies. Within pilot study, users will receive formal training on the Digital Marketplace services.
 - c) Evaluating User Performance: Students receive grades and feedback about their course performance in accordance with faculty rubrics

- d) Demanding User Productivity: Demands for students use of technology competes with other student demands
 - e) Scheduling User Workload: “Milestones” (tests, quizzes, projects) are schedule by faculty. Students determine how to distribute their time to complete milestones.
- 4) Usage Rates:
- a) Targeted products or services: Digital Marketplace is new service that provides access to all learning materials from all sources at one time. Expect daily to monthly usage
 - b) “Competing” products or services: Services that provide access to some content some of the time, thus requiring students to search multiple sources and bookstore to find course materials. Expect close to daily use of the LMS, search services (Google), weekly use of campus library search services, semi-annual use of publisher’s “digital marketplace services”
 - c) Supporting products or services: daily use of browsers
- 5) Cognitive and Affective States of Users:
- a) Abilities to learn: intermediate
 - b) Motivations to learn: intermediate
 - c) Confidence/comfort in the use of technologies: Intermediate, but highly variable
 - d) Attitudes toward technologies: Intermediate, but variable

3.2 Students Technology Infrastructure

- 1) Hardware: 1-4 years old, but variable (significant percentage still using Windows 98), Apple HW as well. Students can use campus HW/SW which is 1-3 years old and well maintained.
- 2) Software: variable on how up to date, most are up to date (over 60% browsers up to date), but a significant percentage still using Win98 MacOS X+ (20%).
- 3) Network: High speed, very reliable (at school), variable at home
- 4) Training: Mostly self taught with minimal training by institution.
- 5) Support: Low level

Appendix A.

1. Document History

Each time the document version is changed, record the author, date and a brief description.

VERSION	DATE	AUTHOR	DESCRIPTION
0.6	8/23/06	GERRY HANLEY & CSU TEAM	FIRST DRAFT FOR DM; BASED ON WORK FROM GLOBE AND EARLIER DM PILOT TESTING

2. Definitions, Acronyms and Abbreviations

Any terms that need defined should be listed in the table below.

TERM	DEFINITION
Federated Search	A search that simultaneously searches a number of digital library collections and presents the user an integrated result set from the search.
Hitlist	A result set from a search operation.
Digital Marketplace	A common collection of all learning objects from all sources and made available through a single, common search.
Learning Objects	A unit of instruction. Could be a textbook, a chapter of a textbook, a model, an illustration, a simulation, or other teaching element. Assessment of student learning as well as materials that support faculty in their job such as professional development materials are also considered learning objects.

3. References

Author Use Cases: User Characteristics (CUDA, 3-12-03) and Federated Search Use Case (MERLOT/GLOBE 1/20/05)

4. Assumptions

This section lists assumptions that are made about the project and the scope of this document.

5. Exclusions

This section lists exclusions that are made about the project and the scope of this document.

6. Open Issues

7. Framework for User Characteristics

This section provides the framework for describing user characteristics and the specific characteristics of users within this use case.

7.1 User Characteristics: Describe the features of the existing user population(s) that will provide the capabilities for the products and services to function. There are 5 categories of features:

- Technical and Information Competencies: What are the knowledge, skills, and attitudes of users that are engaged in using the products and services?
 - Use of Applications (word processing, spreadsheets, authoring tools, etc.)
 - Desktop configuration (downloading plug-ins, setting preferences, etc.)
 - Navigation (use of browsers, webpages, knowledge of internet conventions, etc.)
 - Searching (planning, search strategies, etc.)
 - Evaluating (analysis of outcomes of searches, navigation, systems administration, and applications use)
- Content Competencies: What are the knowledge domains, disciplinary content areas that the user must know?
- Organizational Role: What role does the individual play in the organization which effects user performance including:
 - Setting task goals (does the user choose their own goals vs. are they given goals?)
 - Providing user training (user self-taught vs. training provided)
 - Evaluating user performance (user self-monitor/evaluation success vs. “supervisory” evaluation)
 - Demanding user productivity (user self-motivated vs. supervisory productivity goals given)
 - Scheduling user workload) user self-management of workload vs. supervisory directed workload)

- Usage Rates: How frequently does the user use:
 - Targeted products and services
 - Competing products and services
 - Supporting products and services
- Cognitive and Affective States of Users: What are the “personal” aspects of the users that will influence the users abilities to perform?
 - Abilities to learn
 - Motivations to learn
 - Confidence/Comfort in the use of technologies
 - Attitudes toward technologies

7.2 User’s Technology Infrastructure: Describe the features of the users technical infrastructure that the targeted products and services require. There are 5 categories of features for technical infrastructure:

- Hardware: Computer and peripherals, servers, etc,
- Software: Loadset on or available to computer
- Network: What is the capacity and reliability of network
- Training: Types and availability of training to users
- Support: Types and availability of support to “help” successful delivery of current implementations as well as plan, develop, implement, and evaluate upgrades.

7.3 Use Case Capability Definitions

Capabilities of Users: The ordinal levels of skills/knowledge are:

- **Expert:** Has had expensive experiences with using technology independently (top 10% of population in time spent) and has produced numerous and exemplary products with the technology, resulting in understanding of the full range of capabilities of the technology, can use all problems the functionality within technology and others rely on user for their help, and can solve all problems within the technology and those created by the interactions between the technology and the other systems used by the author.
- **Advanced:** Has had expensive experiences with using technology independently and has produced more than 4 complete products with the technology, resulting in understanding of the full range of capabilities of the technology, can use all the functionality within technology, and can solve almost all problems within the technology, and can solve many problems created by the interactions between the technology and the other systems used by the author.
- **Intermediate:** Has had experiences with using technology independently and has produced 1-3 basics products with the technology, resulting in understanding of the range of capabilities of the technology, can use most of technology, and can reasonably problem-solve within the technology.
- **Novice:** Has had 1-3 limited experiences with technology, typically supervised, resulting in basic understanding of what the technology can do and can use very basic functionality of technology
- **Unskilled:** Has no familiarity or understanding of the technology (can not do anything)