Universal Access to Media and the California Community Colleges Online Education Initiative

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Abstract. The California Community College system launched the Online Education Initiative in 2014 to address the needs of students and to more effectively leverage the collective resources of the 113 campuses to provide the services needed for degree completion and transfer to university. Providing a common base of instructional technology resources, student services, and a statewide exchange of courses, and with all of this being universally accessible, the Online Education Initiative is one of the most ambitious efforts to address the needs of online students and educators in the history of California.

Keywords: Online education · Accessibility · Adaptable computing · OEI · California · Digital ecosystem

1 Introduction

It has been observed that the evaluation of accessibility efforts in higher education have typically focused on the end products of instructional materials and resources rather than the processes that create these materials [1]. It has also been observed within the California Community College system that this approach inevitably results in sporadic efforts and inconsistent results. In order to address the accessibility issues with online education, we need to truly understand the needs of teachers and students, and support the processes that increase the accessibility of our online programs. The California Community Colleges Online Education Initiative is dedicated to increasing the success of all students and faculty by providing the supports and services needed to excel in their mutual roles.

The processes of an online learning community include a wide variety of behaviors, technologies, and attitudes. Oftentimes, inspiration and unforeseen circumstances can coincide in ways that result in inaccessible materials being used despite having access to the required tools, knowledge, and training for creating accessible instructional materials. This problem is not just an accessibility problem, it is an issue of baseline standards for acceptable quality.

The wide-ranging quality of instructional materials can be observed in any active learning management system, as information inevitably exists in a wide range of formats,

gathered from a wide range of sources. By the end of any online class, teachers and students alike will possess a collection of digital information that includes drafts, notes, correspondence, final papers and manuscripts, as well as a variety of third party instructional materials, reports, and manuscripts. Broken into categories of digital media, we have a range of digital text, audio, video, and interactive constructs being used for instruction, much of which is typically inaccessible. We need a means to provide universal access to all of this digital media being used within online learning.

This paper is an investigation of the potential for accessible online education to become a sustainable reality in California, and as such, define a fundamental threshold for effective human computer interactions that are capable of supporting automated and adaptable computing for learning and teaching.

2   An Overview of the California Community Colleges Online Education Initiative

When the Online Education Initiative originated, California was dealing with budget shortfalls that had resulted in the widespread cancelling of classes across the 112 Community Colleges, wherein over a half million students were turned away. [4] Much attention had been given to the use of Massively Open Online Courses, and the idea of leveraging online technology to address localized shortages drove the concept of what would become the California Community Colleges Online Education Initiative (OEI), an effort to increase the overall capacity of degree transfer pathways while providing system-wide support for students and faculty with a deliberate emphasis on increasing the success of traditionally under-represented student populations [5]. As part of this emphasis on traditionally under-represented students in online education, accessibility for students with disabilities is a primary focus and concern.

The following information represents the current vision for ensuring accessibility within the OEI, and represents the viewpoint of the author, as Director of Accessibility and User Experience for the California Community College system. It is offered as a testimonial of the process for designing and implementing what history shall show as the official policy and procedural base that defines and organizes the OEI. It represents the educated opinion of an instructional designer and accessibility specialist who has spent most of the last decade working with faculty and staff from across the state of California, in order to help students with disabilities leverage technology for their academic success.

Finally, the following plan comprises a vision based on a technology base that has yet to be designed and implemented, but which has been agreed upon in terms of a common need and vision of how to meet the needs of supporting the students and faculty of the California Community College system. As of this writing, vendors have been selected for several key components of the technology base that will comprise the OEI, contract negotiations are under way, and expectations are high.

2.1   Primary Objectives of the OEI

Two of the primary concerns of the OEI will be to deliver a Common Course Management System for the entire 113 campus system, and to establish an exchange method for online courses to be shared between the different colleges in order to address the specific needs of ADT students in completing degree and transfer requirements. Surrounding the provision of these two components will be a range of services to address the needs of professional development, basic skills, accessibility, and the entire range of student and faculty services required to address the performance gaps between online education and face to face education.

2.2   The Common Course Management System and Digital Ecosystem

One of the most frequently asked questions thus far regards the Common Course Management System (CCMS) component, which is perhaps one of the best understood specific deliverables of the project.

The impact of the LMS can not be overstated, although it remains just one element of a larger system for delivering learning via online technology. This system will include a student services portal, common assessment and placement, education planning tools, degree audit tools, and a range of specific student services such as online tutoring, counseling, and basic skills remediation. Consider this larger system technology base as a digital ecosystem for learning, and you have an analogy for the complex interactions and data exchange of online education. The CCMS is expected to be one of the primary aspects of the digital ecosystem.

The technology of online education is used to mediate the separation between students and teachers through time and space. It is the power of digital media that conveys and communicates the concepts, principles, facts, procedures, affectation, and attitudes of communication between individual learners and with their instructors. When everything works optimally, technology and media support these fundamental aspects of education in the online context while simultaneously shaping and sustaining the critical interactions of a community of online learners in a way that can transcend the sum of the parts of technology, individual students, teachers, and support staff.

Collectively these different groups of individuals need to be able to interact with each other and exchange information in a variety of formats, from all over the world. All of these interactions and communication are controlled by the capabilities of the digital ecosystem. As the architects and administrators of this ecosystem, it is important to recognize the potential for environmental factors of the digital ecosystem to drive, influence, or even pre-determine certain behaviors and outcomes of the educational process. The analytic potential is exciting to consider, but the questions to drive the data gathering are still being defined.

In addition to the CCMS, the OEI will rely on a series of extendable modules from a common Student Services Portal (SSP) project, which is part of another statewide initiative of the California Community College system, the Educational Planning Initiative [6]. Intended to provide a framework that will help satisfy the needs of the entire spectrum of student services provided to California Community College students. In providing online resources and the capability to complete the various transactions and

services that are a part of attending college, the SSP will allow different aspects of the educational process to be informed by student preferences and needs, while simultaneously helping satisfy the institutional needs for reporting and analytics gathering. The analytic data enables an adaptive capability that can be extended throughout the digital ecosystem so that the different processes and various supports provided to online students can be better monitored, understood, and enhanced.

Beyond the services and functionality of the SSP, the state of California has a Common Assessment Initiative (CAI) [7]. The purpose of the CAI is to provide consistency in the assessment instruments used to place incoming students by establishing a common statewide technology platform for administering assessment (placement) tests. In addition, the faculty of the CCC are working together with subject matter experts to define custom banks of questions for writing, mathematics, and English as a Second Language (ESL).

Collectively, the three initiatives of the OEI, EPI, and CAI are expected to help address the needs of CCC students across the entire timeline of their community college experience, while also leveraging the collective size and wealth of resources that comprises the CCC System to alleviate pressures for local campuses and communities.

3 Universal Access to Instructional Materials and Rich Media Communication

Working within the digital ecosystem of the OEI will be an assortment of students, faculty, and staff who will utilize, organize, maintain, and facilitate the creation, storage, and distribution of a wide range of rich digital media. While there is a never ending need for professional development and support in keeping pace with the tools and evolving world of rich digital media creation, there is an equal need for leveraging technology to better support the human processes that inevitably drive the use of these tools. The belief is that if technology can be integrated comfortably into your daily life, it is more likely to be used and not distract from other experiences and activities. We need to enable faculty and students to create universally accessible information without requiring excessive additional effort. The technology used for managing and facilitating online education should not provide additional cognitive load and difficulty to the process of achieving the original educational goal. The technology for communication needs to be an enabling influence rather than a distraction.

3.1 Supporting Faculty in Creating Accessible Instructional Materials

Faculty of the California Community College system are encouraged to utilize a wide range of digital materials and methodologies to enhance the interest and engagement of students, and maximize the potential for digital rich media to enhance the educational process. The focus is on finding ways to enable the use of the best media objects available for instruction and building online learning communities. We need to avoid the situation where a faculty member decides to not use rich media materials because the work required to make the media accessible is too burdensome for the faculty member.

3.2   Ensuring Accessibility of Rich Media Communications

In the California Community College system, there is a recognized need to provide training for the individuals who create digital media so they can create accessible documents. There is also recognition that leveraging technology to reduce the effort required by content creators is a powerful way to encourage certain behaviors in that process.

Providing effective tools for media authoring is a necessary component of ensuring accessible instructional materials, but even so, there are likely to be limitations in the number of digital file formats you can expect a faculty member to be able to create themselves. Fortunately there are technologies available for media conversion, which enable a well structured digital document to be automatically converted to a variety of different digital file formats, while retaining the accessibility of the document, and sometimes enhancing the accessibility of the information [8].

Beyond the need for supporting accessible document authoring and conversion, there is a need to capitalize on other potential efficiencies offered by technology. With a digital ecosystem that is adaptable and responsive to individual needs and preferences comes a certain capability for tracking user activities and engaging different processes based on the needs of the user. Establishing business rules that center around access strategies for certain media types enables automated processing and reporting that reduces the workload of faculty and staff, and helps ensure accessibility of digital media. For example, whenever a faculty member uploads a video file, that file can be recognized as a digital video file and automatically sent to a captioning service and then the captions can be automatically integrated into the video. The priority for processing the captioning job can be adjusted automatically in response to the needs of students enrolled in the class. If there are no students with hearing impairment, the video can be captioned for a lower cost and longer turn around time, while if there was a student with hearing impairment enrolled in the class, the job could be prioritized as a rush job so that captions could be in place for the student ASAP. In this way, students can customize their preferences and receive digital media that best matches their needs.

3.3   Determining Accessibility of Third Party Resources

In addition to creating instructional materials, many faculty find instructional materials on the Internet and integrate them into their learning activities. Problems arise when these third party instructional resources are not accessible for students with disabilities. Recognizing the potential difficulties that can arise in trying to provide accommodations for these situations in the midst of an online course, it is important to help faculty assess the accessibility of third party websites and digital media before they integrate the content into their courses.

Automated web testing technologies can be useful in this effort but they do not replace the need for human interpretation of the results. There are still things that computers can not do, such as recognizing the content of a digital image so as to provide a textual description, or determining if color is being used as the exclusive means of conveying information. Therefor it is important to address this need for human attention within professional development efforts and institutional policy and procedures.

4   A Plan for Accessible Online Learning Communities

Utilizing the Community of Inquiry model [2] to engage a group of instructional designers, the author is engaging a plan of instruction and training for course reviewers, online teaching faculty, staff who create online materials, and staff who support faculty and students. Integrating a social component to the professional development is an attempt to provide sustainability and invoke a sense of ownership and pride of authorship for faculty working within the OEI. By appealing to the best interests of faculty and supporting their needs to create exemplary online instruction, the hope is that the culture of the California Community College will evolve into one where the inherent standard of quality is based on universal access to education.

The challenge of fostering an online learning community will be balanced through the provision of technology and training based on standards for course design that encapsulate the best practices for online education as well as the legally mandated standards for electronic information and information technology [9], as well as for world wide web content [10]. Training will be conducted by a combination of online webinars, an online training course for online teaching, one on one consultations between faculty and instructional designers via web-conference, and a combination of online and in-person clinics and workshops for hands-on activities and remediation.

The ultimate test of any online community is the amount of traffic and interaction that occurs. Within the raw numbers of community members there is a wealth of data that can inform the process of building and sustaining the community. The value that community members find within the community is the main factor that drives participation and membership within the community, so the OEI must deliver services that are easy to use and provide obvious benefits for both students and faculty.

4.1   Designing a Technological Ecosystem for Online Learning Communities

The basic premise of the OEI digital ecosystem is to facilitate an ease of use that doesn't add complexity or tedium to the process of facilitating online educational processes. The first concern for enhancing ease of use centers around the concept of a single sign on capability to unify the many different systems already in use, and facilitate the creation and use of a central user profile across these technology platforms. Extending the functionality and communications capabilities between student information systems, course management systems, enterprise resource management tools, student scheduling systems, etc., is no small task, but it is essential to provide the user experience being sought by today's students and faculty. The OEI is expecting to push the boundaries of capability for facilitating the needs of online learning, in order to better support the success of online students while keeping the focus on education and not the supporting technology.

5   Delivering on the Promise of the OEI

One of the most exciting prospects of the OEI is the idea of harnessing the analytics capabilities of the digital ecosystem to drive an adaptable computing framework for

learning. It is easy to imagine many different scenarios where computer power enables richer human interactions with information, but we need to engage the community of educators and technologists to collaborate and conceive of the methods that are best suited for our current capabilities and culture. There will be plenty of time to engage the more interesting and ambitious aspects of building online learning platforms and communities once the digital ecosystem is in place.

One of the first general challenges will be assisting faculty with the effort of knowing and understanding the student, monitoring academic progress, and enhancing the timeliness and effectiveness of communication. It is important to maintain appropriate transparency while also preserving privacy of information. Responsible communication about the benefits of data analytics and the assurances in place to protect privacy of end users can help faculty and students accept these potentially threatening concerns, as long as the ease of use and proposed benefits are delivered.

Ultimately, with analytics feeding adaptable computing technology, there is great potential to redefine the way we assess learning, place incoming students, and ensure faculty are properly trained. There are many exciting opportunities for further research in a wide range of subjects, and across many different industries. However exciting the opportunities for further research may be, it is critical that we show respect for the people that comprise the academic institutions, and honor the premise of student-centric policy and practices. This effort has to be about the success of students, first and foremost.

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