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THE CLAS NETWORK: A FREE DIGITAL LEARNING PLATFORM FOR CONTENT REPOSITORY, LEARNING MANAGEMENT, NETWORKING, AND COLLABORATION

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Abstract: Modern communications technology empowers educators to reach learners more effectively, efficiently, at a higher volume, and with a greater potential for differentiation. The mixture that results from this combination of innovative teaching and modern technology facilitates digital learning. The New Jersey Institute of Technology's (NJIT) Collaborative for Leadership, Education, and Assessment Research (CLEAR) is currently developing a free digital learning platform to address the growing need for a solution that can house the growing array and sophistication of digital learning objects and materials. This platform, known as the Curriculum Learning and Assessment Studies (CLAS) Network, funded through a grant from the Roche Foundation, is designed both as a repository of vetted educational materials and a networking tool that connects all educational stakeholders. Central to the design of the CLAS Network is the combination of features from content repositories, Learning Management Systems, and networking and collaboration tools. These features include the ability to find or contribute learning objects, instructionally design collections of contributions for a variety of educational applications, and connect with other educational stakeholders in groups, forums, and blogs. Currently, the CLAS Network is completing the testing phase of development. Thus the authors will present its current features and functionality. There is also a suite of additional improvements which are planned and will be discussed. Input from colleagues on the current state of the CLAS Network, as well as suggestions for further improvement, will be solicited.

***Keywords*:** Learning object repository, digital learning, network, collaboration, website development

Introduction

Today's technology provides the ability for learning to reach more students more efficiently (at a reduced cost), deliver content more effectively (improving learning outcomes), and enables higher levels of differentiation through a flexibility in the students use of their digital resources. These uses of technology in education is fundamental to 'digital learning,' which is synonymous with other commonly used terms including 'e-learning' and 'virtual education.' The definition of the term 'digital learning,' as used herein, is the application of digital media, information, and communication technologies for the purpose of enhancing education.

Embedded within the daily lives of today's student body are digital media, information, and communication technologies, thus forming what can be called the iGeneration. This generation of students utilizes such technology in all aspects of their lives, including for socializing, leisure, information consumption, communication, gaming, commerce, and learning. Thus, the iGeneration is intimately familiar with the digital technology of modern society. This generation does not consider their world as the separate spheres of 'face-to-face,' 'online,' or 'blended,' but rather as a single seamlessly interconnected world (Rosen, 2010). Described herein is the CLAS Network, which leverages the iGenerations intimacy with digital technology and the

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evolving and expanding trends of digital learning as a repository for digital learning objects, resources, and other materials while connecting all levels of educational stakeholders in a collaborative network around content and pedagogy.

Videos For Learning

One technology that is omnipresent in the lives of the iGeneration are videos, which can be vital enhancements of the educational process. Videos are capable of conveying and explaining content and ideas in a variety of ways that enables more natural diffentiation for various learning styles and interests. They are accessible at any time and place where an educator or student has access to an internet connected device. Furthermore, video allows students the ability to watch videos as many times as they deem necessary for their own learning needs. They can be paused for breaks or to take notes, and can also prove invaluable when the video's content would have otherwise been unavailable due to missed classes. Video provides educators with access to demonstrations, explanations, and other external resource augmentations that they may be unable to convey themselves due to the practical limitations of time, resources, access, or even safety.

But the power of video is not simply limited to the ranks of contingency or content additions, but further provides for the option to create content. Educators can capture their students work with video for formative and summative assessment in the format of formal presentation, explanation of knowledge (as Learning Objects), or authentic displays of content completion. Video also provides students with alternative methods of expression that can cater to their differentiated learning styles, increase their interest in the content and schoolwork, and promote their persistence on tasks.

The traditional, pre-digital model is to ask students to listen to a lecture, read a textbook, and come to class to take an exam. Videos, on the other hand, allow students to stream content in order to learn principles, see content in action and context, and experience real world examples and applications of what they have learned. Video is not just a toll for content consumption, but can also be a catalyst for the application of content and content creation by students. These can be in the form of projects that demonstrate student mastery of required knowledge in practical applications. Thus, educators can expand learning outside of the direct contact of the classroom through blended learning to maximize the effort, cross-cutting skills, and learning by the promotion and use of video, and other digital technologies, as a means of learning and demonstrating students' mastery.

Learning and Content Management

Despite the advantages and potential of video and other learning technologies in the learning process, they are not perfect. There are still challenges that teachers need to overcome with regards to capacity and access. Instructional design teams take the need for digital resource delivery into account, necessitating a mechanism for providing access to digital resources to teachers of varying types and sizes, and that can be uploaded, stored, organized, and delivered as is intended by the content producer. American higher education institutions often seek to solve these challenges by contracting with a Learning Management System (LMS) provider to enable educators to coordinate class activities and content. Other institutions utilize alternatives that are free, or otherwise low cost, solutions that serve the same general purpose.

LMS platforms are robust and can also be utilized as a training control system. They can house all types of eLearning courses, track student completion of courses, assignments, and assessments, and record scores for the purpose of grading. LMS platforms also allow educators and trainers to generate and prepare reports, create and disseminate assignments, and send reminders and other information to students from wherever the educator may be. In other cases, Content Management Systems (CMS) are used, often in conjunction with an LMS. In such cases, content is managed and thus there is less emphasis given to, or opportunity provided for, users to dynamically interact with materials. Simper CMS functions are more readily available for free in the form of products including Google Drive, YouTube, and Vimeo.

The advantage of CMS platforms is their provision of the ability to manage widely dispersed content from a central location. The management of CMS platforms is conducted by assigning appropriate levels of access and control to users, which is usually defined by their roles in the educational community. At the highest levels below the website administrators, users can edit, add, remove, and view content as needed. Those with lower level access to the CMS can only view content, not interact with its overall status. A good example of this is Google Docs, which is a CMS that has many of these roles built in, allowing for the creation, submission, and collaboration on several types of documents without inadvertently compromising their security.

So what is the difference between an LMS and a CMS? A CMS is more of a passive platform that allows users to create and view content. An LMS, on the other hand, enables educators to organize the interaction and dynamic flow of materials that their students will experience in a course or training module.

The Clas Project

Since 2006, the New Jersey Institute of Technology's (NJIT) College of Science and Liberal Arts (CSLA) has promoted and implemented a number of projects designed to leverage the University's technological and educational expertise for the improvement of K-12 education. Under the vision of Dr. Fadi Deek, now NJIT's Provost, and the direction of Dean Kevin Belfield of CSLA, Drs. James Lipuma and Bruce Bukiet have worked to improve both in-class and digital learning aspects of primary and secondary education. These efforts are now focused on digital learning and learning object design in several forms.

Dr. Lipuma and Dr. Bukiet recognized the growth of the availability of resources online, while simultaneously experiencing how time consuming it can be to find appropriate learning objects. For example, often one must sift through many videos before finding one appropriate to the situation. From this realization, the Curriculum, Learning and Assessment Studies (CLAS) Network was conceived. The CLAS Project is an integrated framework for K-16 research and professional development. Through an on-line network, conferences, workshops, and a peer-reviewed journal, the project seeks to bring together educators in order to create a community of evidence-based best practices. An essential component of the CLAS Project is the CLAS Network.

The Clas Network

The CLAS Network (see Figure 1) is to serve as a repository for educational resources and materials, thus providing access to these materials to all educational stakeholders including teachers, students, parents, and beyond. The Network provides the means for rating those materials with a 1-5-star rating, while connecting educators and interested persons around content and pedagogy with user-defined groups and personal messaging. The mission of the Network is to address the need for a repository of vetted educational videos and learning objects of various types, which are easily accessible and searchable, so that educators can find what they need quickly and efficiently.

The CLAS Network gives educators, students, and professional development trainers the opportunity to contribute content to the Network for a variety of educational purposes (See Figure 2). These can include K-16 education, professional development, and beyond. The Network enables users to develop playlists of materials that either they have created, or sourced from across the Network (see Figure 3). In this manner, a user might make a playlist of lesson plans, videos, and PowerPoint presentations in a particular order that may addresses an entire unit, or even a full class curriculum in a straightforward and efficient manner. This allows for the creation of interactive and dynamically flowing materials.

The CLAS Network enables content creators, particularly educators, to create suites of digital learning content, whether they be videos, lesson plans, or any other resources, that they make themselves or derived from other sources (see Figure 4). For example, an educator can build a digital classroom by creating video learning objects of their lessons and content for their students to view and review outside of class. In addition, students can create videos and other content as school projects to be shared via the Network with their peers, and provide educators with ideas for projects of their own. Users are also able as well as encouraged to create Learning Objects that link out to resources from other websites and Learning Object Repositories that they wish to share and include in their playlists. This contributes to a major goal of the CLAS Network, to become a 'one-stop shop' for digital learning resources.

Users also have the ability to directly contact a contribution's author via email or an internal private messaging system in order to interact with them, ask questions, and get guidance. The author, on the other hand, can organize group discussions with any users registered in a group as either a broadcast or one on one discussion. This can be pushed further by educators who wish to coordinate class activities and content through the creation of groups consisting of the teacher and students of a particular class. The group function can also be used by any user who has a topic they wish to discuss with the CLAS Network community which they define.

Additionally, forums and blog posts make the CLAS Network a complete source for E-Learning that is free to the public and available for the use of all educational stakeholders. Each contribution is classified into several taxonomical categories relevant to education, which makes organizing, searching and filtering them easier for any user who doesn't have programming expertise. The simple, yet fully functional user interface makes

contributing to the Network an easy task, requiring only a few clicks and keyboard strokes to achieve a desired outcome.

Users also have the option to report, flag, bookmark, are report content (contributions) as spam. If a particular contribution is reported as spam by a certain threshold of users, the contribution is resubmitted to the editor for validation purpose and is immediately removed from public view. The Network can thus automatically remove spam content while promoting authentic contributions. Users can also rate contributions via a star rating system, akin to those available on familiar rating sites.

The back-end of the CLAS Network is run on the Drupal CMS. Drupal enables the design team to install additional modules (software) onto the Network to achieve the vision of the CLAS Project. With this capability, the CLAS Network can handle the embedding of all media and file, private messaging, blogs, forums, taxonomical classification, badging, and more. With the addition of a few more modules, the CLAS Network will combine the best attributes of both CMS and LMS platforms to provide an easy, efficient, and enjoyable e-learning experience for teachers, students, and parents.

Conclusion

What make the CLAS Network unique is the methodology by which it handles content and manages the quality of the content posted by the Network's users. Aspects of both CMS and LMS learning platforms are designed into the Network. As a CMS, it allows for the central control of content by both contributing users and website administrators, depending on the role of the particular user. As an LMS, the CLAS Network enables educators to coordinate class activities, content, user interaction, and flow of content to create a digital learning environment for their students.

As the development of the CLAS Network continues towards completion and launch, the development team continues to seek new improvements in function, aesthetics, and capability. Additional funding over time, either prior to or after the website's initial launch, will allow for additions in these areas to the CLAS Network, thus furthering the capacity for the Network to positively impact student learning at all levels of use. The development team is actively seeking input from both the academic and educational communities to help create the best possible resource repository and educational network. Additionally, the CLAS Network development team has a 'wish list' of features which it wishes to include once adequate funding becomes available. The 'wish list' includes items such as a user interface overhaul to tackle bugs that are keeping the team from developing certain features, decreased loading time for Network webpages, merge secure mailing with the current messaging system, upgrades and augmentations to the networking aspects of the website, and finally, if sufficient funding is available, iOS and Android apps to optimize mobile use of the Network.

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Figures

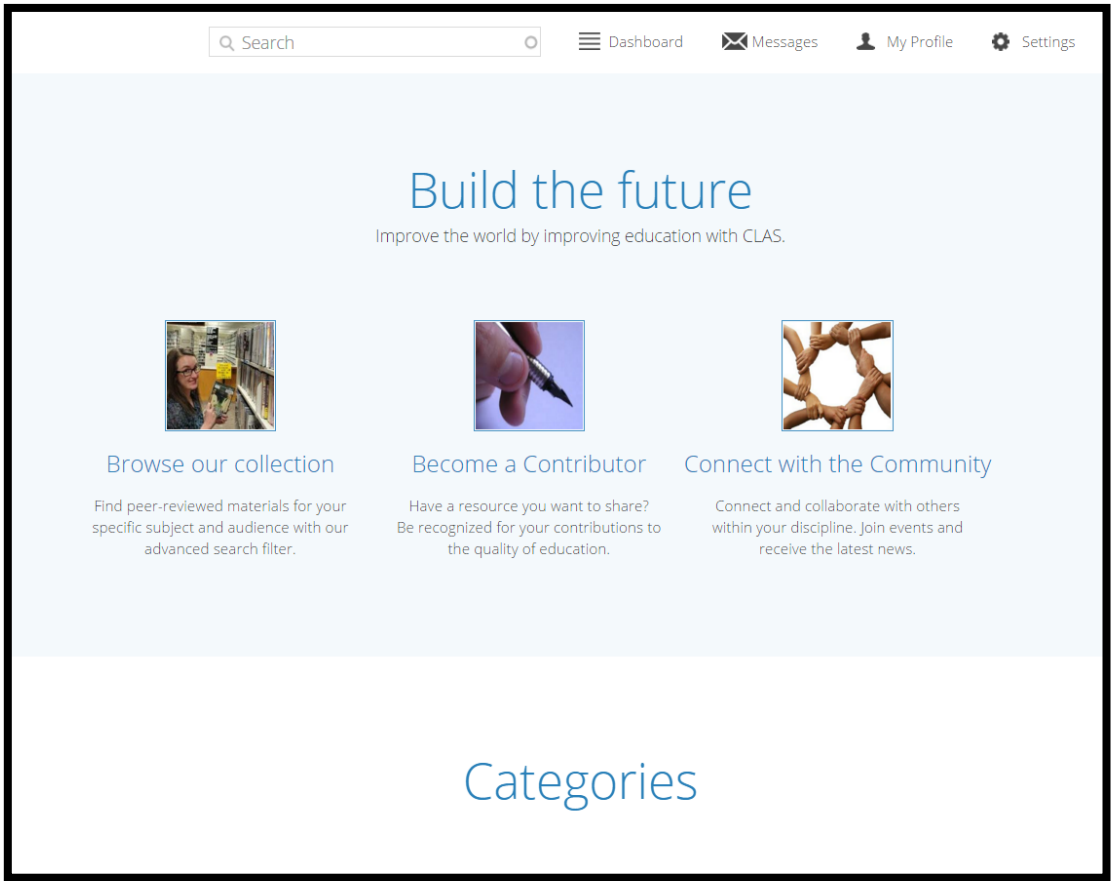

Figure 1: Screen capture of the current CLAS network homepage

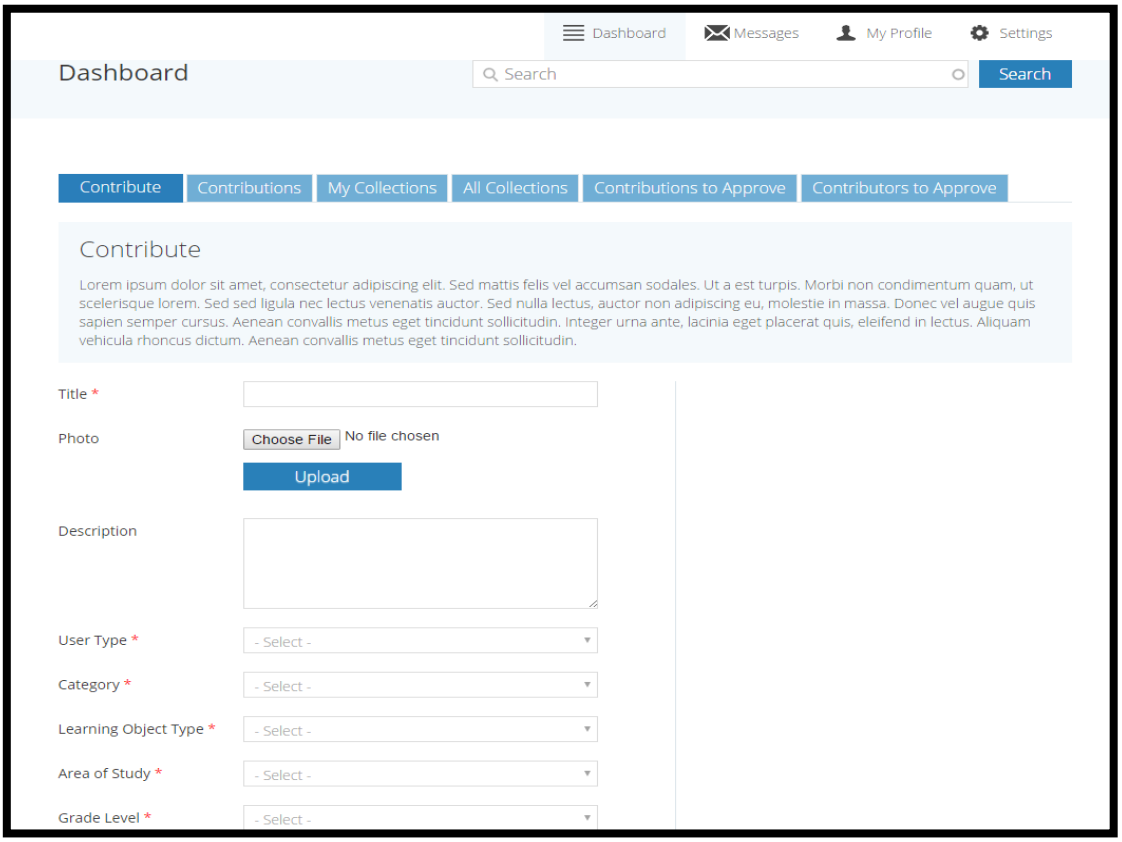

Figure 2: Screen capture of the contribution page of the CLAS etwnork

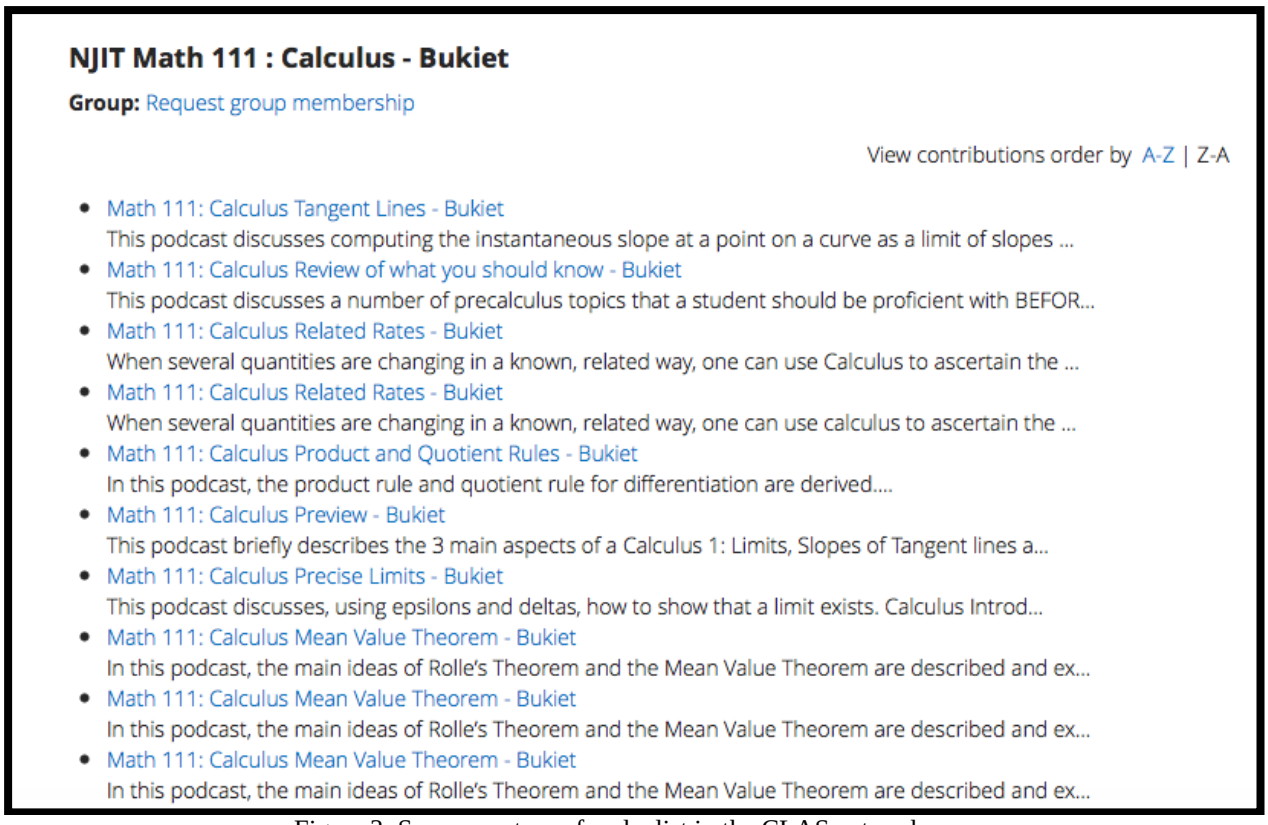

Figure 3: Screen capture of a playlist in the CLAS network

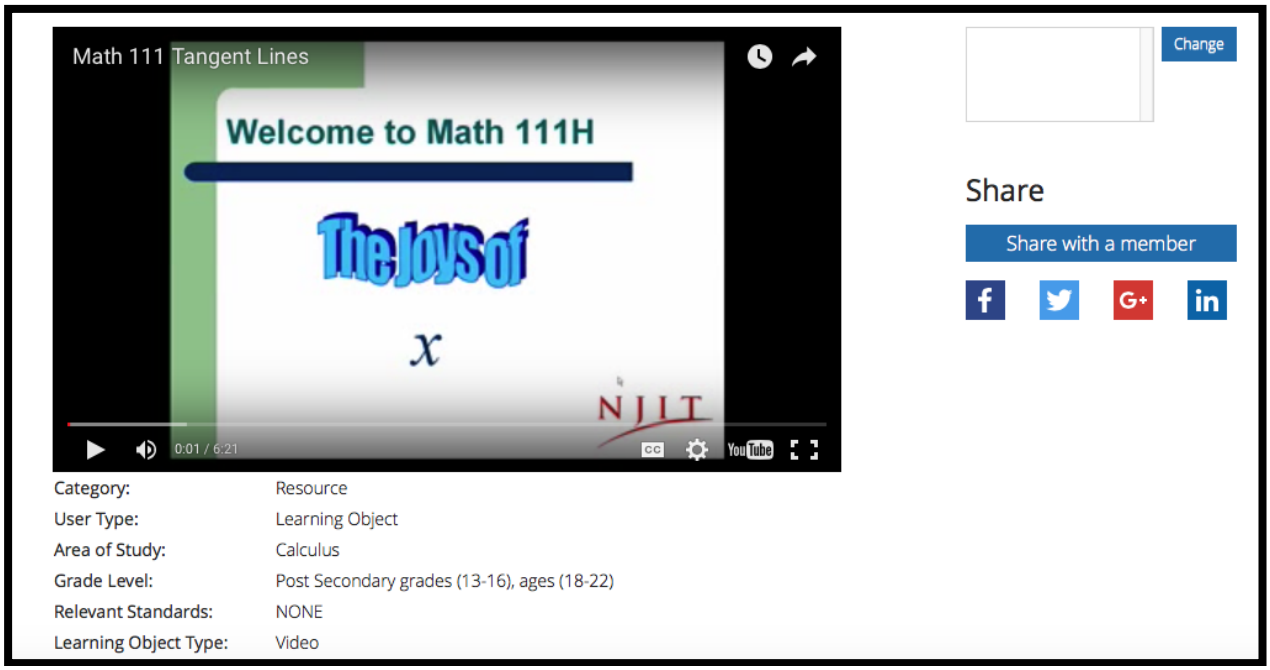

Figure 4: Screen capture of a video contribution in the CLAS network