Private Cloud Communities for Faculty and Students

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Abstract

Massive open online courses (MOOCs) and public and private cloud communities continue to flourish in the field of higher education. However, MOOCs have received criticism in recent years and offer little benefit to students already enrolled at an institution. This article advocates for the collaborative creation and use of institutional, program or student-specific private cloud communities developed as a way to promote academic identity, information dissemination, social discourse, and to form a bridge between faculty, administration and students. Concrete steps to build a private cloud are described. Placing a greater emphasis on meeting the needs of enrolled students versus engaging the masses in a MOOC for "edutainment" purposes is recommended.

Keywords

cloud, online learning, learning platforms, educational technology, technology instruction, virtual communities, cloud computing

MOOCs Versus Private Cloud Communities

According to the *Educause Center for Applied Research*, students expect their instructors to use technology in the learning process and believe technology is "critical to academic success" (Dahlstrom 2012, p. 19). However the time, resources, and energy required for these basic supports are limited. Institutions must be strategic about whether and how they deliver information to paying students, as well as to those who may access academic resources at no charge. The delicate balance of public versus private access to higher education requires strategic pedagogical investments by academic institutions.

Public and private cloud communities, including massive open online courses (MOOCs), continue to flourish in the field of higher education (Glancy, et al., 2013; Mazoue, 2013). A variety of open online courses have attracted students from around the world to allow convenient and low-cost means to access education. Many of the top universities have introduced open-education and allowed the sharing of intellectual content (Mazoue, 2013).

Yet MOOCs have been receiving criticism in recent years. There is greater

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awareness of the difference between the "edutainment" associated with a MOOC, and the experience of demonstrable learning that takes place in a higher education classroom with students who are aiming to attain a degree. MOOCs offer a public access platform to deliver pre-recorded information in an online format to thousands of people at the same time. The median average enrollment in a MOOC is 42,844 students (Jordan, 2014), while the commonly cited completion rate of all students who enroll in a MOOC is less than 10% (Rivard, 2013). These public access courses are often created by an institution's academic "celebrity" (Shea, 2014) or "superprofessor" (Rees, 2013), and draw non-academic students who often already hold a college degree. These "courses" do not function as a true college level course (i. e. one that is carefully connected to a systematic development of student learning outcomes), but may be a way to market an institution.

Despite the current trend in open online course delivery, many institutions (especially those who would be unable to attract "masses") do not need a MOOC, at least not as it currently stands as a showcase for upper tier institutions with ample funding to support its creation, marketing, and implementation. Additionally, students who are already enrolled in higher education rarely benefit from them. A MOOC seldom offers course credit or an incentive for participation among students who are already enrolled at a higher education institution. For students who are paying for their education with the goal to graduate with an academic degree, a private learning community that is tailored to their needs may be a much better fit to aid their experience.

The use of private cloud communities in higher education is a pedagogical resource that can be designed and implemented based on the needs of the institution, a specific educational program or track, or target population of students. Unlike a public community that is an open access online resource, a private cloud operates within a firewall and offers a more intimate way for students to build a social connection.

The critical nature of social connection in an online community is well documented in higher education. Increased engagement in learning occurs through online connections between students and faculty when there is a shared intellectual pursuit (Lambert & Fisher, 2013). Benefits include academic success, retention (Boston et al., 2009) and decreased social isolation (Delahunty, Verenikna, & Jones, 2014). The content and management of this type of online community is privately owned and managed (in this case, by the academic institution). A private cloud community can take many shapes. Examples may include a program Facebook page, a LinkedIn group for a college within an institution, or a Wiki for a course. One useful way to design and implement a cloud is through the use of password-protected online resources available only to enrolled students. We propose the creation of a private cloud as a way to promote academic identity, information dissemination, social discourse, and to form a bridge between faculty, administration and students.

The use of online platforms is the predominant medium for disseminating information to a wide group of stakeholders in higher education. Historically, traditional online technologies have been dependent on digital experts with coding and web-creation expertise. However, the current era of web technologies are collaborative, user-friendly, and typically involve combined resources across disciplines. Thus, the dependence on technological experts to create a web page is diminishing. Table 1 reflects the transition from traditional technologies to the current landscape of online pedagogies now available to academic institutions.

Table 1 Transitions to current online technologies in higher education

Traditional Technologies	Current Online Technologies
Required technological and web design expertise	Requires minimal involvement by information technologies staff
Individual expert input	Collaborative expertise
Copyrighted content and process	Open source options
High cost	Low to no cost
Content driven by administrators	Student and program based content

With this model, greater emphasis is placed on meeting the needs of enrolled students, as opposed to attempting to engage the masses in a MOOC for edutainment purposes. It allows us to shift focus from the academic publicity attached to MOOCs, to resources that can be used to increase the responsibility of education management from the student to the institution. Private cloud communities can be created on a small or large scale. For example, an institution may decide to design a private virtual community for each academic major in an undergraduate setting or for student populations such as Veterans or parenting students; masters-level programs may elect to create a cloud community for program concentrations, while doctoral programs might use private clouds for the dissertation experience. Each of these clouds would contain different content and would be aimed at a different target audience, yet their development and functioning would have similar qualities, as described here.

Step One: Identify technological supports available from the institution

At most institutions, private cloud communities are a fundamental aspect of learning management systems (LMS). The LMS can house the development and delivery of a cloud community for students and is the starting point for building this resource within an institution. Each LMS requires a systems administrator to be the lead developer, designer, and supervisor of the system. In most cases the systems administrator will be the point of contact and gatekeeper for building a cloud community. Therefore, it is imperative that the person spearheading a cloud initiative establish a relationship with this person prior to moving forward with discussions at the institutional level.

The systems administrator is responsible for providing technical leadership and operational support for the learning management system, including system configuration, content migration and end-user support. The administrator interfaces directly with the learning management system parent company (e. g., Blackboard, Sakai, Moodle, Canvas, Desire2Learn) and campus stakeholders to define and ensure successful technical implementation and delivery of information to students and faculty. This person is a technical resource who is most likely responsible for developing strategies for evaluating, integrating,

and supporting web technologies such as a cloud community.

To begin the exploration of this process, the program leadership team might first meet with the LMS systems administrator to discuss the idea of how to deploy academic content to degree seeking students, regardless of whether students are attending classes online or face-to-face. Due to the prevalence of LMS use, using the existing platform that is already in place for 91% of institutions in America is an obvious starting point. However, it is also possible to build publicly accessible virtual communities in other open source cloud based tools, such as Google Drive, Box, or Microsoft OneDrive.

The systems administrator can meet with faculty to brainstorm preliminary ideas regarding what one hopes to accomplish pedagogically using technology. In the beginning stages of planning, the phrase "cloud computing" may a foreign concept to the team, which will likely be comprised of faculty who are unfamiliar with instructional technology. However, the systems administrator should have a good grasp on how to explain the availability of information technology resources with the campus.

Step Two: Identify costs (if any) to establish a virtual cloud community within the LMS

There is a fair amount of diversity in the availability, performance, and reliability of course and learning management systems used in higher education. Yet, regardless of the system selected for use at a particular institution, LMS platforms are universally flexible, customizable to the needs of the institution, and affordable.

Learning management systems operate using a secure password-protected Internet connection. In most cases, registered students must login through the institution's website to access their account. A private cloud can be designed specifically within an institution so that it is only available to designated users. Since information is stored in 'the cloud,' there are no hardware or server maintenance costs, making the service a sound, strategic pedagogical investment for institutions to adopt.

Learning management systems are reported to be easy to manage and require less overhead expense to administer. Many do not charge fees on a per user basis (Harrison 2012), making it affordable to both large and small institutions. In some cases, the LMS may charge for the add-on packages, such as those allowing for synchronous, recordable video chats. While these features are highly beneficial, they require a more advanced, time-consuming level of interactivity and should only be considered if funds are available.

For institutions that already have an LMS in place, there is likely to be no additional overhead cost related to the use of the existing platform given that most of the major vendors already have this option built into the LMS package used by the institution. Thus a project such as this is likely to be administratively approved due to the lack of additional operating expenses.

However, if an institution must invest in purchasing add-on capabilities to create a virtual community in an existing LMS, or if human resources (i.e. the systems administrator) must be devoted to build the community, a cost-benefit analysis of the development of the cloud-based community would be helpful to make a case for adding this feature (see Table 2).

Table 2 Cost-benefit analysis of a private cloud-based community

	Costs	Benefits
DIRECT TANGIBLE	1. Equipment (hardware, software) 2. Communication to students and faculty 3. Project development a. Internal staff b. Consultants c. Expenses for data entry	1. Reduced costs of leadership time 2. Better coordination of learning experience 3. Reduced operating costs (e.g., decreased time spent by administrative offices providing forms and explaining procedures) 4. Expanded pedagogical coverage
INDIRECT TANGIBLE	1. Anxiety related to use of information technology 2. Faculty time spent providing resources to build cloud-community 3. Necessary updates to cloud-based resource database	1. Improved institutional identity 2. Greater clarity for candidates and faculty regarding the program process 3. Increased communication across institutions 4. Nurture relationships 5. Expand development of independent research 6. Universal of information to all students and faculty

Step Three: Develop the homepage for the cloud community

Once administrative approval has been granted to develop the cloud, faculty and students should think through key content that could be included on the program or student specific cloud community. First and foremost, focus on the homepage to ground the audience and to set the tone and identity for the private community at the institution. A video welcome is strongly recommended to bring to life the web-based connection to leadership within the program or undergraduate and/or graduate school. The video clip should be short and offer an introduction to the key faculty within the program and to orient the viewer to the cloud community. The institution may have audiovisual services available on campus to assist, or faculty can record brief, professional introductory clips using programs such as Windows Live Movie Maker or iMovie. Most smartphones allow for the creation of videos that can be uploaded to YouTube and then inserted on the homepage.

Alternately, consider posting faculty profiles and photographs of key people involved with students. The ability to "see" program, departmental faculty and administration is an easy way to help nurture relationships through web technology. A well-developed private cloud may even have student specific introductions to foster student-level connections. These steps help personalize an academic experience in a way that cannot be accomplished in a MOOC.

Contact information is a necessity and can all be placed in a column on the home page.

Students and faculty should know exactly where to call, where to click, and where to go for administrative issues relative to the scope of the cloud; this may include program advising, financial aid, and registration information. Some LMS platforms will connect directly to registration and email systems so that users can more readily access these services from the cloud.

If real-time chat is available through the LMS, consider posting a link to "chat live" with program advisers or faculty during certain business or office hours. Faculty do not need to be tethered to their computer screens during this time, but can have notifications sent to their smartphones or instant message alerts to let them know someone would like to connect with them. In most cases these chat sessions can be recorded and archived for future student use. These connections offer personalized support to registered students, with the potential for improving their connection to an institution.

Documents containing frequently asked questions (FAQ's) are helpful to post on the home page. For example, the development of FAQ information sheets for topics in a doctoral program such as the comprehensive exam, elements of the dissertation proposal, and graduation requirements can be posted. This can help build a community of learners and support open sharing across the institution and community. Other topics might include writing samples, student counseling resources, and program-specific commonly asked questions.

Announcements are another logical category to place on the home page for the cloud. The nature of cloud-based computing is that text, documents, RSS feeds, and other media sources can easily and regularly be updated or replaced. Announcements could contain real-time news regarding students who have successfully completed work, received awards or recognition, secured employment, or acceptance into advanced graduate programs. Cloud communities that are housed through the institution's LMS are password-protected and offer a greater level of security and privacy than social media outlets. Thus, the community cloud is an excellent place to promote accomplishments of students while they are still connected to the institution.

Similarly, newsletters, bulletins, or blogs related to an institution, program, or college would be other appropriate documents or links to post on the home page. Of added benefit, the very nature of using web-based links on a cloud-based virtual community is that any time public websites are updated (i.e., a departmental blog or website), the link within the cloud will automatically update as well.

Step Four: Develop an organizational plan for the cloud

The homepage serves as a landing page for basic information and contacts related to the program of study or student population. Begin to think about categories of information to include in the cloud-based community. In most LMS platforms, these categories will serve as a table of contents or navigation page for the user. Each cloud community will have different content and organizational categories. A sample list of categorical tabs for a cloud designed for Veteran students is listed in Table 3 alongside a potential organization for doctoral students.

Table 3 Sample categories for cloud tabs based on targeted student community

Student Veteran Cloud Categories	Doctoral Program Cloud Categories
Student home page	Student home page
Veteran education benefits	Writing resources
The Yellow Ribbon Program	Research help
Student Veteran groups	Dissertation proposal
Advising for Military and Veteran students	Program timeline
Counseling resources	Program forms
Writing lab	Comprehensive Exam
Math Lab	Dissertation Defense

Additional tabs can be added or re-arranged by the systems administrator or the instructional designer of an institutionally based cloud-community.

Experienced faculty members know all too well the repeated questions and confusion experienced by students, whether related to academic advising and graduation requirements, the transition from military to college life, the comprehensive exam and more. The importance of developing a strong organizational plan of information to be included on the cloud is intended to decrease the burden placed on faculty so that a large amount of reliable, useful information can be disseminated and shared with others.

Step Five: Gather materials for the cloud

One of the great benefits of developing a virtual cloud community is the ability to filter relevant, timely, and useful information that can be shared among faculty and students in one collegial place. An extensive, rich pool of information exists on the web that is waiting to be found. Yet students may be unaware of these resources and need assistance in determining their reliability and relevance. Faculty who provide materials for the cloud can guide students towards scholarly resources relevant to writing of papers, completing course assignments, and meeting program expectations.

Who can help build a cloud community?

It would be best if one faculty member (preferably a program coordinator or department chair) is designated as the resource collector for the assembly of materials to be placed on the cloud. This person should be the point of contact for gathering materials, evaluating their appropriateness in relation to the content focus of the cloud community, to cull out duplicate submissions from various faculty members, and to serve as a point of contact for future requests to add resources.

Using the organizational plan developed in Step Four, determine who would be a good source for sharing information regarding each of the tabs to be included in the cloud database. Program leaders may want to send out a group email to faculty, staff, and current students with an explanation of the purpose of a private virtual cloud community for the programs, and a list of the main categories. This email should include a request to share web-based links that may be useful for others to access or other personal materials they are willing to share.

The email request to faculty should include the organizational plan of categories that will be used to create the cloud. Request for best

practices, sentinel articles or references, helpful websites, video tutorials, or databases are recommended. Faculty holds valuable expertise that can be used and shared by others to aid in the successful completion of a degree program.

Staff involved with writing assistance available at the institution, statistical tutoring, or programmatic issues are excellent sources of information and should be solicited for input as well. For example, the library or media center may have templates available to aid with writing issues; a tutoring center on campus may have decision trees available for choosing statistical tests needed when preparing graduate theses and dissertations. Either of these institutionally- based resources can be disseminated to a much broader student base if they are posted on a cloud. Since the cloud is private within the LMS, the authors do not need to be concerned about the distribution of institution specific materials to non-registered students.

Current students can be an excellent source for sharing timely resources and materials that have been useful for their own academic journey—some of which may be unexpected and could possibly expand the pre-determined categories. In one such case, students recommended sites for reference management software such as Mendeley, End Note, and Zotero, that the leadership team had not previously thought to include.

What to include in a private cloud community

The database of information to be placed on the virtual cloud community will encompass a compendium of resources gathered by faculty, staff, and students—most of which will be directly linked to the resource itself that is available fully online to avoid copyright infringement. Information to be included typically falls into three categories: program-specific forms, institutional resources, and web-based publicly available materials.

Program-specific forms are ideal materials to place on the cloud. Documents of this nature may include forms for faculty and students relevant to a degree program such as contact or intake forms, enrollment or course completion forms, program sheets, and other administrative documents specific to the institution. If these forms are available on an institution's main portal, the systems administration may be able to link the cloud to the portal so that any updates to the forms will automatically update on the cloud. Using the cloud community to store program documents can reduce the amount of administrative time devoted to sending notices and paperwork to students and faculty. It also ensures that faculty and students will have access to the most current and necessary forms whenever they are needed.

Institutional resources are unique to each institution of higher education and to each department offering programs and degrees; they are also some of the most valuable resources available to students preparing term papers, theses and research papers. Resources might be provided to students regarding the institution's content and structure guide for theses and research papers, and/or a form-and-style guide specific to writing within a discipline. If these resources do not yet exist, links to academic and research writing guides and publications available online may be reviewed and selected as exemplars to provide direction for the student.

Content and structure guides are publicly available online and could be added to a cloud-computing database of resources. Some guides are generalizable and can be applied across disciplines. A web search for "guidelines for writing research papers and theses" yields many options available as a PDF. Instructor-created resources and handouts that are typically distributed in person may be shared with a much broader audience in the cloud-community.

Existing faculty-developed materials can be scanned and placed online, while still maintaining the integrity of the original author and affiliation with the institution.

A final recommended institutional and discipline specific resource for the private cloud could be sample papers and work of recent students or graduates. For example, graduate level students' manuscripts can often be retrieved through *Open Thesis* and *Proquest Dissertations and Theses*, and can be extremely helpful for other graduate students to see examples of distinctive work completed by people who have recently graduated from the same program of study. Similarly, course papers at the undergraduate level can offer scaffolded learning for diverse students to set minimum expectations at an institution. Program directors or chairpersons may want to select a handful of exemplary papers or theses that can serve as a model for other students and post them with their author's consent.

Standard practice at most graduate institutions is to have a public defense of the thesis or dissertation. Universities that record thesis and dissertation defenses using web conference sharing programs can post web-based links to the defenses on the virtual cloud community to make them available for viewing at a later date. Similarly, student-led meetings and organizations may opt to offer the meeting through a web-conferencing program to reach a broader or targeted audience. Sharing a link on an internal, password-protected site expands access to these events and serve to introduce students to institutional processes and opportunities.

Depending on the source material gathered for inclusion in the cloud, additional sub-headings will naturally evolve to be listed under each categorical tab. For example, Table 4 illustrates the possible expanded categories for a graduate-level cloud program.

Table 4 Expanded graduate-level cloud categories

Home	**Resources**	**Writing Resources**
Welcome	Institutional Resources	Writing Tools and Tips
Introductory Video	Sample Forms	Institutional Form and Style Guide
Program Newsletter	Directories	Writing Manuals
Program FAQ	Self-Management Resources	Literature Review
Courses Exam FAQ	Study Skills Resources	Citation Resources
Department Website	Learning Resources	Writing Term Papers
Forms	**Research Help**	**Program Support**
Institution Forms	Qualitative Inquiry	Program Guides
Department Forms	Qualitative Analysis	Recommended Books
Program Forms	Quantitative Inquiry	Consultant Database
Drop/Add Form	Quantitative Analysis	Support Group
Admission and Completion Forms	Mixed Methods	Program Requirements
Other Resources	Sampling in Research	Critical Due Dates
Program Resources	Survey Research Tools	Matriculation Sources
Institutional Social Media	Action Research Guidelines	Credit Versus Non-Credit
Common Literature Resources	Program Evaluation Materials	Graduation Support

How to make the cloud "live" for students and faculty

Once resources have been gathered, organized, and cataloged, the resource collector will need to re-establish contact with the institution's systems administrator so that the technological aspect of building a cloud within the LMS may begin. In most cases the system administrator will be responsible for the technology and structural framework of the cloud, while the individual responsible for the content will have access and training to maintain the information available on the virtual community.

Depending on the ease of use of the LMS, it may be possible for the resource collector to upload web links and documents directly based on the materials shared by others involved in contributing to the virtual cloud-community. Alternately, the resource collector may need to send all files and links to the system administrator to build the community. It is imperative for collaboration between the two parties in order to ensure that the desired pedagogical and academic purpose of the cloud-community aligns with the availability of technology in the learning management platform. Checks and balances to make the cloud 'live' to students and faculty include:

- Are directions available for how to access the virtual cloud-community for the institution?
- Is the tab or the link in the LMS for the virtual cloud-community accessible through all web browsers?
- Are all web links functional?
- Do all documents and PDFs open correctly?
- Does the home page set the intended tone of the virtual cloud-community?
- Are categories efficiently organized?
- Should there be consolidation of categories or expansion of topics and headers?
- Are there a variety of media on the virtual cloud-community to make it appealing to users? (e.g. videos, tutorials, RSS feeds, Word/PDF documents, photos)

Once these items are verified, it is time to make the community available to intended users within the institution's LMS. As previously mentioned, administration will need to determine the audience for who should have access to the community. Since this article focuses on a virtual cloud-community that is built into the institution's LMS, and since all faculty and candidates have access to the LMS, administration will need to make decisions about who will be allowed to access the community. For example, if the cloud-community has been created strictly for undergraduate students who are parents, a self-identified group of students may be granted access, perhaps through the approval of a group moderator. Depending on the purpose and intended audience of the cloud community, some institutions may choose to limit access to certain groups of faculty or students. These administrative decisions need to be clearly communicated to the systems administrator who will likely have the capability to control access to the cloud-community.

Administrators involved in programs may want to send out a brief email explanation of the cloud to eligible student populations, and a separate email announcement to eligible faculty. A well-written announcement might include a screen shot of how to access the virtual cloud community if it is embedded in the LMS, contact information for the moderator, or a hyperlink to the community itself.

Maintaining the community

The value to the institution of the creation and use of a virtual cloud-community to support undergraduate and graduate students and faculty working together cannot be underestimated. The infusion of available

technology to support students provides an easy access, cost-efficient, helpful portal into the world of the academic experience. The initial implementation process includes the collection and culling of appropriate web-based resources and documents. Yet in practice, this process becomes an on-going activity as the community expands and contracts predicated upon the needs at the time, updating of the links and webinars, as well as a periodic "cleaning" of the existing cloud framework. New, up-to-date, useful resources should be added regularly to a cloud to maintain student interest and ensure the accuracy of content. The resource collector should be mindful of the need to continually add and update materials to the cloud-community. In some cases faculty who did not previously contribute to the development of the cloud may be active users and have excellent suggestions for items and web links to be added.

Given the web-based nature of a virtual cloud-community, one can anticipate that web links provided by those who helped build the cloud may change or result in an error message. It is pivotal to the success and sustainability of the community that someone at the institution regularly verifies all sources to be sure links are functional. A cloud containing broken, non-functional links will result in decreased usage by those who need it the most. Preventative measures need to be in place to continually monitor and update content on any web-based resource such as a cloud community.

Once the managed institutional networks and resources on the cloud are in place, a series of live or virtual sessions with faculty can acquaint them with the cloud community and its content. It is imperative for faculty to "buy in" to the usefulness and importance of the virtual cloud in order for the utility of the resource to be passed on to students. Faculty need to know how to access the community within the LMS, how to contribute, and how the community can be used in the management of academic work. Similar applications through detailed instructions and announcements to targeted student populations are a must in infusing the positive attributes of the cloud community and its essential components for academic success.

With the identification and use of appropriate resources and institutional supports, the virtual cloud-community will function with little maintenance, low overhead costs, and great benefit to faculty and students in a program. Ongoing evaluation of its usage or non-usage, and specific academic content should be shared across the interested academic partners (faculty, students, the resource collector and systems administrator) for ease of accessibility, content improvement and validity, and whether or not it has made a difference in the academic lives of students.

Conclusion

Private virtual cloud-based communities provide a means for institutions to consolidate and standardize information for registered students to help them manage their course work and receive support. The virtualization of resources may help reduce confusion and uncertainty to students and faculty negotiating the open-access experience. The ability for institutions to offer clear information to students all in one place may contribute to improved quality assurance of the learning experience. Most importantly, the virtual cloud-community offers a benefit for students to receive program specific support and an informative technological connection to their institution connection, all of which may help promote student success.

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