

Evaluation of the MassONE Online Learning Platform

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Introduction

WestEd was contracted to conduct interviews with different groups of MassONE stakeholders and users in Fall 2010 for the non-technical component, with additional interviews and a review of online learning platforms conducted in Spring 2011 for the technical component. This report presents findings based on interviews with several groups of MassONE stakeholders and users, as well as interviews with three individuals working with web-based systems in other states. Finally, this report also includes a brief overview of the features of other states' portals.

The purpose of the evaluation was to provide information to help define the “future direction of the Commonwealth of Massachusetts’ investment in online collaboration and learning tools for public school educators and students” (Request for Response, p. 1). It does so by: reporting on interviews with different groups of users, non-users, and administrators of the MassONE system, developing “use cases,” identifying the key features desired in an online learning platform, reviewing various online learning platforms for their alignment with the key features, and conducting a systematic examination of the learning technology portals in other states.

Data and Methods

WestEd received a list of potential interviewees from the Instructional Technology Director at the Massachusetts Department of Elementary and Secondary Education (ESE), including MassONE stakeholders and administrators from the ESE, users and former users of MassONE, and MassONE administrators. For each group (stakeholder, type of user and non-users), WestEd evaluators developed a list of interview questions based on topics of interest identified in the original Request for Response issued by the ESE and conversations with staff in the Department of Instructional Technology. The questions were reviewed and edited by Instructional Technology staff. WestEd reached out via email and telephone to the individuals on the list of potential interviewees to invite them to participate in telephone interviews. Not all individuals could be reached and interviews were not conducted with all individuals identified as stakeholders, administrators, users, and non-users.

The different groups of stakeholders, users, and non-users interviewed include:

- Massachusetts ESE Leadership (six interviews)
- Teachers and others who use MassONE for professional development (nine interviews)
- Teachers who use MassONE Moodle for professional development (four who used Moodle exclusively plus others who used both MassONE and MassONE Moodle)
- Teachers who use MassONE with students (nine interviews)
- Teachers who formerly used MassONE with students (five interviews)

- Individuals who develop content or professional development for use on MassONE and/or Mass ONE Moodle (three interviews)
- District MassONE administrators and technology leaders (five interviews)
- Massachusetts ESE MassONE administrators (three interviews)
- Directors of instructional technology in other states (three interviews)

In addition to the interviews noted above, one focus group was conducted with a group of nine high school students who use MassONE.

Limitations

This evaluation was not designed to be statistically representative of all groups of stakeholders, users, and non-users. Rather, the goal was to talk to as many different types of stakeholders, users, and non-users as possible in a short time frame in order to gather many different perspectives. There were many different types of user groups and stakeholder groups, and thus the number of individuals interviewed in each group was small, ranging from only three Instructional Technology staff from other states to nine teacher users. It is important to take the findings presented here as suggestive rather than definitive.

Organization of This Report

This report is organized as follows:

- Findings from the interviews with different stakeholders and users are presented, beginning with ESE stakeholders, teachers who use MassONE with students, other educators who use MassONE or MassONE Moodle for professional development, professional development providers and facilitators, district MassONE administrators, and state MassONE administrators
- Findings from a focus group held with students from one high school who used MassONE
- A summary of challenges and desired features across different types of interviewees
- Use cases of current and desired functionality
- A review of different online learning platforms aligned to the key features identified through the interviews
- Findings from the interviews with educational technology staff from other states
- Reflections and recommendation for the ESE

Findings

ESE Stakeholders

Staff at the Massachusetts Department of Elementary and Secondary Education (ESE) were interviewed to gain their impressions of the system, how they use the system, and their vision for the future of MassONE or similar platforms for the state. This group identified the need for some kind of virtual instructional portal for use with students and as a community of educators; for example, to share curriculum resources and material. Most of the interviewees do not personally use MassONE – respondents reported using Sharepoint for collaboration within the department – but are familiar with it and aware that the state has committed significant funds to supporting virtual instruction and resources in the state’s winning Race to the Top application. This group is aware that MassONE is used in the field for both professional development purposes and with students, that it is frequently used as a virtual hard drive, and that it provides access to resources such as Teachers Domain. They also recognize that funding and resources have been, in the words of one state staff member, “hugely limiting” in keeping MassONE current. It was noted that the former Commissioner envisioned MassONE playing a more important role in the state’s education community than it currently plays. Others remember the initial rollout of MassONE as being problematic with technical difficulties and reported that this experience led some to be skeptical of the state’s ability or role in supporting educational technology at the statewide level. Others also reported they have seen and heard of improvements to the system and its reliability over time. Several stakeholders see MassONE, or something like it, playing a larger role in the state over time as a result of Race to the Top. Stakeholders mentioned increasing the use of virtual professional development for teachers and online courses for students, especially to access courses that may not be available in their school. One stakeholder shared the following view of the role of technology in education:

Technology is a facilitator of communication; it provides access to resources. It has a largely unrealized potential. I do think as a state, we need to be active in promoting the use of technology to provide teachers and students with support, resources, curriculum materials, and a learning environment that allows them to both customize instruction and support it.

Another stakeholder emphasized the role that technology will continue to play in educational policy and practice in the state:

Certainly with Race to the Top we’re planning to develop a lot of professional development online ... we see it serving a much larger role in the provision of professional development. [I]f you look at what’s happening in the high schools; students taking online courses ... not sure how much they’re using MassONE. Now [with] new legislation innovation schools can be virtual, so this whole idea of virtual learning is growing. [T]he extent to which MassONE is vital to our moving in that direction ... obviously needs to be considered.

Teachers Who Use MassONE With Students

WestEd interviewed nine teachers who use MassONE with students. The teachers interviewed include core content teachers, such as those who teach English, math, or science, as well as instructional technology teachers who teach students and also support other teachers in their use of technology with students. Some of these teachers also served as the MassONE administrator for their districts and were responsible for rostering students into MassONE and into classes. The teachers interviewed were from around the state including urban, suburban and more rural areas. The teachers included those who use MassONE frequently, such as a weekly, to more infrequent users who might use it for one or two units a year.

Teachers candidly shared information about their use of MassONE, including what they liked and what they did not. Overall, teachers liked that MassONE has a variety of tools “all in one place.” They identified the reliability and a secure environment as two benefits of the system. Another draw for using MassONE was to provide high school students with a “college-like experience,” because as several teachers noted, colleges often do hybrid courses with both face-to-face and online components. Finally, teachers noted that MassONE is an opportunity to have students extend their learning experiences beyond the classroom. Teachers do not routinely use MassONE for preparing lesson plans beyond using the site to access the state standards.

Common Uses

The teachers interviewed who used MassONE with their students primarily used three tools:

Drop Box

Teachers interviewed reported the drop box is one of their most common uses of MassONE. Teachers like being able to have their students complete work and submit it electronically. This allows teachers to access papers and grade or give feedback electronically. Teachers reported using the track changes feature in Microsoft Word rather than giving students handwritten feedback, allowing them to keep a record of student work and their own feedback. The drop box also facilitates teachers grading certain kinds of assignments that would be difficult to assess on paper. One example was offered by a teacher who has students create Microsoft Excel files – looking at the electronic file allowed the teacher to examine such things as equations and formulas used. Teacher comments about the use of the drop box included:

I have students use the homework drop box to submit completed computer files. It's the only avenue for that.

The VHD and the drop box are really the sell for us. For those that are die hard, we can't do without it. We don't want kids emailing us assignments.

My Folder

The My Folder feature was one of the most frequently mentioned uses of MassONE with students. The primary purpose is to allow students to access their work between locations, such as home and school. Several teachers mentioned that students may not have computers at home, but may access their saved work in a library. Teachers also mentioned the benefit to students of being able to begin their work, such as a paper or project, in one location and continuing work at another. Teachers sometimes require the use of MassONE, or they may present it as an option. The My Folder tool was also described as helping in the editing and revision process, allowing students to edit papers without having to constantly rewrite large sections. MassONE also eliminated the use of thumb or USB drives, which can be misplaced or carry viruses. No problems were reported with the use of the My Folder. Some quotations from the interviews give context to the use of the My Folder tool:

Often teachers want students to be able to save their work and recall it at home using MassONE.

English is one of the bigger users; students use it to their save work.

As a teacher, I seldom use it. [Students] use it to hold their work in progress.

Forums and Discussions

The next most frequent use of MassONE with students mentioned by teachers was the use of the forums or discussion tool. This is the tool that allows students in a class to have discussion threads, which can be started by a teacher or a student. Teachers sometimes make participation in the online discussion a requirement for the course. One teacher, for example, described requiring students to respond or make 2-3 comments on a discussion forum per week and changing the topic weekly. In this use, the discussion forum may relate directly to the topic being studied or it may be used to extend thinking about the topic. An example of this would be an English teacher who is reading *Beowulf* with his/her class posting weekly questions that students can discuss in the forum. A sample question might be: “You’ve now read a significant portion of *Beowulf*; you are asked to describe it to a friend. What are the characteristics of it that leap out to you beyond the main events?” Another example of how the discussion feature can be used to get students to extend their learning is a unit on plants. A teacher could ask his/her students to discuss plants they see around where they live. Some teachers mentioned that the MassONE discussion forum is a little outdated because it is limited to text postings; they would like to be able to post other types of files such as images or sound files. The following teacher comments about the use of forums show both positive aspects and some challenges:

I use it almost exclusively for one function, the online discussion forum....I post a question for students to consider that relates directly or indirectly to what we are studying in class....usually higher-order thinking questions to extend their thinking on something.

Our [district] platform doesn’t do forums or discussions. So that’s the hook for us with MassONE.

Discussions are an unwieldy beast to manage. There is a lot of material. It's a lot of quantity in terms of input. It needs to be monitored by the teacher.

Challenges

The primary challenge reported by teachers, especially those who also serve as the MassONE administrator in their district, involved rostering the students into workgroups. Rostered was mentioned as the most burdensome part of using MassONE, as well as the component that can discourage many users. A related challenge or complaint was the use of the workgroups. Teachers reported wanting to access workgroups more easily, perhaps via icons or on an easily accessible menu on the left side of the screen. These two aspects were identified by some respondents as not user-friendly and as a deterrent to using MassONE.

Several teachers also reported that the MassONE interface is a little dated and not as interactive as other sites, such as social networking sites. Another challenge or roadblock that teachers mentioned in terms of using MassONE with students was the requirement that forums for each workgroup must initially be set up by the MassONE helpdesk at the ESE. Finally, others disliked that teachers have little control over certain functions in MassONE, such as the discussion forums in their workgroups. Teacher comments related to the challenges in using MassONE with students included:

The owner of the workgroup should have more control over the workgroup....the owner of the workgroup should be able to take down or edit discussions, for example.

[Note: In response, an ESE MassONE expert noted the forum application allows educators assigned as a forum administrator to delete threads and postings, lock the discussion, or move the thread to another workgroup. Educators cannot delete forums; however, they can purge discussions and reuse them by deleting threads.]

Rostered is a nightmare...we have so many schools, there might be several high schools a student can go to. I have to enroll each student by hand one at a time. It took me three days. It's not easy.

Creating new workgroups can be a challenge.

Suggestions for Improvement

Teachers shared some ideas for improving MassONE, and for different features to add to MassONE that would potentially enhance teachers' use of MassONE with students. Several teachers report using different programs or platforms for different things. For example, one might use MassONE for the VHD and drop box, but wikispaces for the discussion. Some ideas teachers shared included:

- Allow emails to be sent within the system so that teachers can communicate with an individual student – for example, to discuss a forum posting or send a file back to a student

- Facilitate the rostering of students and class lists, perhaps through a URL with a log in required
- Allow different types of posting to the discussion forums, such as audio files or video/picture files
- Allow the owner of the workgroup more control over the workgroup
- Update the look of the interface to be more modern
- Allow easier access to the class site portion of MassONE

Other Platforms and Tools

Most of the teachers interviewed also used other Internet-based tools with students or to prepare for their teaching. Teachers reported using the following tools or platforms:

- Wikispaces
- NING
- Gradebook Wizard
- Moodle
- Glogster
- Google Apps

Educators Using MassONE for Professional Development

Other users interviewed as part of this evaluation were teachers and educators who used MassONE or MassONE Moodle for professional development purposes. These users included teachers and staff at schools and districts as well as some staff at the Massachusetts Department of Elementary and Secondary Education. Most of the individuals interviewed primarily used the main MassONE interface, but several had used MassONE Moodle¹ exclusively, and several others had used both MassONE and MassONE Moodle.

The users of MassONE or MassONE Moodle for professional development each used it for blended or hybrid courses that included both in-person and online components. The primary online components used were the discussion forums, the drop box, and file sharing within workgroups. This group of users was also more likely than teachers who use MassONE with students to use the survey tool, Verizon Thinkfinity, and the WGBH Teachers Domain resources.

Many of the interviewees in this group reported using MassONE or MassONE Moodle exclusively for professional development and not for other work or in their classrooms with students. On the

¹ MassONE Moodle refers to the Moodle site hosted by the Massachusetts Department of Elementary and Secondary Education and accessed by first going through the MassONE site.

other hand, these users were able to use it successfully for their professional development purposes of file sharing and discussion. Several also noted they liked the increased flexibility of MassONE Moodle over the main MassONE interface and tools.

Benefits and Aspects Appreciated

The benefits or aspects of MassONE liked by this group of users included:

- A single place for resources such as forums, lesson planning tools, and other tools
- A central place to store information and resources related to a workshop or course
- Access to a wide variety of tools, including the state standards, surveys, discussion forums, and virtual hard drive

Challenges or Difficulties

This group of users also identified some challenges in using MassONE. Specific complaints included:

- Lesson planning tool is clunky
- Survey tool is clunky (several noted they use Survey Monkey instead)
- Interface is older and not very intuitive
- Setting up forums must be done by ESE

Suggestions for Improvement

This group of users had a number of suggestions for improving MassONE and key features that any online professional development system should have:

- Modern interface
- More interactivity, collaborative space for teachers, social networking for professionals
- Internal search function
- Internal message system
- Easier use of workgroups
- Wikipages
- Easier or streamlined registration system rather than current rostering system by district MassONE administrator

Users Who Develop/Deliver Professional Development on MassONE or MassONE Moodle

WestEd evaluators interviewed individuals involved in developing and delivering professional development for Massachusetts educators using MassONE or MassONE Moodle. Some developed and facilitated online-only courses and some developed both online and face-to-face components, working either as professional development providers for the department or because a grant required the use of MassONE. When working with MassONE as part of a grant, it was frequently done in partnership with other districts. The individuals interviewed in this category all had experience with other online course management software and frequently commented on MassONE in relation to these other programs. Other course management software used by these individuals included: Angel, Blackboard, Desire to Learn, Moodle, and TeachWell. MassONE was not described by professional development providers as integrated course management software but rather as a set of tools.

Strengths of Moodle for Professional Development

The fact that Moodle is a free and open source platform is a draw for many professional developers, districts, and schools. However, drawbacks include the lack of a helpdesk and program developers on staff to fix bugs and problems as they arise. Some professional development providers find Moodle to be among the more user-friendly of the tools and more intuitive than MassONE, although not all described Moodle as more intuitive and user-friendly than other software. For the professional development providers interviewed, one of the strongest selling points in using Moodle for professional development is that many districts have Moodle and thus many teachers are familiar with the platform.

Challenges or Weaknesses of MassONE and MassONE Moodle for Professional Development

Challenges or weaknesses of MassONE or MassONE Moodle cited by professional development providers included:

- Tool and interface can be clunky
- Embedding videos and creating media-rich learning environments is challenging
- Lack of collaborative aspects
- Moodle wiki tools and blogging tools were described as “terrible”
- Several professional developers described MassONE as “outdated”

Desired Features and Use of a Statewide Portal for Professional Development

Individuals who design professional development for Massachusetts educators using MassONE or MassONE Moodle articulated the following desired features and uses as either improvements to MassONE/MassONE Moodle, or to be included in any new portal or tool the state plans to use for professional development:

- Wiki- and blog-type tools, especially those that enable the showcasing of student work and that allow others to comment, edit, and contribute
- Grade book tool
- Tools that facilitate online mentoring and/or online office hours
- Smaller collaborative work spaces within a class or workgroup so smaller groups of students or PD participants can easily share files and work collaboratively
- Streamlined, more user-friendly discussion tool and additional tools within discussion such as private conversations
- Analytic tools to see things such as how many posts someone makes to a discussion per week
- Training for developers on full capabilities of Moodle and/or MassONE
- Synchronous features and tools, such as real-time chats or synchronous meetings (MassONE Moodle has a chat tool that can be configured by the instructor)

District MassONE Administrators

WestEd interviewed five district MassONE administrators about their experience with MassONE. All reported having roles in addition to being the MassONE administrator – one is a classroom teacher, one is a school librarian, one is a technology instructor coordinator, and two are district technology directors. One is no longer using MassONE, but remains the administrator of record and provides MassONE training to teachers at her school.

Interviewees took different paths to becoming district MassONE administrators – some volunteered for the task, while others were assigned because the job aligned well with their existing role. While one respondent was in her first year as district MassONE administrator, the remaining four have served in this role for five or more years.

Overall, district MassONE administrators do not spend much time working with MassONE. Most district MassONE administrators reported never performing functions such as: monitoring/managing the virtual hard drive, managing/moderating discussion forums, archiving accounts, or reviewing TSAT results. Other functions occur primarily at the beginning of each new school year, such as managing teacher and student MassONE accounts.

Providing technical assistance to educators was the only MassONE task reported to occur more often than once a year by multiple administrators; four of the five interviewees indicated they provide technical assistance to teachers on a monthly basis, including answering questions or retrieving forgotten passwords. Individual MassONE administrators also reported performing a specific function more than once per year. For example, the following functions were performed more than once per year by only one of the interviewees:

- One person managed/moderated discussion forums quarterly
- One person rostered students into workgroups monthly
- One person created new workgroups monthly
- One person made announcements on the workgroup homepage monthly
- One person managed teacher accounts weekly
- One person monitored/managed the virtual hard drive weekly or more often
- One person used MassONE for non-administrator purposes (e.g., teaching, professional development) weekly or more often

Overall, the district MassONE administrators reported very little use of MassONE. The majority indicated they perform administrative functions at the beginning of the school year, but may not use MassONE again until the next school year begins.

Key Features of an Online Learning System

District MassONE administrators were asked their perspective on what features are important for an online learning platform. Findings related to the importance of certain features were mixed, likely due to the varied additional roles of the district MassONE administrators interviewed. Items reported by a majority of administrators as “very important” or “extremely important” included:

- Virtual hard drive
- Virtual drop box
- Tools for student instruction
- Discussion groups/forums
- Ability to embed photos/videos
- Easy registering/rostering
- Curriculum tools
- Lesson planning tools
- Ability to share lesson plans
- Ability to share assessment tools

- Tools for professional development providers
- Calendar

Features reported as “not at all important” or “somewhat important” by a majority of administrators included:

- Survey and quiz tools
- Grade book tools
- Real-time/live chat
- Private messaging
- Thinkfinity tools/resources
- Technology Self-Assessment Tool (TSAT)

Challenges and Suggestions for Improvement

District MassONE administrators identified several challenges with MassONE and offered some suggestions for improvement. One challenge was a lack of sufficient storage space, as some teachers and students filled their allocated storage due to large files associated with some classes. Another issue reported by the interviewees was the outdated interface and navigation system used by MassONE, with some calling it difficult to use, not user-friendly, and not intuitive. A common complaint by district MassONE administrators was the difficulty in rostering students new to a school. The difficulties described did not come from the process, but rather the time associated with adding students to the school. Some students were not able to be rostered into workgroups until several months into the school year. This lag in time made it difficult for freshman students to access MassONE, as well as any other students who transferred into a new school. Another issue mentioned by district MassONE administrators was the removal of the calendar system. They indicated this was a popular feature for laying out assignments and due dates.

The suggestions for improvement reflected the challenges described by the MassONE administrators. For example, one suggested improvement was to increase the storage capacity for students and teachers to better accommodate the larger files associated with certain courses, and another was to re-launch the calendar system that was previously accessible through MassONE. A common suggestion for improvement was to modernize the interface and integrate Web 2.0 technologies. District MassONE administrators suggested enhancements might include direct links on the homepage to the most-used features, drag-and-drop capabilities, drop-down menus, and simplified navigation. District MassONE administrators also advocated for a system of rostering students that was not held up until the release of SIMS data in October. This delay prevents students from being able to access MassONE and limits teachers’ abilities to use MassONE as a teaching and learning tool from the start of the school year.

State MassONE Administrators

WestEd interviewed three state-level MassONE administrators about their roles with MassONE. The state administrators all had different roles, responsibilities, and levels of involvement with regard to MassONE.

The first state-level MassONE administrator is a computer programmer responsible for maintaining and debugging the system. The limited technical assistance he provides to districts is related to the MassONE software and the backbone underlying the system. Since joining the ESE last year, he reported spending the majority of his time early in the school year fixing bugs and responding to software crashes, which initially occurred at least weekly and often daily. Since that time, he reports that “issues have minimized and things are under control” although the software still crashes on occasion.

The second state-level MassONE administrator is primarily a database administrator who does not work directly with schools or districts. Rather, the work takes place behind the scenes completing tasks such as populating and managing databases, being responsible for the SQL server, and deactivating old accounts that are no longer used after students graduate or leave the state, or after teachers retire, resign, or transfer out of the state.

The third state-level MassONE administrator serves as a one-stop shop for anything related to MassONE and other technology, on both the front end and back end. This administrator provides all the technical support and site administration; conducts testing, quality control, and troubleshooting; and serves as the MassONE helpdesk. All emails and calls for technical support go to him, and he provides significant technical assistance to districts.

Challenges and Suggestions for Improvement

The state-level MassONE administrators identified some challenges and offered their thoughts for improvement. One challenge cited was the previous issues with crashing and the overall instability of MassONE. When MassONE was initially released, it had only been tested with a small group of users. When the system went live to the state, the large influx of users overwhelmed the servers and resulted in crashes. The instability of MassONE resulted in many teachers abandoning the system altogether. One suggestion to improve this issue in the future was to ensure that simulated testing was conducted with approximately 700 online users prior to releasing a new system or adding new features to the existing system. Such simulated testing can ensure the system has the capacity to support a larger number of simultaneous users.

Another issue described by a state-level MassONE administrator was the overall need to “clean up” the system. This included archiving older accounts and removing features that have limited or no use. Currently, accounts for students and teachers that are no longer needed are simply deactivated to prevent them from accessing the system. As such, thousands of deactivated accounts clutter the system. A suggestion for improvement would be to establish standard protocols for working with

outdated student and teacher accounts, such as archiving them on another server for a set number of years before they are simply deleted. This would result in a cleaner system, increase overall storage capacity, and set standards for handling user accounts.

Other issues described by state MassONE administrators mirrored those discussed by the district MassONE administrators. The limited storage space was viewed as a limitation of MassONE when sites like Google and Yahoo offer five gigabytes of storage. State MassONE administrators also commented about the outdated user interface, noting that while MassONE had “minor tweaks” completed over the past few years, it has not kept up with the Web 2.0 technology that could make the system more user-friendly, intuitive, and attractive. Increasing the allotted storage space and upgrading the system to a more modern interface were both suggestions from state MassONE administrators.

MassONE Student Focus Group Summary

A focus group with nine 11th and 12th grade users at a high school in Western Massachusetts was held in October 2010. Students reported that in the past year, on average, two of their teachers used MassONE. This section summarizes findings from the student focus group.

How MassONE is Used in Classes

Students reported using MassONE for their classes in the following ways:

- Accessing projects or assignments posted by teachers on MassONE
- Saving work in progress; for example, ongoing projects
- Submitting completed work to teachers

Specific examples:

- Students in an art class save projects to MassONE to continue to work on them over time and at different locations (e.g., home, school).
- Work in progress for a Microsoft Publisher project in English class is saved on MassONE. Multiple people can access it, and the work can be accessed from multiple locations.

Other Ways Students Use MassONE and Benefits

Some students use the My Folder function in MassONE in lieu of a flash drive to save their work in progress even if their teachers are not using MassONE. This allows a student to begin work and continue it at different times and places. Features students liked or appreciated about MassONE included:

- File storing and saving

- Ability to access work anytime and anywhere
- Free and reliable backup, eliminating need to purchase flash drives that could get lost or carry viruses

Things Students Dislike About MassONE

Students reported displeasure over perceived problems with MassONE, including:

- System has failed/gone down a few times
- Sometimes it requires too many clicks to get where you need to go
- Some things are not obvious enough (such as finding the drop box)
- Can be difficult to figure out; too many steps to accomplish a task
- Lack of a “sent folder” or permanent confirmation message that the file was deposited in the drop box
- Inability to send a message directly to the teacher

Student Perspectives on Teacher Use of MassONE

Students would like more teachers to post resources that could assist students in their studies, such as study guides, outlines, and practice quizzes. One student noted, “MassONE makes it easier to study [and] have one’s materials handy.” Students reported they are on the computer all the time anyways, so it would be natural for them to check the MassONE site. Several students reported wishing teachers would use MassONE more.

Other

Students articulated a clear desire that all students need to know about MassONE sooner, in earlier grades, because it can be helpful to their self-organization, study habits, and productivity. One student suggested that every freshman student be given a MassONE account automatically.

Summary of User-Identified Challenges Across Interviews and Focus Groups

Several challenges or roadblocks to using MassONE were articulated among different types of users. Some of these challenges and roadblocks lead directly to desired features, and others may be inherent to the system. The commonly mentioned challenges included:

- Rostering students into workgroups each year is a daunting and time-consuming task for district MassONE administrators.
- The site interface is clunky and outdated, often requiring many clicks to get to where one needs to go.

- The workgroup organization can be confusing, and selecting the workgroup is a step many users frequently forget.
- Curriculum tools are out-of-date.
- MassONE lacks a message system, including permanent confirmation that a file has been uploaded to the drop box.
- Users are not sure what parts of the website they have access to and what is available to them that might enhance their teaching or learning.
- Survey tool is very basic.
- Storage space is insufficient.

Teacher users, professional development providers, district and state MassONE administrators, and other stakeholders shared thoughts about features and tools they would like to have in MassONE, MassONE Moodle, or any system that the state might choose to support. Some of the most common desired elements across different groups of users included:

- Simplified rostering, perhaps through a MassONE administrators database that is linked to databases with student information
- Web 2.0 functionality, including user-friendly wiki tools
- More control for the workgroup owner or administrator over such things as setting up forums, deleting discussion threads, or removing postings
- Setting up forums or discussions without going through ESE MassONE helpdesk
- Ability to have private or subgroup discussions on MassONE
- Internal message system for people in workgroup
- Icons or more direct access to workgroups/classes on the homepage rather than dropdown menu for selecting workgroups
- Live chat tool
- Increased storage space for users
- Calendar feature, preferably with the ability to link to existing external calendars
- Simplified, more user-friendly survey feature

One common theme throughout the interviews was high praise for the MassONE helpdesk staff, labeled “phenomenal” by respondents. The helpdesk was frequently mentioned as being very responsive and always available and willing to solve problems.

Use Cases

The use cases of current and desired functionality describe some common uses of MassONE, as well as the challenges discussed above and some desired features identified by interviewees. Use cases of current MassONE functionality and challenges in using MassONE are presented first, followed by use cases of desired functionality from MassONE or a similar system. Appendix A presents diagrams that visually illustrate many of the desired use cases presented below.

Use Cases of Current Functionality and Related Challenges

This section presents use cases, or mini-cases, that describe how different users use particular features and functions in MassONE. Challenges and roadblocks are also described.

Use Case 1: Student Use of the “My Folder” Storage

Overview:

This case presents one student’s use of the MassONE My Folder tool to stay organized and how it helped her be successful in school. Each school year this student organizes her My Folder section of MassONE into folders and subfolders: a folder for each year, and subfolders for each course she is taking. She uses My Folder as both a storage and organizational device. Even if a teacher is not using MassONE for a class, the student uses it to keep herself organized so that she can complete her work in a timely manner. She often begins work in school and saves it to My Folder to access and complete at home, or vice versa, saving a project or other work that she began at home to access the next day at school. Without using the My Folder as a system to organize and store her work in progress, the student reported much of her work may have been late because essays would have to be retyped when edited rather than being able to go right into a document that is already typed up to make edits there.

One potential roadblock for using MassONE as a storage device for students is a lack of information – students may not be aware of this possibility, or even that MassONE exists at all if not informed by a teacher. Students reported that the ability to make folders and sub folders is not emphasized by teachers, and some students were concerned by the limited storage space available.

Actors:

Students who have a MassONE account with a username and password and are rostered in a workgroup for their class

Steps:

1. Student begins an assignment in some software program such as Word, Excel, or PowerPoint. For example, the student might begin writing a research paper or an essay in English using a word processing software program.
2. On web browsing software, student navigates to MassONE homepage. Student logs into MassONE and selects appropriate workgroup from the drop-down menu.
3. Student selects “My Folder” and then “add file” to upload the work-in-progress file.
4. At a later point in different location, the student uses a computer to access the Internet. Student navigates to and logs into MassONE. From MassONE, student can access file(s) that were saved to “My Folder” at an earlier time.

Use Case 2: Teacher Using MassONE for Course-Related Discussion Group Among Students**Overview:**

One common way that teachers used MassONE was for course-related discussion forums among students. Discussion forums are a way for teachers to get students to connect with material outside of class time in a way that engages them and hopefully extends their learning. Before beginning a new discussion forum for a class, a teacher must send a request to the MassONE helpdesk to have a forum set up for the particular workgroup that represents the specific class. This is an added step that many respondents identified as unnecessary for workgroup owners/administrators. Once a forum is set up, the teacher can post discussion questions or threads at any time. Many teachers use discussion forums to extend thinking about a subject, to stimulate discussion, or to encourage students to read and think about what others have written. Frequently, the questions posed require higher-order thinking or may require students to relate a reading or topic to their own experiences.

The requirement that forums must be initially set up by the MassONE helpdesk is seen as a roadblock or deterrent by some teachers in using the software.

Actors:

Teachers using MassONE with students

Steps:

1. Teachers must send a request to the MassONE helpdesk to have the forum tools enabled for a particular workgroup.
2. Once the forums are enabled, the teacher can begin a new thread by clicking on “Post new thread.” Teacher begins a new forum discussion thread with a question such as: “You’ve

now read a significant portion of Beowulf; you are asked to describe it a friend. What characteristics of it leap out to you beyond events?”

3. In class, teacher announces a new discussion forum on MassONE and instructs students to a) answer the posted question, and b) respond to at least one other student comment within a certain time period.
4. Teacher logs onto MassONE with user name and password.
5. Teacher selects workgroup for class using drop-down menu at top of MassONE screen.
6. Teacher clicks on “Forums” on left-hand side of navigation bar.
7. Teacher clicks on most recent discussion topic.
8. Teacher reads and monitors student forum postings and responses.

Use Case 3: Use of Drop Box by Students to Submit Assignments

Overview:

One of the most frequent uses of MassONE by students is the drop box to submit assignments to their teachers. There are two main challenges to submitting assignments this way. First, the drop box is buried in the VHD section of the workgroup. Students must remember to select the workgroup for the class, and then select the VHD before the drop box becomes visible to them. Second, while a confirmation message shows on the screen once a file is uploaded to the drop box, there is no permanent record of the file upload. Students expressed a desire for such a record, preferably including the file name, date, and time of upload.

Actors:

Students who have a MassONE account with a username and password, and are rostered in a workgroup for their class

Basic Flow:

1. A student first logs in to his MassONE account, then uses the drop-down menu to find the workgroup for the class.
2. Using the menu bar on the left hand side of the screen, the student first selects the VHD, then within the list of folders in the VHD, finds the virtual drop box.
3. The student then clicks on the browse button to locate the desired file on his computer. Once the file is selected and uploaded, the student receives a message on the screen acknowledging the file has been uploaded; however, students desire a more permanent confirmation of the upload.

Use Case 4: Use of Drop Box by Teachers to Receive Assignments

Overview:

The drop box is a feature of MassONE commonly used by teachers. In one example, an accounting teacher discussed students in her class using the Quicken software to complete assignments. To be able to grade the assignments or give feedback, she has to manipulate and navigate around the electronic files and not simply read a printout. Thus, she requires her students to submit assignments via the MassONE drop box, rather than having students email her or turn in flash drives or compact discs. Teachers reported liking that many different types of files can be received via the drop box, and noted it is helpful to have an electronic record of student work. In addition, they appreciate not having to carry stacks of paper back and forth between home and school. Challenges for teachers related to the drop box included having to individually download files, and not being able to return graded files with embedded comments to students via MassONE.

Actors:

Teachers who have set up a virtual drop box under the VHD section of the course workgroup on MassONE

Basic Flow:

1. To retrieve the assignments, a teacher logs onto MassONE, selects his/her workgroup, and then selects his/her drop box.
2. The teacher then individually opens or downloads each file for review.
3. Teacher reviews each document for the purpose of providing feedback or grades.

Use Case 5: District MassONE Administrator Rostering of Students Into Classes

Overview:

In order for teachers to use MassONE with their students, students must be registered with specific school workgroups for teachers to roster them into the classroom workgroup. It is possible for teachers to roster students themselves into their classes, if the students are already in the MassONE database and associated with that particular school. Generally, teachers who want to use MassONE with their students or have their students use MassONE to store work in progress go to the district MassONE administrator and request that the administrator register students into the school workgroup. To do that, the teacher and students must be assigned a MassONE account if they do not have one already. The district MassONE administrator enters each student into the MassONE system, and then creates workgroups by rostering or associating each student with a class.

Actors:

District MassONE administrators (may be a district-level staff or may be a teacher or other school-based staff serving as a district MassONE administrator)

Basic Flow:

1. Teacher asks the district MassONE administrator to roster students into her class and provides administrator with a list of names of students who are in the class.
2. MassONE administrator must register each student into the MassONE database, if they have not yet done so. To do this, the district MassONE administrator needs to send an electronic registration file to the MassONE helpdesk via a drop box for the workgroup of MassONE administrators. On this file, the administrator needs to include the following student-level information: SASID, last name, first name, date of birth, school code, and grade. To create this file, the district MassONE administrator must look up each student's information and then input that information into the registration file.
3. Once this file is sent to the MassONE helpdesk and processed, the district MassONE administrator or teacher can roster students into classes.
4. To roster students into classes, the district MassONE administrator logs into his/her account on MassONE, then selects "[School] Workgroup" and clicks on the "Admin" icon on the menu bar at the top of the screen. Next, the administrator selects "Roster new members into [workgroup]."
5. The district administrator then searches for each individual student via a search or browse function that appears on the screen. This search is from the collection of students who were submitted on the MassONE registration file this. Then, the district administrator uses arrows to move students to the teacher's workgroup. Teachers can also perform this function by searching for students in their school and adding them to their class workgroup.
6. Students are now rostered into classrooms.

Use Case 6: District MassONE Administrators Providing Technical Assistance to Teachers and Students**Overview:**

Teachers who want to begin using MassONE or who have been using MassONE and have specific questions will often approach the district MassONE administrator for technical assistance. Types of technical assistance provided include educating teachers about available features of MassONE, training teachers and students on specific features of MassONE, retrieving passwords, answering questions as they arise, and general troubleshooting.

Actors:

District MassONE administrators and teacher or student users of MassONE

Basic Flow:

1. Teacher or student user approaches district MassONE administrator with a question or problem.
2. District MassONE administrator responds to question or problem with technical assistance. As needed, district MassONE administrator models use of MassONE features to teacher/student, resets password for teacher/student, or provides answers to teacher/student questions.
3. As a result, teachers/students are able to use MassONE, can utilize more features of MassONE, and/or are more efficient using MassONE.

Use Case 7: State MassONE Administrator Registering Students Into Schools**Overview:**

In order for district MassONE administrators to roster students into classes so that teachers can use MassONE with their students, students must be associated with a specific school in the MassONE system. Generally, state-level MassONE administrators register students into schools so they are present and available in the system to be rostered into classes by district MassONE administrators or, less commonly, by teachers. To do that, the teacher and students must each have MassONE accounts. The state MassONE administrator enters each student into the MassONE system, and then associates each student with a specific school.

Actors:

State MassONE administrators

Basic Flow:

1. State-level administrators update the Student Information Management System (SIMS) as students graduate, change grade levels, transition schools, or leave the state.
2. SIMS data are integrated with MassONE to link students' SIMS data with their current school.
3. The state MassONE administrator receives a file from a district MassONE administrator containing student-level information: SASID, last name, first name, date of birth, school code, and grade. The state administrator processes the file to ensure that each student is assigned a MassONE account and registered into the school.

4. Students are now registered into schools, which allows the student records to be accessed by district MassONE administrators and teachers for rostering into workgroups.

Use Cases of Desired Functionality

This section presents use cases of functionality that different types of users (e.g., teachers, professional development providers) would like to have in MassONE or a similar system.

Use Case 8: Desired Functionality - Private Messaging in Discussion Forums

Overview:

Teacher user wants to be able to message individual students within MassONE. Possible uses for this feature include responding privately to a forum discussion post, or messaging a student about an assignment submitted via the drop box feature.

Actors:

Teacher who uses MassONE with students

Basic Flow:

1. Teacher goes to computer with Internet access. Teacher navigates to the MassONE website and logs into his account using user name and password.
2. Teacher selects the workgroup for the class of interest from the drop-down menu at the top of the MassONE page and navigates to the discussion forum.
3. Teacher composes a private message to a student in response to a posting that the student made and submits it directly to the student, rather than posting on the forum for all students to read.

Use Case 9: Permanent Confirmation That File Placed in Drop Box Was Received

Overview:

Teacher instructs students to use the drop box tool to submit assignments. Currently, students get an on-screen confirmation message that the file has been placed in the drop box, but cannot see the file in the drop box. There is no permanent record or confirmation of file upload. Students would like a message system or a folder that keeps a record of files uploaded to the drop box as confirmation and proof of submission.

Actors:

Students who have been rostered into MassONE and have user names and passwords

Basic Flow:

1. Student goes to a computer with Internet access, navigates to MassONE homepage, and logs into MassONE.
2. Student selects the appropriate class workgroup using the drop-down menu at the top of the screen.
3. Student selects the VHD.
4. Student uploads file into drop box located in the VHD.
5. Student receives confirmation message on screen stating a file has been uploaded to the folder.
6. Student would receive a permanent confirmation of file upload, perhaps in a “sent” folder.

Use Case 10: Live Chat Function as Part of Professional Development**Overview:**

Professional development instructors using MassONE or MassONE Moodle would like to be able to incorporate live (real-time) chats into courses, in addition to static forums or discussion threads.

Actors:

Professional development instructors and participants

Basic Flow:

1. At the appointed time, the instructor logs into MassONE with user name and password and navigates to Moodle.
2. Instructor clicks on an icon for the “live chat” tool. A sidebar on the screen shows who has logged into the live chat room.
3. At the same time, participants enrolled in the course log into MassONE and navigate to the class site.
4. Each individual participant who has entered the course area clicks on the icon for the live chat.
5. The instructor begins the live chat by welcoming participants and posing a question or making a statement and asking participants to comment and respond both to the initial question/statement and to the comments and questions from other participants. The instructor may also make comments into the chat.

6. The chat continues for the specified time. A record of the chat can be saved or is archived on the course space for future reference.

Use Case 11: Synchronous Meetings or Virtual Classroom Space

Overview:

Professional development instructors using MassONE or MassONE Moodle would like to be able to incorporate synchronous meetings or virtual classroom space. With synchronous meetings or virtual classrooms, educators can engage students in real-time concurrent activities and learning. For example, an instructor might show slides or other material on the screen and talk through the material. The synchronous aspect allows students or professional development participants to ask questions and get answers in real time, rather than submitting questions and waiting for a response. It allows a more interactive and potentially engaging experience for participants.

Actors:

Professional development instructors and participants

Basic Flow:

1. At the appointed time, the instructor and participants log into MassONE with user names and passwords and navigate to the course whether in MassONE or MassONE Moodle.
2. Instructor shares her desktop with the participants logged into the meeting and uses slides or other file types to present material both on-screen and verbally.
3. Participants can ask questions online and interact with each other in a synchronous chat.
4. A record of the chat can be saved or archived in the course space on MassONE or MassONE Moodle for future reference.

Use Case 12: Grade Book for Teacher and Student Use

Overview:

Teachers reported wanting a grade book feature where student grades on assignments, tests, and other graded work could be tracked. Ideally, students would have access to their grades in order to give them some ownership and responsibility in tracking progress. Potentially, parents could be granted access to student grades as well. This type of feature or tool would replace a paper grade book or Excel file commonly used by many teachers. It would give them the portability to grade and keep track of grades from any location where they work (e.g., home, school).

Actors:

Teachers, students, and potentially parents

Basic Flow:

1. In the most basic use, the grade book would be a place for teachers to track student performance on individual assignments. A teacher would set up a class on the grade book function, perhaps something like a spreadsheet with a student per row and assignments listed as columns.
2. Teacher tracks student grades on assignments throughout the course.
3. Teacher can produce different reports or export data for use in other situations.
4. Other potential uses and features of the grade book would allow students and/or parents to access grades. This would allow students, and possibly their parents, to monitor grades so there are no surprises at the end of a term.

Use Case 13: Desired Simplified Rostering of Students Into Classes**Overview:**

A common roadblock and frustration in using MassONE has to do with rostering students into classes. District MassONE administrators find the process of rostering students time consuming and frustrating. They expressed a desire for a simplified way of getting students connected with their teachers and classes. Two potential ways of simplifying rostering were discussed. One would be an administrative site that would permit MassONE administrators to have access to student and teacher databases for simplified rostering. The second method discussed involved assigning each class a separate URL and password that students could access directly without having to be rostered into the classroom.

Actors:

District MassONE administrators

Basic Flow:

At the beginning of a new semester, the district MassONE administrator in a high school has to roster students into classes so teachers and students can access the class workgroup on MassONE. In an ideal situation, the administrator would have access to student names/MassONE identifications to associate with the teacher/workgroup.

1. District MassONE administrator accesses a secure MassONE database where he can manage the accounts for his district.

2. In one single database, the administrator can easily identify all students in the district, give them a MassONE identification if they do not have one, create new workgroups, and move students and teachers to multiple work groups. Currently, administrators have to access student SASIDs in one database and manually roster students into class in another MassONE database.

Use Case 14: Desired Increased Control for Workgroup Owners

Overview:

Currently in MassONE, before the discussion forum sections of a particular workgroup space can be used, the workgroup owner or administrator must send a request to the MassONE helpdesk. Once the forums are created or enabled, then a teacher, workgroup owner, or participant can start a discussion thread. In an ideal scenario, a teacher could decide on the spur of the moment that he/she wants to use a discussion forum to extend conversation about something in class and simply set one up. Teachers would also like to be able to delete postings or even whole message threads.

Actors:

Teacher or workgroup owner

Basic Flow:

1. In a class, the teacher and students are discussing a current event. The class time is almost over, but many students still have thoughts and input they want to share. Even though the class has never used MassONE discussion forums, the teacher suggests that the discussion be continued in a discussion forum on MassONE. She tells the students that prior to the next class she wants each student to post at least one thought and comment on at least one other student's posting.
2. After the class, the teacher logs into her MassONE account and goes to the workgroup for the class. In the discussion forums section, she sets up a forum for the students to continue their discussion of current events.
3. Later the teacher returns to the discussion group to review student postings. She has the ability to delete or comment on student postings, and can remove the discussion thread upon completion of the assignment.

Use Case 15: Desired Increased Storage Space

Overview:

Students often use MassONE to replace a flash drive or similar media that affords them document portability and the opportunity to access files from different locations. As they upload larger files, particularly audio or video, sufficient space is necessary to ensure all student files can be kept available and accessible when needed.

Actors:

Student users of MassONE

Basic Flow:

1. Student users of MassONE upload files to My Folder - the virtual hard drive associated with their personal MassONE account.
2. Once students have maxed out the existing capacity, they are unable to continue uploading files. With the existing capacity limits, students may have to delete older files in order to free up sufficient space for new documents and files.
3. With increased storage available, student users could upload as many files as needed without concern for exceeding the current storage capacity of their virtual hard drive. In addition, audio and video files could be easily uploaded and stored, maximizing the flexibility of the feature and allowing student users to use the virtual hard drive for all their school-based storage needs.

Use Case 16: Desired Simplified User Interface**Overview:**

The general interface of the MassONE system was viewed as lacking and outdated by many of those who were interviewed. Overall, the interface is viewed as overly complicated, too time-consuming, non-intuitive, and lacking in user-friendliness, requiring too many clicks to navigate through the system. Users desire an improved interface that incorporates Web 2.0 technology for easier access and navigation, including drop-down menus and click-and-drag options.

Actors:

All current stakeholders and users of MassONE, including state MassONE administrators, district MassONE administrators, teacher users, and student users

Basic Flow:

1. A full upgrade of the MassONE system is completed to incorporate Web 2.0 technologies to improve the interface and how users interact with the system.
2. Users of MassONE (e.g., teachers, students) sit down at the computer to complete a task using the MassONE system.
3. Users are easily able to access their workgroups and other highly-used features from the homepage, saving time and frustration by virtue of increased access directly on the homepage and a more streamlined and intuitive roadmap throughout the various software features.

Online Learning Platforms

WestEd used the data from the interviews to identify the most important features of an online learning platform, some of which MassONE possesses and others that are desired. The features were divided into three categories:

- **Collaboration and Planning Tools/Features** – Integrated email; internal messaging/live chat; social networking; sharing of lesson plans, resources, or common assessments; access to state standards; lesson planning tools; wiki tools; and an integrated calendar system.
- **Instructional Tools/Features** – Access to online modules; ability to embed audio and video files; forums and discussion groups; survey or testing tools; a drop box for submitting assignments; a virtual hard drive; blogs; and an integrated grade book.
- **Administrative Tools/Features** – Reliability; secure environment; simple navigation; search functions; easy rostering of students; ability to archive accounts; access to a helpdesk; and training to use the platform.

WestEd reviewed MassONE along with several other online learning platforms against these key features. The overarching goal was to identify which online learning platforms possessed which features. In addition to MassONE, WestEd conducted thorough reviews of Moodle and Canvas, described in more detail below. Additionally, for each feature WestEd identified one or more “à la carte” systems. As opposed to online platforms or comprehensive learning management systems, “à la carte” systems are software, websites, or services that offer the single feature or tool. The following sections provide brief overviews of the three primary online learning platforms reviewed: MassONE, Moodle, and Canvas. Afterward, each key feature from the three categories above is presented with a brief description of how the various learning platforms fulfill that feature if it is available on the system.

MassONE

MassONE was developed by the Massachusetts Department of Elementary and Secondary Education to support standards-based teaching and learning across the state. It is a secure portal with web-based applications, resources, and tools designed to encourage collaboration and enhance learning. MassONE includes features that can be used by school administrators, classroom teachers, professional development providers, and students. It is structured around learning communities called workgroups, with individual workgroups for each district and school within the district. Teachers and students can receive a MassONE account that is configured to their respective school. The features of MassONE are designed around the workgroup, so each workgroup has a homepage where announcements can be made to the group, a virtual hard drive for storing files, and access to discussion forums. Other tools include teaching and learning resources, lesson planning templates, survey tools, a technology self-assessment tool, and a personal storage space for each user that works as a virtual hard drive so users can save files and access them at a later time on any computer

with an Internet connection. Additional information about MassONE can be found at <http://massone.mass.edu/>

Moodle

Launched in 2003, Moodle is a software package for producing Internet-based courses and web sites. It is a global development project designed to support a social constructionist framework of education.

Moodle code is provided freely as open source software. Costs to use Moodle are incurred in the hosting and support of the software as well as with any customizations that may be required. Users may copy, use, and modify Moodle provided they agree to certain limitations. Moodle can be installed on any computer that can 1) run PHP, including Windows, Mac, and many Linux operating systems, and 2) support a SQL-type database (e.g., MySQL).

Moodle can accommodate any size student population. It can be used as a platform to conduct fully online courses, or as a library of features to enhance traditional classroom-based learning. Users can choose to create and utilize collaborative communities via activity modules (e.g., forums, databases, wikis), or simply use Moodle to deliver content to students and assess learning via assignments or quizzes. Moodle has been compliant with the Section 508 accessibility guidelines created by the World Wide Web Consortium (W3C) since 2008. Additional information about Moodle can be found at <http://moodle.org/>

Canvas

The Canvas learning management system, launched in early 2011 by Instructure, was designed from the ground up with today's learning concepts. Teachers are able to use multiple modes for communication—email, Facebook, Twitter, video, text messaging, Skype, etc. Canvas is offered as open source software, primarily developed at Instructure and supported by a global community of developers. Canvas is built on the Ruby on Rails platform, a flexible, powerful, and scalable technology. Additional web solutions and modern technologies are leveraged (e.g., HTML5, iQuery, OAuth) as well as external service integrations (e.g., Facebook, Google Docs, LinkedIn, Scribd). As with Moodle, the costs to use Canvas are incurred in the hosting and support of the software as well as with any customizations that may be required.

In addition to a focus on Web 2.0 features and functionality, Canvas is noted for its accessibility, conforming to the Web Accessibility Initiative Web Content Accessibility Guidelines (WAI WCAG) 2.0 AA and Section 508 guidelines created by the W3C. It also received the Gold-level certification from the National Federation from the Blind. Additional information about Canvas can be found at <http://www.instructure.com>.

À la carte Tools

WestEd reviewed a variety of other online environments and websites that could be used in various combinations to address the desired features of an online learning management system. The following is a list of sites that were included in the review, each with their corresponding web address for additional information.

- BetterLesson – <http://betterlesson.org>
- Blogger – <http://www.blogger.com>
- ClassMarker – <http://www.classmarker.com/>
- Collaborize Classroom™ - <http://collaborizeclassroom.com/>
- CourseSites – <https://www.coursesites.com>
- Curriki – <http://www.curriki.org>
- Dropbox – <http://www.dropbox.com>
- EDU 2.0 for Schools – <http://www.edu20.org/>
- Engrade – <http://www.engage.com>
- Google for Education – <http://www.google.com/apps/intl/en/edu/>
- Ning – <http://www.ning.com/>
- PBworks – <http://pbworks.com/content/edu+overview>
- PollDaddy – <http://www.polldaddy.com>
- QuizStar – <http://quizstar.4teachers.org/>
- School Circuit – <http://www.schoolcircuit.com/>
- Schoolwires – <http://www.schoolwires.com/swcorp/site/default.asp>
- Survey Monkey – <http://www.surveymonkey.com>
- Think Wave – <http://www.thinkwave.com/>
- Tinychat – <http://tinychat.com/developer/>
- Wimba Pronto – http://www.wimba.com/products/wimba_pronto
- WordPress – <http://www.wordpress.org>

Collaborative and Planning Tools

Collaborative and planning tools and features include online technologies that could enhance and improve communication between users (e.g., teachers, students, professional development participants) and accommodate desired sharing of information and resources. Specific features identified as collaborative and planning tools included:

- Integrated email
- Internal messaging/live chat
- Social networking
- Sharing lesson plans/materials/assessments
- Access to state standards
- Lesson planning tools
- Wiki tools
- Integrated calendar

These features are described in the sections below. Each section begins with a description of the feature and why it is considered an important aspect of an online learning platform. This is followed by a discussion of which of the online learning platforms reviewed offer the feature.

Integrated Email

Integrated email allows individuals to access email from a single, consistently designed web interface and easily share information between available services. Other users of the system can be emailed directly to ask questions, share information, or continue a conversation. Contacts are stored for easy access to email addresses, and folders can be added to save and store emails. Integrated email would allow teachers to send messages to an entire class, such as clarifying an assignment requirement, or to individual students, such as addressing a question or providing feedback. Integrated email would improve communications between teachers and students, and allow for more collaboration among teachers, among students, and between teachers and students.

MassONE – Currently, MassONE does not offer integrated email functionality.

Moodle – Integrated email is not a core feature of Moodle. However, the eMail block is an integrated internal mailing system for Moodle that can be added. eMail is a tool of private communication between members of the same site on Moodle, particularly among members of the same course. eMail offers the advantage that it only depends on Moodle for its operation, eliminating issues that stem from an external mail service, such as spam problems.

Canvas – Canvas has an Inbox feature that allows for messaging within an enrolled course. Students can easily click the “Write a Message” button to instantly send a notification to the instructor.

À la carte – Gmail for Education is a popular choice for email because of the high storage capacity, ease of use, and free access.

Internal Messaging/Live Chat

Instant messaging (IM) is a form of real-time, direct, text-based communication between two or more people using personal computers or other devices, along with shared clients. The user's text is conveyed over a network, such as the Internet. More advanced instant messaging software clients also allow enhanced modes of communication, such as live voice or video calling. Instant messaging would allow teachers to be more accessible outside of classroom time, and would allow for improved collaboration. Teachers could have virtual office hours where they can answer questions, or make themselves available in the evening or weekend when an assignment is coming due or a test date is approaching.

MassONE – Currently, MassONE does not offer internal or instant messaging.

Moodle – Moodle Chat is an activity module that allows participants to have a real-time, synchronous discussion via the web. The Chat module contains a number of features for managing and reviewing chat discussions. Moodle Messaging, another option for instant messaging, is not limited to a specific course or role; rather, users may send messages to each other regardless of whether they are enrolled in the same course. This is unlike Forums and Chats that can be specific to a course, role, or group.

Canvas – The inbox feature in Canvas shows all messages and discussions a user is party to, including instant messages. The chat feature allows everyone who enters a chat room to communicate in real time, including text, audio, and video. The chat tool is provided for each student group, so that each group can chat in real time.

À la carte – Other online sites that support internal messaging and live chat include Google, Engrade, Wimba, and Tinychat.

Social Networking

A social networking service provides an online platform or site that focuses on building social networks or social relationships among people. Social networks generally utilize user profiles, social links for users, and a variety of additional services. Most social network services are web-based and provide means for users to interact over the Internet. Social networking would allow a teacher to set up a classroom or small group of students into a network where they can share ideas, collaborate on projects, discuss topics of interest, and learn as a group.

MassONE – Currently, MassONE does not include a social networking component.

Moodle – Social networking is not present in core Moodle; however, there are both open source (e.g., Mahara) and proprietary (e.g., joule social) solutions available.

Canvas – Canvas does not have a stand-alone social networking feature; however, it was designed to integrate with existing systems such as Skype, Facebook, LinkedIn, Twitter, Delicious, and Diigo.

À la carte – Other online sites that offer options for social networking include Ning and Schoolwires.

Sharing Lesson Plans/Materials/Assessments

File sharing refers to distributing or providing access to digitally stored information (e.g., computer programs, documents, electronic books) among users of a particular system. In an educational setting, peer-to-peer file sharing systems are often used for situations such as teachers sharing lesson plans, classroom resources, and common assessments with each other.

MassONE – MassONE contains an option for teachers who have created lessons to upload the materials and share them with others.

Moodle – The database activity module allows teachers to build, display, and search a bank of entry records such as lesson plans. The format and structure of these entries can include images, files, URLs, and text. The module creates one table per instance, but users may create multiple instances. The records can be linked to other tables and all resources in the specified course by allowing autolink in a name field, but users cannot build a SQL query.

Canvas – The files tool in Canvas allows users to upload and store files directly into the course with the same organization they use to store them on the computer. By default, these files are public to everyone in the course, but users can elect to lock the files so they are only available to specified users (e.g., teachers, assistant teachers).

À la carte – Other options for file sharing include Dropbox and Google Docs.

Access to State Standards

The state has developed a set of standards indicating what students should know and be able to do at every grade level. The standards are designed to build upon previous years' knowledge and set clear expectations for learning. Teachers are expected to develop lessons aligned to state standards to ensure they are teaching the appropriate content for a given subject at a given grade level. Teachers should have easy access to the standards to ensure lessons are properly aligned.

MassONE – MassONE provides a database that offers quick access to the Massachusetts state standards.

Moodle – Although state standards are not embedded in Moodle, they can easily be added. A resource, such as state standards, can be displayed in a frame in the same browser window in order

to enable users to easily return to the course page. When using such a frame, Moodle navigation remains on the top of the page.

Canvas – Although state standards are not embedded in Canvas, pages in Canvas open in a WYSIWYG editor and hyperlinks and embedded content are allowed so the state could easily add a link to the state-specific standards.

À la carte – Another online option for easy access to state standards would be Google Sites, which does not require coding or HTML.

Lesson Planning Tools

Developing lesson plans is a core function of teachers. Teachers often look for existing tools and resources to assist with the lesson planning process. This can include templates, guides, resources, and sample lessons that can be modified to fit student needs.

MassONE – MassONE provides a lesson planning template where users can enter information such as key concepts, activities, and assessment strategies.

Moodle – Although Moodle does not have any built-in lesson planning tools, lesson planning goals could be achieved via the database activity module or the website link resource.

Canvas – Canvas does not have built-in lesson planning tools, but rather lesson presentation or instructional tools.

À la carte – Online repositories such as BetterLesson and Curriki could be useful in terms of lesson planning tools.

Wiki Tools

A wiki is a website that allows users to create and edit interlinked web pages (e.g., community websites, corporate intranets, knowledge management systems, note services) with a simplified markup language or a WYSIWYG text editor. Wikis are typically powered by wiki software and are generally used collaboratively by multiple users. Teachers could assign a group of students to collaboratively develop a wiki on a specific topic then share the wiki with the rest of the class. As such, wikis have the potential increase collaboration among students as well as increase to opportunities for peer-teaching.

MassONE – Currently, wiki tools are not part of the MassONE software.

Moodle – Moodle offers a wiki module, which is essentially a web page where everyone in a given class or group can create together. A front page is established, then each author can add additional pages by simply creating a link to a brand new page. In general, there is no single editor for this type of document; instead, the community edits and develops its own content.

Canvas – Canvas does not describe a wiki tool as part of its feature set; however, the Pages feature inside a specific course can be used as a single-source wiki. The Collaborations tool allows teachers or students to work together authoring documents, but requires that users have an account set up with either Google Docs or EtherPad. Any Canvas user can create a collaboration and invite other users to join.

À la carte – Other online options for wikis or wiki-like features include PBworks, Engrade Wikis, and Google Sites.

Integrated Calendar

An integrated calendar allows individuals to access their calendar from a single, consistently designed web interface and to easily share information between available services. Teachers can post due dates for assignments or set up timelines for quizzes and tests, and schools can post important information such as professional development days, holidays, special events, or early-release days.

MassONE – The MassONE software does not currently include an integrated calendar.

Moodle – Although not a part of the Moodle core, this feature can be added via a Calendar block or by adding an Upcoming Events block. One or more calendars can be created on the front page of the site or within a specified course. A set of calendar events can be exported so that they can be imported into other calendar programs. There are different ways to show and view a calendar.

Canvas – Within Canvas, events automatically populate into a single calendar and can be manipulated via external calendars such as Google Calendar, iCal, or Outlook.

À la carte – Online options for integrated calendars include Google Calendar and Engrade Homework Calendar.

Summary of Collaborative and Planning Tools

Table 1 provides an at-a-glance summary of the collaborative and planning tools available through MassONE, Moodle, Canvas, and various other online platforms and systems.

Table 1 – Summary Table for Collaborative and Planning Tools

	MassONE	Moodle	Canvas	À la carte
Integrated email	No	Yes	No	Gmail
Internal messaging/live chat	No	Yes	Yes	Engrade Google Tinchat Wimba
Social networking	No	No	No	Ning Schoolwires
Sharing lesson plans/materials	Yes	Yes	Yes	Dropbox Google Docs
Access to state standards	Yes	Optional	Optional	Google Sites

Lesson planning tools	Yes	No	No	BetterLesson Curriki
Wiki tools	No	Yes	No	Engrade Google Sites PBworks
Integrated calendar	No	Yes	Yes	Engrade Google

Instructional Tools and Features

The instructional tools and features category included online technologies that could enhance and improve learning. Specific features identified as instructional tools included:

- Access to online modules
- Ability to embed audio and video files
- Forums and discussion groups
- Survey or testing tools
- Drop box for submitting assignments
- Virtual hard drive
- Blogs
- Integrated grade book

Each of these features is described in the sections below. Each section begins with a description of the feature and why it is considered an important aspect of an online learning platform. This is followed by a discussion of which of the online learning platforms reviewed offer the feature.

Access to Online Modules

Online modules provide access to course content, often with the ability to incorporate demonstrations, questions, and mini-quizzes as student progress through the course. A module may cover a single lesson or a full course that can be completed entirely online. Online modules may also be used to supplement in-class learning by providing instruction that students can follow at their own pace.

MassONE – Online training modules are available to teachers and MassONE administrators to learn more about the MassONE system, including how to use it within their respective roles. Currently, MassONE does not have modules or classes available to students.

Moodle – Moodle allows for online modules that can serve as stand-alone courses or can be used to supplement face-to-face instruction. Moodle considers itself course management software that

allows teachers to set up and develop their courses online so students can navigate the information at their own pace.

Canvas – Through Canvas, teachers are able to create their own new courses using a four-step process. Students have a “courses” and a “group” tab that allows access to their enrollments and memberships.

À la carte – EDU 2.0 for Schools is a free, cloud-hosted learning management system, with nothing to download or install. CourseSite is a free online learning environment that teachers can set up to match their personal teaching style, curricula, and student needs.

Ability to Embed Audio and Video Files

Teachers often want to include audio and video in their instruction. Seeing and hearing the content can help enhance learning and make connections stronger. For example, seeing pictures and hearing stories about the Great Depression can help students learn the content and relate it to the current economy. By providing the links or embedding the files in the online course materials, teachers can ensure students are viewing the correct information and not searching the Internet for unknown content.

MassONE – Currently, MassONE does not allow for teachers to embed audio or video files into online course materials.

Moodle – Moodle has two options for embedding audio and video, a multimedia plug-in filter or through the HTML editor. With the multimedia plug-in filter, teachers type in the web address (i.e., URL) as part of the online course materials and the filter replaces the web address with an appropriate multimedia player. With the HTML editor, administrator-controlled settings turn each supported media type on or off. Note that by default all but the Flash (.swf) filter are enabled - as Flash files present a theoretical security risk, it is strongly recommended not to allow users to add Flash content.

Canvas – Canvas allows for the embedding of audio and video using an HTML editor. Media can be added to course content pages, class assignments, discussion groups, or quizzes.

À la carte – Google Sites, CourseSites, Ning, and PBWorks all support embedding audio and video files.

Forums and Discussion Groups

Forums and discussion groups serve as an online message boards. They allow people to hold conversations in the form of posted messages. They differ from chat rooms in that messages are at least temporarily archived. Also, depending on the access level of a user or the forum set-up, a posted message might need to be approved by a moderator before it becomes visible. Teachers can use discussions as a teaching tool by creating a question or prompt and having students discuss it in

the forum. They can be used as standalone discussion tools, or can be used to extend a discussion started in the classroom.

MassONE – MassONE supports discussion groups. Teachers must make a request to the MassONE helpdesk that a discussion group be added to their existing workgroup. Teachers can then use the discussion group with students, such as posting a question and having students respond both to the question and to each other to extend learning beyond the classroom.

Moodle – Moodle offers a forum module that allows teachers and students to exchange ideas by posting comments. Forums can be structured in different ways, and can include peer rating of each posting. The postings can be viewed in a variety of formats, and can include attachments. By subscribing to a forum, participants receive copies of each new posting in their email. Teachers can require students to subscribe to and participate in the forum discussions.

Canvas – Canvas has a flexible discussion tool that allows the teacher or student to use whatever format they are most comfortable with to communicate. They can simply type text, or they can use the multimedia feature to record and upload video or audio. Discussions can be integrated into the curriculum of the course by having the discussion be gradable. A graded discussion shows up to the student as an assignment, and the SpeedGrader™ feature allows the instructor to easily grade and give points for online discussions.

À la carte – Other online sites that support forums and group discussions include Collaborize Classroom, Engrade Discussions, and Google Groups.

Survey or Testing Tools

An online survey or testing tool is simply a form on a web page that allows students to answer questions that can be tallied as group or scored individually for grades. The online surveys resemble paper or database forms because students fill out the forms using checkboxes, radio buttons, or text fields. For example, a survey tool can be used to quiz students to determine if they understand the content or to assess student needs.

MassONE – MassONE has a survey feature that teachers can use to administer surveys or quizzes to students. In prior years, the survey tool was unreliable and not widely used, but updates and upgrades to the system have improved its usability.

Moodle – Moodle has a quiz activity module that allows teachers to design and post quizzes consisting of a large variety of question types, including multiple choice, true-false, and short answer questions. These questions are kept in the Question Bank and can be re-used in multiple quizzes or end-of-chapter tests. Quizzes also can be configured to allow multiple attempts – each attempt is automatically marked, and the teacher can choose whether to give feedback and/or show the correct answers.

Canvas – Canvas offers a quiz tool that can be used to create and administer online quizzes and surveys. The quizzes tool provides teachers with templates to create multiple choice, true/false, fill in the blank, matching, short answer, and essay questions. Teachers can also incorporate rich content into questions, allowing students to analyze a video clip or answer questions based on images or graphs. Canvas also allows teachers to shuffle answers, set time limits, offer multiple attempts, show students their results with or without the correct answers, require an access code to complete the quiz, and lock the quiz before and after a due date.

À la carte – Other sites teachers have used for administering quizzes and tests to students include: Google Forms, SurveyMonkey, PollDaddy, Engrade Quizzes, ClassMarker, and QuizStar.

Drop Box for Submitting Assignments

A drop box is a feature that allows students to submit assignments electronically. Students simply upload a file to a teacher's drop box, which also documents the date and time submitted so teachers can easily determine if assignments are submitted on time or late. When the teacher is ready to grade assignments, he or she simply logs into the drop box and has access to all the files submitted. Such a feature cuts down on the amount of paper needed to print and submit work, and does not overcrowd a teacher's email box. The drop box was a common use of MassONE described by teachers and students.

MassONE – MassONE has a drop box feature that allows students to submit assignments in digital file formats, such as Word, Excel, PowerPoint, or specialized software programs for classes such as accounting, animation, or business management. The primary issue with the drop box feature is that it does not provide verification that a document was delivered to the drop box.

Moodle – Moodle contains an assignment activity module that allows teachers to collect work from students, review it and provide feedback, including grades. Students can submit any digital content (e.g., word-processed documents, spreadsheets, images, audio, video); however, assignments are not limited to file uploads. Teachers can also ask students to type directly into Moodle using an online text assignment. In addition, Moodle offers an offline activity assignment, which can be used for student reminders and to record grades in Moodle for activities without an online component.

Canvas – The assignment feature allows teachers to collect work from students, review it and provide feedback, including grades. File types can be restricted. For grading, the files are displayed in the browser.

À la carte – Dropbox is a popular Web-based file hosting service that enables users to store and share files and folders with others using file synchronization.

Virtual Hard Drive

A virtual hard drive (VHD) serves as a web-based hard drive, meaning it can contain what is found on a physical hard disk drive, such as disk partitions and file systems. A VHD eliminates the need to

transfer files to a flash drive that can be easily lost or stolen, thus keeping the information safe and secure. Students can use the VHD as an online flash drive to store their files for access later on any computer with an Internet connection. A VHD was cited as one of the most commonly used features of MassONE, and as an important feature to be available with any online learning platform.

MassONE – MassONE has a VHD file storage feature that allows teacher and student users to upload files to the hard drive and access them at any time using a computer with an Internet connection.

Moodle – A VHD is not available as part of the core Moodle; however, the My Files block is a system for storing and sharing personal files in Moodle. Students can send files from their personal file storage to the assignments in their courses.

Canvas – Canvas provides a filing system that allows users to upload and store files, including nesting of files. Canvas also contains a feature called ePortfolios, which can function as a virtual hard drive if students elect to keep their ePortfolio postings private. Students also have the option to share their ePortfolios, which could be used to highlight good examples of work or showcase their accomplishments over the school year.

À la carte – In addition to the drop box feature previously discussed, Dropbox can also serve as a type of Web-based virtual hard drive.

Blogs

A blog (a blend of the terms web and log) is a type of website or part of a website where people can openly communicate, such as sharing their thoughts, opinions, ideas, experiences, or offering commentary. Blogs are usually maintained by an individual, offering regular, time-stamped entries that can contain their text or other material such as graphics or video. Blogs are more free-flowing in terms of the topics they cover and often are one-way presentations of information compared to forums or discussion groups that usually have a focused topic and provide the opportunity for others to respond.

MassONE – Blogs are not currently a component of MassONE.

Moodle – Within Moodle blogs are user-based; each user has their own blog. Administrators, teachers, and students can create and apply tags – administrators can create site-level tags, teachers can create course-level tags, and students can create their own list of personal tags. When a blog entry is created, a user can select which tags they wish to associate with their new entry. Multiple tags can be selected. In addition, users can also select access parameters determining who will be able to view the blog entry.

Canvas – Canvas does not contain a dedicated blog feature. However, using the Announcements feature allows integration with external Web-based blogs, including the opportunity to automatically

post announcements to an external blog and, for multi-topic blogs, to specify which topic an announcement posts to.

À la carte – Several options exist for Web-based blogs outside of dedicated learning management software, including Blogger and WordPress.

Integrated Grade Book

Teachers must review assignments, determine scores, and track the data to assign student grades each term. An online grade book is an electronic resource for keeping track of student progress and work in support of assigning course grades. Many online grade books allow students, and sometimes parents, the option to log into the system and check grades in real time. Integrated systems allow teachers to assign a score to a particular piece of work and the grade is automatically recorded in the grade book.

MassONE – MassONE does not currently contain an integrated grade book feature.

Moodle – The Moodle grade book is a one-way repository of grades; modules push grades to it, but the grade book does not push anything back to the modules. Teachers can add manual grade items to the grade book through the Categories and Items section.

Canvas – The SpeedGrader™ feature in Canvas allows teachers to quickly grade assignments and quizzes from a single screen. The SpeedGrader™ can be accessed within the Assignments or Quizzes sections by clicking on the particular assignment or quiz to be graded. Within SpeedGrader™ the teacher will see all assignments they created, as well as the grading policy for each. When a score is entered for the assignment or quiz, it automatically reflects in the grade book, which can also calculate interim or final grades. Any score entered for an assessment or assignment via the SpeedGrader™ appears in the grade book automatically, and teachers also have the option of manually entering scores.

À la carte – Engrade Gradebook, SchoolCircuit, and ThinkWave are among the many online grade book options available for teachers.

Summary of Instructional Tools

Table 2 provides an at-a-glance summary of the instructional tools and features available through MassONE, Moodle, Canvas, and various other online platforms and systems.

Table 2 – Summary Table for Instructional Tools and Features

	MassONE	Moodle	Canvas	À la carte
Access to online modules	No	Yes	Yes	CourseSites EDU 2.0
Ability to embed audio/video files	No	Yes	Yes	CourseSites Google Sites Ning PBworks
Forums and discussion groups	Yes	Yes	Yes	Collaborize Engrade Google Groups
Survey or testing tools	Yes	Yes	Yes	ClassMarker Engrade Google Forms PollDaddy QuizStar Survey Monkey
Drop box for submitting work	Yes	Yes	Yes	Dropbox
Virtual hard drive	Yes	Yes	Yes	Dropbox
Blogs	No	Yes	No	Blogger WordPress
Integrated grade book	No	Yes	Yes	Engrade School Circuit Thinkwave

Administrative Tools

The administrative tools category is used as a catch-all to capture features, tools, or requirements not listed above. The categories included in the administrative tools section are:

- Reliable
- Secure environment
- Simple navigation
- Search functions
- Easy rostering of students into schools and classes
- Easy set-up of classes, workgroups, and folders
- Ability to archive accounts
- Access to a helpdesk
- Training to use the tool

Reliable

Reliability refers to the system being readily available with very limited down time or data loss. Crashes can occur because of hardware failures, errors in programming, or an overload of the

system when too many users try to access it simultaneously. For example, MassONE administrators reported that in the early years of MassONE, the system was crashing nearly daily because of bugs in the program and lack of capacity to have hundreds of simultaneous users. Most of the issues resulting in those crashes have been resolved and the system is now much more reliable.

The reliability of any learning management system is dependent on the hardware and supports backing the system. For online platforms such as Moodle and Canvas, the ESE would provide the servers and maintenance as they current do for MassONE. The software has been rigorously tested so crashes or instability within the software should be limited. Assuming the ESE maintains the servers and ensures the capacity needed to run an online learning platform with hundreds of simultaneous users, any system should be reliable with few crashes and little down time.

Secure Environment

A secure environment is a necessary feature of any online learning platform. Teachers and students must feel their information is safe when posting or uploading to the system. For example, if a teacher will be administering an online quiz, he or she does not want students to have access to the quiz prior to the administration. Likewise, when students are completing assignments online or posting papers to the virtual hard drive, they want to know that the information will remain private until shared with others and that their paper will still be there when they return to it.

Similar to reliability, security is dependent on how the system is hosted. The ESE must maintain the proper safety protocols and firewalls to ensure hackers are unable to access information. Encryption levels can also be set by the ESE to help safeguard information. Other methods to help keep a secure environment include setting guidelines for proper use of the system, providing instructions for setting strong passwords, and emphasizing the need to keep login and password information private. With proper steps and maintenance, other online learning platforms such as Moodle and Canvas should offer the same secure environment currently set by MassONE.

Simple Navigation

For the purpose of this report, simple navigation refers to the ease with which users can navigate and locate items within the system, the ability to use Web 2.0 features that simplify navigation (e.g., drop-down menus, drag-and-drop functionality), how intuitive the system is, and the overall simplicity in using the system.

MassONE – Navigation is outdated and does not allow for Web 2.0 features.

Moodle – Moodle has a user-friendly interface and accommodates Web 2.0 technologies. It is viewed as easy to use and simple to navigate.

Canvas – Canvas utilizes both a global navigation and a course navigation system for ease of use. Both accommodate Web 2.0 technologies and are considered easy to use.

Search Functions

Search functions allow a user to enter a key word or combination of words to quickly identify where those words appear. For example, a student may forget the name of a specific assignment or file, but could enter a key word associated with the file and the search function would help the student locate the file.

MassONE – Currently, search functions are not part of the MassONE software.

Moodle – Global Search Block is the user-side visible part of the internal global search engine of Moodle, which is located in the “search” directory of the Moodle distribution. The global search block provides the user with a search form interface that will query all searchable entries in Moodle. The searchable entries are “virtual documents” extracted from Moodle course data and databases that each activity module or block will provide to the search engine for indexing.

Canvas – Currently, search functions are not part of the Canvas software.

Easy Rostering of Students into Schools and Classes

To be able to access the materials associated with a particular course, students must be linked to or rostered into the course. This setting ensures that only students truly enrolled in the class are able to view the materials, complete quizzes, or otherwise access the course.

MassONE – Students can be rostered into workgroups when they are already rostered into the school. Problems arise when students are new to the school; it can take weeks to roster students into a school.

Moodle – Several course enrollment options are available in Moodle (e.g., manual enrollment, self enrollment, cohort enrollment, guest access). Of particular note is the fact that from Moodle 2.0 onward, enrollment methods may be enabled at the course level. For example, self-enrollment may be allowed for certain courses and not for others.

Canvas – Canvas has built-in support for a number of different student information systems (SIS) and can support integrating with arbitrary SIS systems or other user management tools through its SIS commas separated value (CSV) interface.

Ability to Archive Accounts

The ability to archive accounts can free up space and remove database clutter after students graduate, or otherwise leave the state. Likewise, teacher accounts can be archived after a teacher retires, resigns, leaves the state, or takes an extended leave of absence. Archiving can take all the information associated with those accounts, compress them into smaller files, and store them on hard drives outside of the primary learning platform. Archiving helps keep the system current

without deleting accounts or information that may be needed in future years, such as when a teacher returns from a leave of absence.

MassONE – Account archiving is not currently a feature of the MassONE software.

Moodle – The system administrators can “back-up” old accounts and courses using a SQL dump of the databases. These can be placed into maintenance mode (temporarily prevents access for software maintenance and/or updates) so only system administrators have access to the information.

Canvas – Canvas allows for accounts and information to be “deleted” from the system; however, once students are deleted, their details can still be viewed via the “view prior enrollments” button on the sidebar.

Access to a Helpdesk

A good helpdesk can be the backbone needed to implement a new learning management system. Teachers and other users need to have a point of contact to address questions, help trouble-shoot, and offer guidance. Currently, the ESE provides a helpdesk for users of MassONE and MassONE Moodle. Should the ESE elect to implement another online learning platform, it is recommended that the helpdesk be maintained and that helpdesk staff receive the training needed on the new system to continue providing the high level of service to which teachers, administrators, and other MassONE stakeholders have become accustomed.

MassONE – MassONE provides a highly regarded helpdesk.

Moodle – Although not a traditional helpdesk, Moodle has a very active user community where users can turn to with questions and problems. The Moodle user community mostly communicates via forums inside the Moodle.org site. In addition, there is a great deal of Moodle-related documentation available online.

Canvas – Canvas includes help and troubleshooting functions, and users can submit a help ticket if they are unable to locate answers to their questions.

Training to Use the Tool

Adequate training on how to use a new system plays an important role in how people will adjust to and interact with a new system. Training can ease the transition from one system to another, as well as help teachers, students, and others to use the system to its full capacity. Training can be provided in person, or through online methods such as webinars or training modules. Regardless of the system adopted, the ESE should provide training or have it available. This is particularly important to new teachers who may not be familiar with the resources available to them from the ESE.

MassONE – MassONE has online training modules that teachers and MassONE administrators can complete.

Moodle – The Moodle Partners are a worldwide group of authorized service companies committed to financially supporting the open source Moodle project. They provide a range of optional commercial services for Moodle users around the world, including several training options.

Canvas – Although not formal training, Canvas offers a support wiki where users can find general information, tutorials, product release notes, and more.

Other State Educational Technology Portals

Following a web review of technology portals used in other states, WestEd identified six states that appeared to have robust statewide instructional technology portals. Individuals in the six states that were identified on the state's website or through the State Educational Technology Directors Association (www.setda.org) were contacted via email and telephone to request an interview. Interviews were successfully completed with the individuals responsible for directing educational technology in Alabama, Arizona, and Indiana. Key features of the portals in each of the six states are presented in Appendix B.

Among our three interviewees, one had been the Director of Technology Initiatives in his state for approximately ten years. Another interviewee was the Deputy Associate Supervisor for Educational Technology and had been in that role for four years. The third is the Director of Learning Technologies and has been with the Department of Education for several years. Each had a long history of working with technology. One shared that having been involved with the start-up of this new portal, a role shift had occurred: “[My role] is helping to design and think through new functionality. A lot of behind the scenes work ... I spend my time looking for ways to underscore the Department of Education's commitment to the tool.”

Impetus/Purpose of the Statewide Portal

Each interviewee was asked to share the reason their state had decided to create/design/provide a web-based portal for educators. The most common reasons cited included providing access to student data, connections to standards and assessments, and a place for teachers to share and collaborate. Interviewees also noted the intent to use the portal for online professional development for teachers. These quotations from the interviewees provide examples of the purposes:

To save time for the teachers when searching the Internet and help with finding quality resources quickly that are tied to state standards. A way for the best schools in our state to share their great ideas and ways they succeed with lower-performing schools in the state.

[It is] a way to pull together a whole variety of resources around state goals and objectives. This was built upon the tenets of school improvement, mainly to provide professional development and good curriculum resources for teachers to use to deepen student learning of the standards as well as assessment. Emphasis is on online professional development and curriculum resources to support learning.

To provide access to student-level data for classroom teachers, to provide a platform for collaboration, and also a delivery mechanism for curricular designing tools and lesson plan sharing. Those were the three big items we organized everything around. Our philosophy is to take away any excuse [for teachers] not to collaborate in [the state]. They can get on [portal] and have a robust set of collaborative tools and I think that part is something you simply can't get anywhere else. We saw it as a statewide issue and it needed to be solved at that level.

Background/Origin of Portals

All three state departments of education were highly involved in the design and development of the web-based portal or worked in partnership with another organization to design it. None of these three models were considered “off the shelf,” rather, all were specifically designed by and/or for the particular state department of education.

- **Alabama** – For the development of ALEX, the Alabama DOE partnered with Alabama Super Computer Authority, a state network that wrote the programming language behind ALEX. The State has three tools for educators to use for quality digital content: ALEX, the Alabama Virtual Library, and Alabama Public Television provides APT-Plus.
- **Arizona** – Originally envisioned by a former superintendent and conceived by a top management team, IDEAL started out as strictly a data tool and then expanded to include resources. Partnering with Arizona State University and intentionally creating this as an open source tool involved several iterations over time. It was originally rolled out in September of 2005.
- **Indiana** – Indiana began with two systems – Smart Desktop and ICAN. An RFP was put out for a developer to create a new system that would preserve the best features and think broadly about where to go.

Intended Users

In each of the three states, the portals were intended to be used primarily by teachers/educators, as these quotations from the interviewees regarding intended users indicate:

Mainly for teachers; some links for parents and administrators to project awareness. Not geared to students, but there is some use of it by them if teachers prompt it.

For teachers – professional development and good curriculum resources for teachers. Intended as a database, but that hasn’t materialized.

One state rolled out the portal in February 2010 and indicated they were ahead of expectations as already about 35,000 had signed up, representing one of every two teachers in the state. There were about 117 parent users, and some schools reportedly found it to be too challenging to sign up parents because of passwords.

System Strengths/Most Widely Used Features

When asked what the key features were, each state representative responded a bit differently but all mentioned: access to student data, connections to state standards, collaboration space, professional development for teachers, teacher resources, lesson plans, and the ability to connect to any school site.

Each interviewee was asked to rate the user-friendliness of their portal. Using a five-point scale, two rated their portal a five and one rated it a three. The portals were described as “easy to log on, don’t need a password, easy to navigate, collaborate, and locate resources.” One respondent stated: “It’s a little clunky, but it’s navigable and more intuitive than some I’ve seen.” All three states also have and use Moodle. Some strengths and features of each portal identified by the interviewees include:

- One site provides a place for teachers to design and share lesson plans; however, there is a strict juried process for approval of the lesson plans to ensure they are high-quality, in-depth, and aligned to a prescribed template.
- Another cited a “planning feature for subs” as a popular tool that allows teachers to keep lesson plans for substitutes and reuse them. Each teacher can create their own website (class website) that the public can view. Easy to connect to any school website, parents and students can access data without going through complications of password management. There is a library to store and search for items, content, or materials you or others have published, and lesson plans. Vetting is not done at the DOE level, as they want teachers to collaborate. Teachers can connect lesson plans to standards, share access with others, and find resources important to a lesson. There is a contacts/communities page that “functions as a virtual Rolodex.” Other features include a message center, inbox, forums, file sharing, a ‘what’s new’ section, and a profile with teacher information.
- A third site indicated the portal was built on the backbone of School Improvement – built around standards and rubrics for school improvement. Some of the key features mentioned include: announcements; Thinkfinity/Verizon; superintendent’s corner; learning resource manager; Apple iTunes; formative assessment item bank; Discovery Education Video Package; [standardized] test support; professional development online catalog course; collaboration; and Google applications.

System Weaknesses

Each of the interviewees was also asked about weaknesses of their portal. Again, responses varied. One state reported finding funds to continually improve the system was a challenge. Another respondent noted initially there was a challenging log-in process where the system selected a user name/password for the user, leading to forgotten information, frustration, and loss of users. Although improvements have been made, the original log-in process caused a setback for users. The third respondent identified limited professional development, a lack of synchronous communication features (e.g., chat), and lagging lesson plans and curriculum designs as a weakness, as well as limited awareness of the portal among some groups.

Awareness

Interviewees shared that promoting their systems was an important and ongoing task. Methods of raising educator awareness about the portal included introducing it at all major conferences, conducting webinars, and offering podcasts.

One state indicated that their intent was for teachers to only use what would enhance their teaching rather than viewing the portal as an obligation: “School districts already have technology that does pieces and parts of what [our portal] does. We encourage schools that this is not a replacement, but a complement. Each school district needs to grapple with what to use and [create] a plan for using it.” The respondent went on to say:

We took the view that people who aren’t using the system fall into one of two camps – they don’t know about it or they don’t see the value in it. Both of those end up being our problem. So we are getting the word out; it’s hard, hard work. Even though we control communication channels from department to schools, still a number of people don’t know about [the portal]. We tell people when we do presentations, webinars, and so forth. We don’t use any accounts that we don’t need. [We] only expect you to use what adds value to you as an educator.

Training

Two sites reported conducting extensive training for teachers, educators, and administrators, and one noted that training was also a means of building awareness about the tool, gaining buy-in, and extending use. Comments included:

Training is a constant ... [you’re] never finished. It goes hand in hand with building awareness and promoting it. Presentations/sessions with superintendents and teachers; webinars. [The portal] uses a variety of delivery methods including podcasts.

There is a statewide instructional technology group funded through my department. Regional trainers ... [They do] lots of presentations at conferences; some online professional development, but not real high quality yet. We need to do more webinars; teachers are more apt to do those than a longer course.

One state had a different philosophy and approach to training. It currently provides no formal training for their portal, though admittedly, some teachers would like it. Some quotations from interviewees about training and professional development provide context:

Teachers are instructed to use the tutorial, but still call with questions. Our intent was to help people understand we wanted them to use the [portal] to enhance something they want to do, or allow them to do something – not just to learn how it works.

[For training] we have people on the road for Title IID and they are goodwill ambassadors for the [portal] as well. We rely on them to do trainings and awareness sessions. Training gets to be very expensive. We’ve gotten a lot for the money we’ve invested on the training side – but more of a ‘just in time’ approach. We try to be real measured about the amount of face-to-face [training] we do.

Recommendations and Advice for Other States

Each interviewee would recommend their portal and one portal has received awards. One respondent’s advice to other states working on portals: “Don’t try to have one website do it all.

Target website to needs, i.e., [our portal] is for the world with everything free and no subscription costs; is tied to state standards with juried lesson plans; [some features have] paid subscriptions available to only citizens; these are kept separated for ease of use, but teachers can use all three.”

Another state encourages having a clear plan in place with clear roles and responsibilities. Their advice is: “Have a well-conceived plan in mind; a vision for what you want it to be. A clear scope of work for whoever does it for you – clear understanding of chain of command. Make sure you don’t make it hard for a teacher to get on it; keep the registration process simple. Offer frequent webinar-type professional development and training; ensure support groups – statewide or local – are supportive.”

The third state’s advice is: “The time you spend on ‘usability’ is time well spent; but don’t think it’s going to resolve all issues ... there isn’t really an intuitive system, just some are more [intuitive] than others. Had a team of 40 educators over the summer, brought in face-to-face, following usability protocols, and creating use cases, [they] certified they could navigate the site even with all that effort, people say it’s hard to use; too many clicks. Data is contradictory: some say ‘this is the most confusing thing I’ve ever used’; the next message is just the opposite: ‘it’s good and going in the right direction.’”

Reflections and Recommendations

MassONE, as a portal for educators to collaborate, engage in professional development, and use with students, has many features that educators across the state value. MassONE has stayed relatively static in its offerings, except for the recent addition of Moodle for professional development that was required for those receiving Title II Technology Grants. At the same time, the landscape of educational technology and e-learning has changed dramatically in the past three to five years. The innovation that MassONE brought to educators for free now faces competition from commercial and open-source tools and programs. A frequently heard comment is that “You can do X (e.g., have a personal workspace, collaborate, host a discussion forum) with MassONE, but Y (e.g., Moodle, Blackboard, Google Apps, iTunesU) does it better.” Educators and their students are used to interactive uses of web-based technology, from wikis to social networking, and Web 2.0 features. Compared to these, MassONE is described as clunky and outdated.

Individuals interviewed for this evaluation, including teachers, professional developers, and staff at the ESE reported there is a need for some kind of virtual instructional portal for use with students and as a community of educators – for example, to share curriculum resources and materials – but whether this tool should be MassONE or something else is a question that remains. Prior to a major investment in MassONE or a decision to end a portal because so many tools are available for free on the Internet, the ESE needs to carefully consider the vision, purpose, and commitment to a state-wide portal for educators. It is important to ask what is the added value of MassONE or some other system, compared to what is already available for free on the Internet.

The future of comprehensive learning management systems is difficult to predict. There are intriguing new systems like Canvas coming to market regularly. Some of the issues that will likely influence the process of selecting appropriate technologies to support e-learning (student-facing and for teacher professional development) are:

- To what extent will the movement toward openness in education be embraced by the learning management system? Will a secure, but permeable learning environment that allows interactions between students and experts from industry be desired?
- Will the learning management system need to integrate with student electronic portfolios and assessment tools?
- How are mobile technology, and the new forms of communication and collaboration, going to impact the role of learning management systems?
- It is widely predicted that in the future, learning management systems will need to adapt to a student’s learning style, actually managing learning more than learning materials. The sophistication of analytical tools is increasing and new forms of personalization are being developed. A learning management system’s ability to remain open and flexible, to be able to integrate new systems into its basic learning infrastructure, will continue to be valuable.

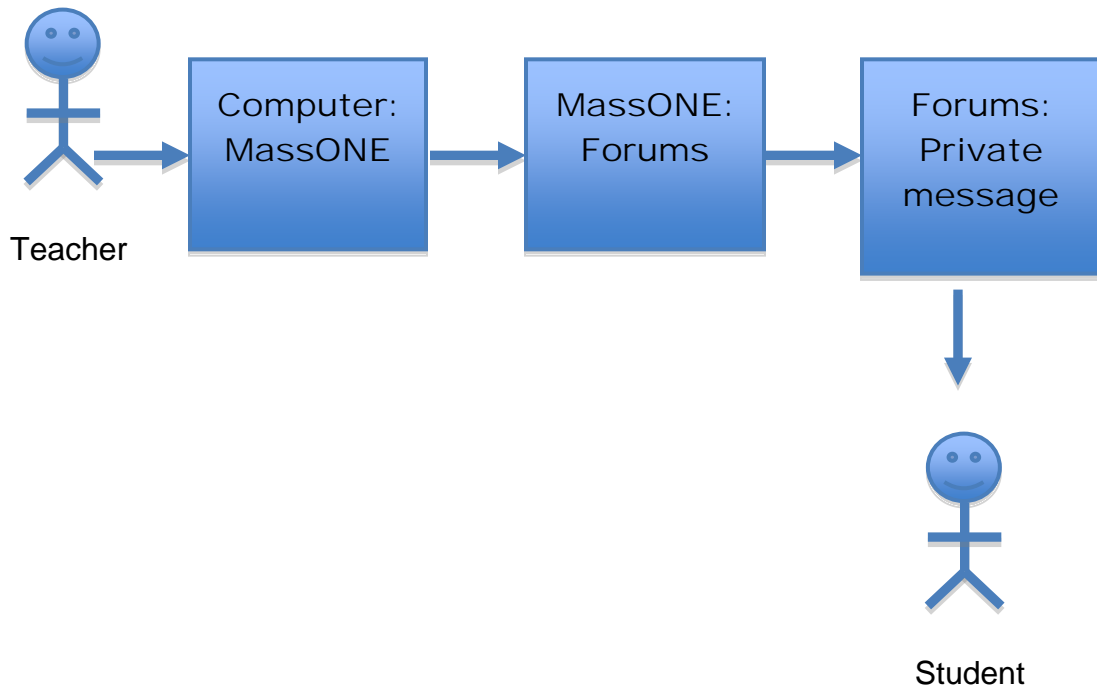
MassONE currently tries to be all things to educators. It is used for professional development, for educators to collaborate, for educators to develop lesson plans, for educators to use with students, and even for students to use. It is worth considering whether having more than one state-supported portal with clearer purposes and goals would help to meet the goals. It will also be important to get input from different types of users in vetting other possible products.

Another important consideration in making a decision about the future of MassONE is the critical role that online professional development and resources will play in implementing the state's Race to the Top grant. Online professional development for educators plays a key part in the state's plan to develop great teachers and leaders. For example, the state's Race to the Top application cites plans to provide online professional development for ESL certification, online mentor training, online courses for the effective use of data, and online training for teachers and others in the new teacher evaluation system. If these plans come to fruition, the online professional development system will need to be robust and user-friendly, as well as capable of including features such as video, chats, and synchronous meetings.

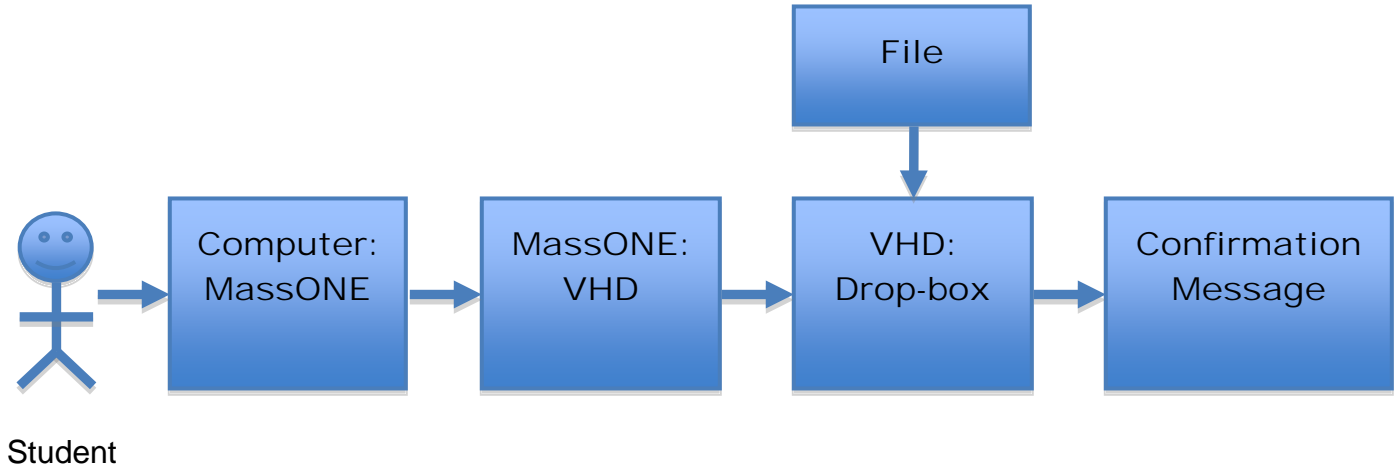
If MassONE continues to be the product promoted by the ESE for online professional development, a significant revamping will be necessary. Whether MassONE is revamped or a new product is adopted/developed, careful planning will be required to ensure the roll-out is smooth and well coordinated. To expand its usage, the ESE will need to think about how to capture the attention of those who currently use other products, and those who had negative experiences with the early version of MassONE.

Appendix A: Desired Use Case Diagrams

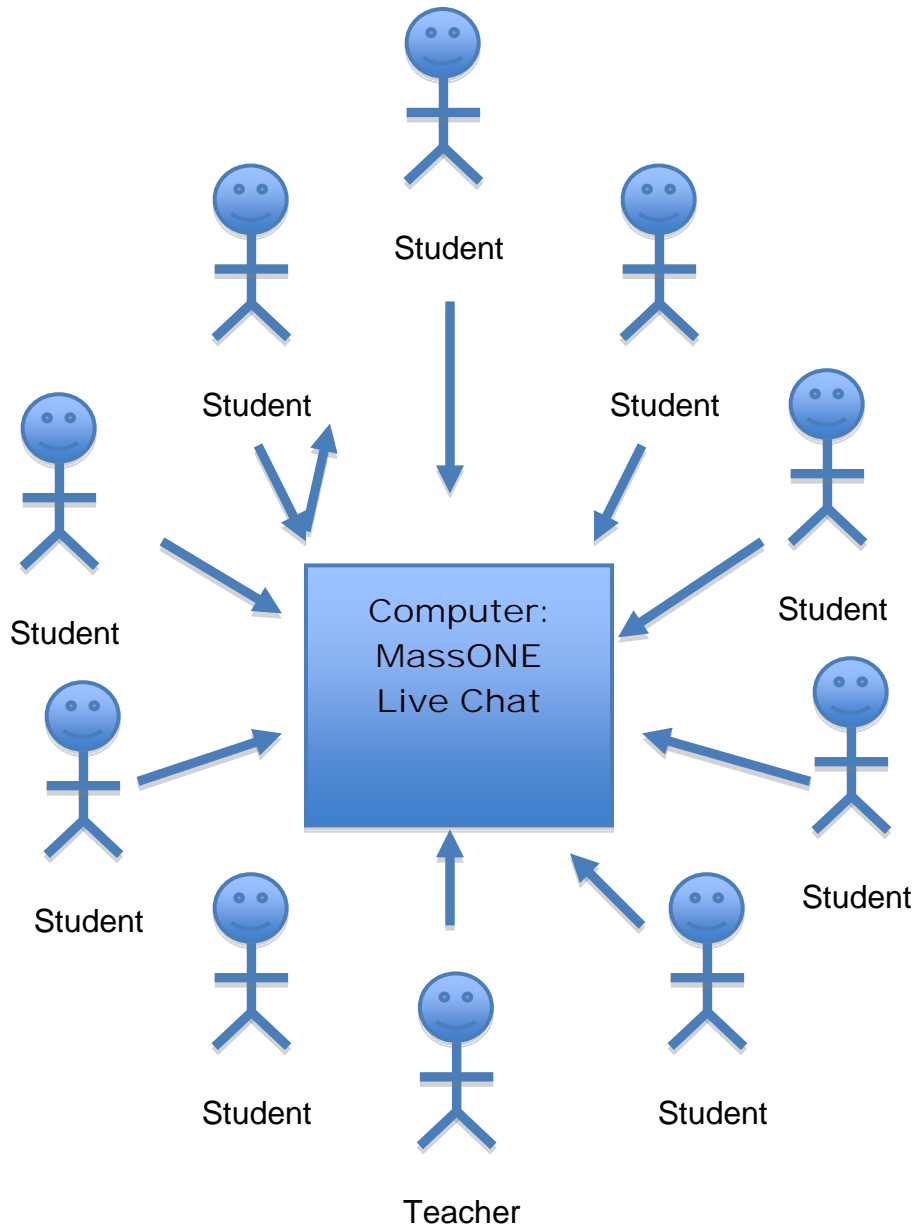
Use Case 8: Private Messaging in Forums



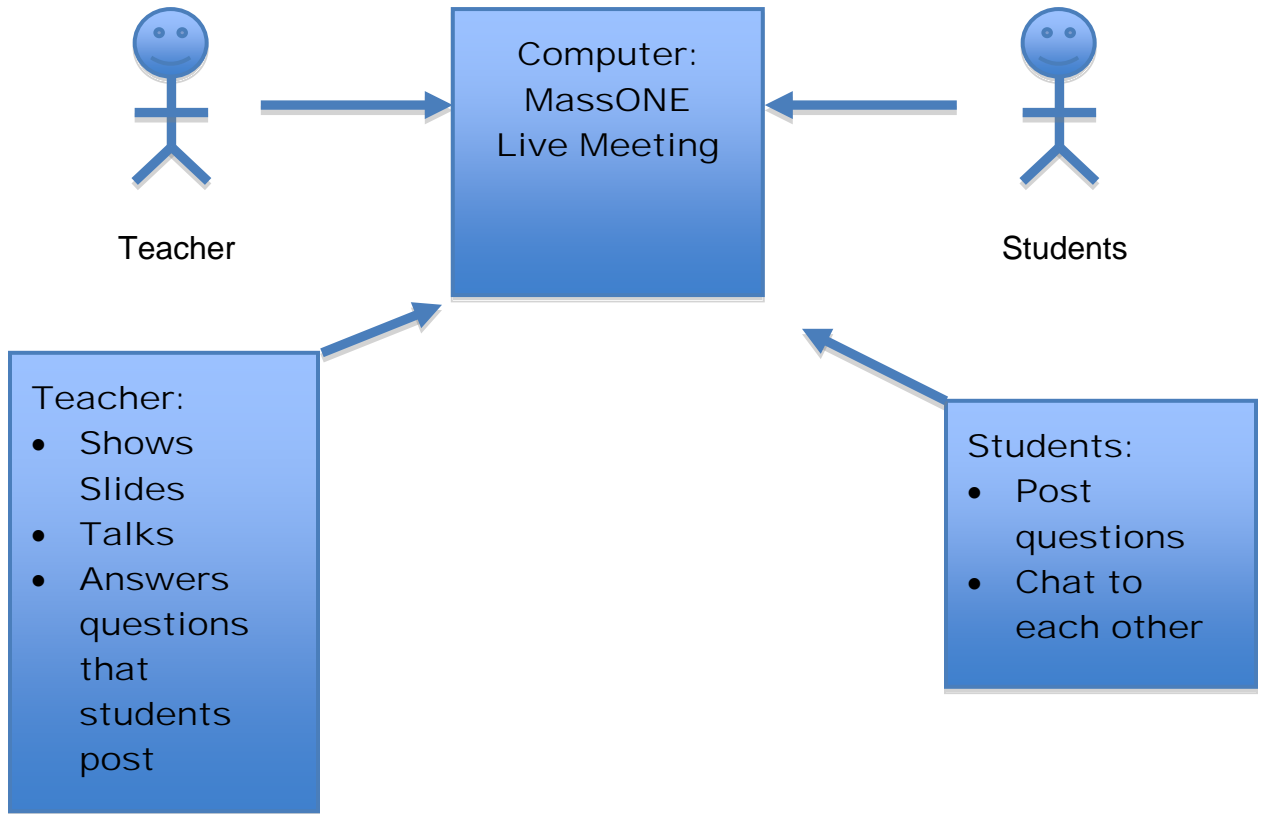
Use Case 9: Permanent Confirmation File Placed in Drop Box



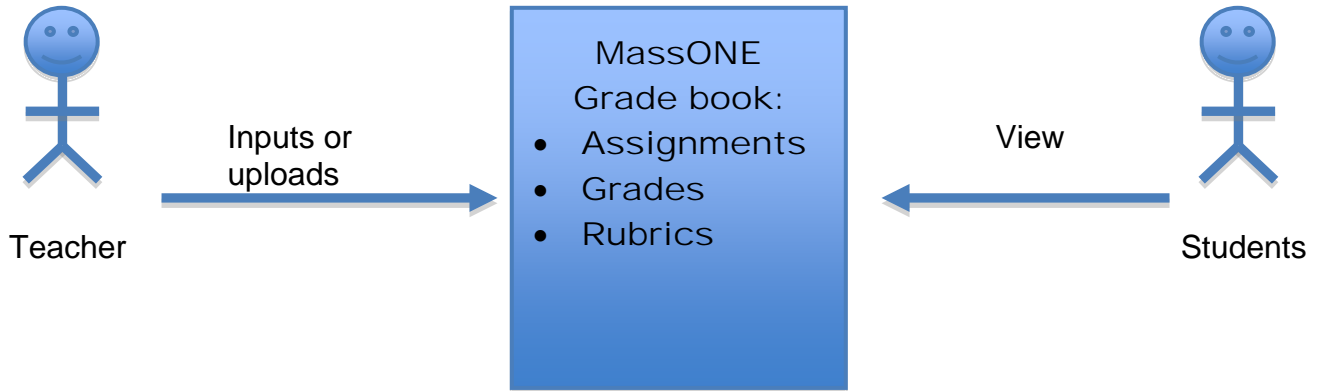
Use Case 10: Live Chat



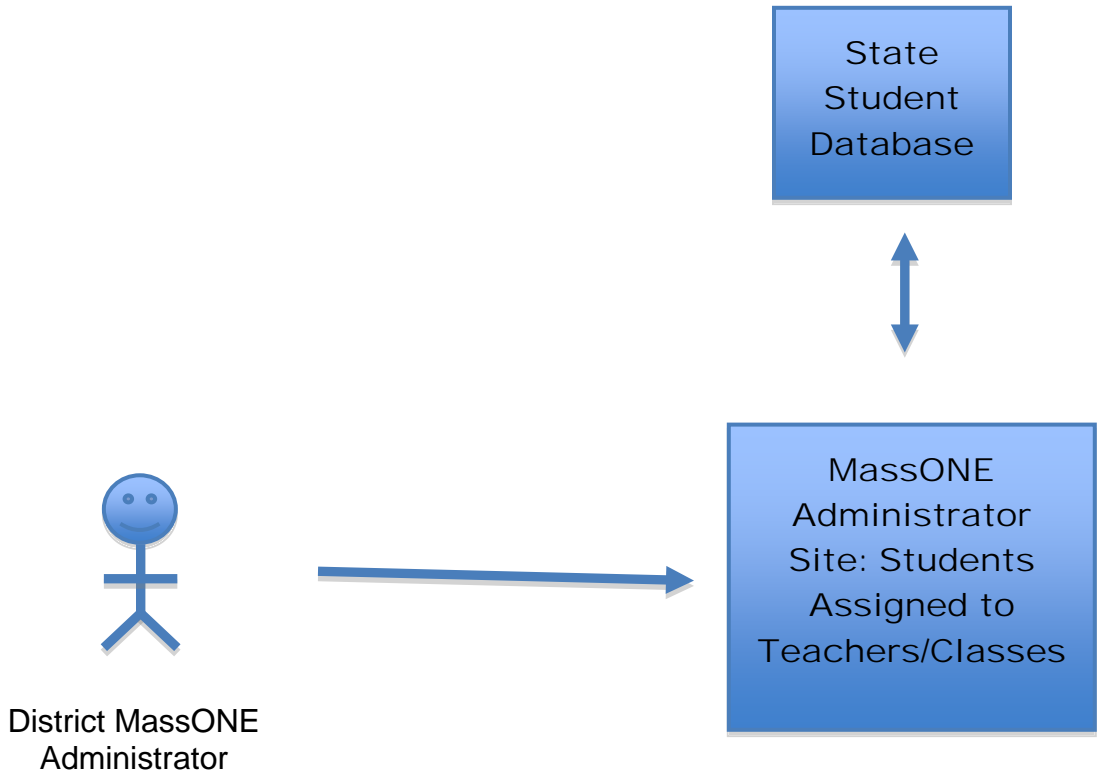
Use Case 11: Synchronous Meetings



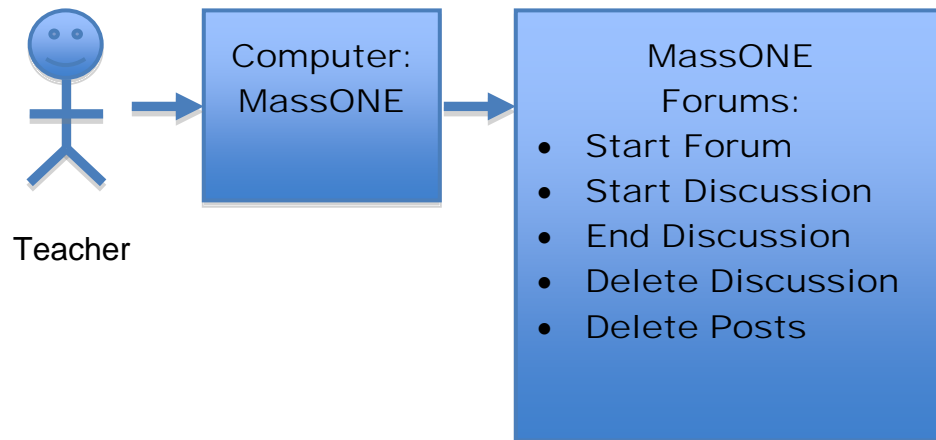
Use Case 12: Grade Book



Use Case 13: Simplified Rostering



Use Case 14: Increased Workgroup Owner Control



Appendix B: Features of Six Other State Portals

	Alabama	Arizona	Indiana
State website accessed	ALEX system http://alex.state.al.us/	https://www.ideal.azed.gov/p/ and http://www.ade.state.az.us/administration/superintendent/IDEALbrochure.pdf	https://learningconnection.doe.in.gov/Login.aspx?ret=/default.aspx
Publicly accessible content	Several areas under Alexville can not be accessed without a username or password. All other areas of the site are accessible by anyone.	The site only gives an overview of features. Features cannot be accessed without a username or password. All information is gathered from videos on the site detailing different sections.	Most of the site can only be accessed with a username and password. Most of the information collected is off of the chart under features that lists the features for both types of accounts (there are 2: basic and school/corporation level)
Online courses for students	No	No	No
Professional development for teachers	Yes-Under the professional learning tab, there are links to pages on Leadership and Evaluation, English Language Learners, Library Media, Special Education, Response to Instruction and Distance Learning. These pages take you to sites that list professional development opportunities for those specific categories as well as other resources. Professional Learning also contains grant opportunities and training for ALEX. There are professional learning community courses under Alexville which include, creating podcasts, creating lesson plans, hands on activities to integrate technology into classroom and a space for the ALEX advisory council.	Yes-According to a professional development tab, when teachers sign in to the webpage, there is an option on the left to view professional development opportunities and a PD course catalog. On the main page, there was also a link to register for winter PD which teachers could access.	Limited mostly to awareness sessions conducted in face-to-face settings and through regular webinars.

Resources for students	Yes-Under Courses of Study, students may search for courses of study by grade level. This provides students with links to educational websites related to that grade level and course of study. Also, under Podcast Treasury, there are podcasts on topics various school topics categorized by courses of study that students may find useful. Also, under Web Resources is a link to web resources that students might find helpful. For example, under Foreign Language, there is a link to an online translator.	Yes-Under the home edition tab students can access a list of web resources based on their grade level.	No
Resources for parents	Everything on ALEX is available for parents but there is not a specific section for parents.	Yes- Under the home edition tab there is a section for parents that include tips for getting students to study at home, homework resources, information about learning styles strategies, testing and curriculum and information on college including financial aid.	Yes, but only under the school/corporation account. The school/corporation account offers: access school or corporation information; access to class information, assignments, announcements; and class documents and reports on student achievement.
Resources for teachers	Yes- The site has several pertinent sections for teachers. In Course of Study, teachers may use the search function to search for courses of study by grade level which will provide lesson plans for those courses of study. Teachers can also search for pre-made lesson plans or use a template to make a lesson plan under the category "Lesson Plan." There are also web resources specifically for teachers under the web resources section. Another category, Alexville, contains several sites for teachers including a page to sign up for teacher oriented listservs	Yes- According to the curriculum resource tab, there is an option for teachers to view pre-developed lesson plans, search for curriculum resources based on grades, and materials aligned to the state testing.	Yes-The site offers teachers links to resources for aligning classroom instruction and assessment to Indiana's Academic Standards, as well as resources for the Indiana DOE's academic standard for students.

Personal workspace for teachers, students or others	Yes-There is a section called personal workspace for teachers to access	Yes-There is a section called personal workspace for teachers when they are logged in. They can change email addresses, enter blog entries, adding professional interests, and join interest groups.	Yes-There are workspaces for teachers to upload documents, links, and participate in online discussions in addition to a class workspace.
Collaboration tools for teachers or students to work together	No	No	Yes-The class workspace allows teachers to post class assignments, activities or lessons; post class discussion topics; and upload homework websites.
Messaging- e.g. ability to send messages or email internal to the system	Unknown	Unknown	Yes-There is an option for teachers to email other teachers across the state.
Interactive features	Yes-There are podcasts that teachers can view. Some of the links in professional learning, for courses of study such as Library media, take teachers to pages that have videos and PowerPoint presentations related to the course.	Yes-There are blogs that teachers can access on the site and use to post their ideas. There is an iTunesU that teachers may use to access podcasts.	Online groups can be formed by any educator on the system. These groups have access to an array of collaboration features including forums, announcements etc.
Curriculum resources	Yes-There are examples of pre-developed lesson plans available on the site as well as a template to make a lesson plan.	Yes-There is a section for teachers on formative assessment and lesson plans that are aligned to state testing under curriculum review. There are also sample AIMS tests available on the site for teachers, parents or students to access.	Yes-Teachers can access growth model data and curriculum maps as well as digital content.
Itunes U	Yes - There is an iTunesU where teachers can download educational content.	Yes-There is an iTunesU where teachers can download educational content including presentations and performances, lesson plans, and lectures and demonstrations.	No

School improvement tools	Yes-There are samples of lessons plans and links to resources to and teaching tools (in professional learning). There are also podcasts available that touch on improving teaching practices such as "School improvement overview-requirements."	Yes-There is a section labeled school improvement for teachers. There is access to the Arizona school improvement plan and standards and rubric tool feature.	Yes-There is a section on the site that tracks class and student achievement. There is also a section to record grades/assess learning. Both are features listed on the site, but details are not given.
Other	There are list groups that teachers can join to collaborate with others.	There are list groups that teachers can join to collaborate with others. Teachers can also post blogs.	There are list groups that teachers can join to collaborate with others. They can also create communities to interact with other teachers.

	Tennessee	Iowa	New York
State website accessed	http://www.tnelc.org/	http://www.iowaonline.org/	http://eservices.nysed.gov/vls/welcome.do
Publicly accessible content	All of the site can be accessed except for the podcasts, which teachers must subscribe to.	The site contains links that require a username and password in order to use the various resources.	All of the site can be accessed except for access to the NY library resources.
Online courses for students	No	No	No
Professional development for teachers	Yes-There is a link to register for professional development on the site. There were only two things listed at the time: Effective Instructional Practices for Enhanced Student Achievement and the 2011 division of career and college readiness conference.	Yes-The website offers access to the DE streaming Professional Development and the EBSCO Professional Development Collection. Teachers can also join the DEN (Discovery Educator Network) to learn about more professional development opportunities.	No
Resources for students	No	Yes-The site offers students access to a variety of resources including magazine articles, newspapers, software such as iclipart, and other resources that students may use when researching materials for school projects.	No
Resources for parents	No	Yes-Parents have access to the same resources as students.	No
Resources for teachers	Yes-The site offers podcasts on a wide variety of topics such as effective practice series, coordinated school health, and various projects such as Project CENTS. There is also a page that offers links to curriculum resources for different areas of study including school counseling, world language and social studies.	Yes-The site offers teachers access to lesson plan materials, encyclopedias and other reference materials, access to software programs, and materials to help integrate the resources available into the classroom.	Yes-This site offers teachers access to test samples based on course of study and grade, links to organizations associated with that course of study and information on standards for each course of study.

Personal workspace for teachers, students or others	No	No	No
Collaboration tools for teachers or students to work together	No	No	No
Messaging- e.g. ability to send messages or email internal to the system	No	No	No
Interactive features	Yes-The site contains many podcasts that teachers can download and view.	No	No
Curriculum resources	Yes-There are videos on effective practices for different courses of study, podcast on the TN Value Added Assessment System and links to curriculum resources such as information on course specific standards and course of study frameworks.	No	Yes-The site provides teachers with access to state standards for student' performance. Some courses of study such as English Language Arts, had links to frameworks and resources on how to close the learning gap.
Itunes U	Yes-There is a large collection of podcasts available. Topics include standards aligned podcasts, curriculum podcasts, and training resources.	No	No
School improvement tools	Yes-There are several videos that discuss about effective teaching practices and standards aligned podcasts that teachers can view.	Unknown	Yes-There are several sections that offer samples of state assessments for that particular course of study and they also contain links to that particular course of study's standards page.
Other	There was no personal workspace for teachers and no area for collaboration seen on the site.	The Discovery Educator Network (DEN) is a global community of educators passionate about teaching with digital media, sharing resources, collaborating and learning together.-From the DEN website	No