Stackable Instructionally-embedded Portable Science (SIPS) Assessments Project

Functional Requirements of a Learning Management System (LMS) for the SIPS Curriculum, Instruction, and Assessment Materials

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This guide offers a list of considerations and specifications for the selection of a web-based learning management platform that states, districts, and schools could use to store and deliver the SIPS unit maps, assessments, and instructional resources, ensure students and educators have access to flexible learning environments and content delivery, and support real-time data access, analysis, and reporting. The platform design would serve a variety of functions, such as a repository for storing curriculum materials and assessment tasks, a web-based authoring system to support the development and refinement of instructional materials and assessment tasks, a tool that promotes student engagement and learning through the flexible administration of instruction and assessment in a variety of learning environments, whether synchronous, asynchronous, online/remote, or brick-and-mortar, and a mechanism for flexible administration, scoring, and reporting.

Technical Requirements
- Determine whether to use a cloud-based or hosted LMS:
  - Cloud-based LMS: Service platform (SaaS), known as a cloud-based application, which allows users to access the platform from anywhere with an internet connection and does not require installation of hardware or software on the system. The platform is maintained by a team of analysts and engineers, eliminating a need for an internal IT department to troubleshoot or maintain the software platform.
  - Hosted LMS: Purchased software application installed on the district's computers and managed and maintained by an internal IT department
- Ensure the compatibility of the system with the school's/district's existing network and software architecture
- Identify the security requirements. For example, where data is stored, how users should receive logins and passwords and authenticate into the system, and who can have access to what data
- Define user roles and allowable modifications to the interface of the LMS. For example, students may see only assigned tasks and a calendar with upcoming events, educators may see a list of students and their academic performance, and administrators will see additional configurations and management tools
- Ensure the LMS supports the file and eLearning formats and data collection capabilities needed (e.g., .pdf, .docx, .mp3, .mp4, SCORM, AICC, Tin Can, etc.)

Flexible and Efficient Content Creation & Resource Library
To support educators' ability to create, modify, store, and access information and resources within the LMS, consider the below specifications for the selection of a LMS:
- Supports development of high-quality, engaging instructional materials and assessments using flexible, interactive templates
- Facilitates alignment of content to standards-based learning goals to support coherence among curriculum, instruction, and assessment materials
- Allows for integration of a variety of multi-media and technology-enhanced methods and formats
- Offers multi-language supports to facilitate communication with parents and students
- Offers both generalized and personal resource libraries for easily accessing and storing curriculum, instruction, and assessment resources as well as learning artifacts (e.g., student work)

Flexible Learning Environments and Content Delivery

To promote student engagement and learning through the flexible administration of instruction and assessment in a variety of learning environments, consider the below specifications for the selection of a LMS:

- Allows for management of classroom schedules and locations, monitoring of performance and attendance, and assignment of learners and educators to offline sessions
- Supports synchronous and asynchronous learning with parent/student access via a web portal or mobile app
- Enables video conferencing to deliver real-time instruction in a virtual classroom setting with video, audio, breakout rooms, chat, screen sharing, and file sharing
- Provides flexible communication/response options to support collaboration and discussion among various groupings in private and public settings
- Offers recording capabilities for later viewing by students who are unable to attend live classes
- Accommodates scheduling and facilitating meetings for small group instruction, one-to-one student conferences, and parent-teacher conferences
- Allows for delivery of assessments using a variety of technology-enhanced and performance-based items
- Includes technology features to ensure access and engagement by a range of learners, including English learners and students with learning disabilities
- Allows for delivery of assessments with stimuli, such as passages, charts, and graphs, provided on the same screen as the prompt, with scrolling capabilities to accommodate varying amounts of content

Real-time Data Access, Analysis, and Reporting

To support real-time data access, analysis, and reporting and efficient communication of information to various stakeholders such as parents/guardians and students, consider the below specifications for the selection of a LMS:

- Provides flexibility to support human-scoring and data entry and/or technology-enhanced scoring methods
- Provides flexibility to organize, aggregate, disaggregate, and compare data in various ways and over time to support data analysis, identification of issues and trends, and communication of results to stakeholders
- Capability to design, generate, and disseminate flexible, multi-level reports (e.g., individual student reports, classroom roster reports, school or district-level reports) in both electronic and printable formats
- Offers video tutorials for users on how to score student work, enter data, and run reports
- Capability to filter data to support complex data sets to produce individual student to classroom to school to district results
- Supports communication of curriculum, instruction, and assessment information efficiently to selected stakeholders
- Provides long-term, real-time data access through a centralized data storage location.
- Offers mobile apps to access and enter data from a variety of locations (classroom, home, field trip)