

Indiana's Success with INvest: A Case Study

Background

Everyone who works in public health saves lives. In fact, improving patient immunization outcomes should be one of the most basic ways to make a community healthier.¹ However, budget constraints often mandate the prioritization of resources. Public health departments frequently rely on a select few staff to provide field training, communicate policy changes, and prepare providers with the necessary tools to be successful. As healthcare offices have become increasingly busy, attrition has increased.² This in turn has presented a challenge to train new employees while still performing daily tasks. Due to this trend, many states have increasingly relied on education deployed through Learning Management Systems (LMS). Managing an LMS requires a skilled administrator who often has experience training and a comprehensive understanding of complex content development tools.³ Even in the best of circumstances, these factors are precarious to sustain at best.

According to the CDC,⁴ it only took 41 days for COVID-19 to jump two oceans and send the public health community into turmoil. An analysis by the Associated Press and Kaiser Health found this disarray was in part due to the nearly 40,000 jobs eliminated in the U.S. at state and local public health agencies from 2008 to 2020.⁵ The initial absence of a vaccine and the implementation of social distancing protocols caused state and local public health offices to close overnight with guidelines changing hour-by-hour.

The pandemic further compounded these challenges as the CDC required all doses of COVID-19 vaccines to be reported due to the declaration of the public health emergency.⁶ Federal funding allocations required states to provide dose level accountability.^{7,8} These conditions resulted in a four-fold increase in users accessing the Children and Hoosier Immunization Registry Program (CHIRP) housing the immunization information system. This abrupt change also necessitated additional access and provider training for CHIRP who had never used the system in the past.

Many states, including Indiana, had previously used Subject Matter Experts (SMEs) and a Learning Management System to facilitate staff education. With the onset of the pandemic, attrition within the public health and fatigued immunization staff resulted in face-to-face instruction becoming unsustainable and updates lapsed in the LMS platforms of many states.⁹

These circumstances constrained most communication between Indiana's Immunization Department and state providers to take the form of daily or weekly email updates. Providers who were already pushed past capacity often didn't have the time to review the most recent changes to pandemic protocols and immunization guidelines sent in this way. These contributing factors often led to providers training themselves but relying on multiple sources of information which frequently contained conflicting or out-of-date policies and procedures.

Analysis of Indiana's Previous LMS and Course Structure

As the pressures of the pandemic began to subside, it became evident that several changes were needed to Indiana's training delivery, the LMS, and content available to better prepare providers and staff for the future. In April of 2022, STChealth was enlisted to assist in this process by identifying and upgrading Indiana's INvest LMS to a new software platform, administering it, and creating additional content for the system.

Indiana's Immunization Department and the STC Training Team, supported by the methods proven in academic research,^{10, 11, 12, 13} conducted a SWOT analysis and needs assessment to better understand what modifications would have the greatest impact. Each provider type was identified, ranging from a school nurse to a primary care office. Survey data was collected, focus groups were held, and the CHIRP provider support line gathered information on the most frequent questions being asked. With this information user stories and acceptance criteria identified the deficiencies of the existing LMS platform.

This analysis determined that most learners found the LMS did not offer clear course assignments, certifications, or a comprehensive dashboard to clearly highlight what training was required or already completed. Many of the eLearning modules contained out-of-date information. The modules themselves also required too many steps with an abundance of 'clicking' each object to obtain credit for course completion. In fact, some eLearning modules became 'stuck' on a lesson preventing the course from showing as 'Complete' when items within the module were not selected in a particular sequence.

Provider feedback requested that new training content had to better prepare learners to discuss importance of vaccinations to properly meet the needs of the pandemic. Moreover, with the disputes over vaccine efficacy permeating social media and the proliferation of misinformation, many providers felt poorly informed on how to best approach patient conversations.^{14, 15}

Users also voiced concerns that the LMS interface did not provide an updated repository of references and resources that contained a simple search functionality. In addition, Immunization staff found much of the reporting to be insufficient. Data was not easily accessible or customizable to use when applying for additional grant funding and a significant amount of time was needed to collect user data for CDC compliance.

Eleven primary acceptance criteria were identified for the new LMS to meet the necessary user requirements and remedy the detrimental factors uncovered during the analysis.

1. The LMS must be easy to use for providers who are both new and seasoned in their experience.
2. Site administration must be simplified for someone with limited or no prior experience.
3. Existing training materials in various formats must be easy to transfer between platforms and update on the new LMS without any reduction in the quality of presentation or functionality.
4. Reporting must offer a comprehensive view of assigned, in progress, and completed training for all users and include certifications and milestones to support user engagement.
5. Annual training and recertification must be automated to renew at certain times to meet compliance requirements.
6. The references and resources section must be searchable and clearly organized by topic.
7. All content, courses, and references must be reviewed on a quarterly basis as a best practice and more frequently as policies dictate.
8. The cost of the LMS must be within the existing budgeted contract pricing and avoid any per-user fees.
9. The platform must be SOC 2 compliant and have a near 100% uptime.

10. Easy-to-understand training must be accessible to all users as well as a centralized communication hub to notify users of any changes or updates.
11. The platform must allow for multiple types of access including being mobile friendly and ADA compliant.

A comprehensive search was conducted reviewing eighteen different LMS vendors against the minimum user criteria. Each criterion was given equal weight by assigning one point to each requirement on an 11-point scale. STHealth conducted in-depth reviews of the features, benefits, and demonstrations of each product to measure against Indiana's existing LMS. Following deliberations, a new LMS platform was chosen based on the highest score, and the data was copied to the new platform to conduct testing.

Adopting a New Path for Training

Choosing a replacement for the previous LMS platform was only the first step towards Indiana's training success. Robust content with engaging topics was developed to encourage positive educational outcomes and promote social learning through collaboration and behavioral intention.^{16, 17} However, in Indiana, as in the private sector, reduced staff and funding made it extremely difficult to generate action without a shared goal and mission. These factors mandated that the training process include not just how to perform a task in a software application but to also better prepare providers to have difficult conversations with their patients and the larger community.

To implement this approach, the new LMS was built around the framework of up-to-date resources, a streamlined learning experience, simplified interface, and automated tasks.¹⁸ Social learning theory and gamification were integrated into existing education initiatives. Additional scenario- and reward-based approaches further built comradery among learners. The goal of these initiatives was to not only meet the primary objectives of the eleven criteria identified for a

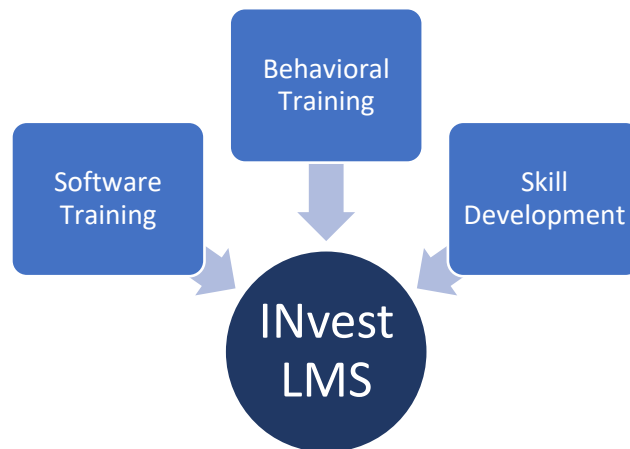


Figure 1: Training Approach

successful LMS, but to better prepare new and existing providers for the additional dialogue with the public. Updated content and new eLearning modules within the LMS were added. Behavioral training paired with ongoing skill development reinforced best practices within the LMS. Specific content on addressing vaccine hesitancy was added. Much of the course content was certified by Indiana University to provide Continuing Education (CE) credit upon completion. A central message also reinforced the primary mission of the immunization department: engage in productive patient interactions and encourage patient immunizations for not only COVID-19, but other vaccine preventable diseases.

Components of the New LMS

The new LMS platform restructured the administrative tasks to better address the need for sustainability and scalability for future preparedness. The platform design included six primary areas: People, Communication, Content Creation, Analytics, Learning, and Configuration. Administrative functions were tailored to the common tasks of state administrators such as password resets, course assignments, and reporting.



Figure 2: Administrative Menu Functions

Simplified Registration Process

The revised user experience empowered each learner with accountability and self-determination. Beginning with enrollment in the LMS, each registration group deployed a unique set of courses and user dashboard. This registration group then automatically assigned only those courses most applicable and valuable for the users' role. It also established requirements and an automated timeline for annual certification.

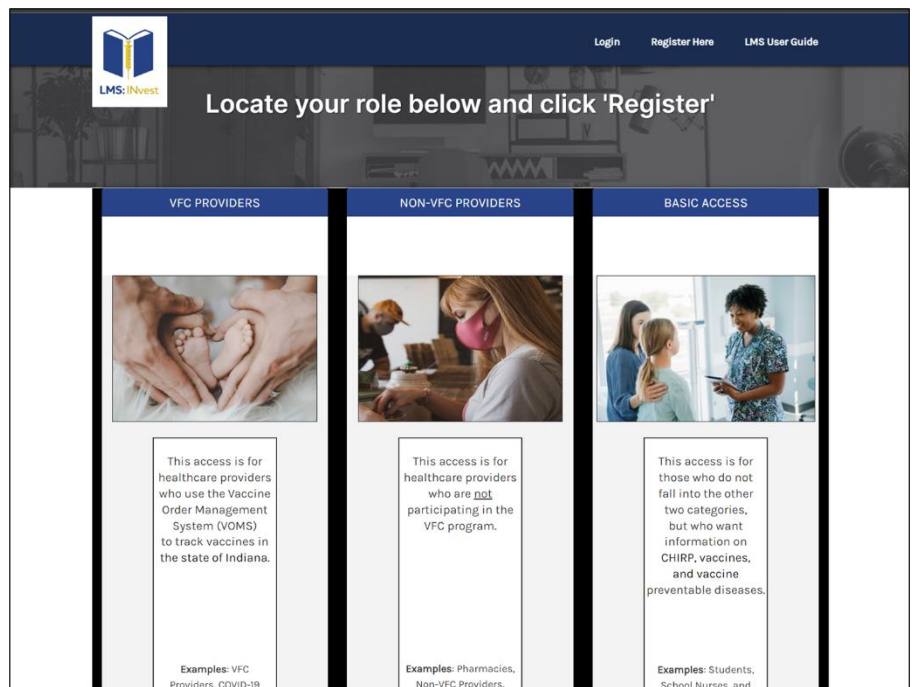


Figure 3: User Identification

Customized User Dashboard

Each user's dashboard highlighted the successes and achievements of each user with the badges and certificates earned. It also showed required courses, checklists, and a leaderboard to measure individual success against the performance of others.

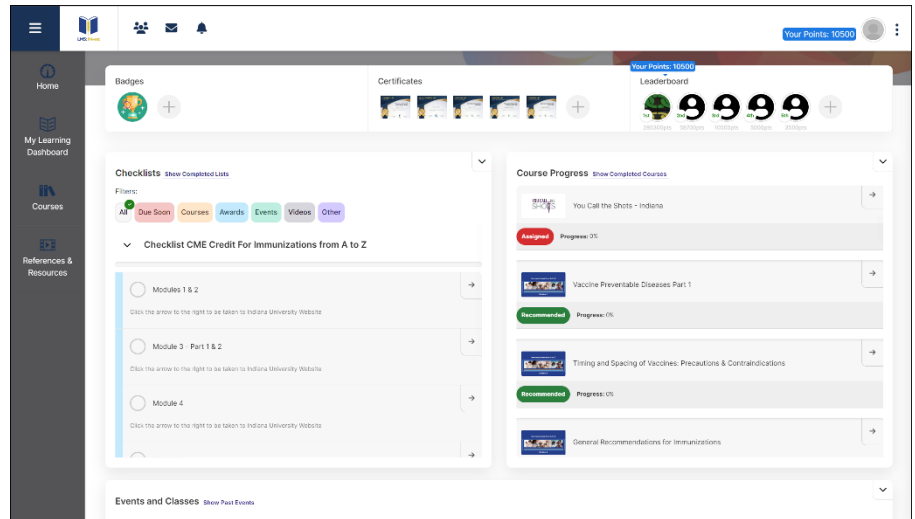


Figure 4: Engagement through gamification

Searchable References and Resources

An integrated, searchable media library was added to simplify resource management for providers looking for quick reference guides, tip sheets, videos, webinars, and other tools. Content within the resource could be updated based on a variety of sources and did not require content to be regulated to one media file format for videos or podcasts.

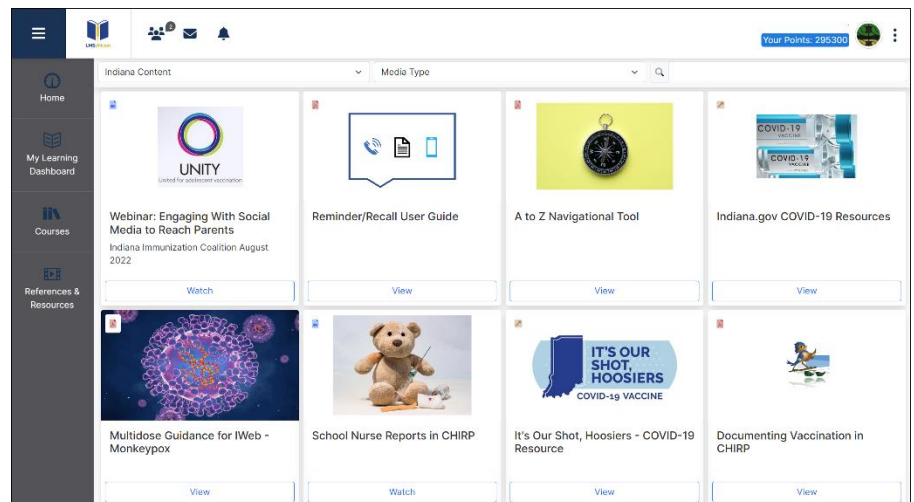


Figure 5: Media Library

Improved Analytics

The analytics available in the new LMS also generated dashboards and custom reports for easier program management and grant applications. Reports highlighted learners who had incomplete coursework and required additional support. The improved analytic reporting also streamlined compliance requirements with automated reminders to both users and administrators when courses were left unfinished or after multiple attempts to achieve a passing score on the course.

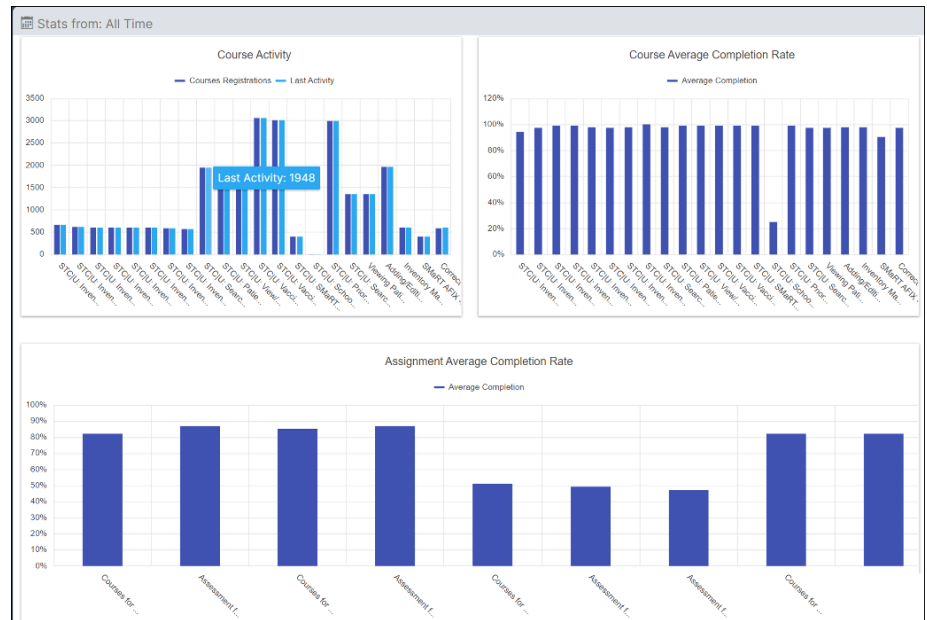


Figure 6: Analytics Dashboard

Testing of Indiana's New LMS

Over a 90-day period, a pilot group was assigned to test the new LMS platform while the previous LMS platform was maintained for continuity of content and to compare results. Qualitative research was collected from this test group in multiple ways. Information on the user experience was collected during department meetings. Surveys were attached to each training module within the old and new LMS. Among other questions, these surveys asked users if the content presented was easy to understand, courses were simple to navigate, and if the content was applicable to their role. A similar survey was sent to users and administrators outside the LMS through direct email campaigns to limit bias associated with the LMS platform collecting the survey data. Five-point Likert scales were used to measure feedback, assigning a Net Promotor Score for each course, while collecting additional data from the comments section available in the survey. Ease of navigation, the relevancy of the added certificates, milestones, and scores from learning games were all measured. The LMS media center then measured the number of visits and what specific resources were selected independently from the required courses.

Results

Indiana's successes were highlighted at [AIRA's Annual Conference](#) in 2023 for its extraordinary accomplishments in user engagement and content development. A total of 1227 registrations were recorded as of Jan 1, 2021 on the previous LMS and that number rose to 2132 users registered on the new platform as of January 1, 2023. This 57% increase over just one year was one of many positive metrics. The number of unique users who accessed the new platform jumped

from 310 to 601 in the space of four months from the date of its launch. An increase of 58.4% of current users also completed additional online modules which were not required for annual recertification. The aggregate data collected from all course surveys demonstrated a Net Promotor Score for the new System of 99.4% satisfaction compared to 62.5% satisfaction of the former LMS system.¹⁹ Common responses recorded from learner feedback included that the “graphic design of the site was very helpful”, that it was “easy to use”, that the information “was very detailed”, and “applied to my work”. Many of these factors reflect documented academic research affirming that constant progress, activity tracking, leaderboards, and community support correlate to improvements in learner engagement.²⁰ The success of the new platform has also driven the expansion of partnerships between states using the LMS to pool resources, best practices, and share some content. Additional incentives are now being offered to learners on the platform including additional courses from partners such as the Indiana Immunization Coalition (IIC) and Continuing Education (CE/CME/CNE) credits available from Indiana University.

Summary and Future Considerations

Despite staffing challenges, policy updates, and everchanging communications, the public health departments around the U.S. persevered, in part, because they adapted. In Indiana, the Immunization Department kept an open dialogue with providers to better understand what was working in the field and what was not while maintaining the willingness to adapt to the findings.²¹

Indiana’s success can be replicated in other states and jurisdictions. However, planning for the future should begin now. It is vital to properly prepare healthcare providers to promote health literacy in patients’ education and in the community. A recent Harvard publication highlighted the importance of training state health departments and providers alike to adapt to the increase in vaccine hesitancy and skepticism.²²

With the support of groups such as the [Association of Immunization Managers](#) (AIM), [American Immunization Registry Association](#) (AIRA), and IIS vendors, there are several opportunities for other states or jurisdictions to achieve similar results in the success of their LMS and training efforts. Begin with an evaluation of the current platform and training content using a thorough needs analysis. Take account of the providers survey responses and evaluate any available reports to look for gaps in learning and user engagement. Review training goals and update content to continuously focus on patient outcomes and best practices. Utilize gamification such as badges, certificates, and milestones to drive success in the LMS. Expand on the impact of the LMS to provide direct benefits outside of daily patient interactions. Offering incentives such as continuing education credits is an ideal way to support provider licensing requirements. With the coordination with experts in [vaccine intelligence](#), we, as a country, will be able to better adapt when the next pandemic creates another period of turmoil and impossible tasks.

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