

**CLIP**

# Data Integration Insights from the Curriculum & Learning Improvement Project (CLIP).

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## About CLIP

The Curriculum and Learning Project (CLIP), funded by the Gates Foundation, brought together eight organizations to enhance middle school students' learning experiences. CLIP developed an integrated data system that consolidates data from existing platforms, allowing for easier and faster data sharing among members. This system provides real-time insights into how middle school math materials are used, helping educators link curriculum implementation to student data and make informed instructional decisions. The initial pilot provided valuable insights into both educators' experiences and the integrated system's available data, highlighting key takeaways and lessons for future data integration efforts which are provided below.

Lyon County School District (LCSD) in Nevada was a critical partner allowing for the development of the system to take place in a real-world district with actual district data. LCSD already adopted both the Infinite Campus learning management system (LMS) and student information system (SIS) and i-Ready, the math curriculum provided by Curriculum Associates. CLIP used these existing systems along with the associated data to develop the integrated data system and platform. The consortium piloted the integrated data system with middle schools in LCSD in the spring of 2024.

## CLIP Consortium Members

- NORC at the University of Chicago
- Infinite Campus
- Curriculum Associates
- Lyon County School District
- University of Southern California
- UChicago STEM Education
- EdReports
- Carnegie Learning

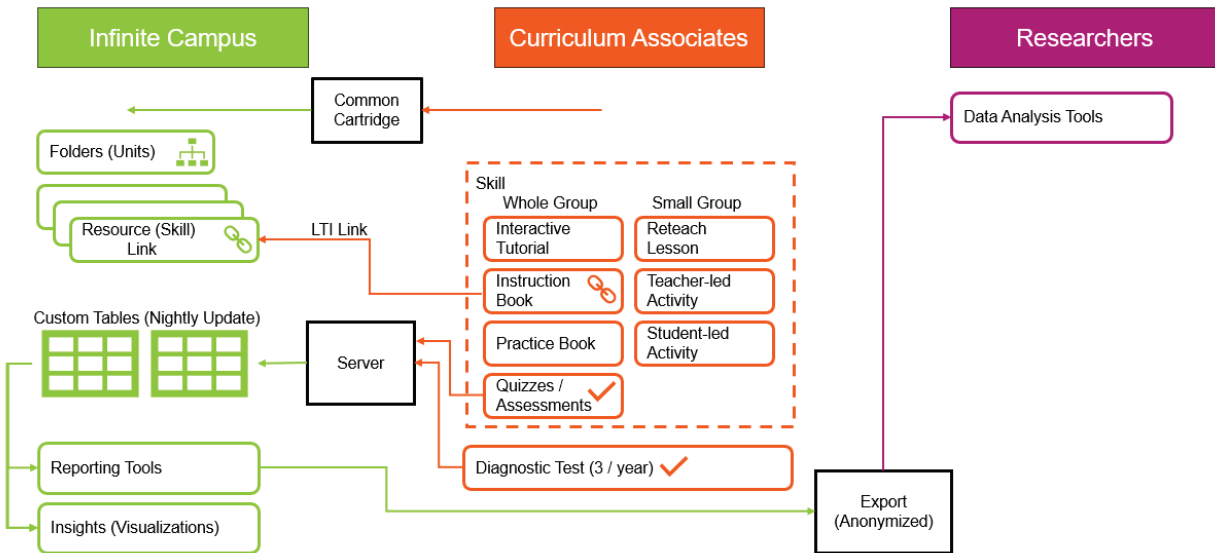
## Piloted System

After analyzing the separate systems, CLIP worked to develop an integrated system to bring Infinite Campus and i-Ready together. Thin common cartridges of the i-Ready curriculum were imported into the Infinite Campus learning management

system (LMS). Scores from activities students completed in the i-Ready platform were imported daily from a secure server to custom tables within Infinite Campus. Inside Infinite Campus, educators could analyze score data alongside student information to determine how students in different groups performed on the curriculum. **Figure 1** shows a map of the integration.

Within the secure system, Infinite Campus used student and teacher IDs to link the data across the files from the two data systems. Once linked and associated with student or teacher IDs, Infinite Campus removed PII data from any files accessible to the broader CLIP consortium.

**Figure 1. Infinite Campus Integration**



The Infinite Campus data for the pilot focused on the middle schools in LCSD. The families of data included for the pilot were the school calendar, course section placement, course roster information, staff data, enrollment information, student demographics, assessment data, assignments and scores, report card grades, behavior incidents, term and class period attendance, curriculum reflections, student engagement surveys, and imported scores from i-Ready on quizzes and thrice annual assessments. Below are examples of the current available data:

- There are 3,038 students represented in the class assignments data, about 652k assignments, (averaging about 214 per student).
- There are approximately 177,578 assessment results in the data for the 3,000 students (about 59 per student).
- There are 4,069 unique assignment names grouped under 123 unique category names.

- There are 500 math sections<sup>1</sup> with almost no missing demographic data, allowing for reports of demographics by section.



## Data Integration Recommendations

### DATA TRANSFER

In the piloted version of the integrated system, Infinite Campus and Curriculum Associates were not able to share important data with the curriculum provider, without extensive development. Having systematic and standardized methods for data transfer would allow both systems to exchange information easily and reduce data processing needs.

<sup>1</sup> A yearlong math course may have 2 sections, one for the first semester and one for the second semester.

1EdTech provides several options for data transfer to connect different educational technology solutions, such as Thin Common Cartridges and Caliper Analytics, among others. Updating to the latest versions of specifications and using the available features would benefit everyone involved in integrated edtech environments.

Infinite Campus used Thin Common Cartridges to bring curriculum materials for i-Ready into its LMS. These cartridges included curriculum unit structures, activity titles, and Learning Tools Interoperability (LTI) links to connect to PDF documents of the curriculum activities.

**There is potential to improve common cartridges for better functionality. For example, using the latest version, Common Cartridge or Thin Common Cartridge 1.4, would be helpful.**

This newer specification includes a K-12 profile that requires extra metadata about learning activities, such as information on Competencies and Academic Standards Exchange (CASE) standards, which can be connected to each activity. It also comes with added benefits like accessibility metadata features and alignment with newer 1EdTech standards for LTI and Question and Test Interoperability (QTI).

Upgrading the links in the cartridges to LTI 1.3 would provide additional benefits. The Assignment and Grade Services would allow the curriculum provider to send scores directly to the Infinite Campus Grade Book in a consistent way. Deep linking could embed interactive Curriculum Associates activities, not just PDFs, within the assigned lessons in Infinite Campus.

This means students and teachers would not need to log into two different systems with separate usernames and passwords. It would also make it simpler to link activity scores in i-Ready with the Reflections data and Engagement Check-ins tied to the assignment. Additionally, the Names and Roles provisioning service allows for sharing user information, which helps ensure that student scores and data connect to the right individuals.

Using the updated specifications fully would:

- Enable the curriculum to be imported into an LMS from a provider,
- Connect user accounts in both systems,
- And allow for seamless and secure data sharing between the two systems.

**CALIPER ANALYTICS**

Caliper Analytics can be used with either (or both) Infinite Campus and Curriculum Associates to track how students interact with these systems. It will collect data on student engagement with activities.

The following features, outlined in Table 1, can be set up:

- In **Curriculum Associates**, the **Assessment profile** can track when students start and finish an assessment. It will also monitor if they pause and resume or skip specific assessment items.
- In **Curriculum Associates**, the **Assignable profile** can track when students open, start, complete, and submit assignments. It can also keep track of multiple attempts.
- In **Infinite Campus**, the **LTI Tool Launch and Tool Use profiles** can track how often students use LTI tools launched from Infinite Campus, including LTI 1.3 links within lessons imported using Common Cartridge.

**Table 1. Caliper Analytic Features and Roles**

System	Caliper Analytic Feature	Caliper Analytic Role(s)
Curriculum Associates	Assessment Profile	<ul style="list-style-type: none"> <li>• Track when students begin and complete an assessment.</li> <li>• Monitor whether students pause and resume or skip specific assessment items.</li> </ul>
Curriculum Associates	Assignable Profile	<ul style="list-style-type: none"> <li>• Monitor when students open, start, complete, and submit assignments.</li> <li>• Keeps a record of multiple attempts.</li> </ul>
Infinite Campus	LTI Tool Launch Tool Use Profile	<ul style="list-style-type: none"> <li>• Track the frequency with which students use LTI tools that are launched from Infinite Campus.</li> </ul>

## ASSESSMENT SCORE TRANSFER

Diagnostic assessments are similar to standardized tests, but they take place throughout the year. These assessments are not linked to any specific course and do not affect students' grades.

Schools can securely share information from these assessments using the Assessment Results Profile for Gradebook Service, which is part of 1EdTech's OneRoster specification. This specification allows traditional score data to be shared and enables the transfer of custom information, such as whether a student is on, ahead of, or behind their grade level.

Comprehension check results can be sent using this specification, or they can be entered into the LMS gradebook through LTI's Assignment and Grade Services specification.

## ASSIGNMENT NAME HARMONIZATION

The current systems, Infinite Campus and i-Ready, let users enter assignment names as free text. This gives teachers the freedom to choose names that are meaningful to them.

However, it makes it harder to connect these assignments with similar ones from other educators. It can also be difficult for others to understand the content just from the names teachers create.

**Future pilots or implementations should offer clear guidelines for labeling assignments to improve collaboration and support curriculum research.**

This could involve:

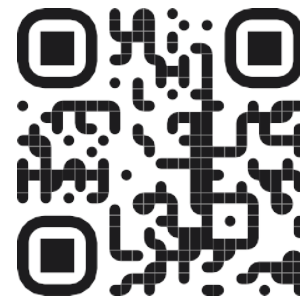
- Asking teachers to start assignment names with the curriculum element or improving the user interface and
- Providing a drop-down list of relevant assignments automatically including the prefix text.



Ultimately, this would help in analyzing curriculum elements.

## ACKNOWLEDGEMENTS

This work was funded by the Gates Foundation. The views expressed are those of the authors and should not be attributed to the funders.



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