

Introduction

The unique identification of students across time and location has been identified by the Data Quality Campaign and in the America COMPETES Act as a fundamental element of an effective Longitudinal Data System. Without unique identification of students, any analysis of an individual's program participation, academic or related history becomes virtually impossible to undertake. Additionally, any trend or predictive analysis becomes exceedingly difficult.

While the actual assignment of a unique student identifier is imperative to longitudinal data analysis, based on our experience working with State and Local Federally-funded Education Agencies, eScholar has identified a number of other important factors that need to be taken into account when considering or evaluating student identification systems.

Outlined below are the key factors that should be used when considering student identification systems as well as a brief description of how **eScholar Uniq-ID® for Students (UID Students)** meets the specific requirement.

Product Evaluation Factors

1. Identifier Assignment and Matching Process

The product must assign an identifier that is not re-used across time, location, or after identifier retirement. The identifier should not be generated based upon any specific student demographics or other identifiable information, and should meet best practices such as using randomized numbers with check digits. The system should utilize a repeatable and consistent identifier assignment process that generates expected results. The matching process should use fields proven to be effective for matching records such as first name, middle name, last name, suffix, date of birth, and gender and should consist of advanced matching methods and algorithms which produce a result quickly and consistently.

eScholar Uniq-ID® for Students – Proven Identifier Assignment and Matching Process

UID Students includes a pool of identifiers which is created using randomly generated numbers including a check digit. When an identifier is needed for a student, the system retrieves one of the available identifiers from this pool. These IDs are never re-used, even after retiring an identifier. Although the matching process uses personal information to match students, the actual identifier assigned has no relevance to the student since it is assigned from the pool of randomly created identifiers.

UID Students includes an established seven-step identifier assignment process which consists of a proven matching process. This process includes the following steps: Data Submission, File Validation, Data Validation, Fix Errors, ID Assignment/Matching, Near Match Resolution, and ID Download/Output. During the ID Assignment/Matching step, the system compares the incoming record to the existing student data in the database. This matching process utilizes first name, last name, middle name, suffix, date of birth, gender and Social Security Number. Middle name, suffix, and SSN are not required for matching while the other fields are required. Previous Last Name can also be used in the matching process if supplied.

The matching process is based upon a matching engine that is used in banking, government, health care and other industries and takes into consideration mixed usage names, nicknames, spelling errors, common names and other algorithms to determine a match decision. The system produces a Match, Near Match or No Match. The match thresholds for these results are configurable. When a Near Match is found, the system allows an authorized user to review and compare the records in the web interface in order to make a match decision.

2. Data Integration

The product should support various options for data submission including standards such as Web Services, SIF, and template-driven submissions and should contain consistent options for retrieval of the data. The product should allow agencies to download identifiers and to perform searches to obtain identifiers for students so that the identifier can be consumed into various data systems.

eScholar Uniq-ID® for Students - Flexible Data Integration

UID Students provides the ability to submit data through Web Services, SIF, online entry, or a manual upload via a web interface. UID Students is template-driven and allows for data submission from any source system using this template. The system also integrates to the eScholar Complete Data Warehouse® and to other SIF or Web Service compliant products. Users can download data directly from the web interface, or receive information via SIF or Web Services.

3. Potential Near Match Resolution

The product should allow for human review of records within a specific range of potential matches, allowing the people with direct knowledge of the students to make a decision when it is too close to call for the matching engine. The user should have the ability to make a decision directly in the application to assign the identifier of the potential match, to create a new identifier if the record does not match, or to cancel the record. The comparison page should provide all of the details of the student record submitted to the system and make it easy to identify differences between the records so that the user can make an informed decision.

eScholar Uniq-ID® for Students - Comprehensive Near Match Resolution

The system offers a web interface for near match resolution allowing users to compare results, view probability matching scores, and to make a decision about the record. When a user is viewing the near match comparison page, the differences in data between the records are highlighted for easy identification of the differences.

4. Identifier Maintenance

Since some identifier assignments are dependent on user decisions, there is a possibility of identifiers being assigned to the wrong student. The product must include functionality to enable the review and analysis of potential issues such as a student being assigned two different identifiers or two different students being assigned the same identifier. When issues such as these are identified, the product should also provide administrators with capabilities to resolve identifier issues such as retiring an identifier or separating an identifier. If identifiers are retired or separated, it is important that the product allows the user to merge history so that no data is lost on a student record.

eScholar Uniq-ID® for Students - Identifier Maintenance

The identifier assigned by UID Students is maintained in the application and never re-used. When a student transfers from one school or district to another, the system matches the record and retrieves the same unique identifier allowing for a lifelong unique identifier for each student.

From time to time identifiers may become shared or duplicated by poor near match decisions, changes in data, or the match process. These scenarios are difficult to avoid in any unique identifier application, but UID Students offers tools to identify and resolve these issues when they do occur. These tools include a Duplicate Queue, Find Duplicates, and Review Shared IDs components. System Administrators can utilize these tools to monitor and manage identifier issues as needed.

When an identifier is separated or retired, the history of the identifier can be merged into an active record. This process allows for the retention of the history of the records in the system with the active record.

5. Security

Access to a unique identifier product should be limited to users with a direct need to review, assign or maintain identifiers. The product should provide flexibility between user levels and allow an administrator to configure roles and data authorization. The product should allow for integration with existing security models providing for single sign-on implementations or other methods to access the application based upon LDAP, Active Directory or other security models.

The product should not require the submission of a Social Security Number and if submitted should provide options for masking the Social Security Number.

eScholar Uniq-ID® for Students - Advanced Security

The system includes 10 user roles, 9 of which are configurable. The roles are configurable by feature and privilege and allow for a granular assignment of functionality to a specific user role. Data authorization to specific users is based upon district and/or school access and is defined in a user registration process. The system offers flexible security integration by supporting Web Services, portals, single sign-on, and other means of authentication.

Based upon the user role and user authorization, as described above, users have limited access to data. The personally identifiable information that is available in the application is limited to the users with access to the system and data which meets FERPA requirements.

SSNs are **not** a required field for matching purposes; however, system administrators can configure the system to mask SSN even if it is submitted.

6. Technology and Usability Factors

a. Architecture

The product should be built on flexible and open systems architecture. The product should support the most widely installed database and application server technologies. The product should support standard systems interfaces, including, Web Services and SIF, and be capable of supporting other standards as they emerge.

eScholar Uniq-ID® for Students - Flexible Architecture

The system is flexible in server and database configuration options by supporting SQL 2005 and Oracle 10/11g, Windows 2003, or Linux (database only). The system supports 64 bit environments. UID Students also supports Web Services and SIF.

b. Product Usability

The product should be intuitive and easy for general users to upload or process identifier requests, to review results, and to extract data as necessary. The application should be consistent in appearance, provide helpful tips to the users, allow flexible functionality such as filtering or sorting options, and provide valuable details for near match resolution.

eScholar Uniq-ID® for Students - User Friendly

The UID Students product has been in use for over six years allowing eScholar to grow with customer needs and feature requests over time. The product includes many features such as Student Notes, Page Sensitive Help, and advanced searching capabilities which were all designed with the general user in mind. The system is consistent in look and feel throughout the application providing common buttons and navigation methods. Since the product is easy-to-use, training can typically be done in a train-the-trainer model in several one hour sessions. The product is 508 compliant and does not require any special plug-ins or software beyond a PDF reader.

c. Configurable

The system should be configurable, based upon the agency, and allow an administrator to enable or disable features/functionality as it applies to the implementation.

eScholar Uniq-ID® for Students - Configurable Environment

The product includes system-wide properties that allow an administrator to configure the environment to the specific needs of the implementation, including branding, SSN usage, SMTP information, and Customer Defined Fields. These properties allow for flexibility across all clients.

7. Vendor Experience

The experience of the vendor in the education market and specifically in student identifier assignment and management is critical to a quality student identifier management solution. The vendor should have a product-based solution that has been implemented by other comparably sized education agencies. The product should be customer-proven with assignment of millions of identifiers and those customers should be referenceable.

eScholar - Experience

Over the last twelve years, eScholar has built an organization of experienced education data management and software professionals who understand the challenges and issues associated with the collection, integration and management of education data. eScholar Uniq-ID® for Students has been used to assign unique identifiers to over 9 million students across 10 clients, including students from early childhood to higher education. Based upon this experience eScholar has developed an established implementation process, allowing for implementation in little as sixty days.

The combination of the number of client installations, implementation experience, matching and assignment process, integration options, usability, and security model makes eScholar Uniq-ID® for Students the most proven, cost efficient, and reliable Commercial Off-the-Shelf (COTS) solution on the market.

Evaluation Checklist

Identifier Assignment and Matching Process

- How is the identifier generated?
- Does the identifier meet best practices including using random numbers with a check digit?
- Is the identifier ever re-used?
- Is the identifier assignment process clear and proven?
- Is the matching process clear and proven?
- What fields are used for matching?
- What logic is used for matching?

Data Integration

- What submission methods are available?
- Is the output file specification consistent with the input file specification?
- What output methods are available?
- Is the file specification clearly documented?
- Do our source systems track the data required by the file specification?

Potential Near Match Resolution

- Does the product generate a list of potential near matches?
- Is there a user interface that allows users to review potential matches?
- Does the comparison page provide enough details to the user to make an informed decision?

Identifier Maintenance

- Is there a feature for reviewing potential duplicate IDs?
- Is there a feature for reviewing potential shared IDs?
- Is there a feature for retiring an ID?
- Is there a feature for merging history of an ID?
- Is there a feature for separating an ID?

Security

- Does the product integrate with our security model?
- How are SSNs handled and are they required?

Technology and Usability Factors

- Is our application server technology supported?
- Is our database server technology supported?
- Is the application 508 compliant?
- Is the user interface intuitive?

Vendor Experience

- How many clients does the vendor have?
- How many years has the product been on the market?
- How many identifiers have been assigned by the product?