



Ed-Fi Extension and Semantic Analysis: Wisconsin

Purpose and Brief of the Analysis

The purpose of this report is to work with the Wisconsin Department of Public Instruction as the partner of Ed-Fi Alliance (Ed-Fi) and share Ed-Fi's findings for the assessment of extensions and semantic alignment of the state's usage of data elements in Ed-Fi's core data standard.

Our analysis has concluded that Wisconsin is completely aligned with Ed-Fi core semantically, which means the data elements in the Ed-Fi core are always used by the State as intended. Wisconsin has used the extension mechanism in Ed-Fi for areas where the core data standard did not meet specific needs of the state in areas that include student transportation, immunization, special education program eligibility, enrollment, and career pathways. As found in the section below, the extension analysis looked at areas where there are current options available in the core; where there might be better alternatives for extension; and where extensions should be considered by Ed-Fi for inclusion into the core data model.

Body of the State Analysis

The Ed-Fi Alliance is committed to sustaining the Ed-Fi data standard to support the capture, usage, reporting, and exchange of educational data. As such the Ed-Fi data standard promotes data interoperability in the industry, enables data-driven decision making, and hence contributing to the advancement of educational outcomes.

In a continuing effort to better serve the community of users, this analysis is the first of a periodic evaluation of how the various Ed-Fi states are using and extending the Ed-Fi data model. In particular, the analysis is meant to investigate the following questions:

- Is the State using the core Ed-Fi data model as semantically defined and intended?
- Does the State follow good practices in extending the Ed-Fi data model, adhering to the overall conventions embodied in the data standard?
- Do extensions duplicate what could be reflected in the Ed-Fi core model, or are there subsequent updates to the core that now cover what previously required an extension?
- Are there extensions that point to common needs across states and/or potential model changes that would benefit the community at large?



The analysis findings specific to Wisconsin are summarized in the following sections: *extension analysis* has a focus on the extensions the state introduced, and the *semantic analysis* evaluates the usage of the core data standard any deviations from the original purpose of the data element. The intent of this analysis is to improve the Ed-Fi data standard and its usage in the community. The analysis should be taken as an *opinion* based upon published materials by Ed-Fi and the states to stimulate further collaboration.

Extension Analysis

The Wisconsin extensions comprise two new entities, one new association, and 72 attributes as outlined below. The new entities and association accounted for roughly half of the attribute extensions.

- A new entity is defined for StudentTransportation, capturing student information about transportation. The StudentTransportation attribute extensions are:
 - StudentTransportation.SchoolYear,
 - StudentTransportation.StudentReference,
 - StudentTransportation.EducationOrganizationReference,
 - StudentTransportation.TransportationTypeDescriptor,
 - StudentTransportation.MileageCategory, and
 - StudentTransportation.PrivateSchoolIndicator.
- A new entity ImmunizationRegistry is defined for a student's immunization history. The ImmunizationRegistry extensions are:
 - ImmunizationRegistry.statusCode,
 - ImmunizationRegistry.statusMessage,
 - ImmunizationRegistry.data.ImmunizationsStudentHistory,
 - ImmunizationRegistry.patientIdentifier,
 - ImmunizationRegistry.ImmunizationHistory.PatientIdentifier.Id,
 - ImmunizationRegistry.ImmunizationHistory.PatientIdentifier.AssigningAuthority,
 - ImmunizationRegistry.ImmunizationHistory.PatientIdentifier.IdentifierTypeCode,
 - ImmunizationRegistry.studentReference,
 - ImmunizationRegistry.studentEducationOrganizationReference,
 - ImmunizationRegistry.PharmacyTreatmentAdministrations,
 - ImmunizationRegistry.PharmacyTreatmentAdministrations.AdministeredDate,
 - ImmunizationRegistry.PharmacyTreatmentAdministrations.AdministeredCode.Identifier,
 - ImmunizationRegistry.PharmacyTreatmentAdministrations.Text,
 - ImmunizationRegistry.PharmacyTreatmentAdministrations.NameOfCodingStyle,
 - ImmunizationRegistry.PharmacyTreatmentAdministrations.AlternateIdentifier,



- ImmunizationRegistry.PharmacyTreatmentAdministrations.AlternateText,
- ImmunizationRegistry.PharmacyTreatmentAdministrations.AlternateNameOfCodingScheme,
- ImmunizationRegistry.PharmacyTreatmentAdministrations.Waiver.
- A new association is defined for StudentSpecialEducationProgramEligibilityAssociation, capturing key data and milestones associated with a student's eligibility determination for special education services. The association is the precursor to the new StudentSpecialEducationProgramEligibilityAssociation defined for data standard 5.x. StudentSpecialEducationProgramEligibilityAssociation extensions are:
 - StudentSpecialEducationProgramEligibilityAssociation.educationOrganizationId,
 - StudentSpecialEducationProgramEligibilityAssociation.programName,
 - StudentSpecialEducationProgramEligibilityAssociation.programTypeDescriptor,
 - StudentSpecialEducationProgramEligibilityAssociation.studentUniquelId,
 - StudentSpecialEducationProgramEligibilityAssociation.consentToEvaluationReceivedDate,
 - StudentSpecialEducationProgramEligibilityAssociation.eligibilityEvaluationTypeDescriptor,
 - StudentSpecialEducationProgramEligibilityAssociation.eligibilityDeterminationDate,
 - StudentSpecialEducationProgramEligibilityAssociation.evaluationCompleteIndicator,
 - StudentSpecialEducationProgramEligibilityAssociation.evaluationDelayReasonDescriptor,
 - StudentSpecialEducationProgramEligibilityAssociation.evaluationLateReason,
 - StudentSpecialEducationProgramEligibilityAssociation.ideaIndicator, and
 - StudentSpecialEducationProgramEligibilityAssociation.ideaPartDescriptor.
- To support Special Education Program Eligibility, the reference StudentSpecialEducationProgramAssociation.fapeResponsibleSchoolReference.SchoolID was also added as an extension.
- Thirteen new attributes were added to the StudentSchoolAssociation relating to enrollment associated with residency, school choice, expected future transfers, part time enrollments, and student status and services on the official student count date. Note that the latter extensions relating to the count date are required because the ODS is not explicitly longitudinal with all data. StudentSchoolAssociation extensions are as follows:
 - StudentSchoolAssociation.privateSchoolChoiceProgramParticipant,
 - StudentSchoolAssociation.expectedTransferLocalEducationAgencyReference,
 - StudentSchoolAssociation.expectedTransferSchoolReference,
 - StudentSchoolAssociation.enrollmentTypeDescriptor,
 - StudentSchoolAssociation.receivingServices,
 - StudentSchoolAssociation.countDateNameDescriptor,
 - StudentSchoolAssociation.countDateReceivingServiceDescriptor,
 - StudentSchoolAssociation.residencyPeriod,



- StudentSchoolAssociation.residencyPeriod.beginDate,
- StudentSchoolAssociation.residencyPeriod.endDate,
- StudentSchoolAssociation.residentLocalEducationAgencyReference,
- StudentSchoolAssociation.CompletedSchoolTerm, and
- StudentSchoolAssociation.ParttimeInstructionalMinutes.
- Two attributes were added to the StudentSchoolAssociation for StudentSchoolAssociation.actualDaysAttendance and StudentSchoolAssociation.possibleDaysAttendance aggregates relating to the possible versus actual day of attendance upon completion of the enrollment period. In general, Ed-Fi does not include aggregate values that can be computed from raw data in the model, with the rationale that this is better suited to downstream analytic artifacts.
- In addition, a reference extension was added for StudentEducationOrganizationAssociation.residentLocalEducationAgencyReference.localEducationAgencyId to indicate the district of residency.
- Four attributes were added to GraduationPlan for specific requirements: GraduationPlans.communityService, GraduationPlans.civicsExam, GraduationPlans.miscellaneousRequiredCredits, and GraduationPlans.nonHsHealthEducationCredits.
- Three attributes were added to the StudentCTEProgramAssociation to better characterize their CTE program: StudentCTEProgramAssociation.certificatedProgramStatusDescriptor, StudentCTEProgramAssociation.StateEndorsedRegionalPathwayStatus, and StudentCTEProgramAssociation.cteProgramAreaDescriptor.
- Two attributes added to Course to better reflect career pathways offered and tracked for students: CourseOffering.careerPathways and CourseOffering.careerPathwayDescriptor.
- Five new attributes were added to Student relating to their user identification and role for secure login: Student.LocalEducationOrganizationId, Student.LocalPersonId, Student.TypeDescription, Student.Email, and Student.WiseSecureRoleDescription.
- Two attributes Student.ParentGuardianNames common and Student.ParentTypeDescription descriptor were added to the Student entity in addition to use of the Parent and the StudentParentAssociation: The purpose needs clarification.
- The attribute Section.instructionLanguageDescriptor was added to denote the language of instruction in a section.
- The attribute StudentDisciplineIncidentBehaviorAssociation.seriousBodilyInjury was added to denote a serious discipline incident.



Semantic Analysis

Wisconsin is completely aligned with the Ed-Fi core standard with all the 343 data elements used precisely aligned semantically with the Ed-Fi core.

Summary of Finds and Next Steps

The analysis found that Wisconsin created a moderate number of extensions to the Ed-Fi core in the areas that include student transportation, immunization, special education program eligibility, enrollment, and career pathways. Specific suggestions for the State are as follows.

- Migrate the extensions to the StudentSpecialEducationProgramEligibilityAssociation to those being added into core for data model version v5.x.

In terms of the usage of the data elements in the Ed-Fi core model (aka semantic alignment), Wisconsin is found to be completely aligned across all 343 data elements.

This analysis also provided Ed-Fi information on a need for the review of the core model with current design of some data elements listed below:

- Investigate model changes to capture important snapshot data, status, and aggregate data for reporting on important snapshot dates (e.g., count date) or milestones (e.g., end of enrollment).

Based on these findings of the analyses, Ed-Fi would like to work closely with the Wisconsin Department of Public Instruction as a part of its commitment to sustaining data standards. The following are opportunities for next steps for this collaboration between the State and Ed-Fi.

- As common a need across states becomes evident, leverage the extension entities defined for StudentTransportation and the ImmunizationRegistry.
- Analysis across states may identify specific common extension attributes for consideration into core where cross-state collaboration is recommended.