



# Ed-Fi Extension and Semantic Analysis: Nebraska

## Purpose and Brief of the Analysis

The purpose of this report is to work with the Nebraska Department of Education 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 Nebraska is well aligned with Ed-Fi core semantically, which means the data elements in the Ed-Fi core are almost always used by the State as intended. Nebraska 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 special education, post-graduation activities, discipline incidents and events that are described as crisis. 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 Nebraska 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 Nebraska extensions comprise three new entities, one new association, and 34 attributes as outlined below.

- To meet the needs of recording student crisis information, extensions were defined for a new entity CrisisDetails (with four attributes CrisisDetails.CrisisType, CrisisDetails.CrisisDescription, CrisisDetails.CrisisEvent, and CrisisDetails.CrisisStartDate) and for a common collection StudentEducationOrganizationAssociation.StudentCrisisEvent (with two attributes StudentCrisisEvent.CrisisEvent and StudentCrisisEvent.DisplacedStudentIndicator) that relates students to specific CrisisEvents.
- A new entity PostGraduateActivity is defined (with five attributes PostGraduateActivity.Student, PostGraduateActivity.SchoolYear, PostGraduateActivity.LocalEducationAgency, PostGraduateActivity.PostGraduateActivity, PostGraduateActivity.PostGraduateActivityDetermination) for students' CTE post-graduation activities.
- A new entity AssessmentAdministration (with two attributes relating AssessmentAdministration.EducationOrganization and AssessmentAdministration.Assessment) that defines the organization(s) administering a particular assessment prior to student rosters being generated.
- A new association StudentEarlyLearningProgramAssociation was defined with attribute StudentEarlyLearningProgramAssociation.EarlyLearningSetting as a precursor to being included in DSv5.
- The following extensions were made to the discipline domain:
  - Two boolean attributes extend the DisciplineIncident (DisciplineIncident.HomicideIndicator and DisciplineIncident.ShootingIndicator)
  - Five attributes extend the StudentDisciplineIncidentBehaviorAssociation for student specific-information regarding the incident behavior (StudentDisciplineIncidentBehaviorAssociation.Weapon, StudentDisciplineIncidentBehaviorAssociation.GunFreeSchoolViolation,



- StudentDisciplineIncidentBehaviorAssociation.SchoolRelatedArrestIndicator, StudentDisciplineIncidentBehaviorAssociation.ReferralToLawEnforcement, and StudentDisciplineIncidentBehaviorAssociation.SeriousBodilyInjury).
- Two Boolean attributes extend DisciplineAction (DisciplineAction.UnilateralRemoval and DisciplineAction.GFSAExpulsionModifiedToLessThanOneYear).
- Five attribute extensions were made to the StudentSpecialEducationProgramAssociation: (StudentSpecialEducationProgramAssociation.SpecialEducationProgram, StudentSpecialEducationProgramAssociation.PlacementType, StudentSpecialEducationProgramAssociation.ToTakeAlternateAssessment, StudentSpecialEducationProgramAssociation.InitialSpecialEducationEntryDate, and StudentSpecialEducationProgramAssociation.PartCTransitionDelayReason).
- Three attributes extend Section entity with StudentSectionAssociation.DualCredit, Section.SectionDelivery, and Section.CourseStaffIdOverride.
- StudentSchoolAssociation was extended to capture the aggregate StudentSchoolAssociation.StudentDaysEnrolled. 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.
- StudentEducationOrganizationAssociation was extended for StudentEducationOrganizationAssociation.ImmigrantIndicator for enrollment.
- The StudentLanguageInstructionProgramAssociation was extended StudentLanguageInstructionProgramAssociation.RedesignatedEnglishFluent for student fluency redesignates.
- The CalendarDate entity was extended with InstructionalDuration to denote the portion of the day that was instructional.

## Semantic Analysis

Nebraska is well aligned with the Ed-Fi data standard with 146 of 151 data elements precisely aligned semantically with the Ed-Fi core. The exception data elements are listed in the following section.

- One data element (CourseTranscript.AlternativeCourseCode) is aligned with the latest full version (v4.0), but was deprecated then and will be removed with DS v5.0. Therefore, we recommend Nebraska to use CourseTranscript.AlternativeCourseIdentificationCode instead.
- Two data elements (CourseTranscript.EarnedCreditConversion and StudentSchoolAssociation.ResidencyStatusDescriptor) are not aligned with the Core semantically.



- CourseTranscript.EarnedCreditConversion is used for the value of credits students awarded towards the completion of the course that is different from the definition in the core which describes as a factor to number of credits to convert it to Carnegie units.
- StudentSchoolAssociation.ResidencyStatusDescriptor is used to record the circumstances of student being contract in or out to another school type like NCLB school choice, another NE public school, out of state etc. to track who is responsible to create what report in terms of student record instead of student's legal residency as intended in the core.
- Two data elements (StudentProgramAssociation.BeginDate and StudentSpecialEducationProgramAssociation.BeginDate) are partially aligned with the core because of how Nebraska captures data for program participation in general and SPED program participation. They reset program participation each school year.

## Summary of Finds and Next Steps

The analysis found that Nebraska created a limited number of extensions to the Ed-Fi core in the areas that include under special education eligibility, post-graduation activities, discipline incidents and events that are described as crisis. Specific suggestions for the State are as follows.

- The Boolean extensions in the discipline domain should be considered to be folded into the related descriptors for Behavior and Discipline. In general, Ed-Fi has avoided long sets of Boolean attributes in favor of multi-valued descriptors.
- The extensions for the StudentSpecialEducationProgramAssociation should be aligned with DSv5 new attributes, specifically SpecialEducationProgram => IDEAPartDescriptor.
- The StudentEarlyLearningProgramAssociation entity should be aligned with the new StudentEarlyLearningProgramAssociation introduced in DSv5.

In terms of the usage of the data elements in the Ed-Fi core model (aka semantic alignment), Nebraska is found to be well aligned with two data elements misaligned aligned and two others partially aligned. Communication of these deviances for stronger alignment is recommended.

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

- Investigate model changes to capture important enrollment aggregate data, such as StudentSchoolAssociation.StudentDaysEnrolled.
- There are 13 core data elements where the Nebraska definition is more precise and should be considered to be adopted as the Ed-Fi definition. The elements are as follows.
  - Parent.Addresses.AddressTypeDescriptor



- StudentEducationOrganizationAssociation.Addresses.AddressTypeDescriptor
- StudentEducationOrganizationAssociation.Languages.LanguageDescriptor
- StudentEducationOrganizationAssociation.StudentIdentificationCodes.  
StudentIdentificationSystemDescriptor
- StudentEducationOrganizationAssociation.Telephones.TelephoneNumberTypeDescriptor
- Parent.Telephones.TelephoneNumberTypeDescriptor
- Course.AcademicSubjectDescriptor
- Course.CourseCode
- StudentSchoolAssociation.CalendarReference
- StudentSchoolAssociation.ExitWithdrawTypeDescriptor
- StudentSchoolAttendanceEvent.AttendanceEventCategoryDescriptor
- StudentSectionAttendanceEvent.AttendanceEventCategoryDescriptor
- StudentSchoolAttendanceEvent.EventDuration
- StudentSchoolFoodServiceProgramAssociation.SchoolFoodServiceProgramServices.  
SchoolFoodServiceProgramServiceDescriptor
- StaffEducationOrganizationContactAssociation.Telephones.TextMessageCapabilityIndicator

Based on these findings of the analyses, Ed-Fi would like to work closely with the Nebraska Department of Education 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 student crisis details, post graduate activity, and assessment administration.
- Analysis across states may identify specific common extension attributes for consideration into core where cross-state collaboration is recommended.