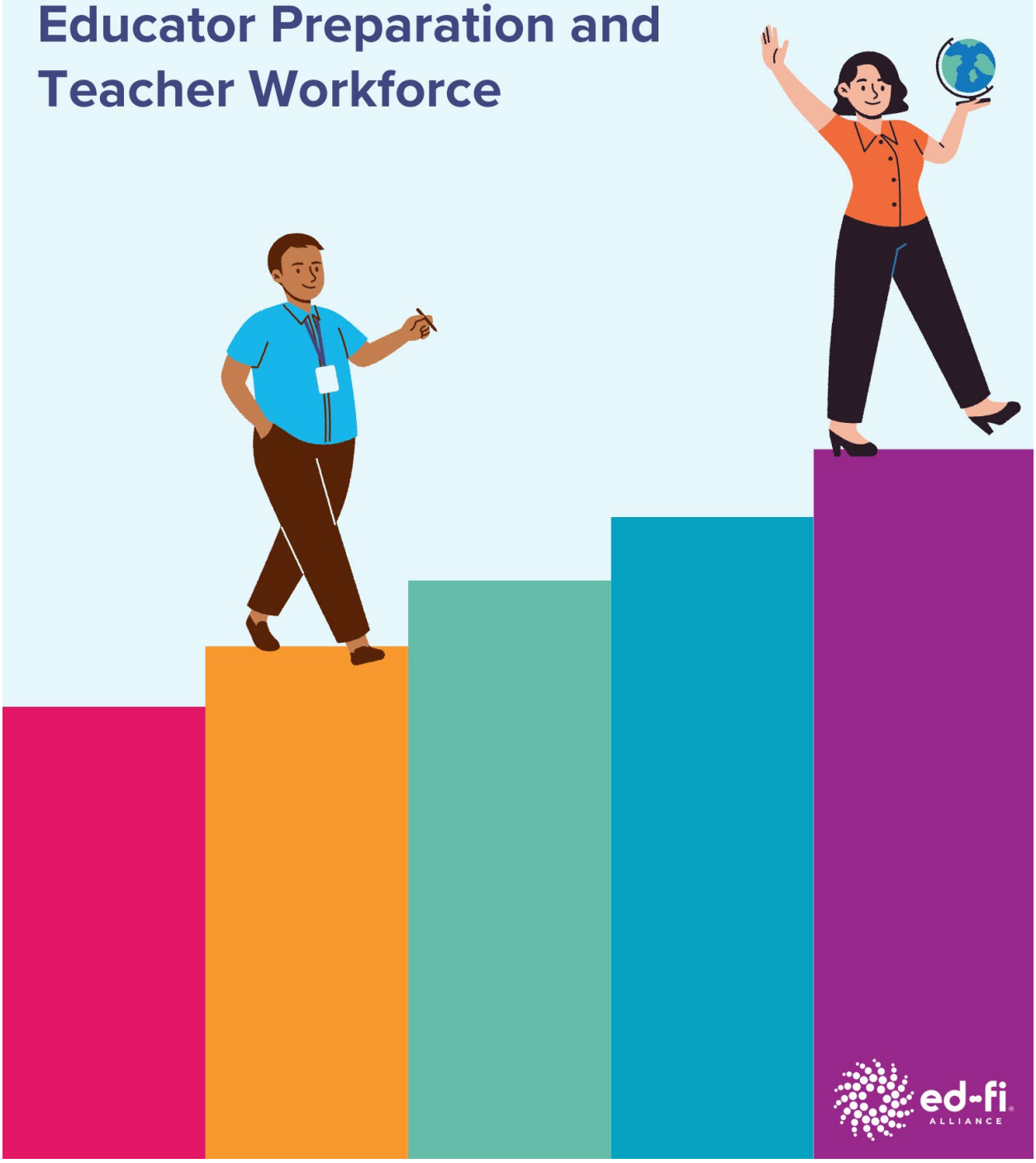
# State Education Agency Playbook: Advancing Data Utilization to Support Educator Preparation and Teacher Workforce



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## Purpose of This Document

This document is for states who have implemented or are considering implementing integrated Ed-Fi infrastructure, which is interoperable infrastructure aimed at meeting both state and local use cases. This resource is intended for states who have already implemented Ed-Fi into their systems and are ready to dive deeper into how Educator Preparation Programs (EPPs) and the data within can drive innovation on a granular, then systemic, level.

In this playbook, we aim to equip these SEAs with the knowledge and tools necessary to leverage the data from the Educator Preparation Data Model (EPDM) to support a variety of use cases at the local, state, and EPP levels.

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# National Context

The educator pipeline faces significant challenges, prompting the education ecosystem to call for more data to better inform regional needs, resourcing, and impact. Stakeholders involved in educator preparation and in-service training manage a wide range of data throughout each candidate's journey. This journey includes milestones like application, enrollment, program completion, state certification, and employment.

Collecting and analyzing this data is essential for understanding and addressing workforce challenges, enabling stakeholders to make informed decisions that enhance educator preparation and support systems. The educator pipeline and workforce challenges in education are becoming increasingly critical, exacerbated by widespread teacher shortages across various regions. These shortages are influenced by factors such as low compensation, lack of support, and inadequate working conditions, leading to high turnover rates and a declining interest in the profession among new graduates. This situation calls for a comprehensive understanding of the regional and demographic variances in teacher demand and supply to address these issues effectively. By identifying specific subjects and specialties facing the most significant shortages, education policymakers and stakeholders can tailor their strategies to recruit and retain educators where they are most needed in a given school, district, education service agency, or state.

Such tailored strategies require robust data collection and analysis within the education ecosystem. Enhanced data on teacher recruitment, retention, and shortages can inform more targeted approaches for recruiting, placing, and retaining teachers and enable more impactful interventions at the school and district/regional levels. For instance, understanding the root causes of regional disparities in teacher attrition can guide resource allocation to support professional development, improve working conditions, and offer competitive compensation packages. This data-driven approach can ultimately contribute to a more stable and effective teacher workforce, ensuring that all students have access to quality education regardless of their location.

State Education Agencies (SEA), Local Education Agencies (LEA), and Educator Preparation Programs (EPP) play a critical role in improving teacher preparation outcomes and meeting the workforce requirements of the education sector. SEAs serve as the governing bodies responsible for setting educational standards, policies, and regulations at the state level, while LEAs oversee the implementation of these standards within their communities. EPPs are tasked with equipping educators with the necessary knowledge, skills, and experiences to succeed in the classroom. When states leverage EPPs effectively and use data about the program pipeline, diversity initiatives, educator assessments, and alignment with teaching standards, then in turn, LEAs and schools can ensure a well-prepared and diverse teacher workforce capable of meeting their most pressing and evolving needs of their students and communities.

SEAs can play a supportive role in providing these data to EPPs in a manner that helps address key questions about candidate preparation and each program. EPPs and LEAs often lack the resources to manage and bring together these data to answer their essential questions, and data come from multiple sources across disparate organizations (i.e., program data that is managed by the EPP, teacher certification data managed by the state, teacher demographic data that is managed by the LEA, etc.). By leveraging integrated Ed-Fi infrastructure, states can better support meaning making from these disparate data points, for themselves, their LEAs, and the EPPs.

It is crucial to emphasize the importance of collaboration among state agencies, districts, and EPPs in creating a cohesive strategy for strengthening the teacher workforce. As highlighted by the Learning Policy Institute (LPI), regional consortia (like states, Education Service Agencies (ESAs)) can play a vital role in analyzing and responding to local teacher supply and demand data, fostering cross-district partnerships, and sharing best practices to address common challenges effectively. For example, “Grow Your Own” programs, which recruit high school students, community members, or paraprofessionals into the teaching profession, have shown promise in stabilizing the teacher workforce and ensuring it reflects the communities it serves (Podolsky et al., 2016). Such programs, tailored to local needs and informed by robust data, can help build a sustainable pipeline for educators who are more likely to remain in their communities, thereby reducing turnover rates and improving student outcomes.

Moreover, a stronger emphasis on diversity, equity, and inclusion within teacher preparation and retention strategies can enhance the effectiveness of data-driven approaches. Research from the Learning Policy Institute underscores that a diverse teacher workforce is linked to positive academic outcomes for all students, particularly students of color (Carver-Thomas, 2018). To achieve this, states and districts must prioritize data that not only tracks the flow of teachers into and out of the profession but also monitors the diversity of those entering the pipeline. This data can inform target recruitment efforts, financial incentives, and mentoring programs designed to attract and retain educators from underrepresented backgrounds. Such efforts are essential to addressing equity gaps and fostering inclusive learning environments, ultimately benefiting student achievement and well-being.

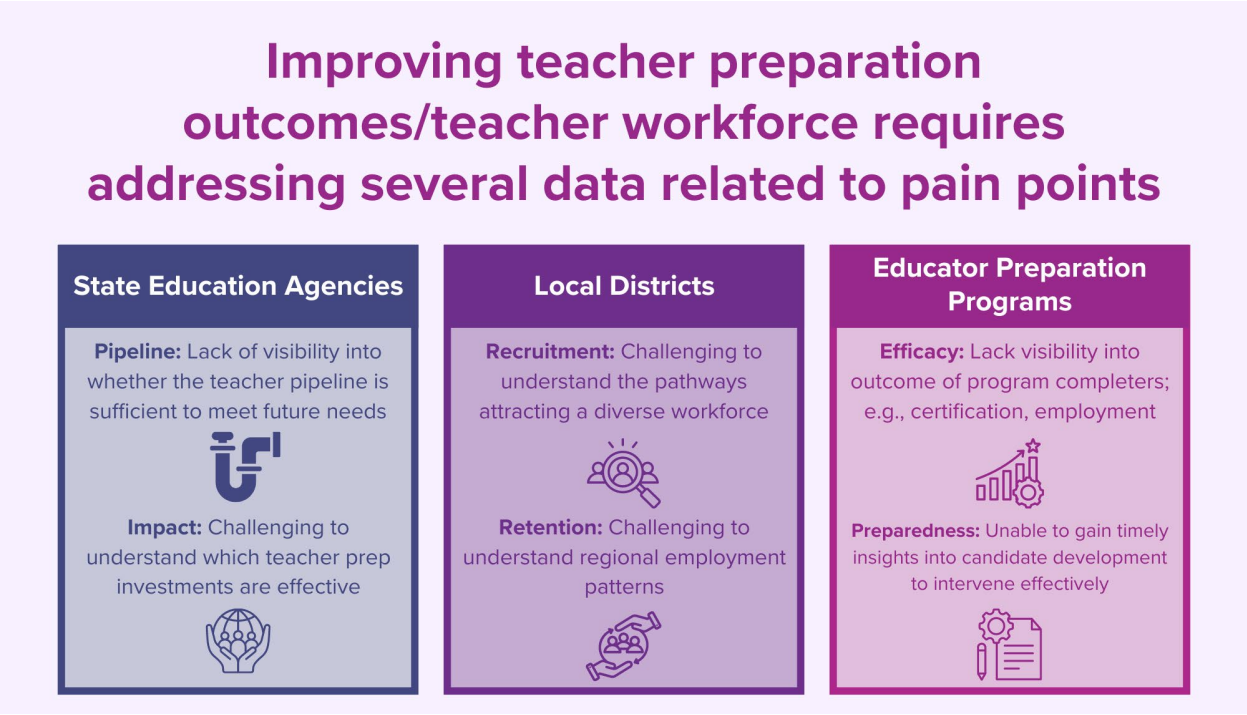
Investing in innovative professional development and career advancement pathways is also critical for retaining talented educators and addressing teacher shortages. According to the Learning Policy Institute, providing ongoing opportunities for career growth—such as instructional coaching, leadership roles, and specialization tracks in high-need areas like special education and STEM—can lead to greater job satisfaction and retention (Darling-Hammond et al., 2019). Using data to identify teachers' professional interests and aligning them with available development opportunities can further enhance retention. Additionally, targeted professional development aligned with needs identified through data, such as data-driven instructional practices, or social-emotional learning, ensures that educators are continuously prepared to meet evolving classroom challenges. A comprehensive approach that integrates these elements not only supports teacher retention but also enhances the overall quality of education, leading to improved student outcomes across the board.

# Why should states do this?

The increasing frequency of teacher shortages and growing need for effective strategies to mitigate them  is a challenge for many states, who often lack the precise data needed to address specific staffing challenges. The lack of integrated, interoperable data systems limits their ability to dig into key questions about the teacher workforce needs, like teacher supply and demand at the local level based on subject, grade level, and region. The National Council on Teacher Quality (NCTQ) compiled survey responses from 43 states related to teacher supply, demand, and

demographics, and they found that not only were their data systems siloed and not talking to one another, but the data that were collected were focused on individual teachers, and not teaching positions—thus, school districts were unaware of how to properly staff positions.

These findings highlight that states need more detailed *and* integrated systems—or interoperability—where multiple data sources are pulled together "to ensure that data from separate source systems and applications is exchanged securely in a way that makes it shareable, combinable, and connected." When data systems are interoperable, we are able to understand the health of their teacher pipeline, track teacher attrition and mobility, and ensure equitable teacher assignments. For example, few states can link newly credentialed teachers to their certifying institutions, and even fewer can link these data to current employment. If states invest in policies and systems that link data from EPPs to K-12 employment data, they will be able to enact strategic policies that address teacher shortages, ensuring that every classroom has a qualified and effective teacher.




Such investments also promote educational equity and access, because interoperable data offers a solution to close achievement gaps and supports a more diverse and inclusive teacher workforce by matching the right educator to the right classroom.

For example, there are 26 states that report a shortage of teachers qualified to teach English as a second language. Reporting on the teacher labor market by SEAs can identify and address inequities in the distribution of teacher talent. If school districts can understand demographic characteristics of the teacher workforce, including race and certification status, they can develop targeted strategies to diversify their teacher population. For instance, understanding where teachers of color are underrepresented can guide recruitment efforts, while data on teacher mobility and attrition can help develop retention programs tailored to diverse educators' needs.

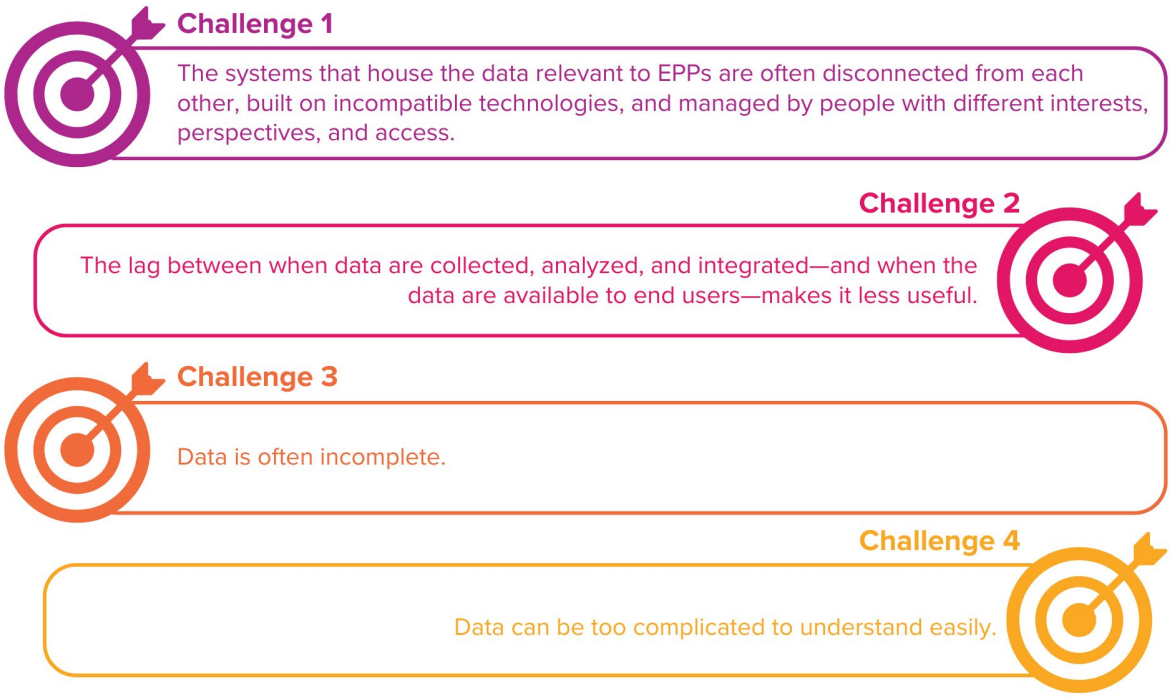
In 2021, the NCTQ examined how the teacher labor market lacks basic information and provided information on how SEAs collect and report data on teacher shortages, retention, and mobility; however, only 20 states have teacher retention and mobility data, and few states report school-level data on teacher performance outcomes.

States must prioritize the development of data systems that ensure the availability of teacher pipeline data (such as applications, enrollments, completions, certifications, and employment), teacher retention and mobility data, alignment of credentials/certifications with teacher assignments, candidate performance, and areas of teacher shortage. Additionally, states need to *link* data to report on vacancies, certifications, and teacher turnover to enhance the ability to provide timely and accurate information about the teacher workforce and better address the misalignment between teacher supply and demand.

In recent years, SEAs like the Texas Education Agency (TEA) have transitioned from a primarily compliance-focused approach to gathering EPP data to one that emphasizes continuous improvement. This shift reflects that focusing on educator needs better support the needs of students. TEA has been at the forefront of this shift, integrating data-driven decision making and support systems that encourage ongoing development and innovation. This evolution highlights the critical role SEAs play in actively supporting the growth and quality of educational systems.

# Local Data Challenges Summarized

Despite the benefits of implementing Ed-Fi infrastructure and the ideal EPP elements in a comprehensive model can come with obstacles, such as ensuring data accuracy, aligning multiple stakeholders, and managing the complexity of integrating diverse data systems. We begin by describing the common challenges of non-interoperable data systems. Consider if any of these challenges are applicable to your organization.




**Challenge 1**: The systems that house the data relevant to EPPs are often disconnected from each other, built on incompatible technologies, and managed by people with different interests, perspectives, and access.

> For example, answering basic questions about how well course work is preparing candidates for success in the classroom requires drawing candidate information from a **Student Information System**; course data from a **Learning Management System**; and **field observation data** from another system. The manual labor involved in gathering the data makes using this data together prohibitively burdensome.

**Challenge 2**: The lag between when data are collected, analyzed, and integrated—and when the data are available to end users—makes it less useful.

> For example, if key assessment data are only available through a vendor portal that few EPP members can access, there can be a delay in getting the data to EPP staff. And that can make timely measurement and interventions a challenge.

**Challenge 3**: Data is often incomplete.

> For example, different avenues of applying to EPPs can lead to application data being recorded across multiple systems, each of which has an incomplete record of program applicants.

**Challenge 4**: Data can be too complicated to understand easily.

> For example, a raw data source from an assessment can contain dozens of coded columns that capture data about both assessment scores and the assessment itself, but this information is difficult to use and digest in this format for many stakeholders.

Recognizing these challenges, the Ed-Fi community saw a need to develop resources and support to address them. Texas is a state agency that has been at the forefront of integrating and using the data from their EPPs, and later we will share examples, best practices, and lessons learned from their work.

## Why You Need Ed-Fi & How Ed-Fi Can Help

Informed decisions about policies, programs, and practices rely on high-quality data, yet gathering and combining data from multiple sources remains challenging. The Ed-Fi standard addresses this issue by enabling interoperable and seamless data exchange. This document shares use cases, effective practices, and guidance for SEAs who are looking to support EPPs in their data use leveraging Ed-Fi platforms. By advancing and refining the use of EPP data, we can significantly improve interagency data integration and sharing between states, districts, and EPPs, ultimately supporting better educational outcomes for students.

The **Educator Preparation Data Model** (EPDM) enables comprehensive data aggregation during the span of an educator's entire career, from application to—and

enrollment in—an educator preparation program, through knowledge and skills demonstrated in fieldwork experiences, to initial certification, to placement, and performance. In the Ed-Fi data standard, EPPs rely on EPDM (initially known as Teacher Preparation Data Model, or TPDM). The EPDM is an extension of the Ed-Fi Data Standard that includes data domains and elements specific to educator preparation, such as field experiences, clinical observation, and rubric assessments. The EPDM was developed to address some of the data challenges that are common among educator preparation programs. Many of these challenges mirror the challenges in K-12 education that the Ed-Fi Data Standard was designed to solve in-service to educators.

Ed-Fi can provide a comprehensive framework for tracking the progression and growth of teacher candidates from enrollment through to their teaching careers. The EPDM model continues to evolve through collaborative efforts within the Ed-Fi community, leveraging insights from various stakeholders and pilot programs to refine and expand its capabilities.

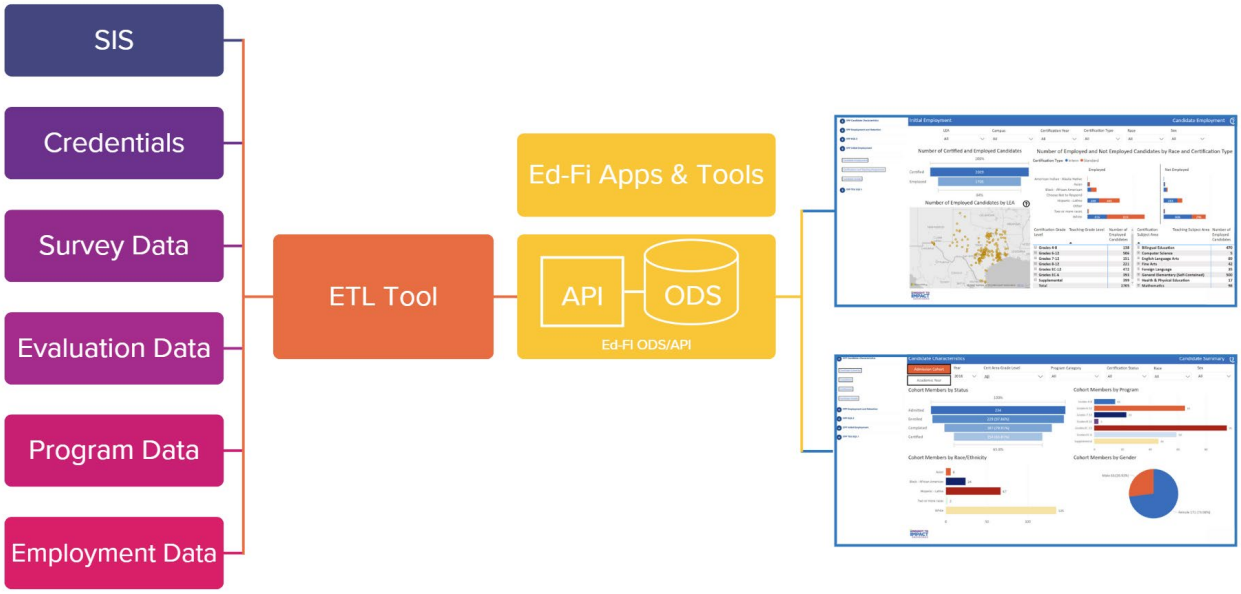
**Note: In Quarter 4 of 2025, the EPDM Community/Core will be moving into the Ed-FI Data Standard, and will no longer be an extension. Stay tuned for updated documentation.*

# Evolution of the Educator Preparation Data Model

Educator Preparation Programs deal with a wide range of data over the span of each candidate's experience: candidates apply to programs, are accepted, enroll in classes, complete program milestones, participate in field experiences, and receive feedback from mentors and supervisors. Additionally, candidates complete programs, take assessments, become state certified, and participate in many other trainings connected to their professional journey, and all of this documentation generates data.


In 2015, an Educator Preparation Work Group formed as members within the Ed-Fi Community saw the potential to apply the data standard to Educator Preparation Programs to help these programs bring data together to answer their important questions. The work group began building expansions of the data standard to accommodate these data relevant to educator preparation. The result of this expansion work was the Educator Preparation Data model (EPDM), first launched in 2019.

The EPDM defines the relevant elements of a candidate's educational experience, and it uses the Ed-Fi API) to organize those elements so that data in individual fields can be stored and retrieved in efficient and reliable ways. Data from sources external to the ODS, like the EPP's student information system, the learning management system, and the field observation data collection system, can be mapped to the entities, attributes, and descriptors in the EPDM to bring them into alignment with the definitions in the Ed-Fi Data Standard.




The Ed-Fi API, which is based on the Ed-Fi Data Standard, can then integrate the EPDM data with other data sources to provide a more complete picture of educator preparation (see above for high-level depiction).

## How to Implement EPDM: EPDM-Core or EPDM-Community

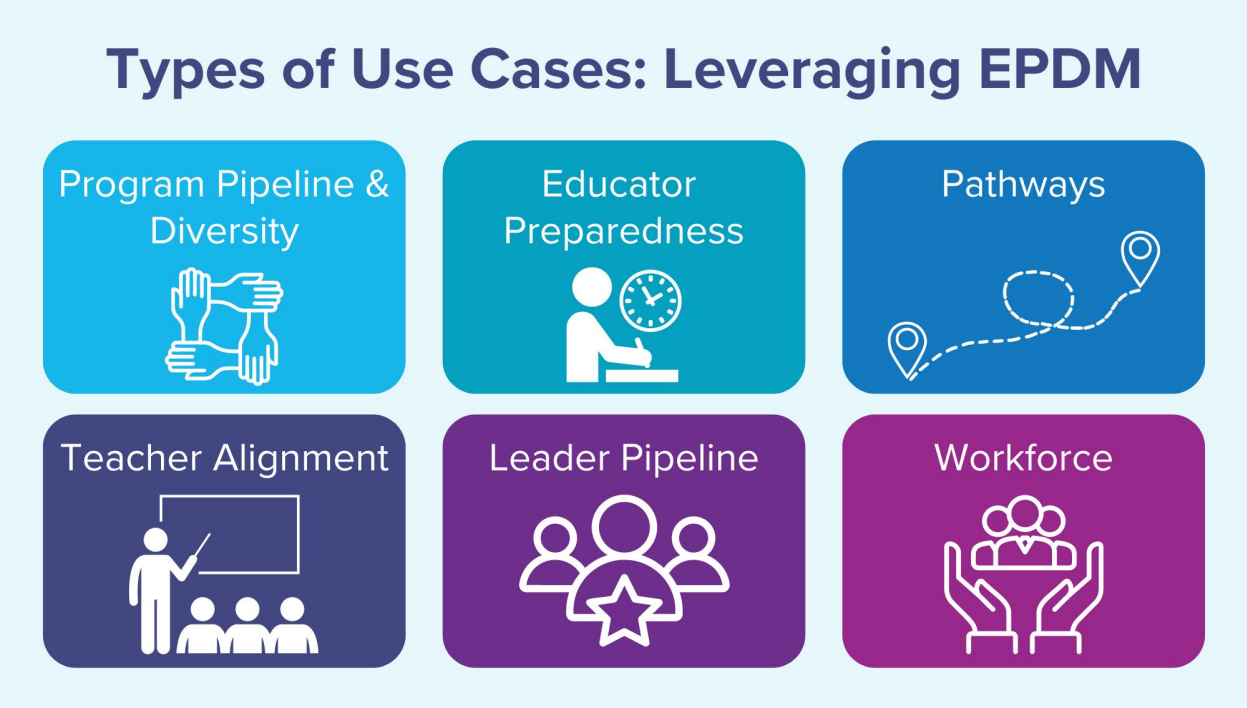
**Note: In Quarter 4 of 2025, the EPDM Community/Core will be moving into the Ed-FI Data Standard, and will no longer be an extension. Stay tuned for updated documentation.*

Currently, there are two types of implementation: **EPDM-Core** or **EPDM-Community**. Most SEA implementations will utilize the **EPDM-Community** version. EPDM-Core allows organizations to get started as quickly and simply as possible using Ed-Fi Educator Preparation Program Starter Kits, with use cases focused on candidate demographics, candidate enrollment, or performance. Organizations have the option to choose EPDM Community for their initial implementation if their use cases require EPDM entities that are not currently in EPDM-Core.

For either type of implementation, the goal is to allow data sources to be integrated into a single location, addressing many of the common data challenges for EPPs.

The EPDM-Core exists as an extension included within the Ed-Fi Data Standard. The entities in EPDM-Core were prioritized as those that address the most common use cases for Educator Preparation Programs. EPDM-Core contains the subset of entities necessary to implement the Ed-Fi EPP Program Diversity and Persistence dashboard and the Clinical Experience and Performance dashboard.

The EPP dashboards were initially designed to help Educator Preparation Programs new to Ed-Fi solve a high-priority problem and deliver an early win for their end users (e.g., administrators, faculty, staff, credential analysts). Each EPP dashboard is designed to address a priority use case in educator preparation, based on input from the Ed-Fi community. These use cases were identified as being widely relevant and applicable across a broad range of EPPs.

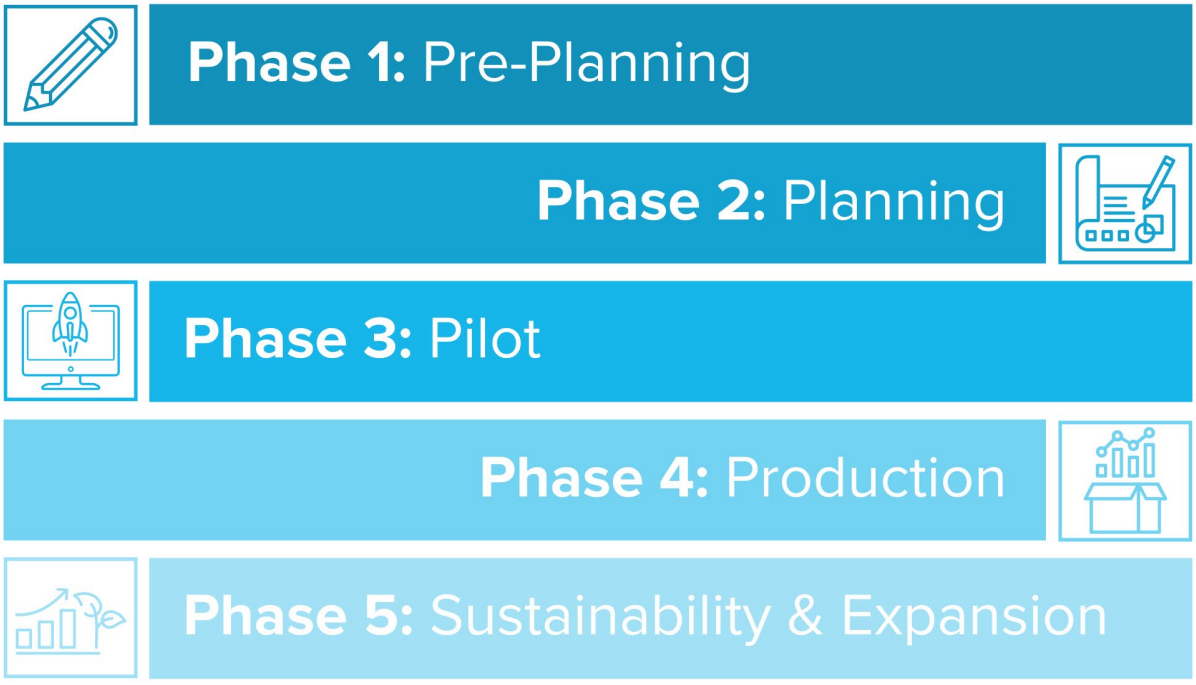


The EPDM-Community extension includes every entity that exists in EPDM-Core, as well as additional entities that are still under field-led development. EPDM-Community extends on the EPDM-Core to capture more data to allow an Educator Preparation Provider to understand and answer key questions relating to educator candidate development.

You can find more information on EPDM-Core and EPDM Community in the resources section below.

# Implementation & Effective Practices

This document aims to offer generalized effective practices and structural guidance that can be adapted by states. Additionally, it highlights key phases and scope of work required to implement EPDM successfully. Below you will find an overview of what each phase entails:




- **Phase 1 Pre-Planning**: The SEA must address five crucial decisions before initiating any technical work or project planning—hence the designation as Phase 1. Investing time and effort in this phase will help you avoid future complications, secure stakeholder support, and foresee potential risks, setting

your implementation up for success. The duration of Phase 1 varies based on the complexity of your state's systems; the more stakeholders, departments, and bureaus involved in forming a unified strategy with a well-defined aim, the longer this phase will take.

- **Phase 2 Planning**: The SEA will engage with stakeholders, develop and implement the technology infrastructure (ODS Systems), and make their roll-out plans.
- **Phase 3 Pilot**: Participating EPPs will begin engaging in the Ed-Fi backed solution, and testing out the initial design and user acceptance of the implementation. This crucial period allows you to uncover problems, assign ownership of those problems, design solutions to those problems, and prepare for wider roll out.
- **Phase 4 Production**: The SEA is validating whether Ed-Fi is replicating the data to power the analytics tools. During this time, all agencies (EPPs and SEA) are learning how to navigate the new workflow.
- **Phase 5 Sustainability and Expansion**: In this phase, SEAs focus on ensuring their Ed-Fi implementation remains stable, scalable, and responsive to evolving stakeholder needs. Key priorities include fostering continuous improvement, building strong feedback loops, addressing system stress points, and equipping EPPs with the resources and training needed to succeed. This phase lays the foundation for long-term impact and adaptability.

The details shared in these phases can serve as a high-level, big-picture guide for states that are interested in setting up their Ed-Fi infrastructure as part of an integrated model. It is not meant to be prescriptive, but rather meant to help lay out all of the elements involved in the process in an organized way, based on our experience to date helping states with this process.

# Phase 1: Pre-Planning Educator Pipeline Use Case

The challenges that any set of stakeholders within a state must confront when designing and building an integrated model can be framed as key decision points that need to be made before launching into such a roadmap. In other words, before any technical work or concrete project planning begins, the SEA must engage in deep conceptual thinking to set the implementation up for success.

These are the decisions that need to be made as part of Phase 1:

1. **Building the Ed-Fi Core Instructure**
    a. Pre-Planning for states that have not yet leveraged the Ed-Fi tools and solutions. Please refer to the prescriptive SEA Playbook published by the Ed-Fi Alliance for state leadership to guide the SEA team on what is involved in adopting Ed-Fi in general. This roadmap is designed for states that have not yet started on their Ed-Fi implementation journey, as well as those that may be somewhere along the path of these phases. Although this document positions the SEA as a key driver for each phase of implementation, there may be other agencies (such as EPPs and LEAs) that are playing a significant role in driving the work forward, bringing stakeholders together, and developing processes to enable an efficient implementation. Even if the state is not initiating the Ed-Fi rollout, the policies and legislative actions of the SEA influence and even drive how EPPs and service agencies both use and interpret data.

    Although we present these phases sequentially, there are ways to expedite the process when needed (e.g., due to legislative or contractual constraints). There are tradeoffs to working these phases concurrently vs. sequentially, such as the risk of not seeing downstream implications of some decisions until later than desired, but an experienced partner who has supported states in establishing integrated infrastructure can help diagnose the tradeoffs in the context of your state. Some SEAs may be well positioned to move through these phases more quickly, and

others may want to invest more time in one place or another depending on their context (i.e., developing new processes/solutions for data submission from stakeholders).

2. **Expanding the infrastructure to support the educator pipeline use case**
    a. Initial Gap Analysis

        The objective of conducting this analysis is to determine early the alignment of state data with the Ed-Fi data standard/EPDM, data gap analysis/quality challenges, data collection processes, and current source systems. States should begin to explore how these elements relate to one another to highlight any challenges to be addressed prior to project kick-off (State data category, Source system; Ed-Fi Standard Alignment). As the essential questions and use cases refine and narrow this analysis will continue.

    b. Models of Infrastructure and Processes
        - Review of Solutions Architecture focused on systems:
            1. New or Existing Systems: Evaluate the current state of Ed-Fi Operational Data Store (ODS) and Application Programming Interface (API) alongside the Ed-Fi Data Standard/Educator Preparation Data Model (EPDM). Determine if enhancements or new implementations are needed to meet the evolving requirements.
            2. State Needs, Goals, and Vision: Assess the requirements for storing longitudinal data, ensuring it aligns with the state's educational goals and vision. This includes understanding the types of data to be stored, the duration, and the accessibility needs for various stakeholders.
            3. Validation Processes: Implement robust data validation mechanisms to ensure data accuracy and integrity before submission. This step is crucial to maintain the quality of data being collected and used for decision-making.
            4. API Integration for Data Collection: Advocate for and explore opportunities for vendor integration with Ed-Fi standards. This includes ensuring that vendors' data

collection solutions are compatible with Ed-Fi APIs, facilitating seamless data exchange and interoperability.

- Review of Solution Architecture with a focus on process
    1. Detailed Resource and Guidance:
        - Provide comprehensive resources and guidance to Educator Preparation Programs (EPPs) for data submission, ensuring clarity and ease of use.
    2. Data Elements for Accountability/Accreditation:
        - Identify and streamline the data elements required for accountability and accreditation to minimize the reporting burden on EPPs and eliminate duplicative efforts.
    3. Communication with EPPs:
        - Establish clear and transparent communication channels with EPPs for data submission, ensuring timely and accurate data exchange.
    4. Disaggregated Data for EPPs:
        - Explore methods to provide disaggregated data back to EPPs in a usable format, enabling them to leverage the data for purposes beyond mere visualizations.
    5. Partnerships with LEAs and EPPs:
        - Foster closer partnerships between Local Education Agencies (LEAs) and EPPs to obtain in-service teacher and district data, facilitating program improvement and informed decision-making.
    6. Data Governance and Support:
        - Implement robust data governance frameworks to ensure state data quality, streamline data collection and submission processes, and facilitate interagency data sharing.
        - Establish a dedicated help desk and support process to assist stakeholders with data submission and related queries.
    7. Strategic Plan for Dashboards:

        - Develop a strategic plan for the rollout of dashboards, ensuring they meet the needs of various stakeholders and provide actionable insights.
    8. Maturation and Sustainability:
        - Identify the roles and responsibilities for maintaining the solution, including data processes, solution versions and upgrades, and refinement of the solution.

- Review of Solutions Architecture with a focus on stakeholders
    1. Leverage State Expertise and Key Project Leads:
        - Utilize the expertise of state officials and key project leads, including project champions, project managers, technical leads, and subject matter experts (SMEs), to guide the implementation and success of the technical solution.
    2. Establish Core Team:
        - Form a core team responsible for overseeing the implementation of the state's technical solution, ensuring alignment with project goals and stakeholder needs.
    3. Develop and Train EPPs:
        - Create and deliver training programs for EPPs to ensure they are well-equipped to use the new systems and processes effectively.
    4. Support RFP Vendor Process and engagement:
        - Monitor Implementation Progress:
            i. Track progress and outcomes to ensure the project stays on track and meets its objectives.
            ii. Determine the appropriate level of involvement from the Data Governance group versus the dedicated project team.
        - Provide Thought Leadership:

        i. Guide the vendor community in the infrastructure build, ensuring alignment with best practices.
    - Prioritize Best Practices:
        i. Ensure vendors adhere to Ed-Fi community best practices, avoiding shortcuts that could lead to long-term vendor lock-in.
        ii. Communicate the mutual benefits of following best practices for optimal outcomes.
    - Offer Technical Assistance:
        i. Provide support during implementation, particularly to non-SIS vendors (e.g., assessment vendors, survey platforms) who may be less integrated into Ed-Fi than SIS vendors.
5. Data Governance with End Users:
    - Implement data governance practices that involve end users, allowing for continuous refinement and improvement of data quality and processes based on user feedback and evolving needs. Identify pain points and priorities to address them effectively.
    - Establish data governance structures to oversee data management and quality.
    - Consider forming sub-committees for:
        i. EPP-related communication.
        ii. Reviewing data collection processes.
        iii. Data sharing agreements and protocols with LEAs, SEAs, and EPPs.
        iv. Interagency SEA data sharing.

You do not have to navigate these decisions alone. The Ed-Fi community is a valuable resource, offering insights and lessons learned from those who have already faced similar challenges. Discovering unknowns on your own can be frustrating and costly, so finding a trusted partner who understands the potential sticking points can be beneficial. Conducting a cost-benefit analysis can help you weigh the trade-offs

between contracting with an implementation partner and handling the work in-house. We recommend that any state starting their Ed-Fi journey seek out experienced partners who can guide them through each decision, considering the unique context of their state.

# Phase 2: Planning 

In Phase 2 of the project, the SEA begins engaging with key stakeholders—including EPPs, vendors, LEAs, partners, legislators, and others—to plan the Ed-Fi pilot, which starts in Phase 3. This planning phase focuses on designing API/ODS systems to support the desired use cases for both the SEA and the supporting EPP.

During the planning process, it is essential to:

1. Secure short and long term funding
2. Define the scope of resources available for this work - both in staffing and time
3. Develop and scope a Request for Proposal (RFP)
4. Create a core project team, including:
    a. *Senior Sponsors:* Coordinate and support inter-agency initiatives. Monitor progress using existing performance management systems. Communicate project updates to executives and participate in/approve vendor selection.
    b. *Project Lead(s)*: Serve as the main point(s) of contact at the state and overall champion(s) of the project. Direct state resources for implementation activities and liaise with EPP partners. Align state goals with project vision and activities, including any changes to the project. Approve project deliverables developed by the selected vendor.
    c. *Project Manager(s)*: Manage day-to-day tasks to ensure project timelines are met and stay within budget. Analyze and manage project risks, and report progress to the Project Lead. Ensure business requirements are in place, oversee testing, data interpretation, and mapping. Manage internal relationships with IT and selected vendors.
    d. *Data Lead(s)* (may be combined with Project Lead/Manager role in some instances): Provide direction on state source systems and act as subject matter experts on data. Provide access to data and source systems.
    e. *Technical Lead(s):* Lead the technical aspects of the project. Ensure access to state systems for the selected vendor. Coordinate project phases and next steps with the selected vendor and Project Manager.

Collaborate with the vendor and EPPs throughout project phases, including knowledge transfer to production and ongoing sustainability of the product. Activities include reviewing technical documentation (for internal and external use), validating technology, and signing off on vendor engagement at project completion.

5. Develop a detailed project plan based on a charter developed by a governance group

Further, there are three main steps the state needs to initiate during this phase, prior to the pilot:

1. Model Reconciliation:
    - Mapping
    - Defining the Use Case: Engage Key Stakeholders to Help Shape the Essential Questions
    - Determining Seed Data
    - Designing and Deploying Extensions
2. Design a Rollout Plan:
    - For the SEA and EPPs
3. Architecture and Deployment

Below, we detail each of these steps, outlining the key decisions to be made, the main challenges to navigate or avoid, and the lessons we have learned from implementing this work in states across the country.

**Phase 2.1: Model Reconciliation**

Model reconciliation involves aligning the current state's data model with the Ed-Fi data model. This process includes three key components:

a. Data Model Mapping: Converting the state's data model to align with the Ed-Fi data model.
b. Defining the Use Case: Engage key stakeholders to help shape the essential questions
c. Determining Seed Data: Identifying the essential data elements that will populate the Operational Data Stores (ODSs).

d. Designing and Deploying Extensions: Deciding on any necessary extensions for the data model and designing those extensions accordingly.

Below, we summarize each of these components of the model reconciliation process.

**Step 2.1 A: Data Model Mapping**

The first step in the model reconciliation process is mapping your state's current data model onto the Ed-Fi data model/EPDM. The goal is to align your state's data model with the Ed-Fi model. To achieve this, the SEA needs to examine each element of the state data and establish logical connections to Ed-Fi data elements, which may or may not be similar.

It is important to note that data model mapping is different from descriptor mapping. Descriptor mapping involves aligning descriptors from your state data model (e.g., categories for race or values for gender) with those in the Ed-Fi model. Think of a data model as a globe: it organizes the entire world in a standardized format. Descriptors, on the other hand, are like the legend on that globe, specifying what colors or symbols mean and what is "allowed" to be represented.

For more details on descriptors, you can refer to the Ed-Fi Alliance resources. As you engage in the model reconciliation process, there are three types of mapping, listed from most to least desirable:

1. 1:1 mapping: When both the data model and the descriptors exactly overlap between the state data model and the Ed-Fi data model
2. Close mapping: When either (1) the data model matches but the descriptors don't match, or (2) the data model doesn't match but the descriptors do match. In either case, you create a logical map between the differences, which are closely aligned but not exact.
3. Extensions: When neither the data model nor the descriptors match (which is a model mapping problem), therefore requiring the creation of an extension. Reach out to Ed-Fi about data elements that seemingly do not have a place in the model. This will help inform Ed-Fi on standard maturation.

Data model mapping is essential for getting your vendors operational (if possible), as it establishes the foundational rules of Ed-Fi within your state's context. This step is also crucial for discussing local use cases and data models, as many local data needs are derived from state or federal definitions (e.g., race/ethnicity, certification type). Engaging in the model reconciliation process ensures significant coverage of the elements that any local data model must include.

During the mapping process for integrating Ed-Fi infrastructure, keep in mind two major goals:

- Enable controlled granularity to support local use
- Be prepared to modify your own organization's practice because of model reconciliation.

The following will briefly explain each of these goals in turn.

**Enable controlled granularity to support local use.**
You should avoid modifying the Ed-Fi model in ways that exclude local use. For example, customizing the API or your data model should not prevent EPPs from adding additional data beyond what the state defines. Take "program subject area" data as an example. Your state-to-Ed-Fi mapping should ensure that your state's program subject area definitions are a subset of all discipline types in the data system. This approach allows other program subject areas—beyond those the state counts or validates—to be included in the data model.

Instead of requiring Education Preparation Programs (EPPs) to conform all their definitions to the state's codes, it is preferable to allow EPPs the flexibility to align codes with state codes for certain purposes while using their local codes for others, based on specific contexts and use cases. This approach aligns with current Ed-Fi guidance on descriptors, which are a type of seed data discussed in more detail in step 2.1C.

The principle of controlled granularity highlights the importance of providing enough detail to benefit EPPs from the Operational Data Store (ODS) while allowing the State Education Agency (SEA) to meet legislative requirements. However, this doesn't mean retaining all values at their most granular level, as that could become overly complex.

It's essential to maintain flexibility without unintentionally removing it, which requires a thoughtful and balanced approach.

**Be prepared to modify your own organization's practice because of model reconciliation.**

Model reconciliation is not just about creating a 1:1 mapping between state and Ed-Fi fields, although that is an important part. For state education agencies, it also involves adapting state data practices to facilitate ongoing model reconciliation. This might include identifying unused fields in existing collections and deciding whether to stop collecting them after consulting legislative mandates and liaising with other departments that use the data.

A common example is aggregate data values (e.g., the annual number of program completers from an EPP), which most states collect. The logic for mapping these values depends on the level of data collected by the state. Moving to Ed-Fi allows for record-level data, making it more practical to receive granular data (e.g., candidate-level data) from EPPs and then centralize aggregation at the state level. This means the state must now handle the aggregation step, which was previously included in what was delivered to the state.

This shift has important implications to consider during Phase 2. For instance, once granular data are in the ODS, the state must transition from verifying a single aggregate number of program completers annually to calculating that number themselves. As a result, the state may need to add new business processes, amend existing ones, or remove outdated ones. The SEA must be open to these changes as an outcome of the model reconciliation process.

### Step 2.1.B Defining the Use Case: Engage Key Stakeholders to Help Shape the Essential Questions

An essential question is an open-ended, meaningful, purposeful question whose answer provides valuable insight to improve a program or organization. The question is designed to guide inquiry over time and can be addressed by the available data.

The iterative work continues by leading a team through a series of steps to develop and refine that question together. For example, you will often write your questions—and then consider the data sources later.

Both the essential question and the use case will be refined throughout this iterative process. For your project to succeed, it is essential for it to maintain focus and provide real value to your organization. Don't try to boil the ocean! Instead, focus on delivering enough features to provide a quick win. There will be opportunities for enhancements later.

Because data-interoperability work requires leadership, learning, and collective effort, it is important to sustain the work by delivering useful information that people can act upon. A use case provides all the necessary context to explain the importance of this data—and the actions that will result from accessing and understanding it. It answers question like:

- Who needs the data?
- What is the data they need?
- What decision or actions will the data support?
- When do they need the data?
- In what system (or systems) does the data reside?
- And, how is it collected or generated?

The use case will be documented in a way that allows people to check back and ensure their designs are meeting the defined and agreed upon need for this information in this context.

Understanding who uses the data—and what decisions they are trying to make—helps us determine how a visualization will be used. The purpose of a data visualization is to turn data into information that people can confidently act upon.

To begin the process, you will have to get the right people in the room and help them understand the task at hand. You will need to gather a cross-functional team that includes a diverse community of experts, people who are deeply engaged in the program side of the work, people who are doing the technical work, and people in

leadership roles. For example, for an essential question focused on candidate outcomes during clinical experience, your cross-functional stakeholder team might include university supervisors, mentor teachers, and faculty who use the observation data to make learning plans for the candidates, a leader from the relevant department or program, and a member of the technical team who manages the data warehouse where the assessment data reside.

Depending on your organization's internal capacity, your team may also include contractors or external subject matter experts to help support the work. In addition to your core cross-functional team, you may choose to identify partner organizations to check in with regularly for an outside perspective and peer review, and observer organizations that you want to keep informed about the work.

However your team is composed, it is important to build relationships and trust to support open dialogue. To learn more facilitation of the essential questions/use case design, please engage with Ed-Fi's free online course, 230 - Essential Question to Visual Design Process. These effective practices have been captured from system projects at Texas Education Agency (TEA) and California State University (CSU).

To be most effective, the cross-functional team members from one or multiple organizations will be asked to share ideas, internal practices, current visual materials, or their data collection processes. Trust is a key part of teams that successfully complete a project, and the leaders of the process should work to build relationships and trust among the team members.

**Step 2.1C: Determine Seed Data**

After you've completed data model mapping, the next step in model reconciliation is to determine your seed data—those data elements that will fundamentally populate the ODSs. A key assumption for how we are laying out how this would be done is that we are starting at the state level and from the state context. This means we're assuming that the state has authority over certain data elements, such as EPP/IHE information, EPP/IHE codes, candidate IDs, staff IDs, and so on. The state will be making decisions about how much of that data you pre-fill into any ODS will operate in the state (either state ODS or local ODS)—in other words, you're defining your baseline data elements.

Without baseline data elements, EPPs and the SEA could have vastly different opinions about what should populate the ODS. For instance, the EPPs and SEA may need, depending on the structure of the project, to agree about which value is used for a state identifier. This means entering into a mutual agreement or a contract of sorts about these elements.

There are three main categories of seed data:

1. Descriptors - such as certification type, race categories, languages, countries, counties, program area, codes, etc.
2. Education organization information - such as education organization name, provider ID, EPP/IHE ID, district ID, etc.
3. Enrollment - Candidate and Educator Preparation Program

Choosing which data to pre-seed allows the state to make important decisions ahead of time, such as what “counts” as a single EPP within the data system and ensures there is alignment between the SEA and the EPPs.

A common mistake to avoid is using seed data as a replacement for a master data management process. You do not want your ODS to serve as the original source of truth for the data inside of it. Although it should align to the sources of truth, every seed data element should originate from another database or data system that serves as the authoritative source for that element. The ODS is designed to enable operational storage of data; it is not meant to be an authoritative source of a data element.

Consider the example of certification codes. The ODS should store the certification codes that are currently in operation. When a new certification type is created, it must be created in another system (not in the ODS). That system should go through some sort of authorization step (to ensure that the new candidate ID is valid, accurate, etc.), and once the certification code data are authorized, then they would land in the ODS as part of the seed data for the upcoming fiscal year. The ODS should not be the original source of truth for the certification code, but rather you want the seed data in the ODS to be downstream of some other validated business process.

### Step 2.1D: Design & Deploy Extensions

While establishing your seed data, you'll also need to determine and design the necessary extensions for your data model. These processes (Step 2.1B and Step 2.1C) occur in parallel and can inform each other—extensions might reveal new seed data needs, and seed data can highlight required extensions.

Extensions should be limited to data elements unique to your state's context. There are two main categories:

- State-Specific Data Elements: These are unique to your state, often mandated by state legislation. For example, some states require data on restraints used, which can vary greatly in format and granularity from state to state.
- Emergent Data Elements: These are new data types that other states are likely to adopt, often due to federal mandates.

It's crucial to work with trusted, well-informed partners who can help drive this effort. This group should ideally include partners experienced with state Ed-Fi data models and the Ed-Fi Alliance. They can provide guidance on what should be a shared extension versus unique to your SEA and help you tap into the community needed to collaborate on shared extensions.

### Step 2.2: Design Roll Out Plans for the SEA, LEAs, and Vendors

Once your model reconciliation, seed data, and extensions are sorted out, you can start planning your Ed-Fi rollout. This involves considering the needs and strategies for gaining stakeholder awareness and buy-in within your SEA, among the EPPs, and with your vendors. Let's discuss each of these groups below.

### Step 2.2A: SEA Rollout Plan

1) Informing and collaborating with your non-technology users and stakeholders
2) Begin to implement changes to business practices that you identified in step 2.1.A during the data model mapping process
3) Validation of data
4) Resourcing and augmentation to Managed Service Provide (MSP), if determined

**Step 2.2B: EPP Pilot Rollout Plan**

As you plan the rollout of Ed-Fi to your EPPs, here are key suggestions to guide you:

Begin with a select group of EPPs that are highly communicative and willing to share their local practices for fulfilling data requirements. Focus on quality engagement over quantity. Consider the Right "Sample" of EPPs to ensure you have a diverse group of EPPs in your pilot. Criteria to consider include:

- EPP size (large, medium, small)
- EPP capacity (high, moderate, low)
- Urbanicity (urban, suburban, rural)
- Locality (North, South, East, West, Central)
- Poverty levels (high, moderate, low concentrations of candidates served in poverty)
- EPP Related Organization - Private IHE, State IHE, District, Other
- EPP Type (i.e., Teacher Residency, Traditional, Registered Apprenticeship, Alternative Certificate)
- Credentials Offered

Your goal is to identify edge cases early to avoid surprises later, which may require revisiting step 2.1 (model reconciliation). When selecting your pilot EPPs include targets and incentives for EPPs to participate in the pilot. Incentives might include financial resources or early access to valuable tools at no cost during the pilot.

Learn the EPPs processes and priorities for data use by spending time with participating EPPs to understand their current practices for collecting, processing, and reporting data. This includes both technological and non-technological processes. Be prepared to discover surprising local practices and maintain a non-judgmental, fact-gathering perspective. Additionally, understand the staffing approach for state data creation. Identify the personnel involved, their time commitment, required skill sets, and training processes. This knowledge is crucial for planning Phase 3 and knowing who to interface with during the pilot.

Consider effective EPP support is needed and provide differentiated support for participating EPPs. The transition to Ed-Fi may be significant depending on the chosen architecture, requiring upskilling or reskilling EPP staff, providing training materials,

and establishing a schedule for hands-on support or professional learning communities. Some support can be shared by vendors, so inquire about this during Phase 2 planning. Regardless, the EPP's leadership in clear and transparent communication will be invaluable.

Finally solicit feedback from the EPPs to gather input, feedback, and buy-in from EPPs for steps 2.1A - 2.1D. Ensure the state data model and data mapping align with EPP practices and interpretation of the data, and make necessary modifications for robust state-to-Ed-Fi data mapping. For example, EPPs may differ in how they are structured. The data model needs to accommodate various EPP models by which candidates learn. SEA staff should understand these possibilities and relay the information to vendors and SEA project team to ensure their products align with different options.

End-user engagement is a cornerstone of successful Ed-Fi implementations, and involving a broad spectrum of personas from a variety of EPPs—such as EPP Deans, EPP faculty and staff, IHE/EPP IT specialists, and other key stakeholders—ensures that the platform reflects the real-world complexity of the system. Establishing a stakeholder advisory group early in the project lifecycle enables these diverse voices to shape the direction of the solution from the outset. This group plays a critical role in identifying initial use cases and formulating essential business questions that the solution must address. Their input ensures that the system is not only technically sound but also aligned with the strategic and operational needs of its users.

The advisory group's involvement continues through key phases such as refining and narrowing the essential questions, rigorously defining metrics, and participating in iterative design activities like reviewing mock-ups and prototypes. This hands-on collaboration ensures that the solutions developed during the proof-of-concept phase are grounded in real user needs and workflows. By embedding user feedback into each stage of development, the project team can deliver a solution with high efficacy and immediate value upon launch. This participatory approach also fosters user ownership and trust, which are vital for long-term adoption and success.

**Step 2.3: Determine Architecture and Deployment Strategy**

You will need to decide how to host your Ed-Fi architecture. There are three main options:

1. Host in-house or on premises (“on prem”)
2. Use cloud-based hosting
3. Use a managed platform provider.

Below, we summarize some of the considerations, benefits, and challenges of each of these options.

Here are some of the factors to consider when making the decisions among these options for your implementation:

1. What are the overall platform hosting costs?
2. What are the licensing costs for the various components, including database, containers, and/or operating systems?
3. What features are available for scaling up and scaling out? By scaling up, we mean adding more resources like memory and the Central Processing Unit (CPU) to increase the computing capacity of your infrastructure. By scaling out, we mean adding more servers or services/containers to spread out the computing workload over several parallel resources.
4. For your deployment, decide how the data will be promoted out of the architecture. The Ed-Fi ecosystem could be completely closed, which means data come in and data exit out only via the Ed-Fi API. Alternatively, you may want to be able to push data out by directly interfacing with the database, which would imply different costs and different architecture decisions. You might want to push data out from the database because it’s more efficient for your Extract Transform Load (ETL) workflow, but we encourage you to think of the API not just as a transport layer but also as a structure that you would use as part of your data systems.
5. Decide if your overarching architecture will be built around a single database model (Shared Instance, Year Specific) or a multiple database model (EPP Specific). In a single database this deployment mode reduces the number of databases you must maintain, but it also creates one failure point. With this approach, you must have a robust backup and failover strategy to account for the fact that you’ve centralized all the data.

These planning steps are key to enabling Phase 3, your pilot phase, where you’ll test out the architecture. The next section provides a roadmap for this pilot.

# Phase 3: Pilot 

The pilot phase is a crucial time when the SEA will begin to align and build trust with all parties involved in Ed-Fi. The main goal for your pilot phase is much more than just having a trial run before larger-scale implementation — it's your tool for how you will pressure test the assumptions, processes, and systems you designed in Phase 2 — and amend those Phase 2 decisions before they are already in action at scale. During the pilot phase, you will inevitably encounter many challenges on a variety of fronts. Your task is, for each one of those problems, to identify which of the parties involved in the Ed-Fi deployment—the SEA, the EPP, the districts, the support agencies, the vendors—are responsible for resolving that issue. You are building a framework of responsibility by doing in depth testing and small scale roll out during the pilot phase. You do not want to wait to figure out how to resolve those problems until people are sending real data.

**Step 3.1: Positioning the Pilot for a More Seamless Transition to Production**

By the time you get to Phase 4 (the production phase), you want your stakeholders to already have trust in place and that they know how to reconcile the errors that will emerge. As an encouraging forewarning, know that everything will feel "wishy-washy" or up in the air throughout the pilot phase until you get to the end of Phase 3. That is normal and expected. It doesn't necessarily indicate things are off-track if it's unclear how all the pieces will come together while the pilot is underway. Your focus should be that by the end of Phase 3, and as you enter Phase 3, **you will have clear decisions about what role each party plays**, so you can solidify those plans during Phase 4 (the production phase). In the sections below, we summarize four main steps to tackle during your pilot phase: Implementing your vendor support, implementing your EPP support, implementing your state design, and optionally designing your local ODS pilot.

**Step 3.1A: Establish Data Lineage**

You'll need to revisit the data model mapping from step 2.1A and establish your data lineage. This involves identifying data elements and specifying the order of data transfer.

For example, to power the teacher pipeline view, an EPP might need to submit only a portion of the teacher pipeline data, while you may need to coordinate internally to ensure LEA employment data is available. Depending on the architecture, if accessing teacher employment data, you must determine which vendor is responsible for the minimum viable data push and the ordering of data collections. How will data flow from each vendor, EPP, and/or interagency department to complete the data record you need?

Another example is staff data from LEAs. Your teacher certification data might be in one data system, but staff roles likely come from a different source. Multiple source systems have the ability to write to the ODS simultaneously. Therefore, the best practice is to ensure the dependency order is kept in place for writing the data. For example, teacher certification data relies on the existence of the staff data in the ODS, if available, to ensure successful updates.

The SEA must actively manage data dependencies and coordinate update schedules across systems to ensure accurate, timely insights. Like a traffic cop, the SEA doesn't just set rules—they direct the flow, signaling when each vendor/interagency data source should push or pause data. Without this coordination, unaligned updates can lead to data conflicts and unreliable analytics.

**Step 3.1B: Start Engaging Stakeholders to Operationalization**

Once you have your interagency/vendor inventory and a sense of your data lineage, you'll want to start engaging with these stakeholders to determine what it will take to operationalize all the conceptual decisions you've made and plans you've designed. At a minimum, you'll need to identify how your timelines will work for each of your stakeholder's workflow, including building in:

- Development work
- Quality assurance (QA) and testing
- Deployment to each EPP (if determined the preferred architecture - individual EPP ODS within the SEA infrastructure)

For instance, some data sets involve monthly updates, whereas others may have a twice-a year schedule. The SEA will need to understand these different timelines and

adjust its own delivery timeline to accommodate the schedules, given that this will dictate how quickly a new feature will "reach" the customer (i.e., the EPPs' users).

### Step 3.1C: Encourage Implementation Vendors to Interact with EPPs to Test Assumptions

In our experience, vendors sometimes make assumptions about how their solutions will be used in practice. However, once their code is deployed, actual usage by EPPs can differ significantly from what was originally intended. To help mitigate this, states should actively encourage vendors to engage directly with EPPs in their state to validate these assumptions during the design and development process.

We have seen cases where vendors invest heavily in development, only to discover that once the solution reaches EPPs, the expected data is either missing or not flowing as anticipated. By clearly communicating your expectation that vendors maintain direct communication with EPPs, you can help prevent these disconnects and ensure that the solutions developed are aligned with real-world use.

### Step 3.1D: Getting Into A Cadence to Address Changes as They Emerge

Unforeseen circumstances or complications are inevitable. We recommend establishing a routine of regular, timely assessments of your data pipeline needs. Given the bidirectional nature of these projects, regular touchpoints are crucial for maintaining a feedback loop. It's not just the state sharing back information with the EPPs, but also the state sharing back with interagency departments, and vendors.

This bidirectional information flow will help you anticipate pivots more efficiently and effectively, solidify the content discussed in meetings, and handle any changes that arise more nimbly.

### Step 3.2: Support Sense-Making of The Mapping Process in Each EPPs' Context

Reflecting on Phase 2, where you conducted data model mapping, determined seed data, and designed extensions, it's now time to bring that planning into practice. This is your chance to repackage the data model mapping for the users generating granular data, who are often far removed from the ultimate use of that data for state reporting.

Stakeholders within your EPPs need to see the rules enforced on their data and understand why these transformations are necessary for key data uses. By involving EPP stakeholders in the process, you acknowledge that their comfort with existing workflows is being challenged. Show them what the transition will look like—not just through a mapping document, but by engaging directly to explain how the map impacts their daily workflow. SEA may also assume the role of mapping the data after it is received from the EPPs to lessen the burden on programs and avoid changing reporting processes that are already well established. In any event, involve stakeholders to ensure transparency about business logic and create reference documentation for end users.

**Step 3.3: Resolve New Data Pipelines for State Reporting**

As the state designs the system to run off Ed-Fi, remember that the data will be shaped differently due to the data model mapping process performed in Phase 2.1A. You'll need to reorganize the pathways for how data leaves the collection system (the ODS) and enters any downstream data sources. For example, when shifting to collecting more granular data than before Ed-Fi, you'll introduce new parts of your data pipeline for aggregate calculations that were previously unnecessary.

Consider how Ed-Fi introduces new data elements (or metadata) that enrich data points you used to collect. Whereas they were previously one-dimensional, Ed-Fi may have more complex associations with those data points:

- Begin date of status change
- End date of status change
- Attribution of status (e.g., did the candidate completion status come from an education provider or certification body)

# Phase 4: Production 

Once you have completed your pilot phase, you'll move into Phase 4: Production. This is when your Ed-Fi based state systems are fully operational, and your EPPs can start leveraging the analytics provided by the SEA or the EPP's local ODS for their own operational needs.

We understand that this document might make the task seem daunting, but it's designed to outline all the specific details necessary for implementing such an infrastructure transformation in your state. By diving into some of these considerations now, you can anticipate and ideally avoid major challenges.

In the Production phase, your Ed-Fi-based state systems become fully operational, marking a significant transition from the pilot's testing and adjustments to a live environment where real data is actively collected, managed, and utilized. The main focus during this phase is to establish a seamless flow of data across all involved entities, including the SEA, EPPs, districts, and vendors. The processes and frameworks developed in earlier phases are now put to the ultimate test as your stakeholders begin to use Ed-Fi in their daily operations. It's essential to have **clear communication channels** in place and ongoing support to address any issues that arise as you move from a controlled environment to full-scale implementation.

One of the critical aspects of Phase 4 is to ensure that your stakeholders are comfortable with managing the inevitable errors that will occur. The production phase is not the time to diagnose fundamental issues; instead, it's about refining and optimizing established workflows. As part of this, regular check-ins with vendors, districts, and EPPs should continue to ensure that data flows are functioning as expected and that any deviations are addressed quickly. It's crucial for the SEA to act as a central hub of information, ensuring that everyone involved is aligned and that expectations are managed effectively. This will maintain the trust built during the pilot phase and prevent stakeholders from feeling overwhelmed by the complexities of real-time data integration.

Additionally, Phase 4 should emphasize operational readiness, particularly in terms of ongoing training and support for end-users. Stakeholders, such as EPP staff, need to

have a solid understanding of how to interact with the system, troubleshoot common issues, and adapt to any changes that arise. Establishing clear support pathways, such as help desks, documentation, and regular training sessions, can help mitigate the steep learning curve that often accompanies new technology implementations. This phase is about reinforcing the processes established earlier and ensuring that users feel confident and capable in their roles.

Finally, continuous monitoring and feedback loops are vital to the success of Phase 4. Establish mechanisms for collecting feedback from end-users to identify areas where adjustments might be needed. This feedback will help inform ongoing improvements and future phases of the project. Regular performance assessments should also be conducted to ensure that the data integration processes are meeting the SEA's objectives and that the systems are functioning at an optimal level. These evaluations will provide valuable insights that can guide future enhancements and expansions, setting the foundation for long-term sustainability and growth in Phase 5 and beyond.

## Phase 5: Sustainability & Expansion 

In the Sustainability and Expansion phase, the goal is to ensure that your Ed-Fi implementation is not only stable but also continuously evolving to meet the changing needs of your stakeholders. As the SEA, you will need to focus on supporting continuous improvement, establishing robust feedback mechanisms, identifying and alleviating stress points in your data systems, and providing the necessary resources and training to help stakeholders thrive in the new environment. Below, we detail the essential steps to achieve sustainable and scalable Ed-Fi implementation:

As the SEA, it's crucial to determine the appropriate support for your EPPs and how to resource them effectively. Here's a step-by-step guide to diagnosing and providing these supports:

## Support Continuous Improvement Practices 

Sustainability requires a commitment to continuous improvement. Establishing a culture of iterative refinement will help ensure that your Ed-Fi implementation evolves in response to changing educational needs and technological advancements. Regularly review your data processes and system performance and use this information to guide improvements. Create dedicated roles for working groups or data governance teams focused on continuous improvement and empower these teams with the authority to make recommendations for iterative adjustments. This can include updating data models, refining error reconciliation processes, or enhancing user interfaces to make data entry and access more intuitive. By maintaining a focus on refinement, you ensure that your systems remain responsive, effective, and aligned with both state reporting requirements and stakeholder needs.

## Establish Opportunities for User Feedback 

Effective sustainability hinges on actively seeking and incorporating feedback from those who use the system daily. Establish formal feedback channels, such as surveys, user groups, or dedicated feedback sessions, where EPPs, districts, and other stakeholders can share their experiences, challenges, and suggestions. Consider implementing a feedback loop that not only collects user input but also communicates how that feedback has influenced changes or improvements. This transparency builds trust and demonstrates a commitment to addressing user needs. Additionally, creating a user advisory council can provide a structured way for key stakeholders to have a voice in the ongoing development of the system, fostering a sense of ownership and collaboration.

## Identify Current Stressors

Determine where the stress points are in your state reporting processes and system. For example, are EPPs burdened by generating CSV files, submitting them to the state, receiving corrections, and then resubmitting? What additional efficiencies could be created?

Identifying existing stress points in your reporting processes is essential for improving overall system efficiency and user satisfaction. Start by conducting a comprehensive assessment of your current workflows, focusing on areas where bottlenecks, redundancies, or repeated errors occur. Engage with stakeholders directly to understand their pain points, such as the burden of data re-entry, inconsistent validation rules, or delays in data reconciliation. Once identified, map these stressors against the potential efficiencies that Ed-Fi can provide, such as automated data validation, inter-agency data sharing to avoid duplicative reporting, real-time error notifications, or integrated data flows that reduce the need for manual file submissions. Prioritizing these pain points will help you direct your improvement efforts where they are most needed and will have the most significant impact.

## Access Changes with Ed-Fi Implementation

Understand how Ed-Fi implementation alters these stressors. For instance, Ed-Fi might shift CSV generation to an earlier stage within the source system itself. With the implementation of Ed-Fi, your existing processes will inevitably change, often in ways that can significantly reduce the workload for EPPs and districts. Assess these changes closely to ensure that the new workflows are more efficient and that they alleviate, rather than exacerbate, current stress points. For example, with Ed-Fi's capacity to handle data more dynamically, you may find that manual CSV generation and correction processes are minimized, allowing for quicker, more accurate submissions. It's important to communicate these benefits clearly to stakeholders so they understand the value of the new system and are prepared to adapt their workflows

accordingly. Additionally, use this assessment to identify any new stressors introduced by the change and address them proactively.

## Diagnose Stakeholder Implications 

Evaluate the impact of these changes on your stakeholders. Do EPP staff need new technical skills? Does the SEAs need to provide new resources to EPPs? Changes in your data systems will have varying impacts on different stakeholder groups. Conduct a detailed analysis to determine how new workflows will affect each group—particularly regarding the skills and resources required to manage these changes effectively. For instance, EPP staff may need training in new data management practices or technical tools, while the SEA might need to provide enhanced support structures, such as help desks or technical documentation, to facilitate a smooth transition. EPP users may need training not just on how to operate the tools, but on how to use them effectively for data inquiry and continuous improvement. The SEA should consider supporting workshops that go beyond functionality—focusing also on how to interpret data, ask the right questions, and apply insights to drive better outcomes.

Understanding these implications will help you anticipate challenges and deploy targeted support that addresses the specific needs of each group, ensuring that all stakeholders are equipped to succeed.

## Design & Budget for Supports 

Plan and allocate resources for support to help stakeholders adapt. Consider partnering with state agencies, such as an ESA or a university research center, or engaging a third party to mediate between EPP staff and state policy staff. Determine the costs associated with these collaborations.

To ensure that your system remains effective and sustainable, it is essential to design comprehensive support structures and allocate the necessary resources. This may involve investing in ongoing training programs for EPPs and districts, establishing technical support teams, or providing tools that facilitate smoother data integration and reporting. Collaborate with external partners, such as ESAs, universities, or third-party consultants, to provide specialized support and expertise that might be beyond your internal capacity. When budgeting for these supports, consider both the initial costs of implementation and the ongoing expenses required to maintain and improve the system over time. A well-resourced support plan will ensure that all stakeholders are capable of fully leveraging the benefits of Ed-Fi and that your implementation can continue to grow and adapt in the future.

## Expanding Insights Through Established Data Foundations



Building on initial data collections and established processes unlocks new opportunities to explore deeper questions about educator pathways and workforce dynamics. As data systems mature and sharing practices strengthen, SEAs can support a broader range of stakeholder (e.g., LEAs, ESAs, SEA Workforce Commissions, EPPs) needs—enabling insights into recruitment, retention, diversity, and alignment with local workforce demands. This evolution transforms foundational data into a strategic asset for continuous improvement across the educator ecosystem.

# Empower Data Use: Cases from the Field

## Texas

The Texas Education Agency (TEA) serves as a leading example of effective data integration within EPPs. In 2015, Texas made significant amendments to its state education code, laying the groundwork for collecting critical data on roles, responsibilities, and qualifications within an EPP. As mandated by Texas Education Code Section 21.0452, information about educator preparation programs must be publicly available to help individuals seeking teaching certification identify the program that best meets their needs. This process enables TEA to gather and disseminate valuable data on various EPPs, including performance indicators, annual reports, accreditation ratings, principal surveys to support effective candidate preparation and programs. To enhance transparency and facilitate data-driven decision-making, TEA also offers an interactive EPP map promoting transparency and accountability across the Texas educator preparation landscape.

As mentioned earlier, Ed-Fi work with TEA has been long-standing in the K-12 space both with school systems and at the state. TEA has been utilizing the Ed-Fi data standard for K-12 state reporting data and was actively participating in Ed-Fi's EPP workgroup, learning about the utility of the Educator Preparation Data Model (EPDM)l to standardize relevant preparation data.

TEA embarked on an initiative to support programmatic improvements by providing high-quality actionable data on EPP inputs, processes, and outcomes - with a keen focus on shifting to a more supportive partner with EPPs versus a relationship purely one of compliance. TEA aimed to build  infrastructure and user-facing dashboards for Texas' diverse range of +120 EPPs —varying in size, goals, and resources. TEA established clear objectives:

- **Driving Improvement and Innovation in Educator Preparation**: By providing high-quality, actionable data TEA will support EPPs in their data-use and continuous improvement of Texas' EPPs, from large institutions like Texas A&M to smaller entities like Region 19.
- **Efficiently process and disseminate new information**: By connecting additional TEA data sources to the data EPPs report, this project will increase the quantity of data available to EPPs.
- **Increase EPP data quality**. By applying business rules to the new flexible-but-well-defined data pipelines, this project will improve data quality as EPPs gain access to a more robust and real-time data validation process.
- **Engage EPPs in deeper data conversations**. This project has a training and support component designed to ensure EPPs shape and understand the information being provided.
- **Provide EPPs and the TEA with timely and accurate information for EPP monitoring and accountability**. This project will generate technology that supports data integration and updating, allowing access to a broader set of teacher production metrics.
- **Increase transparency and stakeholder access to information**. EPPs and the general public will be able to access dashboards that display data on teacher production.

Their technical strategy involved **creating a TEA ODS/API configured with Ed-Fi Data Standard and EPDM Community** to streamline data with other TEA Ed-Fi systems (e.g., K-12 data system) without overhauling existing systems. In April 2023, the Ed-Fi backed Insight to Impact dashboards ( I2I dashboards) successfully launched, providing EPPs with secure access to their unique data visualizations The following section will offer a brief overview of several key activities completed throughout the different phases of the TEA Ed-Fi EPDM implementation.

# Key Activities

The following key activities represent TEA's comprehensive approach to building a sustainable, user-centered data ecosystem for educator preparation in Texas. By aligning technical capabilities with user needs and providing continuous support and

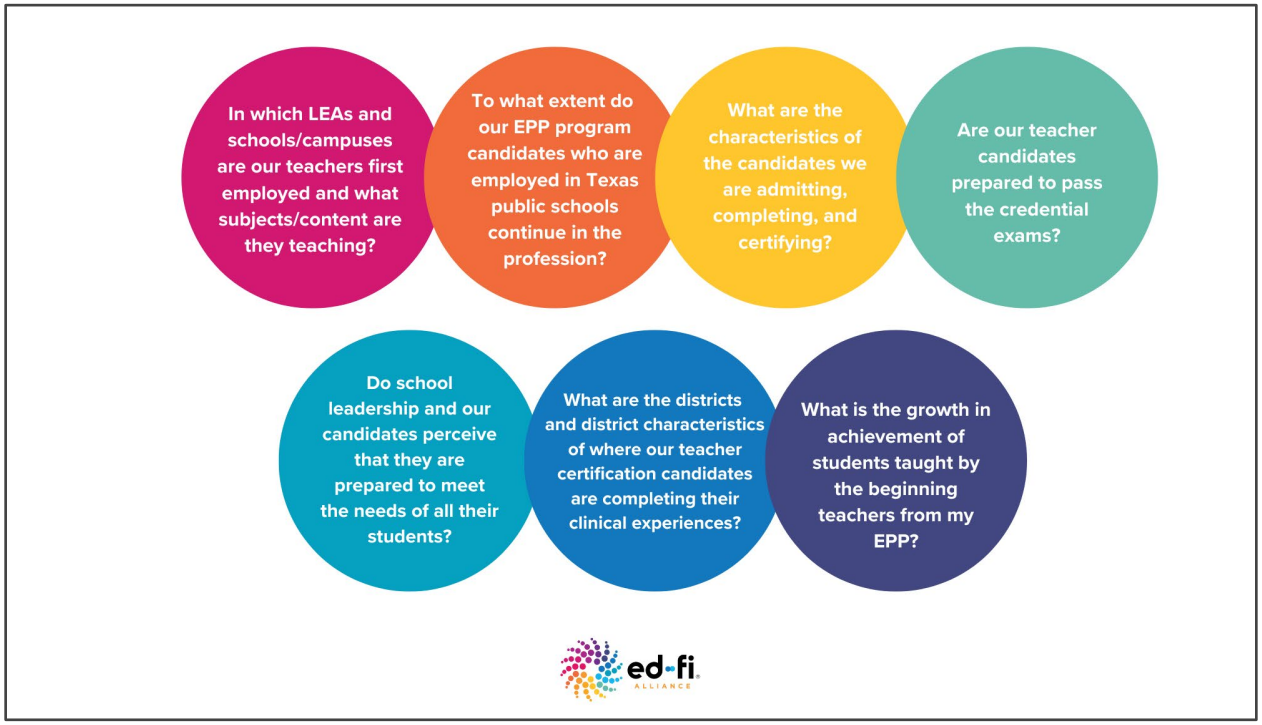
governance, TEA ensures that EPPs have the tools they need to leverage data for impactful decision-making and program enhancement.

## User-Driven Design - Phase 2 (Planning)

During the initial phases of the work, TEA focused on engaging users—primarily EPPs—to identify essential questions and data needs in user-centered design to identify pressing questions to support their continuous improvement efforts. This phase ensured that the data visualizations and tools developed were relevant and responsive to the real-world needs of those who will use them. By involving stakeholders in the design process, TEA could better understand the specific data points that matter most to users, such as program effectiveness, educator characteristics, employment and retention rates. This user-driven approach ensured that the foundational questions guiding the development were directly aligned with supporting the goals of improving educator preparation and outcomes in Texas.

By leveraging existing mandated data, TEA aimed to empower EPPs and other stakeholders to use this information to drive continuous improvement and align their practices with state goals.

From field input, essential questions emerged focused on critical aspects of educator preparation. For instance, key questions included:




By exploring these questions through data visualizations, EPPs can better understand the critical aspects of the educator pipeline,  and identify areas for targeted intervention, monitor data quality, and develop strategies to improve outcomes for candidates and the students they will eventually serve. TEA's approach underscores the importance of starting with the data that is already available and mandated, using it as a foundation to answer these essential questions and drive meaningful change.

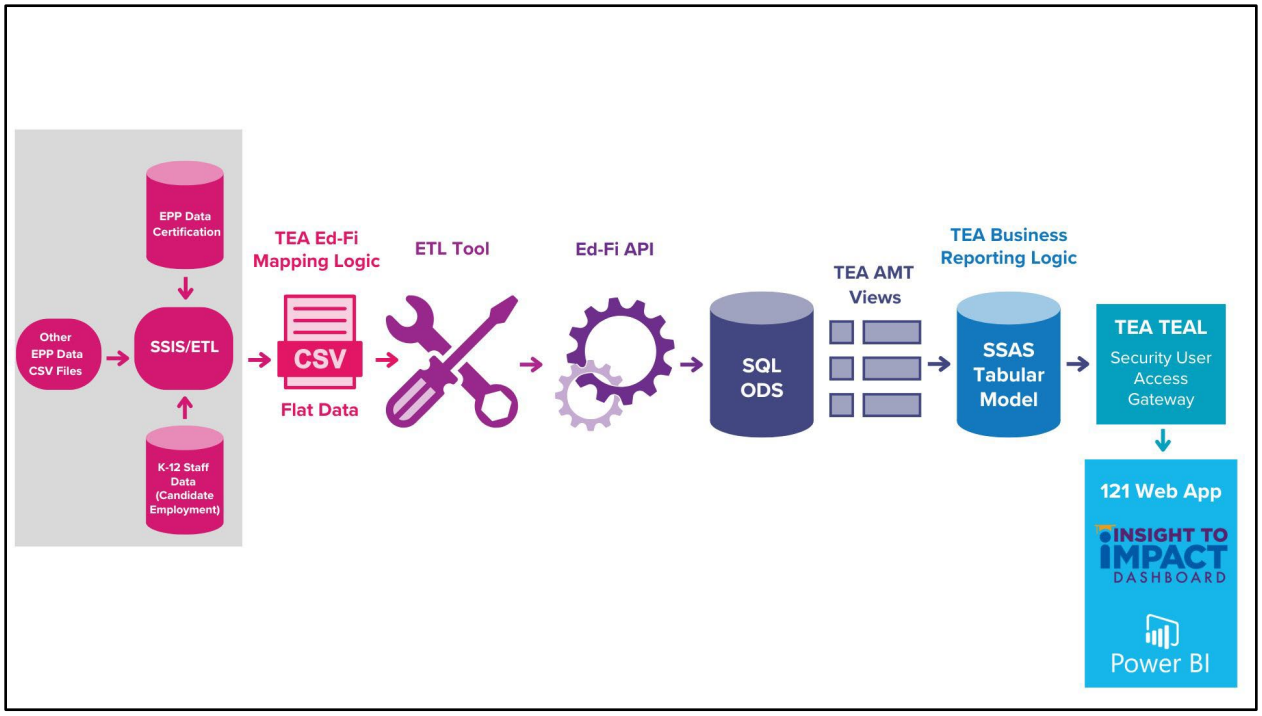
## Technology Development - Phase 2 & 3

Building on the insights gathered during the user-driven design phase, the technical development phase involves close collaboration with vendors and TEA's IT team to build and refine the Operational Data Store (ODS) and associated dashboards. This technical infrastructure allows for the efficient integration, processing, and visualization of key data elements. The development process is iterative, with frequent feedback loops to ensure that the dashboards and data tools meet user needs and are scalable for future enhancements. By working collaboratively with technical experts, TEA ensures the data systems are robust, user-friendly, aligned with the state's data governance standards, and sustainable.

TEA used open-source tools for importing, transforming, and loading data into the ODS. Partnerships with various stakeholders, including support from the Ed-Fi Alliance, were crucial in navigating technical challenges and ensuring the solution met diverse needs. This collaboration fostered a deep understanding of both technical and stakeholder perspectives.

*TEA EPP Project Architecture:*

Below describes at a high level the architecture designed to leverage the essential data sources to power the essential questions scoped for this project.




The data TEA uses comes from important data systems already established prior to the launch of this project. These systems collect K-12 related data reported by school systems in Texas by mandate annually; and from educator preparation providers by mandate annually. These systems are represented in pink (in the Gray shaded area) along with their associated way to ingest data from the educator preparation providers. The SSIS/ETL (Pink) box retrieves data from both systems and transforms it into CSVs for the ETL tool to ingest. A small number of flat files that contain data not in the other source systems is also integrated at this point. CSV is then sent to a folder where the ETL tool will load data into the API. The data in the Ed-Fi API is then retrieved through

a set of views custom to TEA. The resulting data represents the tabular model, a table-like structure that has the data in a format that is usable to the analytics (I2I Power-Bi dashboards).

The final key aspect of the process is a custom web-based application that contains the Power-Bi dashboards, which will then load and display the data. This custom application handles authentication to TEAL (TEA security platform). TEAL is effectively TEA's single sign-on system for authorized users and manages the level of access an authorized person is able to view (i.e., candidate level information)

It should be noted that this architecture leverages the concept and use of Ed-Fi's Analytics Middle Tier (AMT). Ed-Fi now recommends that enterprise/SEA level implementations extract the data from the ODS/API and transform and load into a data warehouse. The analytics would then pull data from the data warehouse.

## Support and Training - Phase 4

To ensure that EPPs and stakeholders can effectively utilize the data tools and dashboards, TEA established I2I Academy. This comprehensive online resource provides step-by-step resources, protocols, and training to empower users to engage deeply with the data. Through hands-on training and tailored support, EPP stakeholders learn how to navigate the dashboards, interpret data visualizations, and use the insights to inform decision-making and program improvement. The I2I Academy plays a crucial role in building data literacy and capacity across Texas, enabling EPPs to drive continuous improvement based on evidence and data.

The resources provided by TEA on their program provider resource page are carefully designed to guide EPPs through the essential process of engaging with key data elements. By focusing on data visualization, TEA emphasizes the importance of understanding and interpreting complex data sets to answer fundamental questions about program quality and educator readiness. The emphasis on leveraging existing mandated data serves to streamline the process, allowing programs to start with a strong data foundation and build upon it to address more specific, localized questions. This approach aligns with TEA's broader goals of enhancing transparency, fostering continuous improvement, and ultimately ensuring that all Texas educators are well-prepared to support student success.

# Refinement 

## Ongoing Governance - Phase 5

Recognizing that data needs and technological capabilities evolve over time, TEA has set up an ongoing Data Governance Group. This group is responsible for prioritizing updates, managing data quality, and ensuring the continuous improvement of the I2I platform and its associated tools. The governance process involves regular review and refinement of data policies, user feedback mechanisms, and strategic planning for future data initiatives.

Following the successful launch of the initial set of I2I dashboards, members of the governance group highlighted the need to expand the scope of data to include other educator certificates. Recognizing the importance of also supporting these providers, the project expanded to include principal preparation and other key professional roles. By maintaining a strong governance structure, TEA can ensure that the data tools remain relevant, reliable, and responsive to the evolving needs of EPPs and other stakeholders.

## Support Continuous Improvement Practices - Phase 5 (Sustainability and Expansion)

The Texas Education Agency TEA offers a range of resources designed to support continuous improvement and innovation within Educator Preparation Programs EPPs. These resources are crucial for helping EPPs align with state standards while also ensuring they can adapt to evolving educational demands. TEA provides comprehensive guidelines and tools that cover various aspects of EPP operations, including curriculum development, assessment strategies, and program evaluation. By leveraging these resources, EPPs can enhance their program quality, better prepare future educators, and meet the rigorous requirements set forth by the state. Moreover, TEA emphasizes the importance of data-driven decision-making within EPPs, offering resources that help programs effectively utilize data to inform their

practices. This aligns with the broader goals of model reconciliation by ensuring that the data collected at the state level is accurate, meaningful, and aligned with the state's educational objectives. The support provided by TEA also includes professional development opportunities for EPP faculty and administrators, ensuring they are equipped with the latest knowledge and skills needed to implement these improvements. By utilizing TEA's resources, EPPs can not only meet compliance requirements but also drive innovation and excellence in educator preparation across Texas.

# Next Steps 

### Additional Use Cases - Phase 5 (Sustainability and Expansion)

Ongoing efforts focus on developing observation dashboards for clinical teaching activities so that Texas EPPs who are interested have the ability to better utilize their observation data in a formative manner.

Additionally, leveraging the Ed-Fi mapped EPP data to enable school system centered human capital questions, with the aim to align with best practices. TEA is currently building the TalentED dashboards on the Texas Education Exchange (a statewide data solution and interoperable application marketplace serving all LEAs in Texas) to provide insights to school systems. This approach is an integrated data solution for school systems, integrating district-level data with EPP data.

# Lessons Learned 

The integration of Ed-Fi standards into TEA's work with EPP data has significantly reduced manual data matching and reporting efforts, providing deeper insights into candidate performance and employment outcomes, facilitating continuous improvement and strategic planning.

Despite challenges related to internal resource capacity, TEA's implementation of Ed-Fi standards for EPP data integration has proven to be **a successful model of collaboration, technical innovation, and user-centric design, driving improvements in educator preparation and district-level data utilization, ultimately supporting better outcomes for educators and students across Texas**.

Key takeaways for SEA embarking on this type of initiative:

- **User-driven Design and Decision-making**: Throughout the process - starting with identifying the need for the project, through use case and essential question development, to mockups and testing, EPP users were central to the work. This enabled the finished product to meet their needs and be situated in their context.
- **Dedicated IT Resources**: Early involvement of dedicated IT resources is crucial for successful implementation and sustainability of the infrastructure going forward. It allows for participation early in project decision making and effective knowledge transfer from vendors who are initially involved in development of the solution.
- **Consistent and Ongoing Collaboration**: Maintaining open communication with internal and key external stakeholders is crucial. This ensures that any changes in project plans—whether they involve scope adjustments, personnel shifts, or timeline modifications—are clearly communicated. This way, stakeholders remain aware of potential dependencies and activities, allowing for better planning and coordination.
- **Alignment with strategy and other initiatives**: The I2I dashboards are just one component of work being done by TEA to support EPPs. Alignment with the development of the Effective Preparation Framework and new supports and initiatives for high-quality preparation helped to ensure that I2I was supporting the larger strategic plan.
- **Philanthropic Partnership**: Philanthropic partnerships can significantly enhance project capabilities and reach.

The Texas Education Agency (TEA) has made significant strides in providing resources and tools that support data-driven decision-making for Educator Preparation Programs (EPPs). Through the Insight to Impact (I2I) initiative, TEA has created a platform where stakeholders can access a variety of data visualizations that answer essential questions about EPP performance and outcomes.

# Indiana 

Indiana continues to build on the efforts to modernize their data infrastructure and support use cases in K-12. Indiana is an example of a state that is in the initial stages of implementing Ed-Fi's EPDM. Indiana's effort, made possible by the State Longitudinal Data Systems (SLDS) grant components, is focused on filling the data gap with pre-service educator data as this data is limited and not timely. Indiana recognizes the challenges of meeting the demands for well-prepared and qualified candidates and included the following aims to work to tackle the challenge in Indiana through the scope of their SLDS grant. This integration will enable Indiana to run comprehensive reports on candidate outcomes and improve its understanding of the teacher pipeline. The following highlights key objectives to enable a clearer picture of the educator pipeline:

**Early Assignment of Educator ID:**

Indiana's EPP modernization also includes efforts to connect teacher candidates with employment opportunities early in their careers. A key milestone on Indiana's horizon is the creation of a state educator ID for all teacher candidates, which will enable the integration of candidate information from EPPs into the Ed-Fi EPDM. This need will be addressed through collaborative effort to mutually address this gap with EPPs. In turn, this integration will allow the state to connect its 52 EPPs, run comprehensive reports to track candidate outcomes, and address data gaps with a comprehensive view of the teacher pipeline.

**Leveraging Candidate Profiles:**

The state launched a statewide job board and applicant tracking system that allows all pre-service candidates to create profiles and apply for jobs at LEAs. The system has been widely adopted by schools across the state, consolidating applications and simplifying processes for both candidates and employers.

Additionally, the state of Indiana publishes weekly postings to their Job Bank site with a dedicated section on teacher shortages, including analytics on job openings. See

https://app.hirenimble.com/jobs/state/in and https://www.in.gov/doe/jobs/ for more information.

**IN DOE EPP Dashboard Development:**

Indiana is focused on the balancing act of both supply and demand for the teacher pipeline. Looking ahead, Indiana aims to leverage EPPs in the state to encourage candidates to establish profiles in job posting systems early in their educational journey. By introducing these opportunities during teacher training, Indiana is optimistic that this early engagement will play a key role in retaining future educators within the state.

The work is particularly important given Indiana's ongoing teacher retention challenges. By leveraging integrated data systems that leverage the Ed-Fi standard, Indiana aims to improve recruitment and retention, providing EPPs with better data to address both the supply and demand sides of the teacher workforce. This data-driven approach will ultimately help ensure that Indiana schools are staffed with well-prepared and qualified educators.

# Key Activities 

## Expanding The Infrastructure - Phase 1 Pre-Planning

Indiana will need to align key stakeholders on the necessary steps to enable the issuance of a common ID. Consideration will need to be made on how and when information is collected from a candidate for issuance of an ID. Planning will be needed to ensure that downstream systems/architecture are able to utilize the ID for the purposes of better understanding the pipeline and retention.

## User-Driven Design - Phase 2 Planning

A crucial next step for Indiana is to engage key stakeholders to form an advisory group that will guide the development of EPP dashboards. This advisory group will work on refining essential questions for EPPs, identifying critical data elements related to these

questions, addressing process and data gaps, ensuring data access, and providing feedback on dashboard design to meet key research priorities.

## Next Steps 

Indiana's pre- planning stage of the implementation of Ed-Fi standards for EPP data integration is a promising step toward improving the state's educational workforce. Indiana continues to seek buy-in by involving stakeholders in the innovation process, presenting ideas, seeking support from EPP associations, and collaborating with state data arms for better understanding of the teacher pipeline and local needs.

By honing in on data gaps on the supply side of the educator pipeline, Indiana aims to create a robust and effective teacher roadmap that supports educators and enhances educational outcomes across the state.

## Lessons Learned So Far 

Reflections on the process emphasize the importance of continuous improvement through what Indiana calls "relentless incrementalism." This approach acknowledges what works and builds upon it gradually, ensuring that the system evolves to meet the needs of educators and students effectively without causing too much disruptive change at once. This work often requires time and resources to thoughtfully assess the desired impact for end users and ensure the best possible support and outcomes.

# Additional Use Cases: Supporting Educator Preparation & Pipeline Insights

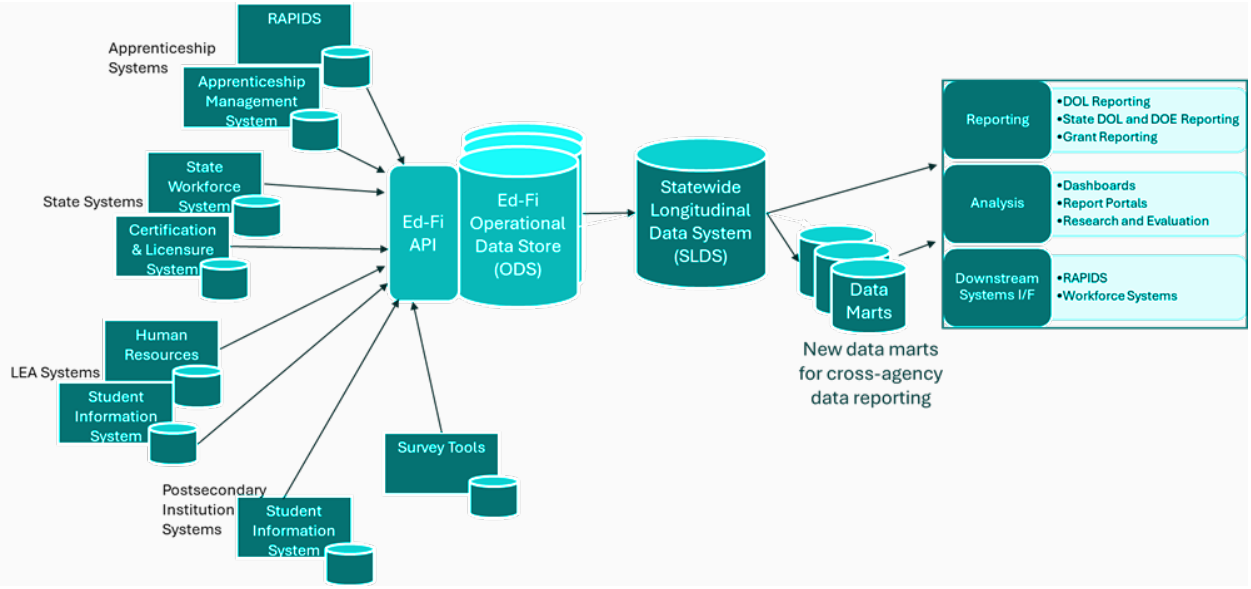
## Registered Teacher Apprenticeship

Registered teacher apprenticeship programs provide several benefits, including paid, on-the-job training, mentorship, reduced costs, and high-quality training. They help diversify the workforce, create clear career pathways, and address teacher shortages.

Registered Apprenticeships offer a cost-effective and scalable approach to strengthening the educator workforce, especially in high-need areas like STEM and special education. Over the past three years, the number of states adopting Teacher Apprenticeship Degree pathways has surged from just 2 to 48, along with the District of Columbia, the U.S. Virgin Islands, and Puerto Rico. These programs support the development of well-trained educators while making the path to teaching more inclusive and affordable.

The growth of educator RAPs has been enabled by leveraging existing organizations, existing relationships, and complementary programs with available funding. While the partnerships vary across states, they all share the characteristics of having complementary goals for addressing educator staffing challenges and having valuable resources contributing to those goals. While there is specific funding for RAPs from the DOL, sustaining and growing an educator apprentice pipeline requires more funding and resources. The partnership approach enables multiple funding sources to be leveraged in a strategy called braided funding.

Accurate data collection and standards-aligned systems ensure compliance with reporting requirements, create a national research data set, integrate labor and workforce data, and support better decision-making in apprenticeship program implementation.




**Ed-Fi Architecture Applied to Educator RAP Data Ecosystem**

Because educator RAPs, by design, involve various different partner organizations, data interoperability and the ability to merge and unify data from multiple sources is sure to be important. With this report, the Ed-Fi Alliance is performing research to expand the data standard into a new educator apprenticeship pathway domain, leveraging the existing Ed-Fi and EPDM models.

# Educator Workforce Use Case 

Research shows that teachers have a profound impact on student achievement, with their influence being two to three times greater than any other school factor on reading and math performance (Opper, 2019). As teacher vacancies are more prevalent in schools serving low-income and minority students (Carver-Thomas, 2022). Providing insights into these critical areas will enable LEAs to address disparities and allocate resources more effectively, ensuring a balanced distribution of experienced educators across schools and guide strategic staffing decisions, enhance professional support systems, and boost educator satisfaction and engagement (Goldhaber & Gratz, 2021). Regular data visualization will track the effectiveness of implemented strategies, allowing for continuous improvement and responsive adjustments. This sustained focus on data-driven decision-making will build a more resilient and effective educator workforce, ultimately enhancing the educational experience for all students.

This open-sourced Ed-Fi backed Educator Workforce MVP tool will empower key stakeholders within Education Service Agencies (ESAs) and Local Education Agencies (LEAs) with data to make informed decisions about the regional educator workforce, aiding in recruitment planning and educator retention. The MVP design was based on field identification of priority essential questions and feedback:

- How do educator (including newly hired and paraprofessionals) counts and characteristics vary across districts/campuses?
- Are there certain assignments of educators that are connected to higher retention?
- How do educator vacancies vary across the district/Education Service Agency (ESA)?

This Educator Workforce MVP tool development includes versions for ESA and LEA users, enabling pooled resources to better support implementation.

Learn more about this use case and related resources at this link.

## Insights for Educator Preparation Program About Their Candidates In-Service

### Employment Placement POC 1:

EPPs need to know where their teacher candidates are first employed and what subjects they are teaching. This information is crucial for:

- Reporting to EPP deans and institution presidents for program changes and improvements.
- Ensuring EPPs are preparing a diverse group of teachers to meet the needs of LEAs and schools.
- Meeting accountability and other data reporting requirements.

Key Objective: To ensure EPPs are meeting the needs of K-12 LEAs by preparing a diverse group of teachers ready to enhance student learning and support high-needs schools, EPPs must know where, what, and whom their former teacher candidates are teaching. Regular data review and analysis are conducted to improve program effectiveness, requiring evidence on:

- Candidate demographics.
- Status of content and pedagogy certification.
- Different preparation fields for candidates.
- Characteristics of the LEAs, schools, and subjects in which candidates teach.

### Employment and Retention POC 2:

Key Objective: To understand how long EPP program candidates employed in state public schools continue in the profession, EPPs need to track when, where, and what their former candidates began teaching and if they stayed in the profession. This data helps EPPs recruit, equip, and retain a diverse corps of teachers, supporting student learning needs and teacher retention.

EPPs require evidence such as candidate demographics, first employment data, certification type, grade band, status, and subjects taught. This information is essential for:

- Developing recruitment and preparation programs.
- Identifying LEAs and campuses with high retention rates to replicate successful practices.
- Crafting grant applications to strengthen retention and attrition efforts.
- Meeting accountability and data reporting requirements

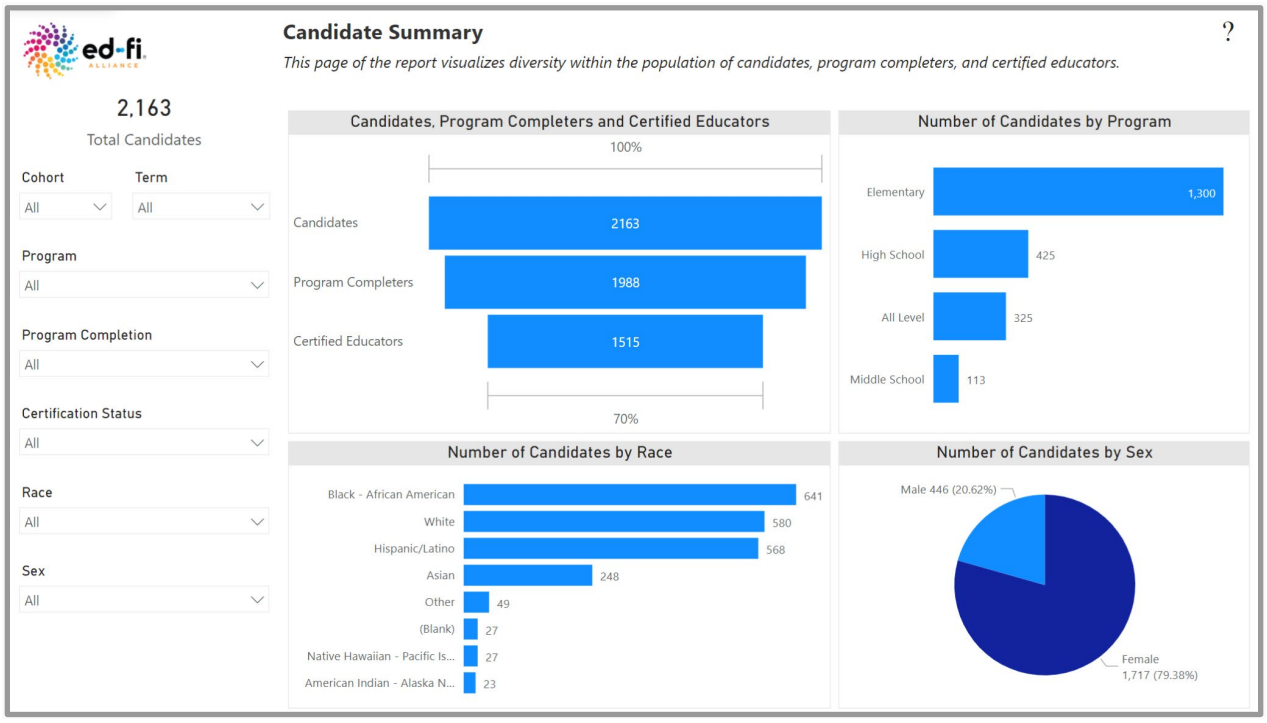
Community Resources available: HERE

## Ed-Fi Educator Pipeline Tools 

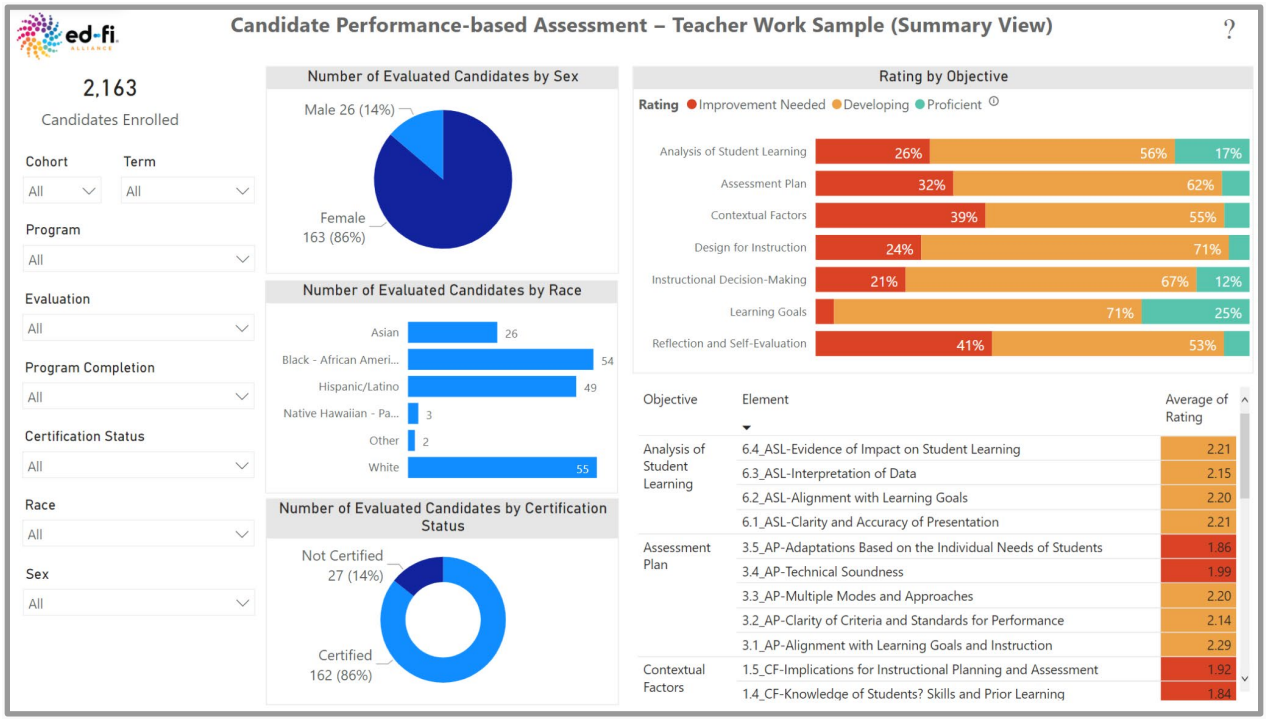
The Ed-Fi Educator Pipeline tools are designed to help someone new to Ed-Fi solve a high-priority problem and deliver an early win for their end users. Each Starter Kit is designed to address a priority use case in educator preparation, based on input from the Ed-Fi community. These use cases were identified as being widely relevant and applicable across a broad range of educator preparation programs.

Below are two examples of EPP Use Cases:

1. Program Diversity and Persistence: This Ed-Fi backed dashboard is designed to help you create an Ed-Fi backed dashboard to monitor candidate progress through your program, and disaggregate data by subgroups, so you can investigate the blockers that disproportionately affect candidates of color.




2. [Clinical Experience and Performance](): This Ed-Fi backed dashboard is designed to provide a lens into candidates' skills and competencies to help inform improvements in candidate support and programs.



# Related Resources 

To gain a comprehensive understanding of the Ed-Fi technology and its implementation phases, states are encouraged to consult the Ed-Fi Alliance's technology roadmap. This resource outlines detailed steps and considerations for states at different stages of their Ed-Fi implementation journey, providing valuable insights into developing a sustainable and impactful data infrastructure.

Other additional resources to explore:

**Ed-Fi Educator Preparation Data Model Resources**

- EPDM-Core
- EPDM Community

**Ed-Fi Pipeline Use Cases and Tools**

- Educator Workforce Use Case
- Apprenticeship Use Case
- Educator Preparation Program Tools:
    - Clinical Experience and Performance Dashboard
    - Program Diversity and Persistence Dashboard
    - EPP Candidate Employment, Placement, Retention

# Conclusion

Data integration is the key to providing enhanced opportunities for improving educator preparation and workforce development. By embracing the Ed-Fi standard and leveraging integrated data systems, states can empower EPPs to excel and ensure that every student has access to high-quality education.

By fostering collaboration and using the phased approaches outlined above, states can strategically build robust systems that enhance educator preparation and workforce development. The rationale remains clear: integrated data not only improves the quality of educator preparation, but also drives more informed policy decisions, better resource allocation, and stronger alignment between educator supply and demand. States that embrace the Ed-Fi standard join a community of peers who have implemented similar systems, demonstrating its effectiveness in addressing complex educational challenges. Ultimately, this approach empowers states to transform their data infrastructure, ensuring every student has access to well-prepared educators and high quality education, and that educators have a clear pathway toward their professional development.

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