Quarterly Performance Review of the Arizona Education Learning and Accountability System: AELAS

Submitted to the Arizona Department of Education by WestEd and CELT

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INTRODUCTION

This report documents a quarterly performance review of the Arizona Education Learning and Accountability System (AELAS) by an independent evaluator as required by *Arizona Revised Statutes* (A.R.S.) 15-249 that was conducted on March 20 and 21, 2018. WestEd, the prime contractor, and the Center for Educational Leadership and Technology (CELT), the subcontractor, were hired by the Arizona Department of Education (ADE) to serve as that independent evaluator. This quarterly monitoring report is a follow-up to the initial performance review conducted in 2013, with a report submitted on September 9, 2013. This report follows and builds on all previous quarterly monitoring reports, updating commendations and recommendations.

This report is different in structure and content from previous reports, as it is the last under the WestEd/CELT current contract. Because of this, the project team sought advice from ADE leadership to determine what kind of reporting would be most informative for them in terms of the constructive feedback needed to move forward. Thus, the report is based on a retrospective of the development activities observed across the past monitoring visits and a forward-thinking set of near-term recommendations for development and maintenance. The report takes a high-level view of the most salient issues ADE IT has faced in the development process, as well as addressing an assessment of overall progress, current findings, and recommendations for future activity. The report is intended to serve as both a retrospective and a roadmap for future maintenance and development. It is written to inform and guide ADE IT, ADE leadership, policymakers, and other interested stakeholder groups. As such, the key sections include the following:

- AELAS Alignment to ARS 15-249
- AELAS Vision, Strategy and Long-Term Plan
- Stakeholder (SEA and LEA) Buy-in and Support
- Data Governance
- Instructional Impact vs. Accountability and the Role of the SEA to Provide Such Data
- Data Literacy and Human Capacity
- Opt-in Strategy
- IT Capability/Maturity and Staffing
- Funding and Sustainability

These sections will highlight that many of the topics we have noted throughout the almost 5 years of monitoring AELAS have been addressed sufficiently. Other topics, in particular, the financial stability and data governance, continue to be of concern. Some topics, such as the e-learning task force and Data Governance Committee, may require cross-agency collaborations. Other topics, such as data governance within ADE, work with the business partners, and IT project funding, require within-agency strategic planning. On balance, most of the issues that were within the control of ADE IT were addressed.

AELAS Alignment to ARS 15-249

The first report issued in 2013 addressed the alignment of AELAS to ARS 15-249. This section provides a retrospective view of the degree to which this statute has been met by AELAS.
In 2010, the Arizona Legislature approved HB 2733 with bipartisan support, now classified as ARS 15-249 and ARS 15-249.01, which led to the creation of the AELAS and a Data Governance Commission. ARS 15-249 required the Data Governance Commission to:

> develop and implement the education learning and accountability system to collect, compile, maintain and report student level data for students attending public, educational institutions that provide instruction to pupils in preschool programs, kindergarten programs, grade one through twelve and postsecondary educational programs in [Arizona].[1]

The Statute required the system to accomplish three main goals:

1. Maintain longitudinal, student level data, including student demographic, grade level, assessment, teacher assignment and other data required to meet state and federal reporting requirements.
2. Incorporate the student accountability information system prescribed in chapter 9, article 8 of [the] title.
3. Be accessible through commonly used internet web browsers to carry out the data collection, compilation and reporting duties prescribed in this title.

Although ARS 15-249 offered general guidance and requirements for the creation of a learning and accountability system, it left most of the details up to the system's architects.

Degree to which the AELAS goals were met

Goal 1, longitudinal data system required to meet state and federal reporting has been largely, but not fully met:

- ADE has implemented a standards-based, best practice approach to collecting LEA student and teacher data and retaining it in operational and longitudinal data stores. The system design is among the best across the other state education data systems that are in operation currently.
- The quality and timeliness of the data is such that it enables the state to make strategic shifts that were not possible under the old system. An example of such a shift is the recent move to current year funding. The quality of the data also ensures much more accurately calculated funding allocations for the LEAs. It has been estimated that these new capabilities have resulted in savings to the state amounting to $40 million.
- While the system is orders of magnitude better than the previous system, it does not fully maintain all data required for federal and state reporting. There are still areas of

federal funding that remain outside the data structures and controlled processes of AELAS. Funding to extend AELAS beyond its state reporting requirements has benefits to data/payment accuracy outside of state purview

Goal 2, incorporate the student accountability information system (SAIS), is well underway but has not been fully met:

- The student demographic and attendance data required by SAIS are now being stored in AzEDS, the AELAS data store. Many of the legacy systems are being driven from data marts derived from AzEDS, but remain to be re-written.
- APOR/CHAR is still in the requirements and design phase, and legislative approval for funding for the development of the required replacement code is in question. A phased approach over three years is planned for the full replacement of APOR/CHAR, assuming funding is approved.

Goal 3, be accessible through a web browser, has been met.

Current Findings and Recommendations:

Finding:

- The legislature does not seem to grasp the serious risk associated with the continued operation of a legacy, unsupported architecture such as is represented by APOR/CHAR.

Recommendations:

- Seek opportunities to explain to key legislators the risks and gravity of continuing to rely on unsupported systems for the funding allocations for LEAs.
- Secure funding for the re-write of APOR/CHAR and complete this conversion of the SAIS legacy applications.
- Establish a stakeholder advisory committee for the re-write of APOR/CHAR to include representatives from the districts, legislature and ADE. Hold regularly scheduled meetings of this committee to seek advice and feedback.

Vision, Strategy and Long-Term Plan

ADE's vision for AELAS, outlined in the Department's business case for AELAS, was wide-ranging and covered areas including:

- Meeting federal and state reporting objectives;
- Providing teachers timely access to information;
- Adopting and maintaining an educator model framework for evaluation; and
- Saving local education agencies (LEAs) money both by reducing the cost of their current data systems and saving time and effort needed to report data to the state.

The specific strategies and platforms employed for these areas included:

1. An opt-in model, whereby LEAs would be able to decide to move to a state-supported system for such things as student information system (SIS), learning management system, assessment system, etc.

2. ADE adoption of a nationally recognized education data standard (Common Education Data Standard or CEDS) as manifested in the openly available Michael & Susan Dell Foundation's Ed-Fi data model.
3. ADE adoption of a nationally recognized education system interoperability standard that enabled real-time data exchange between the LEA SIS systems and the ADE. This standard is known as the Ed-Fi REST API.
4. Cloud-based computing to ensure availability, scalability, and sustainability.
5. Browser-based dashboards for teachers and administrators with locally relevant and timely data.
6. A unified rules engine to centralize all business rules and prevent them from being embedded in the actual code.
7. A unified entity management platform that enables the creation and management of the various entities that program areas manage across the state.
8. A unified document management system for unstructured documents, forms, reports, letters, etc.
9. An identity management system for all user access to systems.

The vision and strategies for the AELAS system went beyond what a strict interpretation of ARS 15-249 required, especially with regard to the opt-in component. They did, however, support the broader goals of the ADE strategic plan that was in play when AELAS strategy was formed. The strategies required support on a very broad front, across virtually all ADE departments and affected schools and districts in multiple areas. The strategies enjoyed mixed results:

1. While the opt-in model was successfully implemented for an SIS system, the level of adoption, ongoing support requirements and fiscal restrictions conspired to diminish the long-term viability of this strategy. The SIS opt-in strategy was dropped in 2018. Other LEA systems were procured and tested with MCESA but these did not get to a broader adoption among LEAs.
2. The use of the Ed-Fi data model has proven successful to date, and the ADE IT team is recognized nationally as having implemented a best-practice approach to data management. More and more ADE systems are being driven from the AzEDS data store. These include: ADE Migrant, AZELLA, ADE Accountability, AzReportcard, AzDASH and CTE. This helps to improve data quality and consistency.
3. Real-time interoperability using REST APIs has proven to be a very good approach for moving data from the LEAs to the state, saving districts time and money and providing the state with much more accurate and timely data. This opens up other opportunities for the use of such data that have yet to be realized.
4. Cloud computing has provided a stable and scalable platform for AELAS and is being adopted by other Arizona state agencies as a best practice.
5. Teacher and administrator dashboards, while successfully implemented in AzDASH, have not enjoyed wide adoption. A major contributor to this is that the AzEDS data are largely summative assessments, which are only relevant for a short period of time at the beginning of the school year. More formative or benchmark data, which is of real interest to teachers and administrators year-round, has not yet been loaded into AzEDS for viewing. This is a future potential that will perhaps drive a broader adoption of AzDASH.
6. A unified rules engine has been adopted and successfully deployed with AELAS.

7. It is very critical for the agency to have a unified Entity Management System that maintains the accuracy of this data for use by all program areas in serving the education community. The previous implementation of the system did not accomplish the need of having the entity (Schools, Districts, etc.) to manage their own entity data. This resulted in creating administrative work both at the entity as well as the agency. Hence, a new approach that incorporates business rules, workflows and the ability for entities to request changes that include contact information as well has been employed. This system is in the process of development.
8. A unified document management system has been deployed for the ADE.
9. An identity management system has been developed and deployed for ADE.

Current Findings and Recommendations:

Findings:

- ADE IT has begun to work with assessment vendors (i.e., ACT) to move data into AzEDS. This work has just begun and is labor intensive since very few assessment vendors have become Ed-Fi API certified. This work will take on additional significance when the menu of state assessments goes into operation. AzEDS will provide a very valuable platform for collecting and storing these assessment data for analysis and viewing by districts and schools.
- ADE IT has found a data owner for the entity data elements and a sponsor for the entity management system.

Recommendations:

- Coordinate with Ed-Fi to bring pressure to bear on the state's assessment vendors to develop certified APIs for moving assessment data into AzEDS.
- Continue to develop the entity system.

Stakeholder (SEA and LEA) Buy-in and Support

Data system development and sustainability require input, cooperation, and support from stakeholders who will be the end users of the technology. Stakeholders reflect the data needs and use patterns that make the data actionable for decision making. It is therefore important to work with the various stakeholder groups to reflect their needs as systems are being designed and developed.

Overarching comments and findings:

- A data system is only as good as its ability to provide the right data in an accessible, timely, and useable manner to the stakeholders at the SEA and LEA.
- A fundamental principle is that data serve the needs of the stakeholders. Their input is essential. Different data serve different stakeholders.
- Collaboration between ADE IT and its stakeholders is an essential component to successful data use. The buy-in and support from both LEAs and the SEA are critical.
- Communication with various stakeholder groups has improved over time. Through recommendations, the communication has transformed from having its focus on technology to data use. Part of this effort was to have communication done by someone

non-technical who can be conversant in more education-oriented issues, rather than technology.

- ADE IT has made many attempts across the development years to reach out to LEAs to seek their input about their needs to inform design features. This has been an iterative and important process of receiving feedback and incorporating it into future design. This kind of feedback should be a continuing and iterative process, especially as ADE considers how to incorporate and provide more locally relevant data that can inform the instructional process.
- ADE IT has benefited from high-level support from ADE leadership which has crossed administrations. This sustained support has been immensely beneficial and necessary.
- ADE IT has been sporadically working with various programs and departments throughout ADE over the course of the development project. There has been substantial success in enlisting the cooperation from specific programs. However, there also have been some less successful efforts.
- Stakeholder buy-in and support for AELAS took a negative hit when the improved AzEDS data collection capabilities enabled the switch to current-year funding. This was perceived by many districts as a negative change that cost them money. The districts viewed this as ADE IT's doing as the enabler of this functionality.

Current Findings and Recommendations:

- ADE IT, with the support of leadership, must continue to develop and establish sustained relationships and cooperative collaborations with all relevant programs and departments across ADE. Such relationships must be based on a shared understanding of needs and a common vision of the importance of the programmatic data. Appointing data stewards from each program as part of the data governance structure would be helpful in this effort.

Data Governance

Data governance has been a focus of the quarterly monitoring process since its inception.

Overarching comments and findings:

- Data governance is one of the more critical components to effective data use within an agency like ADE.
- Data governance requires support and collaboration from many departments and programs throughout ADE.
- Data governance requires a structure in place where programs and IT work together to understand departmental data needs and those data needs are then translated into the organization of the IT structure.
- Data are often treated like one more IT tool, but they are the foundation for funding, staffing, policies and program decisions. Good data governance practices can help ADE streamline and organize its data infrastructure, while helping administrators and staff get the information they need to address educational issues.

- ADE has had a continuing issue with data governance throughout the WestEd/CELT monitoring process. Even before the monitoring began, ADE brought in a data governance expert to provide guidance to the organization. Two major recommendations were suggested: ADE must create an effective data governance structure and there must be a comprehensive data dictionary provide transparency about the data being collected.
- ADE began to make some progress around data governance by appointing someone to lead this work. There was an initial governance structure created with designated data stewards. Unfortunately, this work was not successful. The structure was far too complex. The director polarized the programs and was unable to gain their cooperation. The entire effort elicited negativism from the programs, an enduring issue.
- For over a year there has been limited effort to address the data governance issue. IT has tried to make small inroads in key areas like the entity ownership by the CFO. However, no one has taken ownership of the overall governance task. This is something that ADE must address.

Current Findings and Recommendations:

- ADE IT must try to put in place an effective data governance structure and process that includes data stewards who can represent ADE's programs and the data system's business partners so that there is an effective communication process and feedback loop that provides IT information about stakeholders' needs and the stakeholders, in turn, understand what IT is doing to address those needs.

Instructional Impact vs. Accountability and the Role of the SEA to Provide Such Data

There are many kinds of data that reside in data systems, each of which have different purposes and are intended for different kinds of decision making. It is important to recognize the differences because it is reflected in data use and data interpretation. One of the objectives for AzEDS has been to get real-time data into the hands of educators, including data to inform instruction. Yet, such data may differ from that which reside in a state data system.

Overarching comments and findings:

- There is an important distinction between data for accountability and data for continuous improvement, including instructional improvement. Both kinds of data are needed, but they serve very different purposes. It is essential to recognize the differences in the data, the purposes for which they are collected, and the kinds of uses and interpretations that can ensue from examining the data.
- Much of the data that reside in the state system fall into the category of accountability data.
- State testing data also can be considered accountability data, although there are some uses for such data for school and curricular planning. Data from state tests do not provide the kind of granularity and specificity needed by teachers to inform day to day or moment to moment instructional decision making.

- The kinds of data teachers need to make instructional decisions do not typically reside on state data systems. They may or may not reside even on local data systems. However, district data systems are more likely to be an appropriate repository of such data.
- ADE's AzDASH provides some level of real-time data (such as attendance) in a manner that is understandable and easily accessible. The development of the dashboards is an essential first step in providing readily useable data to state educators.
- Local educators are only likely to access data from AzDASH (than doing the analytics themselves from a data warehouses) because of the availability and ease of access.

Current Findings and Recommendations

Findings:

- The more ADE can do to develop and deliver displays in AzDASH that provide data that are timely and informative, the more data will resonate with educators across the state. The major takeaway message here is that data systems must provide data to educators that have timely utility.

Recommendation:

- AzEDS has the potential to provide a platform for district-level assessment data that are more timely and appropriate for guiding instruction. Continue efforts to place more local assessment data into AzEDS and presented through AzDASH.

Data Literacy and Human Capacity

The topic of data literacy and building human capacity was not part of the original scope of monitoring but it emerged as an essential, parallel component. It is important to recognize that the technology being built is only as good the people who will use it. ADE IT can build the best technology to support data use in the SEA and LEAs, but if educators and staff do not know how to use it properly and effectively, then it is an opportunity lost.

Overarching comments:

- Building the technological infrastructure is essential, but SEA and LEA staff need to know how to use data to inform their specific job functions.
- Data literacy is not just about using the technology; rather, it is about how to actually use data to inform practice.
- ADE has been at the forefront of communicating to teacher preparation programs the importance of developing data literate educators. ADE created a rubric against which the programs must develop courses and curricula to address data literacy in their programs. This is cutting edge.

Current Findings and Recommendations:

- It is essential for ADE to do more than just train LEA staff and educators to use the technology tools; there is a need to help them understand the data being provided and how those data can be used.
- ADE IT must assist its own staff in understanding the power of the technology, the data that reside in the systems, and how those data can inform programs across the agency.

This is very much linked to the data governance process and the need for buy-in and support from the programs. Ownership and need can lead to more effective data use.

- ADE is at the cutting edge of recognizing the importance of developing future educators to be effective data users, but it also must concentrate on helping existing SEA and LEA staff to also become good consumers of data and information.

Opt-in Strategy

The opt-in strategy as laid out in the AELAS Business Case was a broad approach to provide state contracts and centralized support for nine different software systems and 619 participating LEAs. The savings with these assumptions was estimated to be $87 million over 5 years. The types of systems that districts were interested in included the following:

1. Student Information System (SIS)
2. IEP Management
3. Learning Management
4. Assessments
5. Professional Development
6. Content Management
7. Credit Recovery and Accrual
8. Observation and Evaluation Tool
9. High-Stakes Test Analysis

This strategy went beyond the requirements of ARS 15-249. However, it is a strategy that has been employed in many states to varying degrees (i.e. NC, SC, DE, KY to name a few) with significant savings. It was not a bad strategy to pursue for the ADE for the LEAs benefit.

The initial implementation of such systems for statewide use is a heavy lift for any state agency. There are numerous technical, political and end-user capability issues that present risks to such projects. Additionally, few people at the state level truly understand the complexities and nuances of how a system such as an SIS is used in LEAs and schools for things like enrollment or scheduling. As a consequence, state education agencies struggle during initial system implementation to offer meaningful and/or timely assistance to LEA questions; help desk tickets then get backlogged, and LEA customer satisfaction suffers. This in turn creates political issues and subsequently funding problems.

These issues and risks were all present in Arizona for the SIS opt-in project. They conspired to eventually stop all efforts under the opt-in strategy. The shut-down and transition off of the SIS opt-in strategy was well planned and executed. The strategy itself was not flawed, but ADE did underestimate the risks of such projects. Our report from 2013 recommended some remedies for these risks:

- Establish non-IT process owners who can understand the SIS processes and tools and support the districts effectively.
- Be more thorough in the selection of the focus groups to ensure that the range of subject matter experts is sufficient to represent all processes being automated by the opt-in components, such as the SIS. ADE should be included as one of the process owners, as they are appointed.

- Identify sponsors in ADE for the components of AELAS. Use them to champion their systems, drive consistency of practice, develop data standards, and provide ongoing training and support. For the SIS, since it represents multiple functions such as grade book, scheduling and attendance, it may be practical to have multiple sponsors or process owners that coincide with the corresponding data owners

In the final year of the opt-in strategy for the SIS the ADE did establish a well-run customer support process, and LEA help desk ticket backlogs and customer satisfaction improved markedly. The political damage accrued however was already fatal to the strategy.

IT Capability/Maturity and Staffing

The AELAS Business Case stated that the capability/maturity of the key IT processes for the ADE were at a maturity level of 1, meaning that the processes were not well defined and were not executed with consistency. This low capability was an issue that had to be corrected in order for such a complicated project as AELAS to be successful. The ADE IT leadership set out to significantly improve these capabilities as the AELAS project progressed. These efforts enjoyed tremendous success and as a consequence the AELAS implementation achieved most of its major objectives. Also, the ADE now has a very capable IT department. Significant improvements have been made across the board in such capabilities as:

- Develop and Manage an Application Architecture
- Develop and Manage a Data Architecture
- Design and Build Network & Data Centers
- Operate Network & Data Centers
- Develop Applications
- Support Applications
- Manage Product Line
- Manage Help Desk (Customer Support)
- Ensure Quality
- Provide Security/Protection
- Manage Projects

Funding and Sustainability

The issues of funding and the sustainability of the data system project has been documented in every report the WestEd/CELT team has produced. Beginning with the 2013 report produced for the Arizona Department of Accountability, the team noted:

> The approved budget for 2014 for IT ($7 million) does not provide the money to sustain a quality IT operation, let alone the funding to improve the data and application toolset offered to Arizona schools. The budget decision was unclear as to what exactly is approved for ADE to continue to develop.

In all subsequent quarterly monitoring reports delivered to ADE, the issue of the importance of sustained funding has been noted. In the past two years, the reports have targeted two kinds of funding – development and maintenance. Both are essential to the data system work.

Current Findings and Recommendations:

Findings:

- ADE IT has continued to have to fight for and rationalize the importance of funding for development. As all stakeholders have acknowledged, the legacy system, SAIS, had to be replaced by newer and more sustainable technologies.
- APOR and CHAR will suffer the same fate as SAIS unless funds are allocated for their replacement.
- The transition from SAIS has increased data accuracy and been a cost savings to ADE.
- Other legacy systems continue to plague ADE IT, in particular APOR and CHAR, the financial systems. These systems can no longer be maintained and eventually will fail, with catastrophic consequences if they are not replaced.
- Development funds must be allocated to the replacement of APOR and CHAR.
- ADE IT has also continued to fight for and rationalize the importance of funding for system maintenance. The data systems cannot be maintained on a minimalistic budget. There is an ongoing need to sustain the systems well beyond when development work is completed.
- If funding to complete the development process and for ongoing maintenance is not provided, ADE IT is at risk of having to revert back to old and unreliable systems, and perhaps even manual transactions that will create chaos, inefficiencies, and errors in all data processing efforts.
- The non-recurring funds process places serious threat to the current and future functioning of the data system.
- Legislators perceive that ADE IT has unrealistic expectations for funding and that the project has taken too long. In fact, the annual requests have been realistic and have been funded at lower amounts thereby causing modifications in project work and extended timelines.
- Funding for both development and maintenance is essential to the future stability and function of the system.

Recommendations:

- It is absolutely essential for development funds to be committed to complete AzEDs and to replace APOR and CHAR.
- It is essential for recurring funds to be appropriated sufficiently to provide for sustained maintenance of the data system once the development has been completed.

Conclusion

Over the course of the five years that the WestEd/CELT team has been monitoring the development and implementation of AELAS, we have witnessed remarkable progress, founded on a visionary perspective of how educators can use data. This vision is thoroughly consistent with ARS 15-249 and the original business case for the data system. The development process has been sustained across changes in ADE leadership and ADE IT leadership, yet the vision remains strong. Of course, there have been projects and areas where improvement and modifications have been needed, and where challenges continue to exist. Those areas have been noted in prior quarterly monitoring reports and have served as potential guidelines for improvement. Yet overall, ADE IT has been able to replace an archaic legacy system (SAIS) with cutting-edge technology that puts ADE in good standing for the future. That said, and well documented in the quarterly monitoring reports, ADE, with the support of the Legislature, must have a sustainability plan in place to replace the remaining legacy systems (APOR and CHAR) and provide continue maintenance. The reports have noted the dire consequences if these legacy systems were to fail, and eventually they will. The State of Arizona has made a large investment in AELAS and savings have already resulted from the system's implementation. Without sufficient funding going forward, that entire investment becomes at risk. Development and maintenance is essential going forward to not endanger the future of this data system.