

NEW MEXICO ECHO FOR EDUCATION: EARLY WARNING SYSTEMS

2018 – 2019 Evaluation



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Talent Development Secondary

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THE ECHO MODEL

The New Mexico Early Warning Systems ECHO for Education is a program developed in partnership between the New Mexico PED, Talent Development Secondary, and Johns Hopkins University to help address New Mexico's low high school graduation rates. While New Mexico's high school graduation rate has increased substantially, from 60.3% in 2008 to 73.9% in 2018, it still lags far behind the national average of 85.3% and lowest among the 50 states. Underlying this larger problem are the particular challenges that come with New Mexico's geographically dispersed and largely rural populations, such as limited access for teachers to attend professional learning opportunities, limited opportunities to collaborate with peers, and the slower diffusion of the latest tools and resources to support student outcomes.

The New Mexico ECHO for Education is designed to address all of these challenges by providing the opportunity for teachers, wherever they are in New Mexico, to receive professional development from experts, to collaborate with peers on findings solutions to problems and benefiting from each other's experiences, and to access and share best practices and resources within a professional network.

The ECHO for Education model is based on the UNM Health Sciences Center's Project ECHO (Extension for Community Health Outcomes), which has proven to be an effective model for extending medical expertise located at a central hub to practitioners in distant communities. Based on the 'hub and spoke' model, ECHO connects small groups of 2-3 education practitioners from distant and spread out schools with a central research team, in this case via the ZOOM software for communication and tele-conferencing. During regular on-line meetings, the central hub team then brings spoke practitioners together with subject matter experts so that knowledge and expertise can be shared the teacher teams. Each teacher team can then take the knowledge and best practices back to their local schools and share them with their own learning communities of teachers and students.

Each ECHO session is divided into two roughly equal parts. The first part includes Professional Development workshops that are focused on subjects strongly related to the project's goals (in this case keeping students on-track to high school graduation) and other topics desired by the members of the ECHO program's network of participants. It is through these didactic sessions that subject matter experts can disseminate the latest research, knowledge, best-practices, and resources with participants. The second part of each ECHO session is Case Based Learning, whereby each school/team are provided with the opportunity to present a problem they are currently struggling with in their school community, with the rest of the ECHO network. By discussing these challenges with their peers at other schools, teachers in the smallest schools can connect to others and are able to benefit and learn from each other's ideas and experiences. Following each ECHO session, the resources, tools, materials, information, and ideas, that were shared (either by the subject matter experts or by other teaching teams) are then made available to all the network's participants. In this way, participants can increase their general knowledge on the related topics, while also addressing the specific and practical problems with which they are struggling at their schools as they try to support student learning.

Using this model, the Early Warning System ECHO for Education program then has two explicit goals:

1. To directly increase teachers' knowledge and implementation of innovative practices, effective strategies, and tools, around Early Warning Systems, through online professional development.
2. To indirectly increase New Mexico's graduation rates by increasing the number of innovative and effective EWS activities used in the general education classrooms and populations, thereby supporting students to overcome the barriers that effect their path toward graduation.

2018-19 PROGRAM IMPLEMENTATION

A total of 13 schools participated in the EWS ECHO program during the 2018-19 school year, registering a total of 30 staff members. Team sizes ranged from a low of 1 staff member at two schools, to a high of 7 staff at one school (with an average of 2-3 staff members per school). Four additional participants represented two different school districts, distributing their work time through all schools in those districts. As part of the EWS ECHO program, participants were asked to attend at least 14 of the 16 bi-weekly

ECHO sessions offered over the school-year, complete a brief evaluation survey before and after participating in the program, and present one case study of a challenging dilemma facing their school community, during one of the ECHO sessions. Topics for the 16 ECHO sessions varied, including:

EWS ECHO SESSION TOPICS	
An Introduction to Early Warning Systems	Facilitation Skills/Coaching
Teacher Teaming	Chronic Absenteeism Interventions
Resource Mapping/PRIM	Preparing to Close the Year Strong
Data Analysis/Intervention Review	Student Conferencing
Addressing Homelessness	Root Causes of EWI
Visual Displays	Restorative Practices Using Circles
Early Warning Intervention Meetings	Utilizing Success Mentoring within an EWS
Student Voice	Brain Targeted Teaching

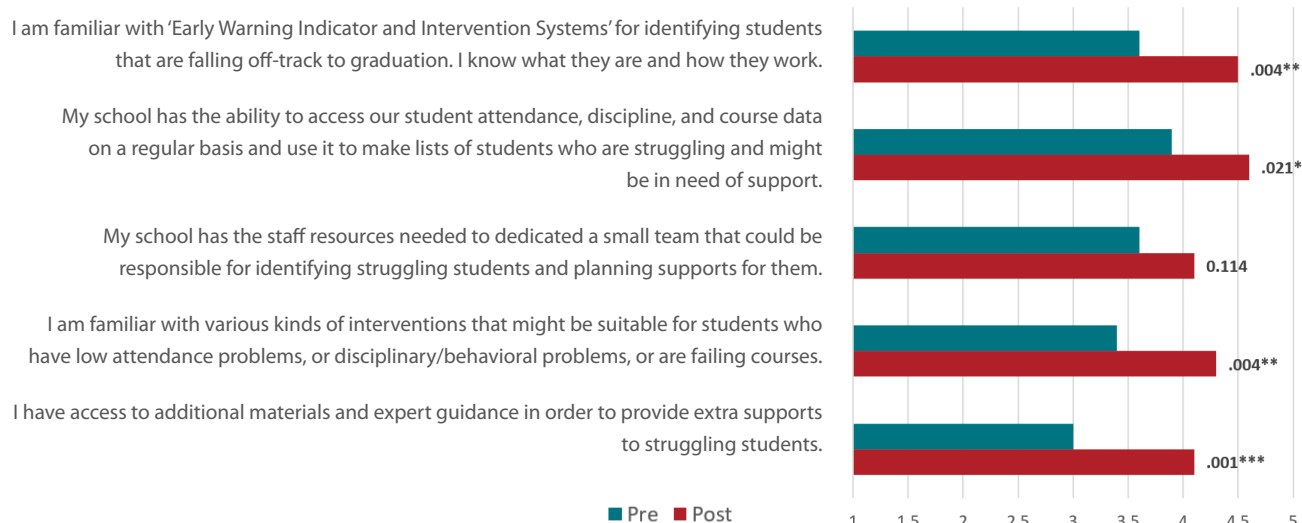
TEACHER KNOWLEDGE & RESOURCES

Surveys were available for 24 participants from both before and after (pre and post) EWS ECHO program implementation. The surveys asked participants about their knowledge of Early Warning Systems and their access to resources and materials, the use of the ECHO platform, and the use of EWS in their schools.

As seen in Figure 1 below, participants reportedly significantly greater familiarity with EWS after having participated in the EWS ECHO program, as well as significantly greater familiarity with the various kinds of interventions

available to them for supporting students. Participants also reported significantly greater access to and use of student data at their schools, and significantly greater access to additional materials and expert guidance in providing support to struggling students. Thus, it seems that the EWS ECHO program had a positive and statistically significant impact upon participants' knowledge of Early Warning Systems and their abilities to implement them through the identification of interventions and access to resource materials and expert guidance.

FIGURE 1 – KNOWLEDGE OF EARLY WARNING SYSTEMS & ACCESS TO RESOURCES
(1) Strongly Agree – (5) Strongly Agree • Statistical significance – * $<.05$; ** $<.01$; *** $<.001$



Asked how they like the ECHO model as a format for professional learning, participants were equally split between their preference for traditional face-to-face training versus the ECHO model. 34% of participants preferred face-to-face professional development, while 42% said they preferred the ECHO model, and 25% said they liked them equally. However nearly all participants preferred the ECHO model to other existing methods of on-line profes-

sional development, as 58% preferred the ECHO model, 33% thought the ECHO model was 'about the same' as other on-line models, and only 8% of participants preferred existing methods of on-line professional development. The element of the ECHO model that participants liked the most was the didactic presentations by subject matter experts (63%), while 21% of participants felt their needs were best met by learning about other participants

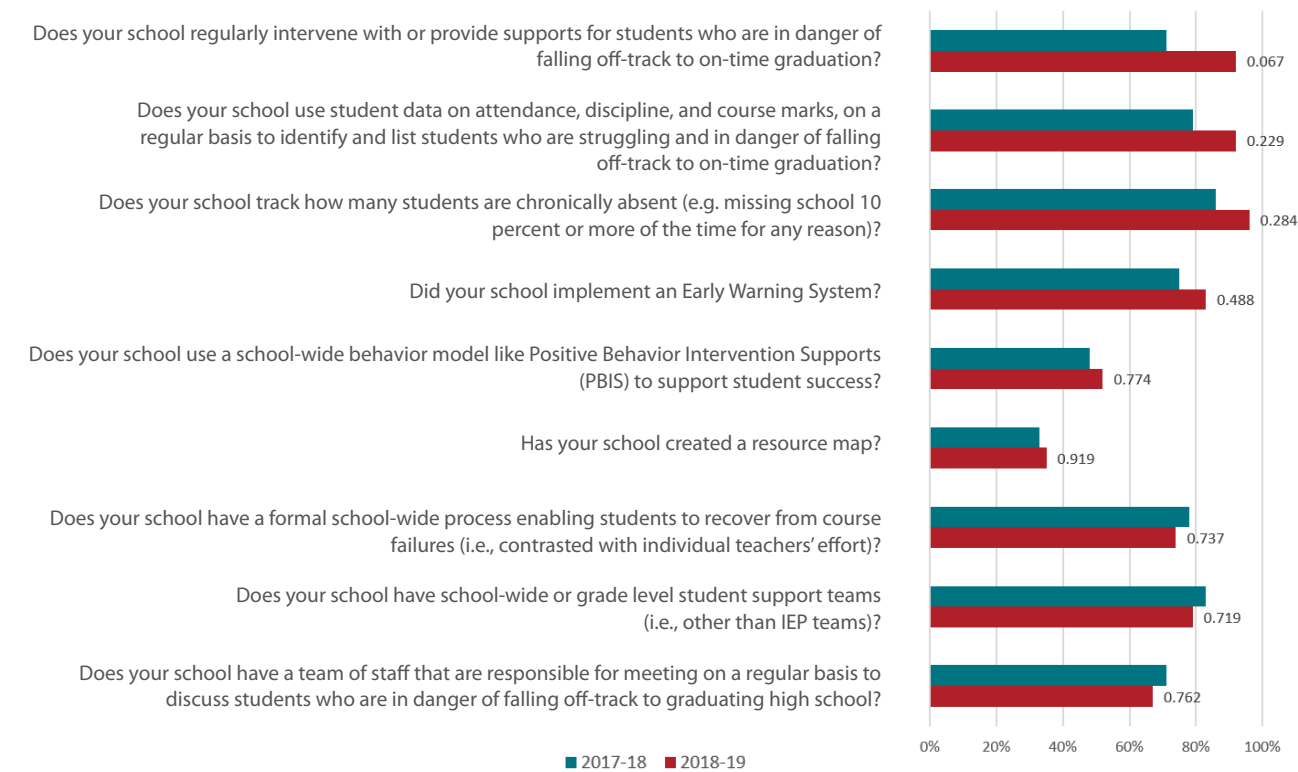
challenges and experiences through their case presentations, and the remaining 17% of participants felt they gained the most from presenting their own challenges through case studies and receiving feedback and recommendations from their peers and experts.

Another series of questions asked respondents about the various elements of an Early Warning System and whether these had been used in their school during the prior school year (2017-18) and again during the implementation year (2018-19). While we have seen that the EWS ECHO program was related to significant improvement in participants’ knowledge of Early Warning Systems, it did not correlate significantly to increases in the school-wide use of EWS and their various components such as data usage, dedicated teacher teams, credit recovery, etc., as seen below in Figure 2. Part of this is due to the fact that the majority the participating schools were already implementing these models prior to joining the EWS ECHO program (8 of the 13 schools in the EWS ECHO program had already been implementing an EWS in the prior school year). Another likely reason is that while the EWS ECHO program was able to make an impact with the individual staff who participated in the program, the 2-3 participants per school were not large enough in number or in

a position from which to influence the types of strategies used school-wide in their schools. Lastly, as some participants were only introduced to these strategies during the school year, through the EWS ECHO program, it may have been too late in the school year to initiate such strategies mid-year.

Although any changes in the use of Early Warning Systems and their components are not statistically significant, we do see reported increases in the two major components of EWS systems, monitoring students on ABC indicators (attendance, discipline, course failures) and responding to them with interventions, with a 13 percentage point increase in the former and 21 in the later. We see a smaller increase in response to the overall question on use of Early Warning Systems as a whole, indicating that some schools may have first begun using indicators and others may have added on an intervention system. We also see small increases for more specific elements of EWS like the use of resource maps, or school-wide behavior strategies. Lastly, we see small declines in the teacher teaming aspects of EWS, perhaps because these often involve organizational and schedule changes which require longer lead times to implement and are subject to competing priorities for teacher time.

FIGURE 2 – USE OF EARLY WARNING SYSTEMS IN YOUR SCHOOL



EARLY WARNING INDICATORS AMONGST STUDENTS

To evaluate the impact of the EWS ECHO on student outcomes, we employed a quasi-experimental design that includes both pre and post-test observations of student outcomes, as well as the use of a comparison group of schools. Typically referred to as the non-equivalent comparison group design, this quasi-experimental design will allow us to determine the effect of the program in two different ways. First, we are able to measure any impact by assessing change in student outcomes from the school year before the program was implemented to the end of the first year of EWS ECHO, in schools that implemented the program. We can then, secondly, compare any change in the treatment schools against changes in non-implementing control schools, to rule out any amount of change that may have occurred naturally in all schools over the observed time-period due to other factors. This added feature helps to reduce history or testing as threats to the internal validity of the study's results. As schools assigned to participate in the program were not selected by random assignment, the two groups will by definition be non-equivalent, inherently introducing selection bias into the study. However, the use of the pretest will allow us to measure the size and direction of any such bias and to control for its effect on post-test results when gauging program impact. The expectation is that those schools implementing the EWS ECHO program would make more use of Early Warning System strategies and components, and that the use of these strategies would reduce the number of students exhibiting the early warning indicators such as low attendance, suspensions, and course failures that are the predictors of dropping out.

Our analyses discounted special education and vocational schools, as well as elementary schools, since the 13 schools participating in the EWS ECHO program were either middle or high schools and either regular or alternative schools. The resulting analytic sample includes the 13 schools that participated in the EWS ECHO program, as well as another 346 other New Mexico middle

and high schools as a comparison group. Many schools in New Mexico, including 5 of the 13 EWS ECHO schools, had already begun to implement an Early Warning System prior to the 2018-19 school year. As such, we would expect changes in the proportion of students exhibiting early warning indicators to be smaller in those schools than in schools which only started implementing an EWS in 2018-19 for the first time. Therefore, our sample is split into five groups. The first group is the comparison schools which had at no point in time implemented an Early Warning System, or the 'null' group. Our second and third groups consist of schools that began implementing an EWS for the first time in 2018-19, with the third group being those that additionally participated in the ECHO program. Our fourth and fifth groups include schools that had already begun implementing an EWS in prior school years, with the latter group being those that also started on the ECHO model in 2018-19. These comparisons will allow us to estimate the impact on student outcomes of participating in the EWS ECHO model while controlling for the fact that other schools were also implementing Early Warning Systems, and that some schools had started implementing their EWS in years before the EWS ECHO program began implementation.

FIGURE 3. NON-EQUIVALENT GROUP DESIGN

Control _{0 (NULL)}	:	O1		O2
Treatment _{1 (NEW EWS + ECHO)}	:	O1	X	O2
Control _{1 (NEW EWS)}	:	O1		O2
Treatment _{2 (OLD EWS + ECHO)}	:	O1	X	O2
Control _{2 (OLD EWS)}	:	O1		O2

O – observation time point
X – implementation of treatment program

The New Mexico Public Education Department provided us with data on which of its schools were implementing Early Warning Systems, and in which years they had started those projects. They also provided us with administrative records of student data from which we have calculated our outcomes, including records of students' attendance, course marks, and disciplinary infractions. While increasing graduation rates at participating schools is the long-term goal of the NMPED and this project, it is also a goal that would require at least four years of observation to evaluate. Given the one-year time frame of this study, we evaluate the more short-term intermediary outcomes such as the average attendance rates at schools, the average number of disciplinary infractions, and average number of course failures at schools. These outcomes serve as indirect measures of students being on-track towards on-time graduation from high school. The outcomes are also measured in terms of the traditional early warning indicators, such as the percent of students who were chronically absent (attended less than 90%), the percent of students to fail one-or-more and two-or-more courses, and the percent of students to have one-or-more

or two-or-more disciplinary infractions. These data points were provided by the NMPED for both the 2018-19 and 2017-18 school years to measure outcomes after program implementation as well as to control for schools' initial starting levels the year before.

Publicly available data from the National Center for Education Statistics (NCES) was also incorporated to provide school level data on each participating and control school, taken from the year prior to implementation (2017-18), for use as control variables in our statistical analyses measuring program impact. School level control variables include: the percent of students eligible for the federal Free/Reduced Lunch program; total enrollment size; urban, suburban, town, or rural locale; middle, or high school level; and regular or alternative school. By controlling for several school background characteristics that are highly correlated to student outcomes, we are able to further rule out the threat of any previously existing differences between the control and treatment groups as a cause for selection bias in the results.

TABLE 1. REGRESSION MODEL RESULTS

	OLD EWS	NEW EWS	ECHO WITH OLD EWS	ECHO WITH NEW EWS
Average Attendance Rate	-0.5 (.692)	0.4 (.810)	1.8 (.638)	1.6 (.607)
% of Students with Attendance Rate <90%	1.6 (.4580)	0.2 (.948)	-4.9 (.455)	-3.3 (.535)
Average Number of Disciplinary Infractions	-0.03 (.283)	0.08 (.020*)	-0.06 (.412)	-0.07 (.220)
% of Students with 1 or More Infractions	-1.7 (.149)	2.9 (.075)	-2.4 (.444)	-3.5 (.204)
% of Students with 2 or More Infractions	-0.5 (.420)	1.8 (.038*)	-1.6 (.325)	-2.0 (.173)
Average Number of Course Failures	-0.16 (.162)	0.11 (.477)	-0.13 (.649)	-0.21 (.415)
% of Students with 1 or More Failures	-3.2 (.142)	3.9 (.179)	0.7 (.894)	-2.8 (.568)
% of Students with 2 or More Failures	-1.4 (.480)	3.1 (.224)	-0.4 (.942)	-2.0 (.638)

(parentheses) = p-value

Statistical significance - * <.05; ** <.01; *** <.001

The results from our regression models, as seen above in Table 1, found no statistically significant differences between schools participating in the EWS ECHO program and other New Mexico middle and high schools. Numbers in the table represent the differences between the selected group of schools and New Mexico schools that implemented neither an EWS nor the ECHO program in 2018-19, in terms of changes from the 2017-18 school year to 2018-19. EWS ECHO schools had stronger improvements in student outcomes from 2017-18 to 2018-19 than either schools without Early Warning Systems or schools with them (regardless of when they started implementing them). On average, schools in the EWS ECHO program saw their average daily attendance rates increase by 2 percentage points more than other schools and saw the percent of their students who were chronically absent decrease more 3-5 percentage points more than others. Similarly, they saw the average number of disciplinary infractions decrease in comparison to other New Mexico, and 2-4 percent fewer students experienced 1 or more infractions and 2 percent fewer students experienced 2 or more infractions. However, these differences were not statistically significant.

One possibility is that the differences, which are nominally large, do not reach statistical significance only because the number of schools participating in the EWS ECHO program are too small a sample at 13. Although, it could also be that the positive differences we see in the small sample of EWS ECHO schools are due to other aspects of the schools or other strategies that they are employing, as we know that these schools are all pro-active in pursuing supports for their students. It is also worth noting that if you examine only those schools who were implementing Early Warning Systems for the first time in 2018-19 (NEW EWS), those that implemented the ECHO model in addition had substantially greater and more consistent improvements across the ABC's. This suggests that the ECHO model might be particularly useful as a support for school staff implement an EWS for the first time.

DISCUSSION

We have seen preliminary evidence that participating in the EWS ECHO program led to significant increases in practitioners' knowledge of Early Warning Systems as well as the types of interventions available to them to addressing students' attendance, discipline, and course issues. Participation in the programs also provided school staff with greater access to materials, and resources, and access to expert guidance. Thus, it seems that the project was successful in meeting its primary goal of increase teachers' knowledge of the innovative practices, effective strategies, and tools, around Early Warning Systems, through online professional development.

In terms of its secondary goal, participants at ECHO schools did report greater usage of two core components of EWS, using early warning indicators and responding to them with student interventions, though they reported no changes in the use of student data, dedicated teacher teams, and credit recovery, at their schools. None of the differences regarding the implementation of EWS and related strategies were statistically significant.

Similarly, an analysis of student outcome data found that schools participating in the EWS ECHO program registered educationally meaningful improvements in attendance and behavior, that did not reach statistical significance given the small sample size. Most notably, schools that implemented an EWS for the first time in 2018-19 in tandem with the ECHO program had larger and more consistent ABC improvements than did schools that implemented an EWS for this first time but did so without ECHO support.

In interpreting these results, it is important to understand that given the nature of the EWS ECHO project, the study is not well suited for the measurement of school-level impacts on the use of EWS and student outcomes. Several plausible reasons why the measurement of school-wide impacts on the implementation of Early Warning Systems and a matching reduction in students falling off-track to graduation would be problematic, include:

1. *The program engaged too few staff at each school to have a school-wide impact.* In most cases, only

2-3 staff from each school participated. Further, while most participants were classroom teachers and a handful were principals or assistant principals, several served in administrative roles or in tertiary/specialist roles that served only particular student groups (ELL, Special Ed., Native American).

2. *Implementation of the EWS ECHO program occurred in such a way that implementation of learned knowledge could not take place in 2018-19.* The program began in October of the school year once structural plans at most schools had been laid out for the year. Further, EWS ECHO topics were introduced on a bi-weekly schedule throughout the year such that most of the topics were not introduced to participants until the latter half of the school year. So most learned knowledge, especially for those topics covered in February and March of 2019, could not have realistically been implemented by staff at their schools until the following school year with time and planning.
3. *The EWS ECHO project was not directly tied to participating schools.* While the project worked directly with some staff members through online professional development, the project team did not oversee the implementation specific EWS strategies in schools, such as the creation of teacher teams for reviewing data, the use of regular of team meetings, the creation and use of lists of students exhibiting early warning signs, the frequency with which early warning data on students is updated and distributed to team members, and the proportion of identified students who receive interventions and are followed-up with.

As a method for the on-line delivery of professional development, the ECHO model was very well received by participants. Most participants liked it better than other developed methods for delivering training on-line, and

overall, it was liked equally as much as traditional in-person training. The access to and learning from subject matter experts was the element of the model that was most appreciated by participants, though there was also substantial appreciation of the opportunity for presenting and sharing the specific challenges that were facing each school and its student body. These presentations gave geographically isolated teams the opportunity to learn and benefit from the experiences of their peers. In such a state as New Mexico, where school communities are so spread out and bringing them together face to face is often prohibitive due to the travel time required, the ability of ECHO to connect practitioners with each other and with subject matter experts is particularly valuable and potentially offers a cost-effective method of reaching a large number of schools with highly rated Professional Development supports.

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