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Memo

Date: July 29, 2016
To: Dr. Rich Brown, Chief Research Scientist, NMSI
From: Dr. Dan Sherman, Dr. Marlene Darwin, Suzanne Taylor, Janet Lundeen, AIR
Re: Findings on Sustainability of CRP in Colorado and Indiana

Introduction

This memorandum summarizes AIR's findings from telephone interviews with school personnel, referred to as Designated Administrators (DAs), in 52 schools in Colorado and Indiana. These schools received funds under a U.S. Department of Education i3 validation grant to implement NMSI's College Readiness Program (CRP), previously referred to as the Advanced Placement Training and Incentive Program. AIR conducted these interviews in May and June of 2016 to collect information on how the program was implemented in these schools, to learn what parts of the program were considered most valuable, and to determine how schools plan to continue program activities as grant funding ends. DAs from three cohorts of schools (defined in terms of when they began program participation) were represented in the sample.

The first cohort of schools began implementing the program in the 2012-13 school year and received assistance under the grant through the 2014-15 school year. AIR's interviews with these schools focused on how they implemented the program and how they sustained it in the 2015-16 school year, along with their plans for later years. The second and third cohorts (which began participation in the 2013-14 and 2014-15 school years, respectively) received grant funding in the 2015-16 school year, with support to the second cohort ending in the 2015-16 school and the support to the third cohort ending in December, 2016.

Table 1 provides a breakdown of interview participation by both State and cohort. We interviewed personnel representing 52 of the 60 participating schools; there were 7 DAs representing 8 schools, who were either unavailable for an interview or did not respond to our request.

Table 1. Number of Interview Participants by State and Cohort

Sample	Cohort 1	Cohort 2	Cohort 3	Total
Participant Schools – CO	8	10	8	26
Participant Schools – IN	9	10	7	26
Non-participants – CO	1	0	3	4
Non-participants – IN	0	1	3	4

Approach

We used the interview protocol attached as an appendix to guide our conversations with the DAs, which typically lasted about an hour. There were minor variations in questions (and therefore protocols), depending on the cohort interviewed. The DAs were generally quite knowledgeable about the program and familiar with AIR, given their participation in school-level data collections that were part of AIR’s evaluation of the i3 validation grant. Most of the individuals we interviewed indicated that AIR could quote their responses in any reporting to NMSI. We have included quotes from the interviews below to illustrate common findings across respondents.

In the remainder of this memo, we summarize key findings for NMSI’s review, which we can present in more detail after discussion with NMSI.¹

Overall Impressions of CRP and its Implementation

As part of our interviews, we asked respondents to describe their overall impression of the program, its impact, and general challenges they had in implementing the program. Below is a summary and key themes across responses and cohorts.

Successes associated with implementation

All (100 percent) of respondents felt CRP was beneficial. A few comments that reflected on its benefit were:

- “As an administrator it’s been a real joy to see the growth in our AP program over the past 3 years.”
- “Systems needed to get put in place and we didn’t previously have funding for tutoring on Saturdays or to have school-wide practice tests.”
- “Kids aren’t able to afford tutors or get support at home; to be equal, we need to provide those structures within our building.”
- “The most important work we’ve done.”

¹ AIR wishes to thank Karen Morris from Indiana’s State agent, University of Notre Dame, and Gregg Hesse from Colorado’s State agent, The Colorado Education Initiative, for their contributions in reviewing the interview instrument and contacting school personnel to notify them of this research.

A common conclusion among the DAs was that CRP served to increase participation of previously underrepresented students across a range of AP courses in math and science, and especially among female students in these subjects.

Further, all respondents indicated that the components of CRP were implemented at their schools, though there were challenges (discussed below), which often reflected the difficulty of scheduling activities into school calendars. We discuss challenges below.

Assessment of Program Impact

As part of the interviews, researchers asked DAs to discuss CRP's impact on their schools, teachers, and students. During the interviews, many DAs discussed the impact of the program in the context of successes and challenges with implementing specific components of the program. As such, it was not possible to readily separate discrete answers on impact from the interview data and quantify the responses. Evidence of perceived impact, however, may be garnered from the following quotes that illustrate the key themes that emerged across respondents.

School climate changes

Respondents noted school climate changes for the school, for teachers, and for the students. Overall, they felt that there were positive climate changes with an increased focus on offering rigorous courses and working to provide access for all students to those courses.

Schools

- “We were intensive on creating excitement around taking hard classes.”
- “Transformative for us in terms of our commitment and our kids’ commitment to AP classes.”
- “Culture is more academic and high achieving; kids are taking more upper level classes and have pride in upper level.”

Teachers

- “Helped to root and embed the academic rigor of AP classes.”
- “Treat every class as if it is going to lead kids to AP.”
- “Teachers learned how to teach students who are not necessarily prepared for AP; some challenges for teachers in realizing that not all of the students can teach themselves and that may not get a qualifying score; shift in culture and mindset.”
- “Teachers brought a new philosophy of advanced placement to our school.”
- Teachers liked “feeling like their class mattered” and that they were “a part of something big.”
- “Helped us level the playing field and address some inequities.”

Students

- “Completely changed the way that students see themselves.”
- Students realized AP “is for everybody, not just for [our] top kids.”
- “Since our involvement in the grant our students have a better understanding for what is expected of them in college.”

Experience with Key Program Components

AIR asked the DAs to discuss implementation of the key components of CRP. Below is a discussion and a quantitative summary of the components in the order that DAs identified as the most beneficial.

Mock exams

- Seventy-nine percent of DAs found these to be a valuable component.
- Overall, mock exams were rated as a valuable and critical component of the program.
- Respondents indicated that the exams help reduce testing fatigue, improve test taking strategies, and help students learn how to pace themselves during the exam.
- Some illustrative quotes include:
 - “Gives teachers the greatest insight as to how students will be judged in their work; can much more thoroughly mentor and coach students not only in content but how do you communicate what you know? How do you maximize your score and get at least some credit for your responses? [Teachers gained] a higher level understanding of what it takes to be successful on the AP exam because of the mock readings.”
 - “Helped the students self-reflect heavily but also gave teachers that idea of understanding the scoring process to be able to be more effective in their approach.”

Saturday study sessions

- Seventy-one percent of respondents felt these sessions were extremely valuable in terms of content and supporting student learning; at the same time, DAs also noted that the implementation of these sessions was problematic and logistically challenging to execute in terms of student participation. Some of the challenges to student participation were transportation, costs, competing school activities and sports, weather cancellations, and family and job commitments.
- Respondents felt that the webinars/videos were not as helpful as anticipated. It was hard to keep students engaged during the webinars and they were not as motivational as being in person.
- Some illustrative quotes include:
 - “Hearing content from another voice was very helpful.”

- “Personnel were highly trained, efficient, knew the material, added to the students being able to learn more.”
- “Attendance data from Saturday session positively correlated with [student] passing rates.”

Summer institutes

- Sixty-nine percent of respondents felt the professional development received at the summer institutes was extremely valuable.
- An illustrative quote was: “To get our teachers to multiple trainings was really powerful.” However, some respondents said that going to summer institutes for 3 years in a row was too much for teachers. Respondents reported that 1 or 2 years was sufficient especially for more experienced teachers.

Teacher incentives and bonuses

- Twenty-one percent of respondents felt the teacher incentives and bonuses were beneficial to motivate their students and teachers.
- In general, teacher incentives did not seem to be a highly motivational factor. Even in schools that were no longer funded, DAs reported that teachers were so committed to the program that they did the extra work without the incentive.
- Some schools mentioned that other non-AP teachers or teachers in other subject areas who taught AP were resentful because they did not have the same opportunity to earn incentives.
- An illustrative quote was: “Teachers actually found this [incentives and rewards] confusing - their incentives were based on maintaining enrollment, but they would lose students sometimes who moved away, which they felt unfairly penalized them.”

Student incentives

- Twenty-one percent of respondents found the student incentives beneficial.
- In general, many schools did not find the student incentives to motivate students. They may have motivated students at first but noted that the incentive comes after 9 months of school so the “specialness” of it was diminished for them.
- The part of the incentives that was seen as most motivating was the public recognition that students received for their efforts – for instance, some schools reported holding special ceremonies or announcements to recognize students who qualified to receive an incentive.
- Some illustrative quotes were:
 - “Students haven’t responded to incentives.”
 - “Over time, the excitement of that [incentives] seemed to go away and [its] become more of an internal motivation to do well because that’s what students in our building do, we take AP and honors classes.”

Vertical team meetings

- Nineteen percent of respondents felt these were a helpful component.

- Many respondents noted that it was hard to carve out time for teachers to meet, given competing obligations for teachers' time.
- Respondents generally felt these meetings did not really improve the AP program or lead to greater student success.

Equipment expenditures

- Twelve percent of respondents felt having program funding to buy equipment was important to their schools, especially for science and math classes.
- Most schools reported utilizing all the funds offered to them for equipment.
- An illustrative quote was: "It was like Christmas to them [the teachers]."

Structured tutoring

- Ten percent of respondents felt this was a valuable component.
- Schools often found it difficult to schedule these sessions, given competition from other activities involving teachers and students.
- Respondents reported that implementing the structured tutoring was challenging because it had to be outside teachers' working hours.
- Respondents felt that the tutoring was too structured.
- Many schools reported that they were already doing this informally.

General challenges associated with implementation

Although respondents indicated the program was worthwhile and generated positive student outcomes, many noted that some components seemed less impactful and more challenging to implement. DAs specifically expressed these concerns with Saturday study sessions, vertical team meetings, and structured tutoring. The most commonly expressed concerns across respondents were:

- Teachers were frustrated while learning how to work with students who were not academically prepared.
- Schools learned that they needed to intervene and provide supports immediately for struggling students. Students needed more support in the first week or two. Other teachers who were not involved with CRP sometimes felt excluded, not supported, and/or undervalued.
- It was time intensive to complete administration tasks given the amount of record keeping required.
- The program requires a lot of teacher and student time.
- Teachers struggled with more students taking AP classes but scores went down.
- Many schools noted frustrations in scheduling program components.

To address these challenges, NMSI could consider making some adjustments and offering strategies for modifying methods for implementing these components. Below are a few action steps that we would suggest based on the findings.

- Providing guidelines or suggestions for restructuring Saturday study sessions with more flexibility especially with regard to scheduling, offering sessions at other times, or within other already established structures in the school
- Offering some flexibility on how certain components are implemented – vertical team meetings, structured tutoring
- Letting schools know what resources and materials are available to them for free or low cost after the grant funding ends; offering ideas on what others have done to continue the program
- Providing schools with ideas on how to coordinate and collaborate either with other schools in their district or other schools in the area to keep the program/collaboration going
- Restructuring incentives to make them more tangible and more immediate for students. For example, offering students a small gift card or quarterly incentive for maintaining a certain grade.
- Providing guidance on extending the program to other subject areas

Experience in Sustaining Program

Lastly, researchers asked DAs to talk about the school’s plan to sustain the program. Of note, at the time of the interviews, cohort 1 schools had just completed the first year post-grant funding; cohort 2 had just completed its last year of grant funding; and cohort 3 had 1 additional year (2016-17) of reduced funding under the grant. In presenting the next set of results, we indicate the percentage of DAs providing the response and, where appropriate, we can provide more detail after discussion with NMSI.

Generally, schools were making decisions about what program components to sustain beyond program funding using both quantitative (AP enrollment, AP scores, and cost factors) and qualitative data (formal surveys and informal anecdotal teacher and student feedback) data. Schools commented that the formal and informal teacher and student feedback was especially important to them in their decision making about what components of the program to continue.

Goals for Sustainability

Researchers asked the DAs to discuss the school’s most important goals in working to sustain the program. At least 75 percent or more of the respondents focused comments on the importance of teacher’s content and pedagogical knowledge and on a strong STEM/AP culture.

Build and maintain teacher content knowledge

Ninety-two percent of respondents noted the value of sending teachers to intensive professional development to learn how to build content and pedagogical knowledge to teach AP courses.

- Respondents noted that ongoing professional development for teachers or at the very least for new AP teachers was crucial.

- Some schools are continuing to work with nearby schools working under the program; they find it helpful to have a shared understanding of what they want to accomplish.

Develop teacher pedagogical knowledge

Eighty-eight percent of respondents specifically noted that developing teacher pedagogical knowledge as a goal for the schools.

Build an AP/STEM culture

Seventy-three percent of respondents want to continue to build and sustain an AP/STEM culture. They want to maintain enthusiasm for the AP program and school culture changes.

- An illustrative quote was: “[The] goal is to get students to a point where they can receive qualifying scores, but AP programs [are] bigger than that – about rigor, learning to learn, wanting to learn, to stretch our students academically and so they’ll be successful as they leave our tutelage.”
- Schools want to continue with a culture that ensures all students have access to AP courses.

Increase student enrollment in AP courses

Eighty-three percent of respondents want to continue to increase student enrollment in AP courses; however, the DAs from the smaller schools in the sample noted that this likely will be a challenge as they no longer have a pool of students to draw into the program.

Improve student performance in AP courses

Ninety-two percent of respondents want continued improvement in AP courses.

Improve college readiness

Eighty-three percent of respondents seek to improve their students’ college readiness through the AP program.

Offer more AP courses

Fifty-eight percent of respondents noted the school wants to offer a wider variety of AP courses across content areas, extending beyond STEM and English courses.

Diversify AP course offerings (e.g., more math AP courses)

Thirty-five percent of respondents want to diversify their AP course offerings within content areas, e.g., additional AP courses in science, such as AP Chemistry. Schools also noted they are seeking to extend some components (mock exams, Saturday study sessions) to other subject areas, such as social studies and foreign languages.

However, DAs also noted that it is difficult both to offer more AP courses in different content areas and offer more courses within content areas due to “singletons” (a single class for all students taking the AP course because of low enrollment and/or lack of resources). Singletons make scheduling challenging especially for smaller schools since the AP course would only have one section. For example, if a school has multiple AP classes with only one section each, the master schedule is difficult to design because overlapping sections of AP courses can impact students’ accessibility to the course(s) for which they qualify or would benefit.

Components Schools Sustained or Expected to Sustain

Mock exams

Almost all schools want to continue with mock exams but are not necessarily sure what it will look like yet. Schools considered this a low cost component; therefore easier to sustain and even expand to other subject areas.

Saturday study sessions

Many schools really want to keep this component but often with modifications to the timing, length, and/or frequency of the sessions. Schools noted a variety of alternative approaches to implementing the sessions, such as holding these sessions during the district “interim” breaks, holding the sessions after school, and scheduling sessions with other nearby schools to rotate session locations and to share presenters.

Vertical team meetings

Schools found this a logistically challenging component to implement and most DAs indicated that they do not plan to continue these after the grant ends, at least as they were designed under the program. Several schools said they hold vertical team meetings that focus beyond just AP to more broadly address vertical articulation across all content area courses.

Structured tutoring

Schools noted that they plan to continue tutoring but most likely in a less structured way.

Summer institutes

Schools indicated plans to find a way to send teachers, especially new teachers, to College Board summer institutes. Many schools said they plan to send all new AP teachers and a few experienced AP teachers who need a refresher training. A few schools noted there would be no funding for any teachers for these summer institutes.

Challenges in Sustaining Program

Schools noted a range of challenges they either experienced or anticipate experiencing in the future. Since cohort 3 schools have an additional year of partial funding under the i3 grant (the

first half of the 2016-17 school year), they generally did not have firm plans in place regarding sustainability but anticipate some challenges and uncertainties. Many talked about what they would like to sustain but “they were still working it out.”

Funding

Most schools are relying heavily on district or school funds to sustain the program. A couple of schools mentioned that they were able to receive local foundation funding for some components of the program and schools in larger districts benefit from the support of district grant writers to help secure additional funding. Put succinctly by one DA, “Money will dictate a lot of what we’re able to do.”

Maintaining buy-in

Several schools noted it will be difficult to grow a program that fast and be able to sustain growth at the same pace. Others noted that when students are not achieving the desired success in AP classes, teachers, students, and parents have difficulty maintaining confidence in the program.

AP versus dual enrollment

Schools noted this as a push and pull situation; AP courses are more rigorous and better prepare students for rigor in college while dual enrollment guarantee college credit with a passing grade. They wrestle with the idea, how do schools illustrate the value of AP specifically over the value of dual enrollment?

Human capital investment

Schools noted that it can be challenging to invest in a teacher, in terms of sending them to summer institutes and other trainings, only to have them leave the school and take all that knowledge with them. DAs also expressed concern about initially finding the right teachers to teach AP courses.

District support

Some districts provide a lot of support for AP, including, most commonly, paying for at least a portion of the exam fee. Larger districts also have grant writing teams who can help with looking for additional funding sources outside the district. One cohort 2 school in Colorado noted that it was dropping the AP program due to a district decision to eliminate all AP courses and offer dual enrollment in its place.

Relationships

DAs noted that it will be difficult to maintain relationships with other schools around the program and its goals. They will now be working more in isolation. A few schools mentioned trying to or planning for collaborating with nearby schools that implemented the program, especially for Saturday study sessions.

Conclusion

AIR appreciates the opportunity to study CRP and schools' experiences implementing the program and seeking to sustain it. The research team looks forward to discussing these findings with NMSI and determining how best to present additional information to meet its needs.

Appendix

National Math + Science Initiative Extension Study on Sustainability: Designated Administrator Interview Protocol (Cohort 1)

[Note to interviewer: The following information should be shared with the interviewee as you open the call to provide background. It is not intended as a script to be read.]

As you know, the Advanced Placement Training and Incentive Program (APTIP)/ Colorado Legacy Schools Initiative (Legacy Schools) was funded by the U.S. Department of Education's i3 grant program covering the 2012–13 through 2014–15 school years. As part of that grant, American Institutes for Research (AIR) conducted an independent evaluation of the program, during which we contacted you or others in your school to collect data. Although the i3 evaluation is now complete, the National Math and Science Initiative (NMSI) has asked AIR to extend its work to examine program sustainability and programmatic changes that schools have made over time. More specifically, NMSI is interested in learning about your activities related to the program this year and your plans for future years.

The purpose of the interview is to collect data from the Designated Administrators (DAs) from each school (Cohorts 1, 2, and 3) that implemented APTIP/ Legacy Schools through funding from the i3 grant. This interview is **not** intended to evaluate the school's or any individual's capabilities or performance. The data being collected will be used only for the purposes of understanding how the APTIP/ Legacy Schools program has changed and been sustained over time in schools in STATE.

We would like to record this interview for our internal use to ensure our notes are complete and accurate. Do we have your consent to conduct and record the interview? We would also like to use quotations from the interview in the reports prepared for this study. Do we have your permission to attribute quotations from this interview to you using your full name and current title at your school? Do you have any questions before I begin?

[Note to interviewer: After the recording has started, please ask the questions above again to have it on the recording.]

1. Please tell me about your role as the Designated Administrator and how long you have been involved in the program.

2. I'd like to gain an understanding of your school's implementation of APTIP/ Legacy Schools. Could you describe the key components of your school's program when you were receiving funding for the program through the grant?

Probes: *[If the interviewee makes no mention of the following, ask if the school implemented the component.]*

- Summer institutes
- Saturday study sessions
- Vertical team meetings
- Mock exams
- Structured tutoring
- Teacher incentives²
- Teacher bonuses
- Student incentives
- Equipment expenditures
- School climate changes—increasing access to AP courses for those students most underserved

3. While you had the grant, what parts or components of the program did you find were most helpful or contributed the most to meeting the APTIP/ Legacy Schools goals? Why do you feel the components you mentioned were most helpful?

Probes: *[If the interviewee makes no mention of the following, ask if the school thought any of these components were most helpful.]*

- Summer institutes
- Saturday study sessions
- Vertical team meetings
- Mock exams
- Structured tutoring
- Teacher incentives
- Teacher bonuses
- Student incentives
- Equipment expenditures

² Teachers and students receive \$100 incentive for a qualifying score on the AP exam of 3 or higher. Teacher and administrator bonuses are based on the growth goal for enrollment and success (\$1000 for a teacher, \$2000 for administrators).

- School climate changes—increasing access to AP courses for those students most underserved

4. While you had the grant, what parts or components of the program did you find were less helpful or contributed less toward meeting the APTIP/ Legacy Schools goals?

Why do you feel the components you mentioned were not helpful?

Probes: *[If the interviewee makes no mention of the following, ask if the school thought any of these components were not helpful.]*

- Summer institutes
- Saturday study sessions
- Vertical team meetings
- Mock exams
- Structured tutoring
- Teacher incentives
- Teacher bonuses
- Student incentives
- Equipment expenditures
- School climate changes—increasing access to AP courses for those students most underserved

5. What do you feel were the effects of APTIP/ Legacy Schools? How did it impact the school? Teachers? Students?

Probes:

- AP enrollment increased
- Teachers received valuable training
- Students received support
- Participation increased among underserved populations
- AP scores improved
- Students experienced success
- Positive culture changes occurred

What parts of the program had the greatest effect (if more than one was mentioned)?

6. Did your school, teachers, or students experience any negative effects from the program?

7. Now I'd like to gain an understanding of the school's current AP program. Could you describe the key components of your current AP program and how or if it differs from when you had the grant?

Probes: *[If the interviewee makes no mention of the following, ask if the school is implementing the component and if it is, whether the component has changed since APTIP and in what ways.]*

- Summer institutes
- Saturday study sessions
- Vertical team meetings
- Mock exams
- Structured tutoring
- Incentives
- Bonuses
- Equipment expenditures
- School climate changes—increasing access to AP courses for those students most underserved

8. Why did you choose to continue with these *[interviewer can reference APTIP components brought out in the discussion of the current program]* particular APTIP/Legacy Schools components?

Probes: *[If the interviewee is not clear on the reasons for choosing to keep certain components, you can probe into the following possible reasons. These are examples. There could be other factors that the school considered.]*

- Cost effective
- Change in funding stream (SPECIFY)
- No funding stream
- Teachers like this component
- Component showed positive/no impact for students
- Change in priorities at school, district, or state level

9. What data did you use to make the decisions about which components to continue to implement?

Probes:

- AP enrollment increases
- Teacher feedback

- Student feedback
- Other assessments
- Participation increases
- AP scores
- Other impacts

10. What goals does the school have regarding sustaining the components of the APTIP/ Legacy Schools program?

Probes:

- Build and maintain teacher content knowledge
- Develop teacher pedagogical knowledge
- Build an AP/STEM culture
- Increase student enrollment in AP courses
- Improve student performance in AP courses
- Improve college readiness
- Offer more AP courses
- Diversify AP course offerings (e.g., more math AP courses)

In what ways do you think the components that you've chosen to implement since the grant ended will contribute to those goals?

Which components are the most important to the school?

11. How are you financially supporting the program without i3 funding?

Probes:

- Provided funding from the district
- Leveraged school budget to provide funds
- Collaborated with other schools to share costs
- Received other grant funding

What are the school's plans regarding supporting the program into the future?

12. What do you think is the greatest challenge in sustaining the APTIP/ Legacy Schools components?

13. Is there anything else you'd like to share about your efforts toward sustaining APTIP/
Legacy Schools?

Thank you for your time.

[Note to interviewer: If the interviewee gave us permission to use quotes, please confirm this with them after the interview.]

As a reminder, we may use quotations from this interview. Do we still have your permission to use quotations from this interview and attribute them to you?