

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY) is a project of the Berea College Promise Neighborhood, one of only two rural U.S. Department of Education Promise Neighborhood planning grantees. Berea College is the lead applicant in this I3 Development Proposal, and official partners include the Kentucky Science and Technology Corporation, Save the Children and the three school districts located in the Promise Neighborhood: Clay County Schools, Jackson County Schools and Owsley County Schools. *All Promise Neighborhood schools are classified as rural by the U.S. Department of Education.*

A⁴KY proposes to implement the evidence-based National Math and Science Initiative (NMSI) Advanced Placement Teacher Training and Incentive Program (APTIP) in all Promise Neighborhood middle and high schools—two middle and three high schools. APTIP will be replicated with fidelity. Three APTIP Elements of Success will be leveraged for greater impact.

Competitive Priority 7: Our Innovation Supports College Access and Success

Our innovation, implementing APTIP with leveraged Elements, will positively impact college access and success within the Promise Neighborhood. Research shows that passing Advanced Placement (AP) exams positively impacts college matriculation and graduation.¹ These studies find that an AP course culminating in an AP exam grade of 3 or higher has a significant, positive impact on a student's likelihood of college success among academically comparable students, including low-income and rural students.

Additional research shows that AP students who received credit for introductory college-level math and science courses earned the same or higher grades in the second-level college courses as students who took the introductory course in college.² Thus, a high-quality, AP course in high school fortifies students for a successful transition into and graduation from college.

A key focus of APTIP is to assist students and families with understanding college readiness, college affordability and the college application process. A⁴KY will leverage the

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Elements of Success by placing Achievement Counselors in each high school. The Achievement Counselors will emphasize the importance of rigorous coursework in middle and high school to achieve college readiness and avoid remedial courses in college. They will coordinate parent nights specifically addressing college readiness issues with presentations on how AP makes college more affordable and discussions on the financial aid and college application processes. Achievement Counselors will conduct home visits and present information to parents on an individual basis as necessary. They will connect students and families with Upward Bound, Talent Search, Upward Bound Math and Science and other college access programs designed to raise educational aspirations and college readiness levels.

A⁴KY will create a college-going culture from birth to adulthood. Our partner Save the Children (Save) works extensively with young families of children, birth to age three, providing in-home literacy and early childhood education. Save also provides in-school and out-of-school literacy and STEM programming for students in K- 6th grades, targeted to students and families with academic and social needs. Imbedded in Save's work is an emphasis on ensuring students are academically and socially ready to transition to middle school. A⁴KY will ensure students and families served by Save continue to receive academic and social services during middle and high school. During the key transition year from elementary to middle, the Achievement Counselors and Save staff will conduct joint sessions and home visits to students participating in Save programs. A⁴KY will ensure that students served by Save in early childhood and elementary school receive academic and other support services through middle and high school.

A⁴KY will lead to a culture shift within the schools as all students begin to expect to attend college and all teachers begin to support this expectation. High school students with high visibility—football players, cheerleaders and student leaders—will begin taking AP courses

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

and will speak with younger students about the benefits of AP, encouraging middle school students to expect nothing less than college success. Saturday student study sessions in high school will encourage student support and confidence as they bring together students from multiple schools across the Promise Neighborhood. When traditionally under-represented students sit next to other students during these sessions, they will realize they know as much as their peers from other schools and that AP has brought them equality of intellect.

Teachers will provide support and knowledge to A⁴KY students. Saturday study sessions will be led by the most knowledgeable AP teachers in the region. AP classroom teachers will provide at least 40 hours per course in out-of-school tutoring. All teachers at all levels will be mentored and monitored to ensure they provide exceptional support and encouragement to create a culture of college-readiness for all students.

A. Need for the Project

1. A⁴KY represents an exceptional approach to Priority 5 and Priority 2

a. Absolute Priority 5: Improving Achievement in Rural Local Education Agencies

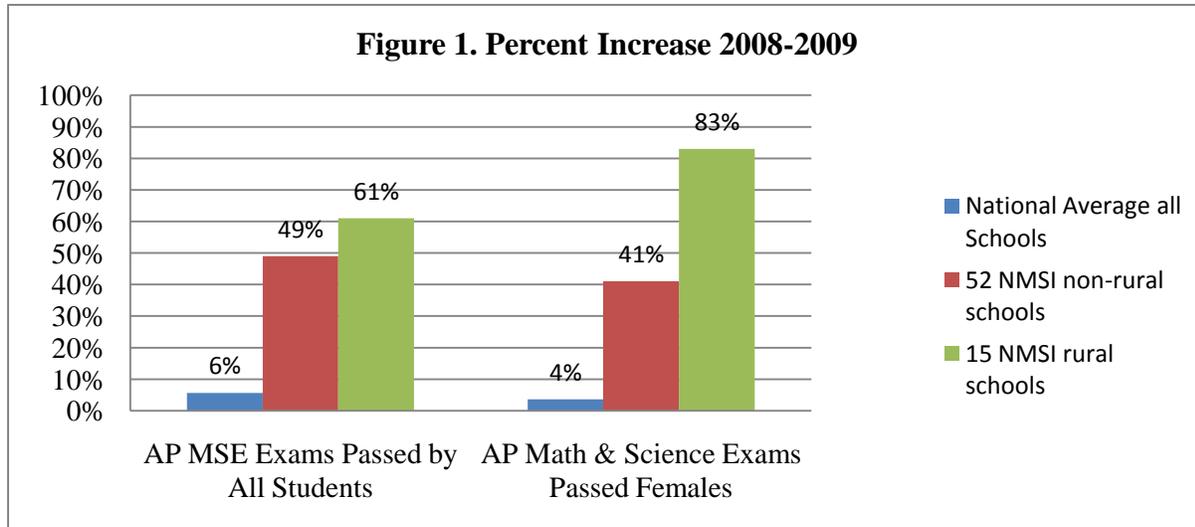
All LEAs within the Promise Neighborhood are eligible for the Rural and Low-Income School Program for FY 2011 and, thus, qualify as rural schools under the I3 competition.³

APTIP, our model, is proven to increase achievement, high school graduation and college going in rural schools: The National Math and Science Initiative (NMSI) has always included rural schools as roughly one-quarter of its APTIP partner schools. These rural schools have thrived with APTIP, improving student access, student achievement and teacher effectiveness at a pace that even outperformed their urban or suburban counterparts.

As the results for the first APTIP cohort of 67 schools, which began implementation in fall of 2008, show, APTIP created large percentage increases for all students in passing AP math, science and English (MSE) exams in rural schools in six states. Rural schools also outpaced

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

urban or suburban counterparts in the percentages of females taking and passing AP MSE exams (Figure 1). This demonstrates that APTIP is closing the college-readiness gap for female students in math and science in rural schools at an accelerated rate. NMSI's APTIP thus addresses the unique challenges of high-need students within rural LEAs and establishes a culture of college-readiness in rural schools at a rate faster than schools in urban areas.⁴



Berea College and our official partners, the Kentucky Science Technology Corporation and Save the Children, have extensive experience working with high need students in rural LEAs. See Appendix C, Response to Statutory Eligibility Requirements, for detailed information on lead applicant and key partner experience with high need students in rural LEAs.

b. Absolute Priority2: Promoting STEM education

A⁴KY promotes STEM education by replicating the National Math and Science Initiative's APTIP program which provides students with increased access to rigorous and engaging coursework in Math and Science and increases the opportunities for high-quality professional development for teachers of Math and Science. In 2007, our partner the Kentucky Science and Technology Corporation (KSTC) became one of only six National Science and Math Initiative (NMSI) statewide, nonprofit organizations awarded funding to replicate APTIP.

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

The Kentucky Science and Technology Corporation titled its efforts to replicate APTIP in Kentucky *AdvanceKentucky*. See Appendix C, Response to Statutory Eligibility Requirements, for detailed information on *AdvanceKentucky's* experience and impact.

Provide students with increased access to rigorous and engaging coursework in math and science: The culture in persistently lowest-achieving schools must be transformed into one that recognizes students can often achieve well beyond our expectations. A key step in replicating the NMSI model is to establish an inclusive school environment that encourages students to enroll in rigorous courses. While some schools require students to prove their way into challenging courses, which limits enrollment to just the top few, this policy erroneously reinforces stereotypes about what AP students “look like.” In contrast, APTIP schools rethink their AP culture by adopting open enrollment and recruiting more students, including high-need students, thereby allowing many more students to succeed at that level. A⁴KY will leverage the open enrollment Element of Success by placing Achievement Counselors in each district and shifting the culture of the schools so that all students are expected to take rigorous courses.

Increasing the opportunities for high-quality professional development for teachers of math and science: NMSI insists that those who replicate APTIP train pre-AP and AP teachers with relevant pedagogical methods and provide continual support as teachers adopt new skills. This intensive support and training is critical to building the capacity and in-depth content knowledge required to successfully teach AP courses. APTIP teacher support will include:

- A Content Director for each discipline who coordinates the subject area’s curriculum to ensure consistency across the state;
- Summer Sessions for Lead Teachers regarding monitoring and mentoring for APTIP;
- Two, content-based training sessions and one for AP Teachers;

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

- Vertical Teams in each subject, so that instructors, beginning in 6th grade, can understand how to teach the building blocks that prepare students to comfortably achieve in the rigorous AP courses they will be offered in high school;
- Pre-AP training provided by Laying the Foundation; and
- Continuous monitoring with feedback and training by Lead Teachers and Content Directors.

As a leverage point, A⁴KY will accelerate the training of all pre-AP math, science and English teachers in rigorous content across middle and high school classes. Over five years, all A⁴KY math, science and English teachers will receive two to three years of Laying the Foundation,⁵ the Pre-AP program within the NMSI model.

Laying the Foundation provides hands-on experience in skills based model lessons. LTF is a combination of articulated lesson plans, instructional resources, testing tools and teacher training. This system connects high expectations for all students to achieve academically with preparation and the confidence and know-how to be successful. LTF lessons, labs and formative assessments are based on a cumulative progression of skills and concepts for math, science and English for grades six through 11. The resources can be embedded into existing curriculum to raise the level of instructional rigor.

The key Elements of Success of AdvanceKentucky's APTIP and the A⁴KY leverage points are illustrated on the following chart:

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal



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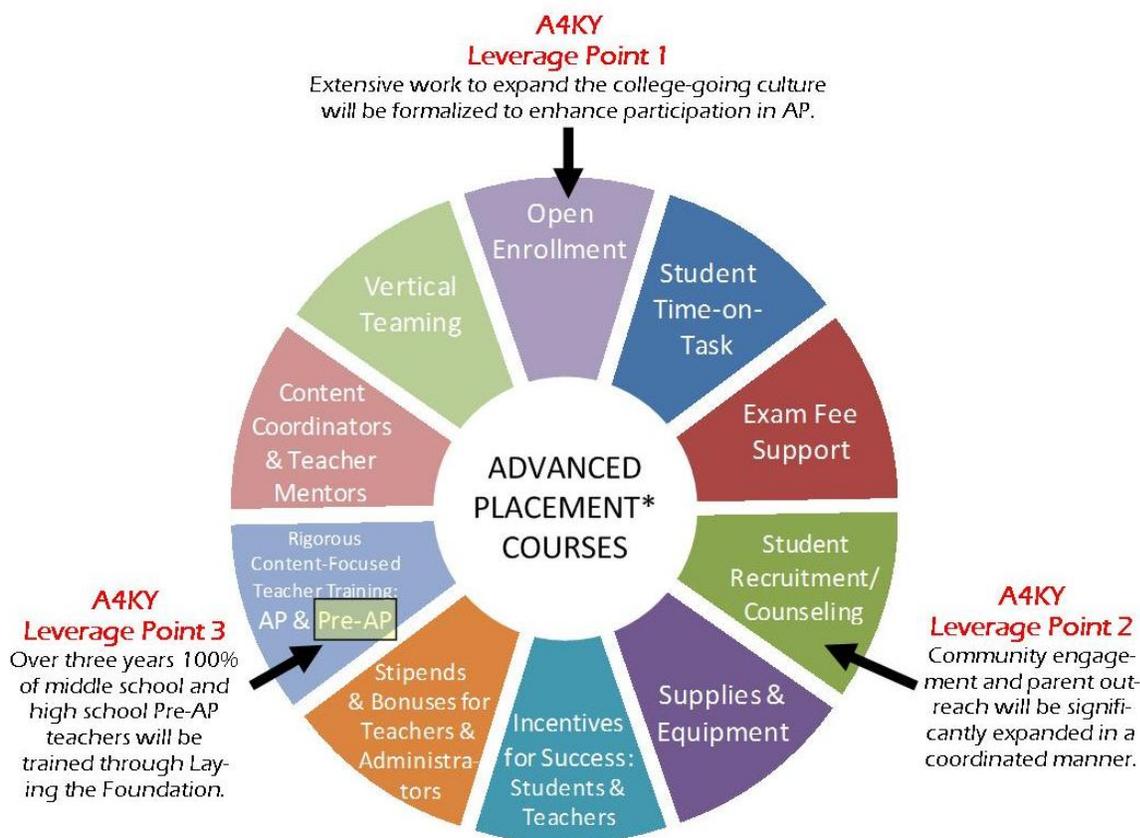
...accelerating learning in math, science and English

AN INITIATIVE OF KENTUCKY SCIENCE & TECHNOLOGY CORPORATION

IN PARTNERSHIP WITH



National Math & Science Initiative (NMSI)
AP Teacher Training and Incentive Program
ELEMENTS OF SUCCESS



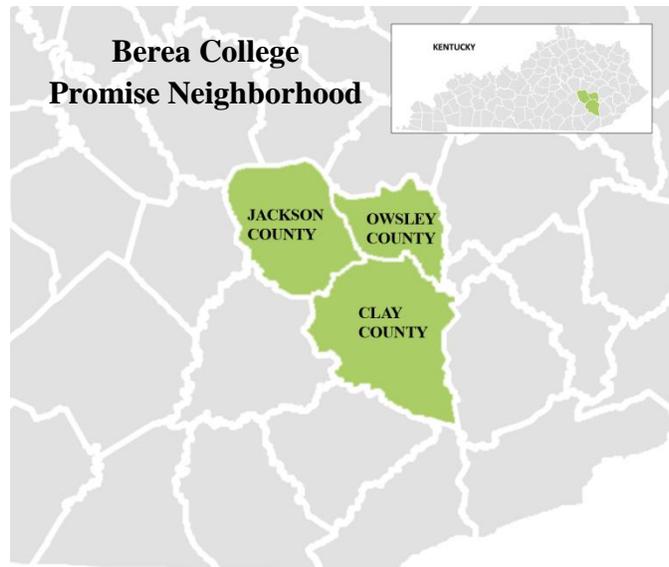
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* Advanced Placement Program, AP, and Pre-AP are registered trademarks of the College Board.

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

2. Specific gaps or weaknesses have been identified and will be addressed by A⁴KY

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY) will impact the Berea College Promise Neighborhood, composed of Clay, Jackson and Owsley counties in rural Appalachia. A⁴KY will serve 2,948 students in all middle and high schools within our Promise Neighborhood—Clay Middle and High, Jackson Middle and High and Owsley Junior High.



The Promise Neighborhood Management Board began collecting data and analyzing community need and assets in October 2010. This work has informed the design of this A⁴KY, an I3 Development proposal.

Within our Promise Neighborhood, poverty levels and unemployment rates are high; educational attainment and income is low, all exacerbated by the isolation of the area. There are no interstate highways in the area, making travel in and out of the region difficult. The Daniel Boone National Forest covers a large part of the region greatly reducing the local tax base.

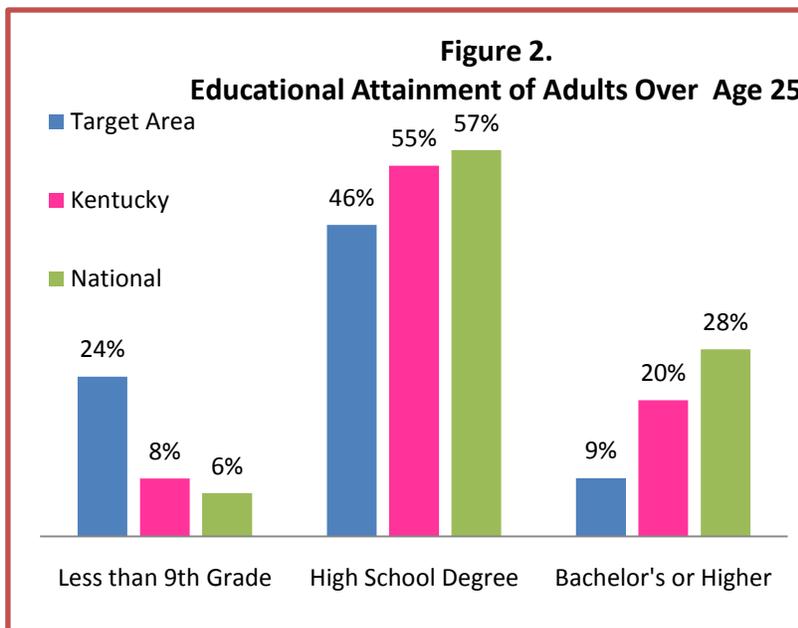
Two counties within the Promise Neighborhood are above 300% of the U.S. poverty rate and the third exceeds 200%. Child poverty rates of 38% are significantly greater than Kentucky at 24% and more than double the nation at 19%.⁶ The Appalachian Regional Commission (ARC) has designated these counties as economically distressed. The ARC assigns an Index Value Rank to all counties using several economic indicators, ranking all U.S. counties from 1 (the best economically) to 3,100 (the worst economically). *The three counties in Promise Neighborhood*

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
 A Berea College Promise Neighborhood I3 Proposal

are all are worse off economically than 99.7% of the other counties in the nation.⁷

Our targeted region of Appalachia has historically been under-educated. As shown in

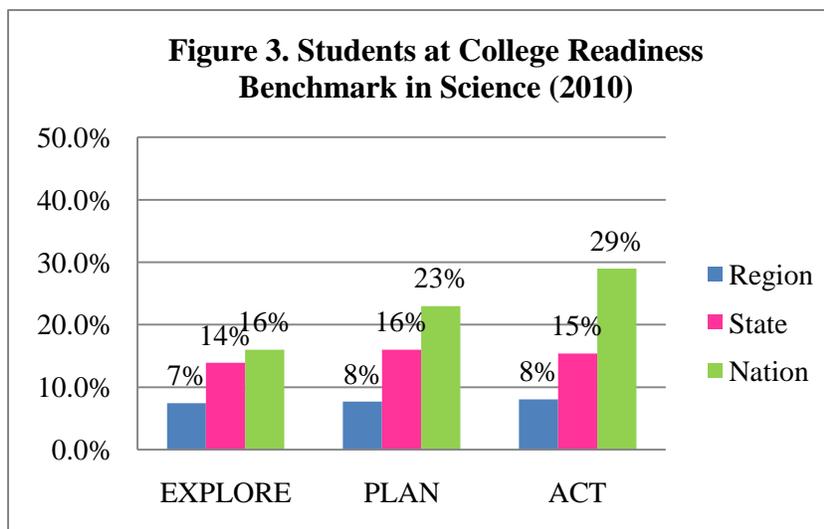
Figure 2, 24% of residents over the age of 25 have less than a 9th grade education and less than half (46%) have a high school diploma. Only 9% have a bachelor’s degree or higher.⁸ Owsley County, with only 4.6% of residents with a bachelor’s degree, has the



lowest rate of bachelor’s degrees of any county in the nation.

The Kentucky Department of Education (KDE) has classified all middle and all high schools within the Promise Neighborhood as Persistently Lowest-Achieving schools. Clay

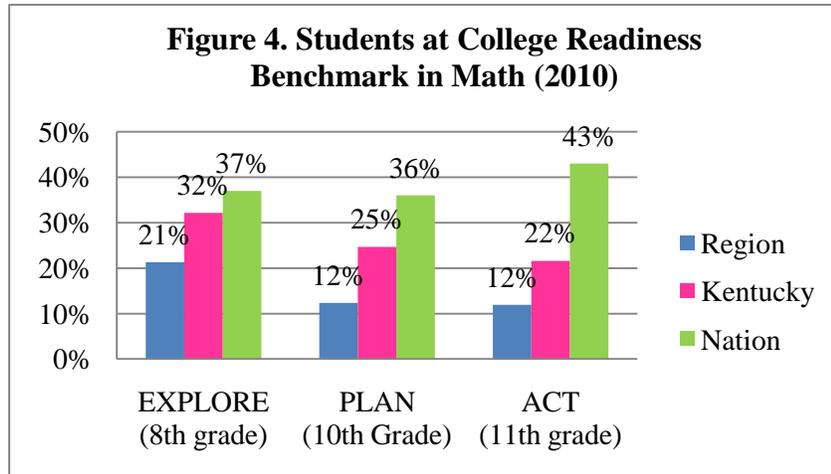
County Middle, Jackson County High, Jackson County Middle and Owsley County Junior High were included by KDE in their 2009 application for the School Improvement Grant (SIG).⁹ And, Clay County



High School has been identified by KDE as a 2010 PLA school.¹⁰

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
 A Berea College Promise Neighborhood I3 Proposal

Students from the target area are not college ready. All 8th, 10th and 11th grade students in Kentucky are assessed using ACT’s EXPLORE, PLAN & ACT, assessments, respectively,



to determine college readiness level. Students at college readiness benchmark have a 50% chance of getting a B or better in the first credit-bearing college course within the content area—English relates to English 101, mathematics to algebra and science to biology. **At each grade, fewer students from the target area are at college readiness than the state or the nation in Math and Science (Figures 3 and 4).** The gap between our region and the state/nation continually increases as our student’s progress from 8th through 11th grade.

Large numbers of our students are not persisting to high school graduation. Researchers have found poverty, more than ethnicity, to be highly linked to low graduation rates.¹¹ **Each school district within our Promise Neighborhood has a free and reduced-price lunch rate of more than 70%, greatly exceeding Kentucky’s rate of 56%.**

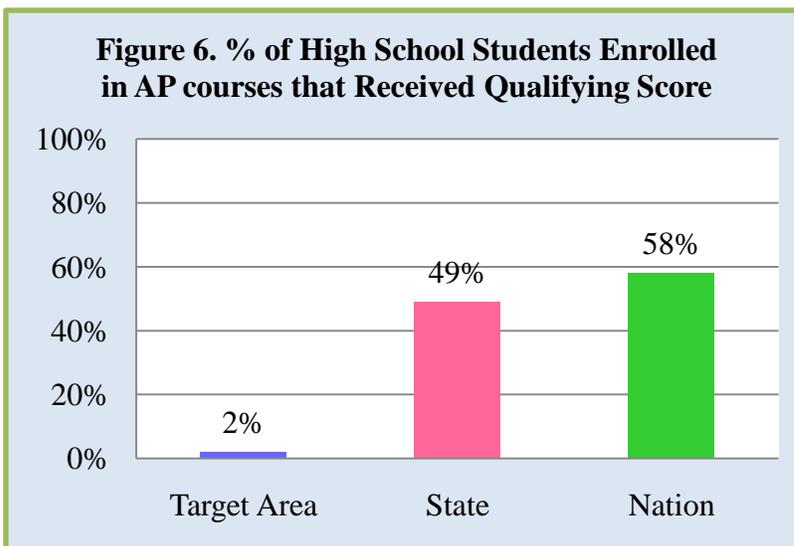
In 2006, Kentucky’s State Auditor found that school districts greatly under-reported student dropout rates.¹² Thus, a more accurate representation of actual high school graduation within our Promise Neighborhood is promoting power. Put forth by Alliance for Excellent Education as an accurate measure, promoting power is calculated by comparing the number of students enrolled in 9th grade to the number enrolled in 12th grade three years later; this estimates the share of a single class of students who dropped out of school before their senior year. Schools

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
 A Berea College Promise Neighborhood I3 Proposal

with 60% or fewer seniors than freshmen are identified as dropout factories.¹³ We have a dropout factory within our target area—Clay County High. Figure 5 shows the 2009-2010 attendance, retention, dropout, graduation and promoting power rates for each high school.

Figure 5. School Information					
High School	Attendance	Retention	Dropout	Graduation	Promotion Power
Clay	88%	9.4%	5.4%	72.5%	55%
Jackson	90%	4.5%	2.9%	83.1%	74%
Owsley	91%	8.0%	1.3%	88.5%	96%
Kentucky	94%	2.8%	2.0%	83.9%	NA
Nation	NA	NA	3.50%	74.90%	NA

Very few students are successful in rigorous Advanced Placement courses. In 2010-2011, there were 940 enrollments in math, science and English AP courses in our Promise Neighborhood. Only 2% (see Figure 6) of students enrolled in AP courses received a 3 or higher on the AP exam (the minimum required to get college credit). This is drastically lower than the state and national percentages of 49% and 58%, respectively.¹⁴



A very small percentage of our students are entering college. Of 2008 high school

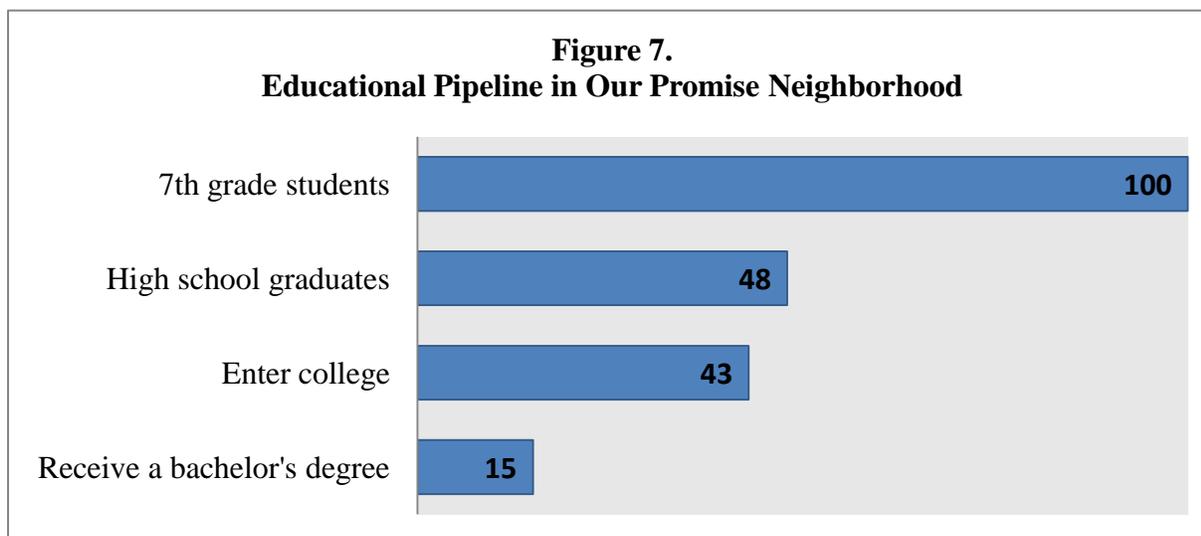
graduates in our region only 45.51% entered college. This percentage is below that of Kentucky (60.9%) and the nation (63.3%).¹⁵

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Many of our students enter college with remedial needs. Sixty-three percent of high school graduates from the Promise Neighborhood need one or more remedial courses in college, compared with 38% for all of Kentucky.¹⁶ Students who are not academically prepared for college face greater obstacles to degree completion. Developmental education lengthens a student’s time-to-degree, increases costs and consumes institutional resources.

Very few students from our target area who attend college graduate with a bachelor’s degree within six years. The 2006 bachelor’s degree six-year completion rates were 56.4% for the nation, 46.4% for Kentucky and a significantly lower 35.5% for the target area.¹⁷

Current high school graduation rates, college-going rates and six-year bachelor’s degree attainment rates predict a dire future for youth in our target area. As shown in Figure 7, if we maintain the status quo, only 15 out of 100 seventh graders in our Promise Neighborhood will go on to receive a bachelor’s degree within six years of high school graduation.



During the 2010-2011, a Berea College evaluation team conducted site visits and a comprehensive needs assessment of each Promise Neighborhood school. The following needs were identified and will be addressed by A⁴KY:

- Few students take AP courses—in Owsley County no AP courses are offered;

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

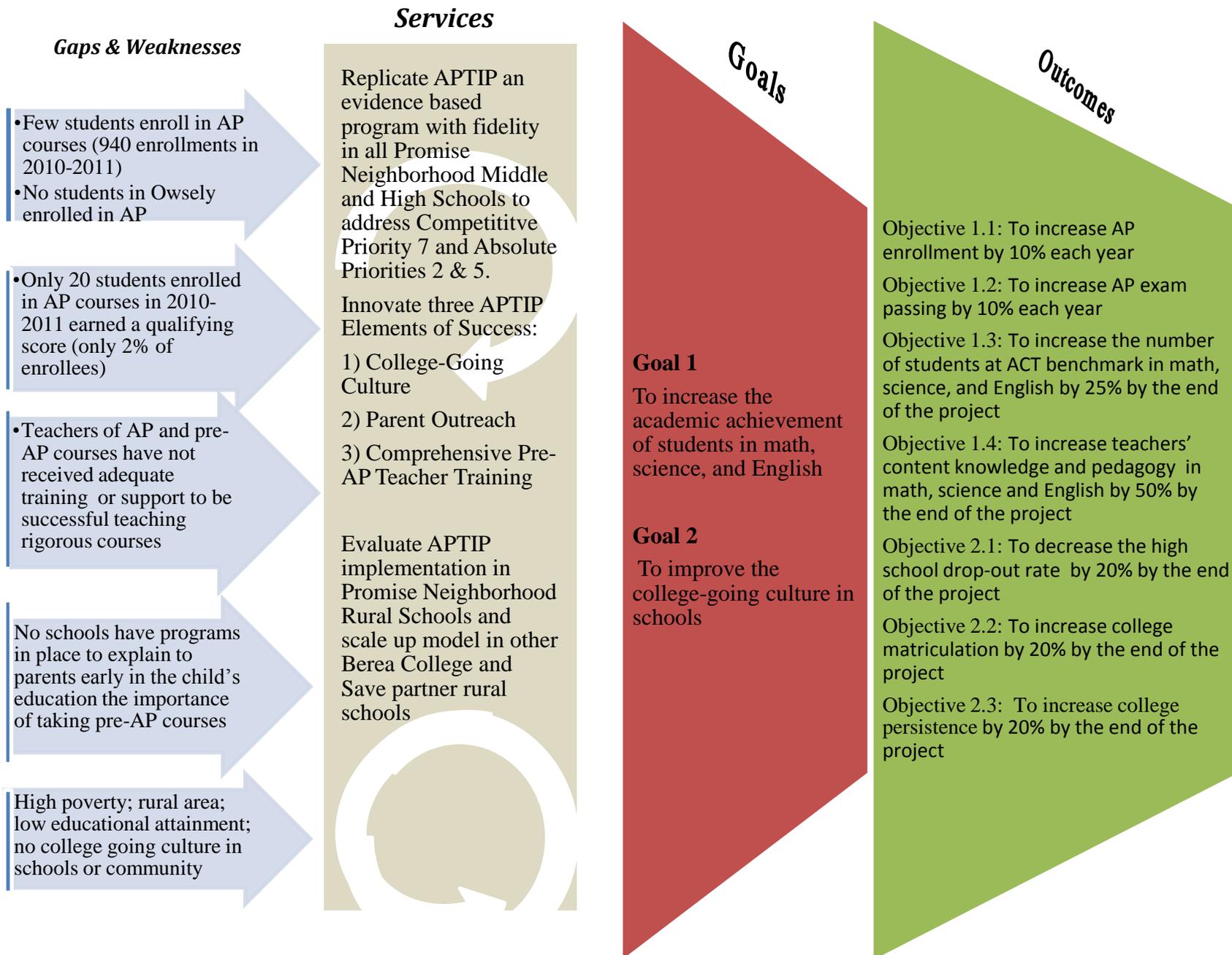
- Few students receive qualifying scores on the AP exams - only 2% of students enrolled in AP courses received a 3 or higher on the AP exam;
- Teachers of our AP and pre-AP courses have not received training necessary to ensure that they are providing the foundation necessary for their students receive a qualifying score in Advanced Placement courses; and
- Fewer than 25% of parents receive high school planning or post-secondary information, and no schools have programs in place to explain to parents early in the child's education the importance of taking pre-AP courses in a timely manner.¹⁸

To respond to these gaps and weaknesses, we will implement with the NMSI Advanced Placement Teacher Incentive Program with three leverage points designed to meet the needs of our rural Promise Neighborhood. A research-based, continuous improvement assessment model along with a thorough project evaluation, based on quantitative and qualitative data, will ensure our services have the desired impact. The A⁴KY Partnership will result in systemic change in the culture of our school systems.

3. A⁴KY will have a positive impact on student achievement and will decrease dropout rates and increase college enrollment and completion rates.

Project goals and measurable objectives are illustrated in the logic model that follows:

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
 A Berea College Promise Neighborhood I3 Proposal



Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal

B. Quality of project design

1. **A⁴KY has a clear set of goals and explicit strategy, with actions that are (a) aligned with the priorities; and (b) that will achieve goals, objectives, and outcomes**

The explicit strategy to achieve the A⁴KY goals and objectives is the replication of the NMSI APTIP. Key actions to implementation of this evidence-based program are as follows:

Assessment, Setting Goals, Planning: AdvanceKentucky will conduct a thorough, initial assessment of the current AP environment at each school, establish performance goals and set plans for meeting those goals, including ensuring teachers are dedicated to APTIP and evaluating and recommending appropriate revisions of school policies in order to maximize success.

Letter of Agreement: Each LEA will sign a formal Letter of Agreement with AdvanceKentucky outlining the responsibilities of implementation, clearly delineating responsibilities and establishing expectations for faithful APTIP replication for all parties.

Ongoing operational aid is the largest responsibility of AdvanceKentucky and includes overseeing day-to-day implementation, monitoring APTIP according to NMSI's operational milestones and providing direct assistance to the schools.

Policy support requires championing policies that promote the overarching goal of improving access to quality education for all students, improving student achievement and student growth for all students and closing the college-readiness gap.

Data Collection: NMSI insists that APTIP remain a data-driven program that constantly evolves and improves, based on feedback generated from each LEA. LEA partners will participate in data collection by releasing (with FERPA compliance) class enrollment data, including school, course name, teacher and student demographic details, such as gender, ethnicity, socioeconomic status and grade level that will be used to measure and report outcomes.

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Student Support, Open Enrollment and Extra Time on Task: APTIP schools adopt open enrollment and recruit more students, including high-need students, to AP courses. APTIP provides academic support so that students have tools to succeed in this new environment of high expectations. APTIP includes at least three AP extracurricular study sessions per subject, led by local experts, as well as after-school tutoring, at a minimum of 40 hours per teacher per year.

Teacher Training, Mentoring and Vertical Teaming: APTIP insists on training teachers with relevant pedagogical methods and providing continual support as teachers adopt skills.

Incentives for Teachers & Students Based on Student Performance: Offering incentives for performance and extra pay for extra work sends a message to students and teachers alike that success in rigorous courses is valued. Incentives focus the attention of everyone on a student's academic achievement on meeting very high standards and acknowledge accomplishment. In recognition of the fact that teachers take a risk by teaching more rigorous courses with students who have not been traditionally represented in AP classes, incentives reward teachers for their dedication to increasing student achievement and encourage them to participate in the professional development necessary to teach to a broader array of students.

A⁴KY will introduce supplemental, complementary actions expected to further enhance schools' success. Three strategic leverage points of innovation are:

- ***College Going Culture:*** Achievement Counselors and Partners will work extensively to expand the college-going culture to enhance participation in AP;
- ***Parent Outreach:*** Achievement Counselors will significantly expand parent involvement in rigorous course taking and college planning;
- ***Comprehensive Pre-AP Teacher Training:*** All middle school and high school pre-AP math, science and English teachers will be trained through Laying the Foundation.

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

2. Proposed project costs and estimates to reach 100,000, 250,000 and 500,000 students

In this project, Berea College will expand student access to rigorous courses and increase student achievement in order to transform five schools within the Promise Neighborhood to an environment of high expectations and a culture of college-readiness for approximately 2,948 students at a cost of \$3,290,948 (i.e., the cost of the project, including federal and non-federal funds, but excluding the cost of the independent evaluation, see Budget Narrative).

Furthermore, the estimated cost of scaling APTIP in similar, small rural schools is only \$1,117 per student. This figure is based on a project cost of \$3,290,948 (see above), which is expected to reach 2,948 students who are taught by APTIP-trained teachers. **Note that this cost per student is not a “per year cost,” but a one-time cost that provides multiple years of service to all students.** The annual cost per students is only \$204 (calculated at an average annual cost of the program divided by 2,948 students).

APTIP generates economies of scale as it reaches more students. APTIP costs \$597 per student to reach 100,000 students; \$384 per student to reach 500,000 students; and \$273 per student to reach 1 million students. This economy of scale is generated based on review of data from similar organizations serving 400,000 students annually.

3. Costs are reasonable in relation to project objectives, design, and significance

Berea College’s Promise Neighborhood I3 program will transform the culture of five persistently lowest-achieving schools in Appalachian Kentucky into one of college-going; provide 2,948 students with access to rigorous curriculum and develop the capacity of all middle and high school teachers within these three Promise Neighborhood school districts. Our budget is adequate to implement planned services and activities; costs are reasonable in relation to the number served, the quality of services described and results and benefits to be derived from I3.

We have included a five-year total project budget that details all project expenses,

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

categorizing expenses as federal or match. All costs are reasonable in relation to the objectives and the scope of the program and all costs are linked back to the project goals. Each line item has been carefully calculated, using EDGAR and Berea College's costing principles, procedures, guidelines, restrictions and limitations and each has been connected to a specific objective.

Berea College Promise Neighborhood I3, our activities and our services address long-standing gaps around rigor and high expectations in our Appalachian Kentucky schools. Our schools do not have resources to adequately address the unique needs of low-income students. As a result, our schools are failing our students. The costs of I3 are reasonable when compared to the long lasting, systemic change that will result. We will meet our stated goals and objectives and provide a solid return on the federal investment.

4. Potential and planning for incorporation of A⁴KY into the ongoing work of Berea College, Kentucky Science and Technology Corporation and Save the Children

Berea College and our partners have a structure and plan in place to incorporate the work of A⁴KY into our work with rural LEAs across Kentucky and the nation.

Berea College: Berea College has been working in partnership with rural schools and communities since the college's founding in 1855. In the late 1800s and early 1900s, Berea staff and faculty visited rural Appalachian communities in horse-drawn wagons delivering books to homes and schools. In 1967, we received our first U.S. Department of Education college access program, an Upward Bound program that we are still operating today. Through current college access and outreach programs, Berea serves more than 60 high schools across the state, the majority of which are rural. As we develop our Promise Neighborhood program, we plan to scale up our Neighborhood to include other rural Appalachian schools. The work of A⁴KY will be an integral part of the programs we take to our partner schools.

Kentucky Science and Technology Corporation: The Kentucky Council on

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Postsecondary Education, the Kentucky Board of Education and the Kentucky Department of Education collaboratively developed a unified strategy to reduce college remediation rates of recent high school graduates by at least 50 percent by 2014 from the rates in 2010 and to increase the college completion rates of students enrolled in one or more remedial classes by 3% annually from 2009 to 2014. A key goal is for all students to have access to and success in Advanced Placement, International Baccalaureate or other accelerated learning opportunities and *science, technology, engineering and mathematics (STEM) program opportunities, including AdvanceKentucky*. Kentucky Science and Technology Corporation is included on a cross-agency work team charged with implementing the unified plan to ensure that students have increased access to accelerated learning. The lessons learned in A⁴KY will be shared with the cross-agency work team and will impact all schools and students in Kentucky.

Save the Children: Save the Children (Save), a member of the Promise Neighborhood Management Board, is one of the largest and most highly regarded organizations in the world devoted to helping children in need. In the United States, working in partnership with rural schools, Save provides in-school, after-school and summer programming to 15,000 children in nearly 150 of the nation's poorest and most remote rural communities. Save focuses their partnerships primarily on improving educational outcomes in youth. They come to this partnership with a desire to identify proven strategies to share with their partner schools to help the schools develop a strong educational continuum from birth through college. Save will distribute information on A⁴KY to their partner schools throughout the country and assist those schools in replicating the lessons of A⁴KY.

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

C. Quality of Project Evaluation

- 1. The methods of evaluation will provide high-quality data and performance feedback, and permit periodic assessment of progress toward intended outcomes.**

Purpose of the Evaluation: Evaluation Consulting Group, Inc. (ECG) will lead the A⁴KY evaluation. The evaluation of Berea College's A⁴KY is guided by two primary objectives: (1) to assess the impacts of A⁴KY over time using a rigorous and robust study design with high internal validity; and (2) to study program implementation—both of the A⁴KY program in participating schools and of Berea College's innovative strategy.

Evaluation of Program Implementation: The goals of the A⁴KY implementation evaluation are to: (1) provide formative feedback to Berea College on A⁴KY implementation; (2) measure implementation fidelity; (3) describe the service contrast between A⁴KY and non-A⁴KY schools; and (4) summarize information related to the successful development of A⁴KY. These goals will be accomplished in two phases of the evaluation.

(Year 1: 2011-12). In Year 1, the three participating school districts will implement A⁴KY according to Berea College's established milestones and implementation data will be entered into the web-based database management system. In fall 2011, ECG will review the database management system and develop an auditing plan that will be implemented and refined, as necessary, throughout Year 1. ECG's auditing approach will involve analyzing the implementation records for each of the three schools at fixed time periods. Thus, during Year 1, ECG will establish the number, type, and timing of implementation records to ensure that Berea College's system is sufficiently monitored during the full study. ECG will also develop protocols and conduct interviews with Berea College key stakeholders and school district administrators to provide Berea College with third-party feedback on how its key partners view their relationship

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

to Berea College as the project prepares for the full study.

In addition to this formative feedback, ECG will develop data collection instruments that will be used to expand Berea College's evaluation of A⁴KY implementation and measure the service contrast between A⁴KY and non-A⁴KY schools and the impact of A⁴KY at the individual student level. For both of these purposes, ECG will adapt relevant instruments developed for other studies, including evaluations that incorporate school-based professional development measures and teacher-leader and student surveys. Instruments will be refined to measure the fidelity of project implementation during the 2012, 2013, 2014 AP teacher summer trainings.

To measure the service contrast between A⁴KY and non-A⁴KY participants, ECG will also develop surveys for AP teachers, Lead Teachers and students at A⁴KY and non-A⁴KY schools. The teacher surveys will address topics such as teacher background characteristics, AP organization at the school and AP-specific training and support systems for teachers. The student surveys will include topics such as number and type(s) of AP courses, participation in AP-specific tutoring and support and attitudes and other behaviors related to AP courses. For all implementation instruments developed during Year 1, ECG will communicate regularly with Berea College's A⁴KY Project Director and conduct a limited number of in-depth interviews with A⁴KY and non-A⁴KY teachers to inform and improve the development process.

Phase 2: Measure Program Implementation (Years 2-5: 2012-2016). At the conclusion of Year 1, ECG will have a complete set of implementation instruments and procedures to use in the full study. In **Year 1**, an ECG evaluation team member will attend the first teacher training to test the fidelity form and will review the form to ensure that it captures the desired data. Also during the first year, ECG will monitor the AP Teacher, Lead Teacher and Berea College Project Director logs on a monthly basis to: measure implementation; administer the teacher and student

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

surveys (spring) and collect syllabi from nonprogram AP teachers (spring) to measure the service contrast; conduct site visits to A⁴KY and non- A⁴KY schools (spring) to measure implementation; and interview Berea College key stakeholders and school administrators (spring) to provide formative feedback to Berea College. This data collection plan will be repeated during **Years 2-5**, except that the school site visits to schools will only occur every other year – in Years 2 and 4.

Performance feedback and assessment of progress. Quarterly written updates will be provided to the Director. Summaries will be provided after each round of data collection to keep project participants apprised of the most up-to-date data. Written annual evaluation reports will be provided a month after the end of each school year in July. Written reports will include methods, analyses and discussion of all data collected throughout the year. Discussions will include an examination of the project’s progress toward achieving objectives and performance measures, strengths and weaknesses of the project and recommendations for improvement. Evaluation reports will be shared with Management Board members and project staff and used to guide plans for later project year(s).

2. Evaluation will provide sufficient information about the key elements and approach of the project to facilitate development, replication, or testing in other settings.

Evaluation of Program Impacts: The Evaluation Consulting Group (ECG) will assess the impact of A⁴KY on student-level outcomes over time with a rigorous quasi-experimental, pre-post, nonequivalent group design. The study design will allow estimation of the effects of A⁴KY on outcomes that include AP exam-taking, AP exam-passing and rates of college application, matriculation and persistence.

The primary research questions that guide the impact evaluation are:

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

- (1) *What is the impact of A⁴KY on the likelihood that students will enroll in AP courses, take and pass AP exams in mathematics, science or English (MSE)?*
- (2) *What is impact on likelihood that students will apply to, matriculate and persist in college?*

Secondary research questions include:

- (1) *What is the impact of A⁴KY on the likelihood that students pass AP exams in MSE with test scores that translate into college credits?*
- (2) *What is the effect on rural schools' achievement vs. nonrural schools, with achievement factors defined as, but not limited to, test scores, course enrollment and course offerings?*

In total, there are 20 school districts in the Berea College Office of External Programs service region of rural Appalachia Kentucky. Of these 20 school districts, three school districts were selected for participation in the Berea College A⁴KY program. These school districts were self-selected to participate in this program based on need (low academic achievement on state test scores in MSE, few AP course offerings, low AP passing, inadequate formalized preparation for AP teachers), their identification as Promise Neighborhood schools and a willingness on the parts of the administrators to implement the A⁴KY program with fidelity. Within two of the selected school districts, there is one middle school that feeds into one high school; the third has a junior high school (7-12). A⁴KY program will include all the students in these five schools.

In 2010-2011, 2,948 students were in attendance at the five schools who will be participating in the A⁴KY program (treatment group students). A matching group of 2,948 control students (see figure 8 below) will be identified based on matching criteria (matching criteria may differ based on the grade of students) from the larger pool of non-A⁴KY program schools located within 17 nearby school districts. Using data provided by the Kentucky Department of Education and a propensity score matching (PSM) procedure, participating

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

students (the treatment group) will be matched with a student from the control group using key characteristics, including: (a) prior achievement scores in math, science and English on Kentucky state tests; and (b) student demographics, including gender, race, free/reduced-priced lunch status, disability status, English proficiency and school grade. In the unlikely event of a need for a control student replacement, an alternate list of matched students for the A4KY program participating students will be identified to minimize disruption to the data collection process. The utilization of the matched comparison group will minimize threats to internal validity at each stage of the A⁴KY program, as students will be matched at three different points given the expected progression of A⁴KY students and the expected benefits of the program. The evaluation will make further attempts to mitigate threats to selection bias by employing statistical controls for background variables that may affect program participation.

Figure 8. Matching Characteristics for Treatment and Control Groups		
Matching Variables for 7 & 8 th Grade Students	Matching Variables for 9 & 10 th Grade Students	Matching Variables for 11& 12 th Grade Students
Gender	Gender	Gender
Race	Race	Race
FRP	FRP	FRP
Disability Status	Disability Status	Disability Status
English Proficiency	English Proficiency	English Proficiency
Grade	Grade	Grade
	8 th Grade State Achievement Test Scores	8 th Grade State Achievement Test Scores
		Taking AP class(s)

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Sample Size and Analysis: Analyses for binary outcomes in quasi-experimental designs determine the minimum sample size required to detect a difference of approximately 3 percentage points on a key outcome (e.g., AP exam-passing) between 11th and 12th graders in treatment schools and 11th and 12th graders in control schools is approximately 50 per condition.

Measures and Data Collection: As described earlier, A⁴KY intends to provide training and incentives that are expected to result in expanded enrollment in AP MSE courses, increases in AP exam-taking and success, and increases in college readiness and success. The outcome measures for this A⁴KY evaluation are directly aligned with these program objectives. The intermediate outcome includes AP course-taking in MSE subjects. The primary short-term outcomes include AP exam-taking and AP exam-passing (with a score of 3 or higher) in MSE subjects. The primary longer term outcomes include application to college, enrollment in college (two-year as well as four-year) and persistence through the first year of college.

Data will be collected from students in grades 7th through 11th in school year 2011-2012 and continue for five years. In grades 7 and 8, each student attending A⁴KY schools (treatment group) will be matched on demographic characteristics with a student attending a non-A⁴KY school (control group). Students in grades 9 and 10 will be matched on demographic characteristics, A⁴KY school status, as well as 8th grade achievement test scores in mathematics, science and English. Students in grades 11 and 12 will be matched on demographic characteristics, A⁴KY school status, as well as 8th grade achievement test scores in mathematics, science and English as well as enrollment in an AP course in mathematics, science and English. In short, the matching characteristics for the treatment and control students will become increasingly more demanding as students in the lower grades continue and experience the positive impacts of the A⁴KY program (see figure 8 above).

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

The data collected from the participating treatment and control students are as follows: achievement scores will be collected from 7th and 8th grade students; AP course matriculation data will be collected from 9th and 10th grade students; for 11th and 12th AP exam taking and resulting AP scores will be gathered. For students in 9th through 11th grade in A⁴KY program at Year 1 (2011-2012), college application, college matriculation and college retention data will be gathered as they advance in their education. These student-level binary data and analyses will reveal the impact of A⁴KY on the probability of individual students enrolling in AP courses, taking and passing AP exams in the core subjects and students applying to, enrolling and persisting in college. To collect data related to AP courses (course-taking, exam-taking and exam-passing) and college applications, Berea College and ECG will work with each school to establish a control study coordinator to whom a nominal stipend will be provided (e.g., the school guidance counselor). The school control study coordinator will be asked to provide the requested information for all of the students in the school using a secure data collection system, which has been developed specifically for Berea College's Department of External Programs. This secure data collection system will be utilized for the A⁴KY project. Additionally, college matriculation data (i.e., whether students enrolled in college and whether the college is two-year or four-year) will be collected as well as data on persistence in the first year of college by using the National Student Clearinghouse (NSC). Over 3,300 colleges and universities participate in the NSC, and 92% of U.S. students attend participating schools.

ECG will use student characteristics including grade, demographics (race/ethnicity, gender, age, free/reduced price lunch status, special education status, English learner status) and test scores on 8th grade state assessments in English, mathematics and science. Berea College and ECG will collect these student-level data from the LEAs and schools.

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Analytic Strategy. The basic logic behind the analytic strategy is to compare outcomes for students from three of the low-income, low-performing Appalachian schools in Berea College's service region selected to participate in A⁴KY relative to matched control students attending a non-A⁴KY program school in the service region. The primary unit of analyses is the student. Propensity scores will be calculated utilizing logistic regression analysis prior and testing for meaningful differences as a result of participating in the A⁴KY program. Regression analysis will be utilized to determine the value of participation in A⁴KY program in contributing to AP test scores of 4s and 5s in the areas of mathematics, science or English. In addition, Multivariate Analysis of Variance will be utilized to evaluate the broader impact the significance of participation in A⁴KY program, effect of a specific school, and achievement test scores on AP course enrollment, AP test results, and college matriculation, and persistence. ECG will conduct this analysis after the completion of each school year on all of the specified outcomes that are relevant for that year of the project.

The timeline shows evaluation activities and is followed by details.

Evaluation Timeline

Evaluation Activity	Completion Date
Meet with Project Director to finalize evaluation design	October
Develop data collection protocols	October
Review database management system, develop auditing plan	October
Conduct literature review	October
Develop survey and interview instruments	October
Collect baseline data on student achievement	November
Administer Student and Teacher surveys	November

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal

Conduct Teacher interviews	November
Analyze implementation records for treatment schools	TBD
Quarterly update	November
Student test scores released by KDE	January
Identify control group	January
Analyze implementation records for treatment schools	TBD
Quarterly update	February
Conduct Teacher interviews	March
Conduct student focus groups	March
Conduct interviews with key stakeholders	April
Analyze implementation records for treatment schools	TBD
Quarterly update	May
Analyze AP-passing results	June
Document analysis	June
Observe summer workshop	July
Analyze implementation records for treatment schools	TBD
Annual evaluation report	August

After Year 2, analyses will determine the impact of one year of A⁴KY on AP course-taking (intermediate outcome), AP exam-taking and –passing, college application and matriculation by comparing 11th and 12th graders in the treatment schools to their matched control students.

After Year 3, an estimation of the impact of two years of A⁴KY on the AP-related outcomes plus first-year college persistence can be calculated. **After Year 4**, the pooled effects

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

of two years of A⁴KY, compared to control students, will be estimated and a comparison of treatment students to control students will be calculated to estimate three-year impacts of A⁴KY.

At the end of Year 5, pooled effects of three years of A⁴KY vs. control students will be estimated. Also, by comparing treatment students to control students at the end of Year 5, the impact of four years of A⁴KY (including one year of program development) on all outcomes can be estimated. Analyses of effects over five years will also include estimation of time effects, which will help determine the effectiveness of Berea College's development strategy.

3. Sufficient resources are allocated to carry out the project evaluation effectively

Evaluation Team: The evaluation of the Berea I3 A⁴KY program will be conducted by the Evaluation Consulting Group (ECG). Located in metropolitan Washington, D.C., ECG works extensively in Kentucky as well as Illinois and Washington, D.C., providing research and evaluation services to educational institutions.

With most of the organization's projects in the Commonwealth of Kentucky, ECG is very familiar with the needs, gaps, and resources within the state. In Kentucky, ECG works with Berea College, Morehead State University and West Kentucky Educational Cooperative, evaluating each of the educational institution's Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP), funded by the U.S. Department of Education (ED). With Berea College, ECG also conducts the evaluations for the College's Women in Educational Equity Act grant (final year) also from ED and the Office of Juvenile Justice and Delinquency Prevention's (OJJDP) Mentoring program. At Morehead State University, in addition to GEAR UP, ECG evaluates the state-funded Improving Educator Quality (IEQ) grants in Math as well as for Reading and the Increasing College Readiness grant. Also in Kentucky, ECG works with the University of Louisville, evaluating the National Science Foundation (NSF) GK-12 project and

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

the Early Start STEM Noyce Scholarship program.

The evaluation team from Evaluation Consulting Group will be Judy H. Kim, Ph.D. and Amanda Kim, Ph.D. With a Ph.D. in Educational Policy Studies from the University of Illinois at Urbana-Champaign, Dr. JH Kim has more than 13 years of experience conducting program evaluations. Dr. A Kim, also from the University of Illinois at Urbana-Champaign, received her Ph.D. in Counseling Psychology and has been conducting program evaluation for more than eight years. Both have extensive experience working in K-12 educational settings as well as higher education institutions. Please see attached CVs, Appendix F, for detailed experiences.

D. Quality of management plan

1. The management plan is adequate to achieve the objectives on time and within budget, including clearly defined responsibilities, timelines and milestones for accomplishing project, sustainability and scalability tasks

Based on previous experience with federal programs of this size and scope, we have developed an extensive plan for effectively managing the Promise Neighborhood program. Policies and procedures are in place for data collection, recordkeeping and reporting – financial, student, and service. Berea College personnel, financial, and management policies are in place to ensure compliance with all federal and state regulations. In compliance with Department of Education regulations, all I3 personnel will maintain time and effort logs that will be turned in monthly to the Project Director, reviewed and signed by the Director and filed in the I3 office. Each district will assign a principal as on-site supervisor for the Achievement Counselor and the principal will review and sign the Achievement Counselor’s time and effort logs and submit to the Director.

Our Year One timeline with milestones for accomplishing project tasks, and responsible party follows. No major changes are anticipated during the second - fifth years.

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Figure 9. YEAR ONE PROJECT TIMELINE AND PERSONNEL RESPONSIBLE	
Principal Investigator (PI), Project Director (PD), Achievement Counselor (AC)	
WEEKLY ONGOING ACTIVITIES	
Leadership meeting to review data and discuss individual students and schools (PD) (ACs)	
Tutoring sessions and Rigorous Courses (AC)	
Maintenance of Time and Effort Logs and Service Reports (ALL)	
Mentoring with At-Risk Students and Visits with Families (AC)	
MONTHLY ONGOING ACTIVITIES	
Meetings: <i>Staff Meetings</i> (All) <i>Faculty meetings</i> (PD) (AC) <i>Berea College Directors Mtg</i> (PD)	
A ⁴ KY Staff Training and Development (ALL) Student and Parent Workshops (AC)	
Reconcile federal/match expenditures with college accounting office statements (PD)	
Meetings with key education stakeholders and potential funders to ensure sustainability and scalability of project beyond grant term. (PI) (PD)	
Promise Neighborhood Management Board Meeting and Report (PI) (PD)	
JANUARY 2012	FEBRUARY 2012
Hire staff, Establish Office (PI) Introduce A ⁴ KY (PI) Meeting with School Officials (PI) Receive data download from KDE (PI)	Set project benchmarks and targets (PD) Administer Parent & Student Survey (PD) Conduct walk through assessments (PD) School Team Planning Retreat (PD)
MARCH 2012	APRIL 2012
Identify teachers for AP and LTF (PD) (AC) Work with school on Scheduling (PD) (AC)	PD for teachers/administrators (PD) Parent Sessions on Scheduling (AC)
MAY 2012	JUNE 2012
Collect EPAS data from Schools (PD)	Intensive PD for AP/pre-AP teachers
JULY 2012	AUGUST 2012
Evaluation of all A ⁴ KY Staff (PD)	Conduct Focus Groups (AC)
SEPTEMBER 2012	OCTOBER 2012
Conduct walk through assessments (PD)	Confer with Partners Regarding Match (PI)
NOVEMBER 2012	DECEMBER 2012
Year 2 Planning Retreat (All)	Year End Evaluation (PD)

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

Sustainability and Scalability: Our Berea College Promise Neighborhood I3 is composed of partners committed to our schools, our parents and our students. Collectively our partners have committed private dollars to match the federal funds. It is important to note that as a Title III certified institution, Berea College qualifies for reduced matching of federal dollars. However, our partners came forth with the required match. We are not requesting the reduced match that we qualify for as a Title III Institution.

Our cohesive commitment will not end when federal funding ends. Our stringent evaluation will ensure that we have the data necessary to show that A⁴KY does work and must be replicated in rural schools in Appalachian Kentucky and beyond. The Promise Neighborhood Management Board will take the lead on the effort to seek funding to sustain A⁴KY within the Promise Neighborhood. Save the Children will take the lead on seeking funding to scale-up A⁴KY on a national level and the Kentucky Science and Technology Corporation will lead the scale-up of A⁴KY within Kentucky. Both Save the Children and the Kentucky Science and Technology Council have a proven fundraising track record and with the expertise to locate private funds to scale up A⁴KY.

2. The qualifications of the project director and key project personnel

Upon funding, we will begin a search for a Project Director who will report to the PI.

Figure 10. PROJECT DIRECTOR 100% FTE for 12 months	
QUALIFICATIONS	RESPONSIBILITIES
Minimum of Master’s degree in educational administration, evaluation studies, or related field, with a Doctorate in education, evaluation or leadership strongly preferred	Develop and refine program operations; design and implement evaluation; supervise staff hiring, development and evaluation; oversee budget planning – federal and match

Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
 A Berea College Promise Neighborhood I3 Proposal

Figure 10. PROJECT DIRECTOR 100% FTE for 12 months	
QUALIFICATIONS	RESPONSIBILITIES
Minimum five years experience in personnel/ program/fiscal management required	Ensure objectives are being met and program is in compliance with USDOE & EDGAR
Minimum of five years experience with federal grants management, including budget responsibility for programs in excess of \$250,000 per year , required as is extensive evaluation experience.	Guide development of five year plan of operation with specific strategies to meet student, parent and school needs. Lead Sustainability efforts and assist partners with Scale-Up
Demonstrated knowledge and leadership in the areas of school reform, college and career readiness, and program evaluation	Maintain relationships with partners; ensure all stakeholders, including teachers, students and parents, have input

Key Personnel: Principal Investigator (10% FTE): Dreama Gentry, J.D., Director of Berea College External Programs will serve as Principal Investigator (PI), devoting 10% of her time to this role and will be paid out of **private funds**. Her **qualifications** include more than 15 years administering federal programs in partnership with rural schools. She directs External Programs which has an annual budget in excess of \$5 million dollars and 27 full-time employees. Gentry reports to the Berea College President. As PI, her **responsibilities** will include articulating I3’s strategic direction and theory of change, collaborating with the evaluation team, and aligning the I3 program to other Berea College and Appalachian P-16 initiatives.

Key Personnel: Achievement Counselors (3 100% FTE): Upon notification of funding, Berea College will begin a search for three full-time, 12-month Achievement Counselors (AC). ACs will be located in the A⁴KY high schools. **Responsibilities include** providing college and career awareness information to students and parents to support rigorous course taking; provide

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

services to students and their families to remove barriers to student success; and, maintaining a caseload of A⁴KY students identified as students who may not be aware of, or encouraged to enroll in, rigorous pre-AP and AP courses or who may be facing barriers to success in AP or pre-AP courses. **Qualifications:** A bachelor's degree in education, counseling or a related field is required, with a master's degree preferred. Preferred skills include: proven experience collaborating with teachers, administrators and parents; excellent rapport with students; high expectation for all students; ability to tutor students in academic contents; understanding of the skills and academic levels needed to be college and career ready and a belief that all students can be college and career ready.

In addition to these key personnel, one full-time Program Associate is included to ensure all program goals and objectives will be met.

¹ Geiser, Saul & Santelices, Veronica, "The Role of Advanced Placement and Honors Courses in College Admissions." 2004. Research & Occasional Paper Series No. CSHE 4.04). University of California, Berkeley. Web. <<http://cshe.berkeley.edu/publications/docs/ROP.Geiser.4.04.pdf>>; and Dougherty, C., Mellor, L., Jian, S. "The Relationship Between Advanced Placement and College Graduation." February 2006. National Center for Educational Accountability: 2005 NCEA Study Series, Report 1. Web. 4 May 2010 <http://www.nc4ea.org/files/relationship_between_ap_and_college_graduation_02-09-06.pdf>

² Morgan, R. and Ramist, L. "Advanced Placement Students in College: An Investigation of Course Grades at 21 Colleges." ETS Statistical Report NO. 98-13. 1998. Web. 8 May 2010 <http://www.collegeboard.com/ap/pdf/sr-98-13.pdf>

³List of all eligible LEAs for the Rural and Low-Income School Program (RLISP) for FY 2011 by state: <http://www2.ed.gov/programs/reaprlisp/eligible11/index.html>

⁴ Information on rural schools provided by The National Math & Science Initiative in their May 2010 Investing in Innovation Fund Grant Application

⁵ Laying the Foundation is a registered trademark of Laying the Foundation, Inc. See www.layingthefoundation.org.

**Accelerating Academic Achievement in Appalachian Kentucky (A⁴KY)
A Berea College Promise Neighborhood I3 Proposal**

⁶ U.S. Bureau of the Census, *2005-2009 American Community Survey*, December 2010. U.S. Appalachian Regional Commission, *County Economic Status*, www.arc.gov. 2011.

⁷ U.S. Bureau of the Census, *2005-2009 American Community Survey*, December 2010. U.S. Appalachian Regional Commission, *County Economic Status*, www.arc.gov. 2011.

⁸ U.S. Census Bureau, *2005-2009 American Community Survey*, December 2010

⁹ *Kentucky Department of Education*, SIG Federal Tier Schools List for FY09 and FY10, <http://www.education.ky.gov/KDE/Administrative+Resources/Federal+Programs+and+Instructional+Equity/Title+Programs/SIG+Technical+Assistance+for+Federal+Tier+Schools.htm>

¹⁰ Ibid.

¹¹ Balfanz and N. Legters, *Closing Dropout Factories: The Graduation-Rate Crisis We Know and What Can be Done with It*, *Education Week* 25, No. 42, 2006

¹² Lexington Herald-Leader, "Dropout Rates Are Off, Auditor Says," October 13, 2006

¹³ T. Tucci, *Prioritizing the Nation's Lowest-Performing High Schools*, Alliance for Excellent Education, 2010

¹⁴ The College Board, www.collegeboard.org, 2011)

¹⁵ National Center for Higher Education Management Systems, www.higheredinfo.org, 2009

¹⁶ Council on Postsecondary Education, *High School Feedback Report*, November 2010

¹⁷ Council on Postsecondary Education *2008-2010 Kentucky Postsecondary Education Profile*

¹⁸ Berea College, *Survey of Services Provided in Target Area*, November 2010.