

# **RESULTS OF THE 2011-12 KENAN FELLOWS PROGRAM EVALUATION**

**PREPARED FOR:**

**Kenan Fellows Program for Curriculum and Leadership Development**  
Kenan Institute for Engineering, Technology & Science  
Campus Box 7006  
North Carolina State University  
Raleigh, NC 27695

**PREPARED BY:**

**Amy A. Germuth, Ph.D.**  
EvalWorks, LLC  
150 Solterra Way  
Durham, NC 27705



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## EXECUTIVE SUMMARY

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The Kenan Fellows Program for Curriculum and Leadership Development supports a networked cohort of educators who have advanced skills, are attuned to significant issues in STEM, and see themselves as effective participants in efforts to improve education. Under this program, outstanding classroom teachers selected as Kenan Fellows engage in an 18-month fellowship in partnership with university researchers and industry scientists. As part of the fellowship, Fellows participate in a 5-week research externship and 2-week professional development program during their first summer and fall. Special seminars and events are provided throughout the school year to foster additional professional growth. A product of their fellowship is a curriculum project that results from the externship. The project is disseminated through presentations at state and national conferences, and professional development to Fellows' colleagues in their school or district.

An external evaluation consulting firm, EvalWorks, LLC evaluates the Kenan Fellows Program based on an evaluation plan developed in conjunction with program staff. Findings include the following:

### Fellows

- The number of applications for 2012 was triple the number of fellowships available, with 66 fellowships filled based on 217 applications and 120 interviews. The Class of 2012 was the largest class to date and included 19 Fellows who were selected to work with the NCDPI to support the implementation of the Common Core and Essential Standards.
- Almost three-quarters of 2012 Fellows have Master's degrees and 32% are Board Certified. Over half (64%) of these Fellows were lateral entry teachers.

### Professional Development

- The professional development program focus for the 2012 Fellows was inquiry-based learning, the engineering process, and leadership. Overall Fellows rated the professional development sessions very favorably, especially the second week, where all ratings were above 4.0. For both weeks, ratings were highest as they related to interest in topics covered by the Institute, presenters' knowledge of subject, and overall quality of the Institute.
- In one survey, all 2012 Fellows agreed or strongly agreed to the statements "The Kenan Fellows Program stimulated me to think about ways to improve my teaching." and "I believe the Kenan Fellows Program resulted in me being a better teacher."

### Impact on Teacher Leadership

- Fellows' post-data suggest that they made considerable growth in terms of their knowledge and skills related to being an effective public speaker and knowledge of education policy. In addition, 2012 Fellows see themselves more as teacher leaders, believe others view them in this same way, and now take on more teacher leadership roles within their schools.
- A majority (69-89%) of Fellows agree or strongly agree that their fellowship increased their interests and abilities to network with colleagues and non-educational professionals, helped them become better instructional leaders, and, as a result, increased the likelihood that others come to them for guidance on promoting critical thinking and technology in their classes.
- As part of the 360 Degree Survey Fellows completed on themselves, 88.9% indicated that they were "above average" or "well above average" when compared to their colleagues in terms of their leadership outside of the classroom. In addition, 99% of Fellows selected leadership outside of the classroom as one of the areas in which they had increased the most as a result of their Fellowship, along with instructional leadership, ability to reflect on lessons, and ability to critique and adapt lessons.

### Teacher Retention

- Of the 85 of 120 alumni responding to a short survey in 2011, 64 or 75% of Kenan Fellows have remained as classroom teachers, with an additional 15 remaining in education as school administrators, district administrators, or in other education positions (e.g., counselor, media specialist, etc.) for a total of 93%. Thus, as a best estimate, 93% of Kenan Fellows remain active in education.
- For 2012-13, only two Fellows have plans to leave education, with the majority (n=60, 91%) remaining as classroom teachers, 2 remaining in education in a non-teaching/administrative role, and 2 moving into administration. Although some Fellows reported that the Kenan Fellows program had no impact as they have already made teaching their career, other remarks suggest that this program greatly renews teachers' enthusiasm for the classroom

### Using Inquiry

- Critically, 98% of teachers agree or strongly agree that they use resources other than textbooks to teach whereas 97% agree that they can lead students in inquiry while maintaining discipline.
- 93% and 97% of Fellows agree or strongly agree, respectively, that the Kenan Fellows Program helped Fellows develop innovative and challenging instructional materials for their students, and that the professional development they received through the Kenan Fellows Program positively impacted their teaching. Additionally, with respect to STEM, 84% of Fellows agreed or strongly agreed that the Kenan Fellows Program increased their knowledge of current issues in STEM education, whereas 87% agreed or strongly agreed that the Kenan Fellows Program enhanced their knowledge of the applications of STEM in everyday life.

### Impact on Students

- A total of 675 students (348 / 51.6% female and 289 / 42.8% male) responded to a survey at the end of the academic year that asked them about changes based on having worked with a Kenan Fellow math or science teacher. Almost three-quarters of respondents agree or strongly agree that they know more about how math and science is used in the real world at the end of the school year compared to when they started the school year. Additionally, 70% reported that their teacher made them feel more positive about math and science this year and 60% of students report being more positive about math and/or science in general now compared to the start of the school year.

### Dissemination

- This year Fellows provided high quality curricula, best practices, and resources to over two thousand persons; presentations by 2012 Fellows were provided at local (i.e., school and district) levels, as well as statewide, including at NC Science Teachers' Association Annual Conference; Triangle High Five Algebra Readiness Summit and Technology Exposition; NC Conference on Exceptional Children; Fourth Annual NASA STEM Workshop; and NC Council of Teachers of Mathematics.

## OVERVIEW

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Established in 2000 as a result of a community effort to address teacher retention and recruitment, and specifically to address the need for Environmental Science teachers, the Kenan Fellows Program for Curriculum and Leadership Development supports a networked cohort of educators who have advanced skills, are attuned to significant issues in STEM, and see themselves as effective participants in efforts to improve education. The program advances teacher professionalism by providing sustained professional development and research externships conducted in collaboration with business and industries, public schools, and institutions of higher learning. The Kenan Fellows Program is administered by the Kenan Institute for Engineering, Technology & Science at NC State University and is supported by grants from foundations, government organizations, corporations and individual partners.

The goals of the Kenan Fellows Program are to:

- Develop teacher leaders through identifying, advancing, and retaining accomplished teachers in classrooms across North Carolina;
- Advance effective teaching that prepares students for success in the new knowledge economy;
- Foster collaboration among teachers, researchers and industry to make STEM education relevant;
- Design innovative curriculum across North Carolina to enhance teaching and learning; and
- Become a national model for advancing teacher leaders and STEM education by managing the program in an organized, efficient and sustainable manner.

Six key features that distinguish the Kenan Fellows Program from other programs are that it:

1. Recognizes and develops K-12 accomplished “master” teachers;
2. Provides K-12 Teachers professional development that links outstanding teachers to:
  - cutting edge science through research experiences in corporate settings and/or university labs; and/or
  - externships that are identified as workforce/ economic development needs in a given region;
3. Engages teachers from across disciplines in the development of STEM focused curriculum and leadership development;
4. Engages teachers in the program for an extended period of time;
5. Provides teachers with a rigorous professional development experience that focuses on contemporary practices in teaching and learning and instructional leadership; and
6. Develops and tracks a cohort of teachers who continue to engage and impact their schools, districts and communities after the initial fellowship experience has ended (ex. advisors, recognized teacher leaders, consultants to KFP, DPI etc.)

Under this program, outstanding classroom teachers selected as Kenan Fellows engage in an 18-month fellowship in partnership with university researchers and industry scientists. As part of the fellowship, Fellows participate in a 5-week research externship and 2-week professional development program during their first summer and fall. Special seminars and events are provided throughout the school year to foster additional professional growth. A product of their fellowship is a curriculum project that results from the externship. The project is disseminated through presentations at state and national conferences, and professional development to Fellows' colleagues in their school or district. To date, eleven classes of Fellows from across North Carolina have been selected; two classes are active at present (Class of 2013, the class of 2012A will complete their presentation requirement in Nov 2012).

## EVALUATION METHODS

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An external evaluation consulting firm, EvalWorks, LLC evaluates the Kenan Fellows Program based on an evaluation plan developed in conjunction with program staff. Much of the data for this report were provided by Fellows from the Class of 2012. The following instruments and procedures were used to assess the program:

- **Professional Development Evaluations** from the 2012 summer internship sessions provide data on whether Fellows find sessions useful for application to the classroom;
- **Impact Surveys** completed by Fellows in spring 2012 gauge Fellows' perceptions of program impact related to key goals, including teaching/ leadership ability, comfort levels in developing and maintaining partnerships with the community, and relationships with Mentors;
- **Leadership Data on National Board Certification Rates, Presentations at Conferences, and Grants** obtained from Fellows via Moodle provide information on how the program has enhanced Fellows' leadership skills and how curriculum have been disseminated;
- **Teacher Retention Data** provided by Fellows is an indicator of how successful the program has been at encouraging participants to remain in teaching;
- **Teacher Leadership Survey<sup>1</sup> data** are used to detect changes to Fellows' perceived teacher leadership skills from the beginning to the end of the fellowship;
- **Professional Efficacy Survey<sup>2</sup> data** are used to determine whether Fellows' self-efficacy in teaching changed from the beginning to the end of the fellowship;
- **Teachers' Beliefs About and Use of Inquiry Survey<sup>3</sup> data** are used to document changes to Fellows' perceptions and use of inquiry in the classroom;
- **Student STEM Attitude Surveys** provide additional data on Fellows' impact on student in the area of STEM interest, a critical aspect of building the STEM pipeline;
- **Fellow, Principal, and Colleague 360 Degree Surveys** provide additional data from multiple perspectives, including persons beside the Fellow about his or her development as a teacher leader; and
- **Mentor Surveys** provide information from Mentors about their Fellows development, their perspectives on the program, and how the program impacted them.

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<sup>1</sup> Survey adapted from a Teacher Leader Survey developed by Barnes, N. & Dozier, T., Center for Teacher Leadership, Virginia Commonwealth University, 2003. As of the writing of this report, only baseline data were available for this instrument, final results will be provided in a subsequent report.

<sup>2</sup> Survey adapted from the Teachers' Sense of Efficacy Scale (Tschannen-Moran & Hoy, 2001) and Teacher Self-Efficacy Scale (Bandura, undated). As of the writing of this report, only baseline data were available for this instrument, final results will be provided in a subsequent report.

<sup>3</sup> Adapted from Marshall, J.C., Horton, R. M., Igo, B. L., & Switzer, D. M. (In Press). K-12 Science and Mathematics Teachers' Beliefs About and Use of Inquiry in the Classroom. International Journal of Science and Mathematics Education. As of the writing of this report, only baseline data were available for this instrument, final results will be provided in a subsequent report.

# PROFILE OF KENAN FELLOWS

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## *Selection Process*

Kenan Fellows are selected through a competitive application process that targets outstanding K-12 teachers within North Carolina across all content areas. Announcements soliciting applications are made via a variety of methods including print notification, email, calls, and radio. Applicants may be nominated by their school or district and must complete an online application that provides information about professional achievement, the nature of their commitment to teaching, and a statement about how they propose to address the specific Fellowship opportunity for which they are applying. Two letters of recommendation are also required.

From the applications received, a Kenan Fellows selection team composed of university faculty, Kenan Fellows staff, NC Department of Public Instruction (NCDPI) representatives and industry partners selects candidates for personal interviews. The rubric used for the Kenan Fellows selection process ranks the teachers on their leadership potential, content knowledge, initiatives taken to grow professionally and recommendations from principals and colleagues.

As is shown below, the number of applications for 2012 was triple the number of fellowships available, with 66 fellowships filled based on 217 applications and 120 interviews. The Class of 2012 was the largest class to date and included 19 Fellows who were selected to work with the NCDPI to support the implementation of the Common Core and Essential Standards. Two Fellows were selected from each of the 8 educational regions except Region 1, where only 1 Fellow was selected. Fellows worked with the PD Region Leads to develop training resources needed in their region; four other teachers were selected to work on replacement units which aligned with the new standards. The other 47 Fellows were industry- or university-based and worked with their Mentors on curricula based on their Mentor's area of work.

**Table 1. Overview of Class of 2012 Applications**

<b>Class year</b>	<b>Number of Fellowships Offered</b>	<b>Number of Applicants</b>	<b>Number of Interviewees</b>	<b>Number of Fellowships Filled</b>
2012	19	70	40	19
2012A	49	147	80	47

## *Characteristics of Program Participants*

Kenan Fellows constitute a group of teachers with recognized teaching and leadership skills; the Kenan Fellows program seeks to further enhance these teachers' skills and leverage their fellowship experiences by disseminating the products of their work to other teachers in North Carolina. As is shown below, almost three-quarters of 2012 Fellows have Master's degrees and 32% are Board Certified. Over half (64%) of these Fellows were lateral entry teachers.

**Table 2. Demographics of 2012 Fellows**

		2012 (n=66)
<b>Gender</b>		
Female		72%
Male		28%
<b>Race / Ethnicity</b>		
Caucasian		70%
African-American		13%
Hispanic/Latino		0%
Native American		2%
Other		4%
No response		11%
<b>Other</b>		
Master's Degree		70%
Board Certified		32%
Lateral Entry		64%

## PROFESSIONAL DEVELOPMENT PROGRAM ACTIVITIES

As part of the Kenan Fellowship, Fellows engage in Professional Development Institutes as well as a Research Externship. The professional development program focus for the 2012 Fellows was inquiry-based learning, the engineering process, and leadership. Fellows began in June at the NC Center for the Advancement of Teaching (NCCAT) with the Center for Inquiry Based Learning (CIBL) delivering hands-on instruction that demonstrated how to incorporate inquiry into any lesson. In August, CIBL facilitated a mini Lesson Share session with all Fellows. A number of Fellows shared their new inquiry lessons and the group provided feedback. Also in August, Dr. Laura Bottomley, Director of NCSU's Engineering Place outreach program, and Bonnie Murray, NASA Education Specialist, delivered sessions to help Fellows promote student thinking in their lessons and support a hands-on approach to teaching. The final Institute, held in October, concentrated on the tools and skills necessary for effective leadership in schools, districts and the state.

Fellows completed evaluation forms via Survey Monkey for each week of professional development attended. These surveys asked for Fellows' perceptions of session quality as well as relevancy to their teaching. Overall Fellows rated the professional development sessions very favorably, especially the second week, where all ratings were above 4.0. For both weeks, ratings were highest as they related to interest in topics covered by the Institute, presenters' knowledge of subject, and overall quality of the Institute.

**Table 3. Professional Development Ratings**

	Week 1		Week 2	
	Mean	% 4 or 5	Mean	% 4 or 5
a. Interest in topics covered by the Summer Institute	4.08	81%	4.38	87%
b. Usefulness of the content/material presented	3.93	73%	4.21	82%
c. Applicability of the topic/content to your role as a Fellow	3.93	69%	4.19	82%
d. Quality of the materials presented	3.97	73%	4.21	82%



e. Presentation styles of the presenters	3.41	46%	4.13	79%
f. Presenters' responses to questions	3.64	59%	4.23	76%
g. Presenters' balance between training and application	3.66	58%	4.15	74%
h. Presenters' knowledge of subject	4.10	75%	4.36	74%
i. Credibility of the presenters	3.92	61%	4.34	74%
j. Overall quality of the Institute	4.05	80%	4.26	68%

Select comments provided by Fellows regarding the most useful aspects, activities, topics, etc. of the Summer Institute are included below:

*"This week gave me excellent connections with other fellows who I will be in touch with regularly to stay on track, and the inquiry sessions with CIBL were a great reminder on the important components of inquiry. CIBL also provided great vocabulary to easily articulate inquiry to teachers new to inquiry."*

*"I have a better understanding of how to design lessons that are cross-curricular, including engineering. I cannot wait to tweak existing lessons and design new ones to slowly walk across the high school curriculum from my science classroom."*

*"Being a young teacher, I enjoyed the opportunity to see several inquiry activities in action with the CIBL presenters, and I appreciated the focus on specific important elements of our upcoming lesson plans. The opportunity to build relationships and have conversations with the cohort members about teaching and their externships was the most valuable piece of the week."*

*"Each time I have met with the Kenan Fellows as a group it has been entertaining and energizing. The entire organization is one of the best run groups I have been associated with and the Kenan Fellows organization seems to really care about the success of the teachers. It is refreshing to see such a different approach toward the teachers - especially the teachers that are putting forth their best efforts for the students and the schools they work for."*

*"The week was great, and the quiet room and the wonderful walks at WCU and meeting new colleagues have been refreshing. It was wonderful to be so well fed and treated and to be given an opportunity to go rafting. So far, my entire Kenan experience has been wonderful. Normally, if not prompted by something, I shut my brain down in the summer, even though I have grand plans to work on units, etc. But with Kenan, I have the chance to keep my brain engaged without the drag of day to day teaching and its challenges. I can already tell in the first two weeks that I have done some of my best and most creative thinking, and that has been a priceless gift to me."*

*"I appreciated all of it as a whole package and find it useful in reflection and practice. The Summer Institutes provided me with specific trajectories of thought and practice to assess and forge new lessons. In October, I have found the careful attention given to the process of giving feedback to others on their lessons has sharpened my view with my own lesson development. The October session helped me to start making a transition to a presentation phase of Kenan involvement and a refocus moment regarding Common Core and Essential Standards importance. A valuable part of professional development has been*

*the genuine connection with my colleagues. The caring, respectful giving and receiving of feedback is a validating, challenging, and encouraging part of the experience."*

Kenan Fellows also commented on the professional development that they received as part of an Impact Survey that they completed at the end of their Fellowship. As can be seen in Table 3, Fellows credited the Kenan Fellow Program highly across all areas noted, with 90% of ratings a 4 or a 5 on a scale of 1 (Strongly Disagree) to 5 (Strongly Agree). In fact, all Fellows agreed or strongly agreed to the statements "The Kenan Fellows Program stimulated me to think about ways to improve my teaching." and "I believe the Kenan Fellows Program resulted in me being a better teacher."

**Table 4. Additional Professional Development Ratings**

	<b>n</b>	<b>Mean</b>	<b>sd</b>	<b>% 4 and 5</b>
The Kenan Fellows Program met important professional development needs.	63	4.51	0.60	95%
The Kenan Fellows Program was appropriate to my knowledge, skills, and interests.	63	4.52	0.57	97%
The Kenan Fellows Program increased my confidence as a teacher.	63	4.57	0.72	95%
The Kenan Fellows Program increased my enthusiasm for teaching.	63	4.56	0.74	93%
The Kenan Fellows Program increased my interest in the way that science, technology, engineering, and mathematics can be used in my teaching.	63	4.48	0.74	92%
The Kenan Fellows Program stimulated me to think about ways to improve my teaching.	63	4.75	0.43	100%
I believe the Kenan Fellows Program resulted in me being a better teacher.	63	4.72	0.45	100%
The Kenan Fellows Program increased my commitment to teaching.	63	4.47	0.72	90%

## **ATTAINMENT OF KEY PROGRAM GOALS**

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***Develop teacher leaders through identifying, advancing, and retaining accomplished teachers in classrooms across North Carolina.***

### **Teacher Leadership**

As part of the evaluation of this program, multiple data were collected and measures used to assess attainment of the goal of identifying, advancing, and retaining teacher leaders in classrooms across North Carolina. All Fellows respond to a survey about their leadership behaviors both before they became a Fellow and then upon their completion of the program, to assess program impact on leadership behavior. Fellows also report on leadership behaviors including obtaining grants, presenting at conferences, and working with others in their own school or district.

As is shown below, 2012 Fellows' data reveal the areas of teacher leadership in which being a Kenan Fellow has had an impact. As can be seen, Fellows post-data suggest that they made considerable growth in terms of their knowledge and skills related to being an effective public speaker and knowledge of

education policy. In addition, 2012 Fellows see themselves more as teacher leaders, believe others view them in this same way, and now take on more teacher leadership roles within their schools.

**Table 5. Teacher Leadership Ratings**

	<b>Pre % 4 or 5</b>	<b>Post % 4 or 5</b>	<b>Gain</b>
1. I have the knowledge and skills needed to be an effective public speaker.	6.8%	84.8%	78.0%
2. I am knowledgeable about education policy.	21.7%	76.4%	54.7%
3. I take on teacher leadership roles within my school.	68.2%	94.4%	26.2%
4. I have the skills needed to work collaboratively with business leaders and other educational stakeholders.	69.5%	88.9%	19.4%
5. I have the knowledge and skills needed to provide effective professional development for teachers.	73.9%	91.6%	17.7%
6. I have the knowledge and skills needed to write curriculum for my content area so that most students learn at high levels.	73.9%	88.9%	15.0%
7. Others consider me a teacher leader.	82.6%	95.8%	13.2%
8. I consider myself a teacher leader.	82.6%	93.1%	10.5%
9. I have the knowledge and skills needed to serve as a mentor for new teachers.	91.3%	94.4%	3.1%
10. I reflect on my teaching practice in order to improve my performance.	95.7%	97.2%	1.5%

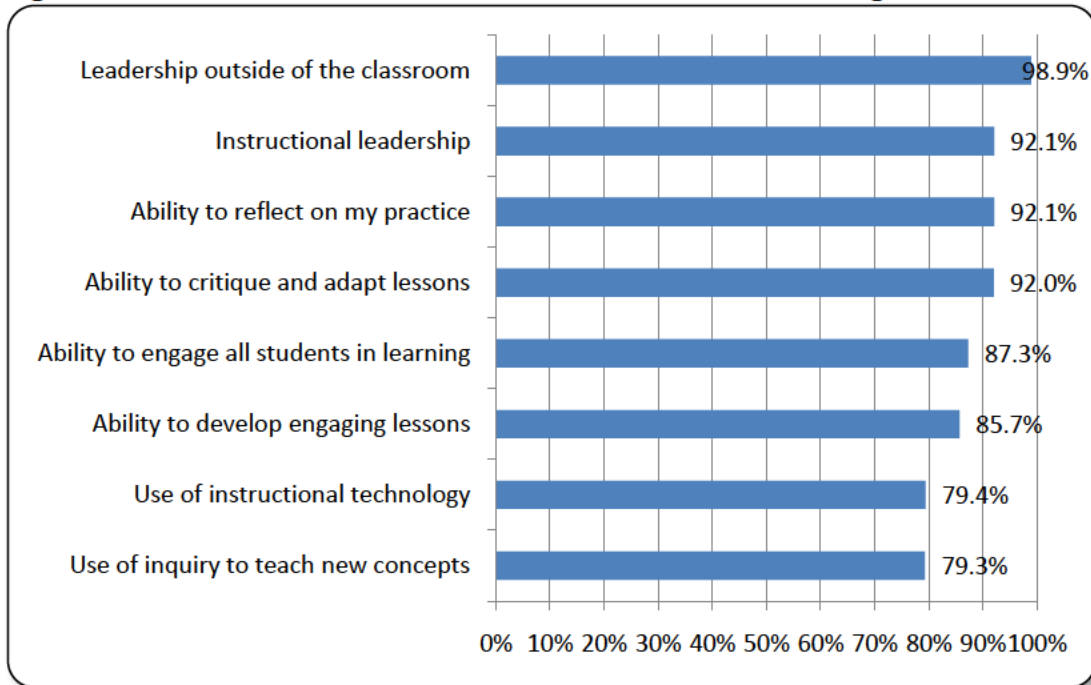
Additional feedback from the Impact Survey show that a majority (69-89%) of Fellows agree or strongly agree that their Fellowship increased their interests and abilities to network with colleagues and non-educational professionals, helped them become better instructional leaders, and, as a result, increased the likelihood that others come to them for guidance on promoting critical thinking and technology in their classes.

**Table 6. Additional Teacher Leadership Ratings**

	<b>n</b>	<b>Mean</b>	<b>sd</b>	<b>% 4 and 5</b>
The Kenan Fellows Program increased my ability to network with teachers.	63	4.42	0.68	89%
The Kenan Fellows Program increased my interest in networking with non-educational professionals.	63	4.18	0.94	79%
The Kenan Fellows Program increased my ability to network with non-educational professionals.	63	3.95	1.00	69%
The Kenan Fellows Program helped me become an instructional leader in my school.	63	4.27	0.78	89%
Other teachers consult me for advice or assistance with promoting critical thinking activities in their classroom.	63	4.32	0.73	79%
Other teachers consult me for advice or assistance with integrating technology into their classroom instruction.	63	4.08	0.96	89%

As part of the 360 Degree Survey Fellows completed on themselves, 88.9% indicated that they were "above average" or "well above average" when compared to their colleagues in terms of their leadership outside of the classroom. In addition, 99% of Fellows selected leadership outside of the classroom as one of the areas in which they had increased the most as a result of their Fellowship, along with instructional leadership, ability to reflect on lessons, and ability to critique and adapt lessons.

**Figure 1. Areas Fellows Identified as Where the Greatest Change Has Occurred**



As part of the Impact Survey, Fellows were asked to identify the elements of Kenan Fellowship program that they believed most significantly impacted teacher leadership. Fellows from the class of 2012 reported the following:

*"The ability to network with professionals outside the classroom and gain real world case study information to take back to my students."*

*"I feel that receiving affirmation from my peers and from the leadership in Kenan regarding the quality of my lesson design and creativity provided me with the confidence to "step out" as more of a teacher leader. It is one thing to "think" you are doing a good job, but quite another when those thoughts are validated by people you respect for their knowledge and position."*

*"The CIBL workshops really changed the way I teach. Instead of doing notes and then an activity, I have reversed how I do things. Now we do a lab or inquiry activity and then connect it back to the content. I really think this has helped the students. I have shared many of these new lessons/ideas with my PLT so they can use these techniques in their classrooms."*

*"Kenan Fellows forced me to present in front of my peers. It is very easy to present in front of your students, but I have always feared presenting in front of my fellow teachers. I now have a sense of duty to help my school, my community of educators, and of course my students. Before, I mainly focused on my classroom. I am on the school improvement team and I am also the grade level chair."*

*"The ability to network outside the educational arena with the universities and non-educational professionals has impacted me the most in teacher leadership. The Kenan Fellows program has provided the opportunity of learning exciting innovative ways from other outside resources to implement in the educational setting. Sharing ideas and have the chance to express my opinion in the area of education helped me to reflect on my own practices and think above the expected norm of education."*

*"Working with my mentors from DPI (NE RESA, Beth and Dianne). Their support and encouragement to present what I had learned over last summer's fellowship to my colleagues at my school was invaluable. The immediate atmosphere of collegiality established from the onset of the very first meeting we had as fellows set the stage for collaboration with other fellows. The collaborative atmosphere is a springboard for teachers to go back to their districts in formal and informal roles as educational leaders."*

*"Being part of such an incredible group of educators makes me more confident in my ability to share with people. I feel that I have been a teacher leader in the past, but now I feel that my opinion is more sought after beyond my area of instruction. Having the opportunity to work with someone that was an expert in their field gave me the support I needed to write lessons that were accurate in content. This also helped me be a teacher leader."*

*"I think the Kenan Fellows program has given me confidence in my abilities as a teacher which I did not possess before. It has also helped me to really think about the types of lessons I create, and how I can make the students more active participants in the educational process."*

*"The Kenan Fellows Program has given me skills and training that allow me to serve as a mentor to other teachers and as an advocate for the teaching profession. I entered teaching after 15 years in another career. Prior to my fellowship, I never really felt I was a professional. Now I do. I used to refer to myself as a nurse who was teaching. Now I say with pride that I am a teacher with a nursing background."*

Many Kenan Fellows receive awards and recognition as teacher leaders while engaged in their Fellowship. Recognition of 2012 Fellows over the course of this year included the following:

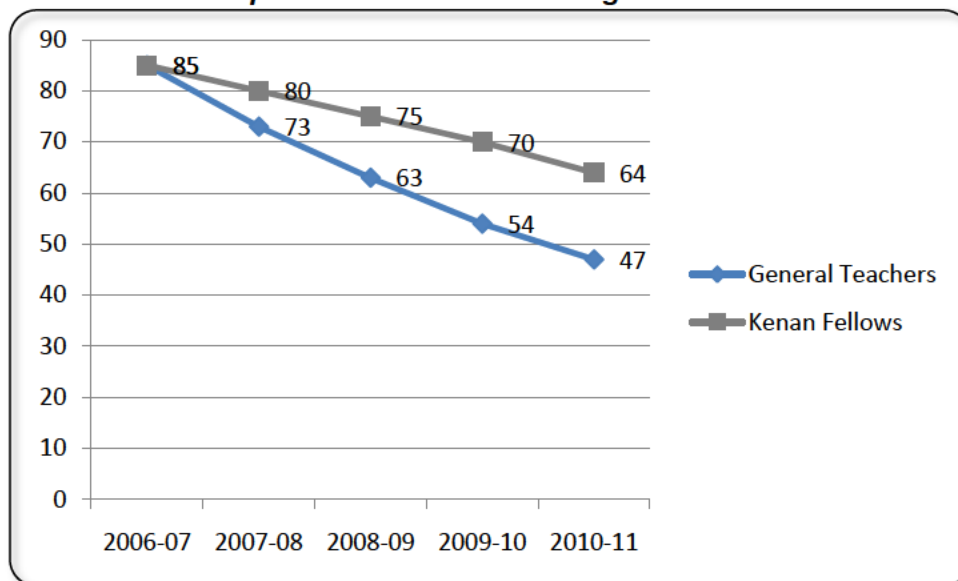
- Rebecca Hite and Sam Wheeler were selected as Albert Einstein Distinguished Educator Fellows at the National Science Foundation for 2012-2013. The Albert Einstein Distinguished Educator Fellowship Program provides a unique professional development opportunity for accomplished K-12 educators in the fields of science, technology, engineering, and mathematics (STEM) to serve in the national education arena. Fellows spend eleven months working in a Federal agency or in a U.S. Congressional office, bringing their extensive knowledge and experience in the classroom to education program and/or education policy efforts. Only 15-30 fellowships are awarded each year.
- Carol Taylor was named Outstanding Secondary Mathematics Teacher of the Year for Winston Salem / Forsyth County Schools and will be recognized at the *North Carolina Council of Teachers of Mathematics* Conference in the fall of 2012.
- Constance Russell was selected as the Region 4 High School Outstanding science teacher for 2011 by the NC Science Teacher Association.

- Ronda Bullock earned National Board Certification while a Kenan Fellow and was named Teacher of the Year at her school.
- Mark Jankowski and two other teachers received an Asheville City Schools Foundation Fellow to study and implement Project Based Learning. The grant provided \$10,000 for the 2011-2012 school year to study PBL. It also provided \$15,000 for the 2012-2013 school year to implement in the classroom.

## Teacher Retention

One of the emphases of the Kenan Fellows Program is retaining classroom teachers. Recent statistics for the cohort of teachers who began teaching in North Carolina during 2000-01 show that approximately half of teachers with previous teaching experience, one-third of new teachers with no experience, and fewer than half of lateral entry teachers were retained beyond their third year.<sup>4</sup> North Carolina's annual average attrition rate is approximately 14% each year over the past 5 years. Given this, one would only expect 55% of Kenan Fellows to remain in education. However, as is shown below, of the 85 of 120 alumni responding to a short survey in 2011, 64 or 75% of Kenan Fellows have remained as classroom teachers, with an additional 15 remaining in education as school administrators, district administrators, or in other education positions (e.g., counselor, media specialist, etc.) for a total of 93%. Thus, as a best estimate, 93% of Kenan Fellows remain active in education. This may be due to the fact that the Kenan Fellowship promotes teacher leadership and development, potentially providing new opportunities to teachers to rejuvenate their practice and foci, and potentially providing them new opportunities in education outside of the classroom. It is hoped that a renewed interest in teaching will influence other teachers within Fellows' schools and districts.

**Figure 2. 2000-2012 Kenan Fellows Remaining in Classroom Teaching Compared to General Teaching Public of NC**



Former Fellows continue to excel as teachers and leaders, including within the Kenan Fellows Program. For the 2011-12 Fellowship year eleven Kenan Fellow Alumni were assigned as advisors to approximately 6 Kenan Fellows each prior to the start of the 2012 Fellows' externships. Advisors were responsible for

<sup>4</sup> Report and Recommendations from the NC State Board of Education Teacher Retention Task Force, February, 2005.

contacting each of their Fellows weekly and their Fellows' Mentors monthly during their externships. Alumni reported their findings back to the KFP staff on a weekly basis.

For 2012-13, only two Fellows have plans to leave education, with the majority (n=60, 91%) remaining as classroom teachers, 2 remaining in education in a non-teaching/administrative role, and 2 moving into administration. As part of the impact survey current Fellows are asked to reflect on whether the Kenan Fellows program encourages has positively impacted their decision to stay in education. Although some Fellows report that the Kenan Fellows program had no impact as they have already made teaching their career, other remarks suggest that this program greatly renews teachers' enthusiasm for the classroom:

*"It has increased the likelihood that I will continue teaching by providing me with opportunities to interact with other professional educators interested in improving their own teaching and also having a positive impact on the teaching profession."*

*"It has increased the likelihood that I remain in the teaching profession by providing exposure to other professional educators that are dedicated to improving their craft."*

*"I will definitely remain in the profession, and the Kenan Fellowship has helped me feel as though my efforts in creating engaging, interactive and inquiry based lessons is worth the time and effort to do so. Their feedback and support has meant a great deal to me personally and professionally."*

*"The exposure helped in seeing the importance, implications and impact of our work."*

*Yes, it is...but it has encouraged me to pursue things beyond the classroom...i.e. additional fellowship opportunities, additional leadership roles, and more."*

*"It has definitely influenced my decision to serve and teach to my community. It has been wonderful to be around a lot of positive teachers. It is contagious."*

*"I am not burned out anymore and I have a much more positive outlook on the new curriculum changes occurring over the next few years."*

*"This is perhaps the greatest impact my fellowship has had. When I started the fellowship, I had given up my hope in education and was actively looking for a new job outside of teaching. My experiences as a Kenan Fellow inspired me to stay in the teaching profession. The support of the other fellows and the new ideas that I wanted a chance to try gave me reasons to come back, despite the lack of support I feel at my school."*

*"Participation as a Kenan Fellow has improved the likelihood that I will stay in the profession by providing a vehicle for interacting with other educators who share my passion for teaching and by giving me rich and varied experiences to incorporate in my classroom."*

***Advance effective teaching that prepares students for success in the knowledge economy.***

**Teaching Using Inquiry**

As part of teachers' professional development, CIBL and other persons worked with Fellows to help them better incorporate inquiry into their lesson plans. As is shown below, teachers thoughts regarding the use of inquiry indicate that teachers are comfortable using it and see it as at least as beneficial as teaching content. Critically, 98% of teachers agree or strongly agree that they use resources other than textbooks to teach whereas 97% agree that they can lead students in inquiry while maintaining discipline.

**Table 7. Teachers' Thoughts Regarding the Use of Inquiry**

	<b>n</b>	<b>Mean</b>	<b>sd</b>	<b>% 4 and 5</b>
I can manage student behavior during inquiry.	62	4.52	0.56	97%
I can effectively lead students in inquiry.	62	4.49	0.56	97%
I can effectively assess my students' progress during inquiry.	62	4.37	0.58	95%
I can effectively teach students how to participate in inquiry.	62	4.41	0.64	92%
My school's administration is supportive of inquiry instruction.	62	4.29	0.89	82%
Inquiry teaching methods motivate students who would otherwise be disengaged.	62	4.29	0.61	92%
Teaching content is more important than teaching inquiry.	62	2.75	0.84	10%
Using inquiry teaching methods increases students' enjoyment of the subject I teach.	62	4.27	0.65	89%
In my content area, I use resources other than textbooks.	62	4.75	0.47	98%
I know the content standards for the course students took prior to my course.	62	4.38	0.63	81%
I know the content standards for the course students take after my course.	62	4.16	0.94	98%
It is important to help students see the connections between my subject and other subjects.	62	4.79	0.45	97%

As part of the Inquiry Survey, Fellows were asked how their understanding of inquiry changed the way they develop lessons or how their lessons look now, as opposed to before they became a Kenan Fellow Responses included the following:

*"I have become more comfortable with allowing my students to struggle with the inquiry before I swoop in to save the day!"*

*"Inquiry is now on my mind for each lesson that I teach...I am trying to look at each major topic with a different perspective. How can I present great questions that spark interest and curiosity for a whole unit instead of teaching a mundane progression of sections in the pacing guide? As a result, my class has become more project based, with each day getting us closer to our end goal of answering the unit question."*



*"The Kenan Fellows program has allowed me to see the importance of connecting the real-world to daily lessons. It is important for students to see the value of the content beyond the classroom."*

*"As an English teacher, I was new to the whole concept of inquiry learning. Having gone through the summer retreat with CIBL, I think back all the time to those lessons like the stream table and try and think how I can create language based situations that also let students inquire before the content presentation  
The amount of time I spend lecturing has greatly decreased this year. I have my students do more projects in which they are learning the material, and I try to guide them where I want them to go."*

*"Student freedom to explore has increased. Student participation / enjoyment has increased."*

*"Using inquiry based strategies has forced my students and myself to think more about the math; the "whys", "how's", "why not's" and "what ifs" that are usually left out in math."*

*"I now analyze a lesson plan from the perspective of the level of interest it will have to a student rather than simply the lesson's content. Not all of my lessons have been adjusted to be inquiry-based lessons but many of them have been based on simply evaluating the amount of interest that is possible for the lesson to generate - along with how to generate it."*

### **Additional Impacts on Fellows' Teaching**

As is shown below, 93% and 97% of Fellows agree or strongly agree, respectively, that the Kenan Fellows Program helped Fellows develop innovative and challenging instructional materials for their students, and that the professional development they received through the Kenan Fellows Program positively impacted their teaching. Additionally, with respect to STEM, 84% of Fellows agreed or strongly agreed that the Kenan Fellows Program increased their knowledge of current issues in STEM education, whereas 87% agreed or strongly agreed that the Kenan Fellows Program enhanced their knowledge of the applications of STEM in everyday life.

**Table 8: Additional Impacts of Kenan Fellows Program**

	<b>n</b>	<b>Mean</b>	<b>sd</b>	<b>% 4 and 5</b>
The Kenan Fellows Program enhanced my knowledge of the applications of science, technology, engineering, and/or mathematics (STEM) in everyday life.	63	4.31	0.73	87%
The Kenan Fellows Program increased my knowledge of current issues in STEM education.	63	4.25	0.76	84%
The Kenan Fellows Program increased my knowledge of STEM careers.	63	4.05	0.95	69%
The professional development I received through the Kenan Fellows Program has positively impacted my teaching.	63	4.70	0.53	97%
The Kenan Fellows Program has helped me develop innovative and challenging instructional materials for my students.	63	4.57	0.61	93%

## Student Attitudinal Impact

A total of 675 students (348 / 51.6% female and 289 / 42.8% male) responded to a survey at the end of the academic year that asked them about changes based on having worked with a Kenan Fellow math or science teacher. As can be seen, most students who responded were in Grades 8 and 10, followed by grades 6 and 11. Very few 7th and 12th graders responded to surveys. A breakdown of respondents by ethnicity/race is also shown.

**Table 9. Student Respondents by Grade**

Grade	n	%
6	92	13.6%
7	23	3.4%
8	183	27.1%
9	77	11.4%
10	162	24.0%
11	83	12.3%
12	46	6.8%
<i>Missing</i>	9	1.3%

**Table 10. Student Respondents by Ethnicity**

Race/Ethnicity	n	%
American Indian	19	2.8%
Asian	34	5.0%
Black	126	18.7%
Caucasian	401	59.4%
Hispanic	56	8.3%
Other	33	4.9%
<i>Missing</i>	6	.9%

Students were asked to indicate on a scale of 1 (Not true at all) to 5 (Very true) to what degree the following statements were true for them. As can be seen, almost three-quarters of respondents agree or strongly agree that they know more about how math and science is used in the real world at the end of the school year compared to when they started the school year. Additionally, 70% reported that their teacher made them feel more positive about math and science this year and 60% of students report being more positive about math and/or science in general now compared to the start of the school year.

**Table 11. Student Attitudinal Impacts**

	n	Mean	sd	% 4 and 5
1. I now know more about how math and science is used in the real world compared to when I started the school year.	669	4.00	1.08	74%
2. This teacher has made me feel more positive about math and science this year.	673	3.90	1.23	70%
3. Overall, I am more positive about math and/or science in general compared to the start of the school year.	668	3.64	1.21	61%
4. I now believe that math and/or science is easier to learn than I did before the start of this school year.	672	3.51	1.16	54%
5. I enjoy math and/or science much more now than I did at the start of the school year.	673	3.43	1.26	52%
6. I am more interested in jobs or careers that use math and/or science now than I was before the start of the school year.	670	3.36	1.36	51%
7. I am more interested in math and/or science than I was at the start of the school year.	666	3.36	1.27	51%

8. I work more on my own to learn math and/or science now than I did at the start of the school year.	670	3.38	1.24	49%
9. I want to take more math and/or science classes now compared to when I started the school year.	664	3.21	1.31	46%
10. I want to be more involved in math or science activities outside of school now than I did at the start of the school year.	671	2.9	1.3	34%

***Foster collaboration among teachers, researchers and industry to make STEM education relevant.***

**Mentor Survey Results**

A key partner to each Kenan Fellow is the university or business/industry Mentor who serves as a host for the externship experience. Each Fellow/Mentor team develops a plan for the externship and a project plan that details their methods for ongoing work on a curriculum project that will translate the externship for the benefit of students. During the summer, Fellows work extensively with their Mentors and Mentors occasionally attend parts of the summer professional development program with their Fellow. Fellows continue to communicate with their Mentors throughout the school year. Some Fellows bring Mentors into their classrooms to talk with students, attend university classes taught by Mentors to enrich their content knowledge, and make joint presentations at conferences.

Current Mentors of 2012 Fellows were surveyed in spring 2012 to assess their views of their mentee and the Kenan Fellow Program. A total of 28 Mentors responded (response rate = 46%). As is shown in the figure below, most respondents agree or strongly agree that they have developed productive, professional relationships with their Mentees, that these relationship have increased their understanding of the K-12 classroom environment, and that their work with their Fellows have increased their awareness of alignment of public education and workforce development.

**Table 12. Mentor's Perceptions of Fellow-Mentor Relationship**

	<b>% 4 and 5</b>
1. My relationship with my Kenan Fellow has increased my understanding of the K-12 classroom environment.	78.5%
2. I have developed a productive professional relationship with my Kenan Fellow.	75.0%
3. My work with my Kenan Fellow has increased my awareness of alignment of public education and workforce development.	71.4%
4. I am more reflective of my own practices as a result of working with my Kenan Fellow.	64.30%
5. It is likely that a professional relationship with my Kenan Fellow will continue after the formal end of the fellowship.	53.60%
6. My participation as a Kenan Fellow mentor has helped me establish relationships/partnerships with those with similar interests in the community.	50.00%
7. I feel more capable of explaining my research and professional expertise to the lay and K-12 environments as a result of serving as a Kenan Fellow mentor.	50.00%
8. My work as a Kenan Fellow mentor has positively impacted my scholarly contributions in my field.	46.40%
9. Serving as a mentor has had a significant impact on me professionally.	44.90%

As one mentor commented, "I have enjoyed visiting their classrooms and thinking about ways the new standards will impact classroom teachers. This helps me when I work with district leaders in getting professional development to the teacher level." Another wrote, "Working with my Kenan Fellow enriched the experiences of my lab team on interaction with a non-science professional who chose to immerse himself in science for the fellowship."

### ***Design innovative curriculum to enhance teaching and learning across North Carolina.***

While a major goal of the Kenan Fellows Program is to foster teaching and curriculum development, an equally important goal is to disseminate the innovative curricula developed by Fellows to other teachers. Each Fellow is expected to create lessons that can be disseminated online, with the support of Kenan Fellow staff, including key outcomes of their curriculum project. The curriculum project is aligned with national and state standards. Each Fellow presents at conferences such as the NC Science Teachers Association Conference, National Science Teachers Association conference, or other relevant conferences to share their curricula with teachers locally, statewide, and nationally. Below are examples of the types of curriculum that Fellows are sharing with their colleagues at the school, district, and state levels. ***Based on the estimated number of attendees, this year Fellows provided high quality curricula, best practices, and resources to over two thousand persons.***

Presentations by 2012 Fellows were provided at local (i.e., school and district) levels, as well as statewide, including at

- NC Science Teachers' Association Annual Conference;
- Triangle High Five Algebra Readiness Summit and Technology Exposition;
- NC Conference on Exceptional Children;
- Fourth Annual NASA STEM Workshop; and
- NC Council of Teachers of Mathematics.

## **SUMMARY AND DISCUSSION**

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Results of the evaluation of the Kenan Fellows Program for 2011-2012 provide evidence that this program is meeting its goals of 1) developing teacher leaders through identifying, advancing, and retaining accomplished teachers in classrooms across North Carolina.; 2) advancing effective teaching that prepares students for success in the new knowledge economy; 3) fostering collaboration among teachers, researchers and industry to make STEM education relevant; and 4) designing innovative curriculum across North Carolina to enhance teaching and learning.

Fellows are provided high quality professional development via workshops by those knowledgeable in their fields that focus on teaching, leading, and learning. These opportunities, combined with their externship experiences, appear to improve Fellows' leadership skills as is shown by 2012 Fellows' post data which showed growth in multiple areas, suggesting that they:

- have the knowledge and skills needed to be an effective public speaker;
- are more knowledgeable about education policy; and
- more often take on teacher leadership roles within their schools.

In addition, more Fellows recognize themselves as teacher leaders and have a better understanding of what it means to be a teacher leader. Related, based on the estimated number of attendees at school professional development meetings, school, district, and state-level conferences, and other teacher

leadership activities in which Fellows engaged, this year's Fellows provided high quality curricula, best practices, and resources to over two thousand persons, many teacher colleagues.

Results from 2012 Fellows of their ratings of agreement to items on the inquiry survey further underscore how the Kenan Fellows program is helping teachers advance best practices to better prepare students in 21st century skills. Fellows report being better able to lead students in inquiry while maintaining discipline and assessing their progress, using resources other than textbooks to teach, involving more STEM professionals in their classrooms, and using inquiry in general more often.

As compelling as the quantitative findings are, the qualitative reports by Fellows of the changes they have experienced related to their selves and their roles because of their participation in the Kenan Fellowship Program are still more instructive. Comments from the Impact Survey further support how Fellows believe that the Kenan Fellows Program has benefited them in the area of professional relationship/networking/partnership-building and teacher leadership. Additional data provided by Fellows further underscore the impact of the Kenan Fellowship Program on them and evidence such as the grants and awards received suggest that Fellows are being recognized for these changes by others.

Comments by Kenan Fellows often reflect the quality of the externships they have experienced. These experiences are a critical aspect of Fellows' development and truly place great reliance upon a mentor to make the experience rich and fulfilling. Perhaps most positive is the fact that mentors both believe in the Kenan Fellows Program and have benefitted from their participation. For example, data gathered as part of this evaluation indicate that most mentors agree or strongly agree that they have developed close and lasting relationships with their mentees, that these relationships have enhanced their professional knowledge and teaching (where applicable), and that they have increased their understanding and respect for the K-12 classroom environment. Additionally, most responding Mentors agree or strongly agree that being a mentor has had a great impact on them professionally including fostering their own work and helping them translate their work to the K-12 setting. In terms of their perceived impact on their Fellow, over half of mentors agree or strongly agree that they have positively impacted their mentee's content knowledge and research skills, increased their understanding of contemporary scientific knowledge, and helped him or her to become an instructional leader.

Finally, not only does the Kenan Fellows Program develop teacher leaders, it retains them as well. In fact, given that the state average turnover rate for teachers over the past 5 years has been 14%, the fact that so few Fellows have left the classroom and far fewer have left education is remarkable. For many, the Kenan Fellowship has rejuvenated their enthusiasm in teaching and has contributed to keeping some active in the classroom instead of choosing retirement. Retaining teachers is hard, even in this economy, and retaining high quality teachers such as Kenan Fellows is even harder. The Kenan Fellows Program has shown that helping high quality teachers improve their use of inquiry and engage in instructional leadership behaviors such as developing and sharing curricula can spark or support the drive that made them choose to be teachers in the first place.