RESULTS OF THE
2010-11
KENAN FELLOWS PROGRAM EVALUATION

PREPARED FOR:

Kenan Fellows Program for Curriculum and Leadership Development
Kenan Institute for Engineering, Technology & Science
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EXECUTIVE SUMMARY

The Kenan Fellows Program for Curriculum and Leadership Development is a K-12 teacher professional development program that seeks to identify, develop and retain teacher leaders in North Carolina; advance effective practices and the use of technology in preparing students for the 21st Century; and create synergy among teachers, researchers and industry that supports the development of innovative curriculum resources and relevant STEM instruction to enhance teaching and learning. The program works to advance teacher professionalism in a program of sustained professional development and research externships conducted in collaboration with the private sector, public schools, and institutions of higher learning. Fellows use these experiences to develop inquiry- and STEM-based curricula that they present to other teachers via workshops, seminars, and at conferences.

For 2010-11 two cohorts of Fellows were active but in different stages of their Fellowship. 2011 Fellows (n=15) were halfway through their two-year fellowship. In the summer of 2010 they spent one week of professional development at the North Carolina Center for the Advancement of Teaching *(*NCCAT*)* where they explored ethical issues in light of scientific complexity, and the remainder of their time engaged in externships. 2012 Fellows (n=19) began their fellowships in the summer of 2010. They spent two weeks in a Summer Institute for Professional Development in Raleigh and four weeks in a research externship with their mentors.

Evaluation of the 2010-2011 program suggests that the professional development provided by the Kenan Fellowship is of high quality (mean rating = 4.56 for Week 1 and 4.75 for Week 2 on a scale of 1 to 5) and is provided by presenters who are highly knowledgeable of their subject matter (mean ratings = 4.69 and 4.81, Weeks 1 and 2, respectively, on a scale of 1 to 5). Furthermore, evaluative data suggest that the Kenan Fellowship provides multiple experiences to teachers that have significant and positive impacts on their teaching, leading, and learning. Consider the following:

Retaining effective teacher leaders

- Retention data indicate that 95% of past Kenan Fellows are either classroom teachers or remain in education in other positions. This percentage is much greater than would be predicted by North Carolina's average attrition rate of 14% annually.

- Based on the estimated number of attendees at school professional development meetings, school, district, and state-level conferences, etc., this year's Fellows provided high quality curricula, best practices, and resources to over two thousand persons, many of whom were teacher colleagues, as part of engaging in teacher leadership activities under the Kenan Fellows Program.

- 2011 Fellows' data reveal the areas of teacher leadership in which being a Kenan Fellow has had an impact. Fellows' post-data suggest that they:
    - Are more knowledgeable of the state's procedure for adopting educational policy;
    - Are more knowledgeable of the needs of educational policymakers and skilled at discussing educational policy with them;
    - Are taking on more STEM leadership roles within their school;
    - Have increased knowledge and skills needed to serve as a mentors or coaches; and
    - Are more likely to be considered teacher leaders by others.

- 2012 Fellows' data reveal similar findings related to teacher leadership, including having increased knowledge and skills needed to provide effective professional development for teachers, to be effective public speakers, and to serve as a coaches to other teachers. In addition, more Fellows recognize themselves as teacher leaders and have a better understanding of what it means to be a teacher leader.

Advancing instructional practices

- 2011 Fellows indicated a strong sense of self-efficacy as a teacher, reporting greater efficacy over time in key areas such as influencing decision making among school leaders and policymakers, motivating and supporting students, and engaging others.

- 2012 Fellows also indicated a greater sense of self-efficacy in such areas as promoting students' interest in STEM, involving and collaborating with others, and influencing decision makers, whether at the school or district and state levels.

- Results from the Inquiry Survey suggest that 2011 Fellows better see that teaching inquiry is critical. Self-reported behavior changes include more 2011 Fellows using inquiry and making connections between their subject areas and careers.

- 2012 Fellows report being better equipped to lead students and assess their progress using inquiry, and knowing more about the science and math content standards in courses students take prior to and after their course. Self-reported changes in behavior include involving more STEM professionals in their classroom, referencing STEM professions as part of lessons and assignments, and using inquiry more often.

- Impact Survey comments from 2011 and 2012 Fellows describe how their participation has impacted their teaching, including enhancing their confidence and skills with content knowledge, inquiry-based instruction, technology and ability to make STEM relevant to students, which are central goals of the Kenan Fellows program.

Networking

- A substantial majority (92%) of 2011 Fellows reported on the Impact Survey that the program has enabled them to build relationships/partnerships with the broader community, and 84% agree or strongly agree that opportunities to network with other Fellows benefits their teaching and leadership skills. 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.

- Most Mentors agree or strongly agree that they have developed close and lasting professional relationships with their mentees, that this relationship has enhanced their professional knowledge and teaching (where applicable), and that it has increased their understanding and respect for the K-12 classroom environment. Additionally, over half of responding Mentors agree or strongly agree that being a Mentor has had a great impact on them professionally including fostering their own work, translating their work to the K-12 setting, and making them more reflective of their own teaching practices (where applicable).

- 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. Only a quarter of Mentors, however, agreed that they have contributed to their mentee's leadership skills through activities such as co-publishing and joint professional presentations.

Evaluation of the Kenan Fellows Program suggest it stands out for its success in addressing several critical aspects related to ensuring that every child in NC public schools is taught by a highly effective teacher, including:

- Retention of the most effective K-12 public school teachers from across the disciplines;
- Leadership and instructional development that is multiplicative in its impact on other teachers;
- Connecting innovative science in research labs to science in classrooms via teacher externships;
- Promoting instructional relevance for students in the context of local, cutting-edge industry assets; and
- Supporting an interdisciplinary model that encourages collaboration among teachers and systems thinking in students.

OVERVIEW

Recent national reports on the state of education in the United States suggest that there is cause for concern regarding the educational preparation of students to compete in the new global economy. The emerging workforce will necessarily consist of highly trained and educated workers with sophisticated skills in science, mathematics, engineering and technology, as scientific and engineering occupations are expected to continue to grow more quickly than other occupations.[1] Unfortunately, evidence continues to show that while there has been improvement in math scores since the 1990's, performance in science has not improved, and the performance of disadvantaged populations continues to lag far behind their peers. Recent international assessment results show that the United States continues to trail other nations in terms of science and mathematics literacy; in fact, more than half (55%) have significantly higher science literacy scores and 79% have significantly higher mathematics scores than the U.S. [2]

North Carolina student performance tends to reflect national trends. National Assessment of Educational Progress (NAEP) results from 2009 showed that slightly more than a quarter (30%) of North Carolina's fourth grade students and just 24% of eighth graders were considered proficient or advanced in science. [3] Contributing to this problem is the fact that many North Carolina students do not take science coursework that may lead to science proficiency*:* slightly less than one-quarter (24%) of NC high school students enroll in advanced science courses (e.g., chemistry or physics) compared with 31% nationally, and percentages have declined since 1996.[4]

Attracting and retaining qualified science and math teachers, as well as those who weave science and math into their subjects, is of paramount importance to improving student achievement in science and math coursework. Many teachers in North Carolina and nationally lack the qualifications necessary to teach science and mathematics, and this likely contributes to the achievement problem. The most recent state indicators available from 2006 show some improvement in the percentages of North Carolina middle school science and math teachers who are certified to teach in their area.[5] However, more than a quarter are still not certified to teach math (26%) or science (29%), and more than half of the states reporting these data had higher percentages of certified teachers. At the high school level, more than 85% of North Carolina science and math teachers are certified to teach these subjects, and these percentages slightly exceed those seen nationally.

Research has consistently shown that teacher training in math and science education is of critical importance to student achievement. For example, recent NAEP reports suggest that achievement in eighth grade science is directly related to whether the student's teacher majored in science education.[6] Additionally, algebra is now becoming recognized as a gateway course to future high school success and graduation.[7] It would appear important for North Carolina to continue to address ways to increase certification rates for middle school science and math teachers.

[1] National Science Board (2006). America's Pressing Challenge – Building a Stronger Foundation.
[2] National Center for Education Statistics, U.S. Department of Education and Institute of Education Sciences, Highlights from PISA (Programme for International Student Assessment) 2006, 2007.
[3] National Assessment of Educational Progress (2005).
[4] State Indicators of Science and Mathematics Education: 2007.
[5] State Departments of Education, Data on Public Schools, 2005-06. Council of Chief State School Officers, State Services and Technical Assistance, Washington, DC, 2007.
[6] National Assessment of Educational Progress. Op.cit.
[7] Middle School Predictors of High School Achievement in Three California School Districts
Kurlaender, M. , Reardon, S., and Jackson, J., California Dropout Research Project

Compounding the issue is the problem of retention of high quality teachers in North Carolina and nationwide. While the annual attrition rate in North Carolina is somewhat lower than that seen nationally (approximately 13% versus 17%), nearly a quarter of the turnover rate can be considered to be "turnover that might be reduced." [8] Data on teachers' perceptions of working conditions inform the development of strategies targeted towards reducing this aspect of the teacher turnover rate. The most recent survey on teacher working conditions showed that school leadership, teacher engagement in decision-making, and teachers' sense of empowerment were strongly related to teacher attrition.[9] Teachers who were more likely to feel empowered within their school and supported by administration were less likely to leave. Investment in targeted funding for professional development in teacher leaders who can lead the way towards improving the teaching and working conditions for all teachers is critical to keeping teachers in the profession.

Unfortunately, whereas most states have professional development policies that require teacher training, most teachers spend significantly less time than is generally recommended to invoke significant change. School districts typically allocate only approximately one percent of their budgets to professional development, and less than half of teachers surveyed report that they received release time to attend training sessions. Many professional development efforts involve one-shot workshops that lack a connection to the real-world challenges teachers face in the classroom. The need for ongoing and sustained quality professional development may be even more critical in the fields of science and technology.

In order to address the problem of quality in professional development of teachers, the National Staff Development Council recently provided revised standards for staff development that improves the learning of all students.[10] These standards encourage staff development efforts that:

- are organized based on learning communities;
- provide appropriate leadership and resources for continuous instructional improvement;
- allow teachers to apply research to classroom decision making and collaborate with other teachers in their knowledge development; and,
- encourage equity and family involvement in their improvement efforts.

The Kenan Fellows Program for Curriculum and Leadership Development has adopted these standards in their efforts to enhance teacher professionalism and leadership. 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, currently the program 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 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 four goals of the Kenan Fellows Program are:

1. Identify, develop and retain teacher leaders in classrooms across North Carolina;
2. Advance effective teaching that prepares students for success in the 21st Century;

[8] Public Schools of North Carolina, Department of Public Instruction (2008). Teacher Turnover Report: Annual Report on the Reasons Teachers Leave, 2007-2008.

[9] New Teacher Center, (2009). North Carolina Teacher Working Conditions Survey Brief: Working Conditions Influence Teacher Retention.. Retrieved from:

[10] National Staff Development Council. (2001). NSDC Standards for Staff Development.

3. Create synergy among teachers, researchers and industry to ensure STEM education is relevant and that best practices are adopted by all stakeholders; and
4. Develop innovative and relevant tools and resources for North Carolina teachers and students to enhance teaching and learning.

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 skills;
4. Engages teachers in the program for an extended period of time;
5. Provides teachers with a rigorous summer institute experience that focuses on contemporary practices in teaching and learning; and
6. Develops a cohort of teachers who continue to engage and impact their schools, districts and communities long 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 and industry research scientists. As part of the fellowship, Fellows participate in a 5-week research externship and 2-week professional development program during their first summer. Special seminars and events are provided throughout the school year to foster additional professional growth. A product of their month-long summer collaboration with their university or business/industry Mentor is a curriculum project that results from the externship experience. This project is disseminated through the Kenan Fellows Program website, presentations at state and national conferences, and professional development for their school colleagues. Fellows also earn six graduate credits from NC State University through their participation as a Fellow.

To date, nine classes of Fellows from across North Carolina have been selected; two classes are active at present (Classes of 2011 and 2012). Over 120 Kenan Fellows have successfully completed the program; the program currently includes 15 and 19 Fellows from the Classes of 2011 and 2012, respectively. A map depicting all counties represented by Kenan Fellows to date is shown below.

Figure 1. Map of Counties Represented by Kenan Fellows[11]

EVALUATION METHODS

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 are provided for Fellows from the class of 2011, most whom have recently completed their Fellowship, and 2012 Fellows who have recently completed their first summer of the Fellowship. The following instruments and procedures were used to assess the program:

- ***Professional Development Evaluations*** from the 2011 summer internship sessions provide data on whether Fellows find sessions challenging and useful for application to the classroom;
- ***Impact Surveys*** completed by Fellows in spring 2011 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 provide information on how the program has enhanced Fellows' leadership skills, how curriculum have been disseminated, and how their overall experience has been shared;
- ***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[12] data*** are used to detect changes to Fellows' perceived teacher leadership skills from the beginning to the end of the fellowship;
- ***Professional Efficacy Survey[13] 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[14] data*** are used to document changes to Fellows' perceptions and use of inquiry in the classroom; and

[11] Map developed by Tom Knott, former Kenan Fellow and current staff at the Kenan Fellows Program.

[12] 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.

[13] 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.

- ***Fellows End of Year Surveys*** provide additional data on how Fellows have shared their research, engaged in teacher leadership behaviors, and been recognized for their work.
- ***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.

PROFILE OF KENAN FELLOWS

Selection Process

Kenan Fellows are selected through a competitive application process that targets outstanding K-12 teachers within North Carolina from across all content areas; Announcements soliciting applications are made via a variety of methods including print notification, email, calls, and radio. The program targets school and district administrators as well as a broad range of business, state, county/community and education leaders statewide. Applicants must be nominated 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.

From the applications received, a Kenan Fellows selection team composed of university faculty, Kenan Fellows staff, NCDPI representatives, and/or 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.

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 disseminate the products of their work to other teachers in North Carolina.

Whereas the Kenan Fellows Program has primarily attracted secondary teachers, some elementary teachers participate. Some are regular elementary classroom teachers, while others have included science specialists, academically gifted and arts specialists. Most middle and high school Fellows teach science, but other areas have included math and English/ Language Arts.

[14] 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.

Table 1. Fellow Demographics

	2011 (n=15)	2012 (n=19)
Gender		
Female	8	14
Male	7	5
Race / Ethnicity		
Caucasian	11	13
African-American	4	4
Hispanic/Latino	0	0
Asian/Pacific islander	0	0
Native American	0	0
Bi / Multi-racial	0	0
Other	0	1
No response	0	1
Current School Level		
Elementary	3	0
Middle	7	4
High	13	15
Other	3	0
Current Subject Area		
Elementary/General	1	0
Math	3	4
Science	16	10
Special Education	0	0
English/Language Arts	0	0
Other	6	4

PROFESSIONAL DEVELOPMENT PROGRAM ACTIVITIES

As part of the Kenan Fellowship, Fellows engage in Summer Institutes for professional development as well as a research externship that spans two summers. A full two-thirds of the summer program for 2011 and 2012 Fellows was spent on this Fellow-Mentor collaboration. 2011 Fellows spent one week of the Summer Institute at the North Carolina Center for the Advancement of Teaching *(*NCCAT*).* Workshop discussions surrounded the book "The Immortal Life of Henrietta Lacks" and covered topics such as

- The Ethics of Technology Manipulation of the Environment
- The Ethics of Engineering the Human Organism
- The Ethics of Machine-Human Interfaces, Digital Identity, Personality and Communication
- The Ethics of Technology in Education

For 2012 Fellows, the Summer Institute included professional development provided by the Triangle Leadership Academy and Center for Inquiry Based Learning. Training focused on having crucial conversations as teacher leaders and developing lessons that utilized inquiry learning. 2012 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, at or above 4.31 (both weeks) on a scale of 1 to 5 in all areas, including overall quality of the institute (4.56 and 4.75, week 1 and 2, respectively), applicability of the content/topic (4.50 and 4.63, week 1 and 2, respectively), and usefulness

of the content / material (4.31 and 4.56, week 1 and 2, respectively). Additionally, presenters were rated highly on the materials they presented, presentation style, knowledge of subject, and credibility(all ratings at or above 4.31).

Table 2. Professional Development Ratings: 2012 Fellows

	Week 1		Week 2	
	Mean	sd	Mean	sd
a. Interest in topics covered by the Summer Institute	4.44	0.63	4.44	0.51
b. Usefulness of the content/material presented	4.31	0.70	4.56	0.51
c. Applicability of the topic/content to your role as a Kenan Fellow	4.50	0.63	4.63	0.50
d. Quality of the materials presented	4.50	0.63	4.69	0.48
e. Presentation styles of the presenters	4.38	0.62	4.31	0.60
f. Presenters' responses to questions	4.50	0.63	4.50	0.63
g. Presenters' balance between training and application	4.31	0.48	4.44	0.51
h. Presenters' knowledge of subject	4.69	0.48	4.81	0.54
i. Credibility of the presenters	4.81	0.40	4.81	0.54
j. Overall quality of the Institute	4.56	0.51	4.75	0.45

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

- *Hands down - the training from the Center for Inquiry Based Learning was the most engaging, most applicable aspect of the training. Their content was directly applicable to our work as Fellows and the quality of presentation was excellent. There was a mix of content and practice and I especially appreciated work in practicing lesson plan development.*

- *Crucial Conversations and Components of an Effective Lesson provided ways of improving leadership skills, building content knowledge, and improving my instructional practice.*

- *Crucial conversations was extremely interesting. It is something that will be useful in so many applications - not just teaching. I especially enjoyed that training. The other training was useful and interesting, but was similar to staff development I have had in the past. Still, I learned a great deal from that training as well.*

- *I really like "Crucial Conversations"! There was so much interactions and I felt this will help me in so many ways in my classroom and in my interactions with others!*

- *The lesson planning sessions were of great interest and help as we prepare our own lessons. I could have had more of the lesson planning sessions.*

ATTAINMENT OF KEY PROGRAM GOALS

Identify, develop and retain teacher leaders in the classrooms across North Carolina

As part of the evaluation of this program, multiple data were collected and measures used to assess attainment of the goal of identifying, developing, and retaining teacher leaders in classrooms across North Carolina. All Fellows respond to a survey about their leadership behaviors before they became a Fellow, after their first year in the program, 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, 2011 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:

- Are more knowledgeable of the state's procedure for adopting educational policy;
- Are more knowledgeable of the needs of educational policymakers and skilled at discussing educational policy with them;
- Are taking on more STEM leadership roles within their school;
- Have increased knowledge and skills needed to serve as a mentors or coaches, and
- Are more likely to be considered teacher leaders by others.

Table 3. Teacher Leadership Ratings: 2011 Fellows

	Pre % 4 or 5	Post % 4 or 5	Gain
1. I am knowledgeable of my state's procedure for adopting educational policy.	40.00%	66.70%	26.70%
2. I am knowledgeable of the needs of educational policymakers and skilled at discussing educational policy with them.	60.00%	83.30%	23.30%
3. I take on STEM leadership roles within my school.	86.60%	100.00%	13.40%
4. I have the knowledge and skills needed to serve as a mentor for new teachers.	86.70%	100.00%	13.30%
5. I have the knowledge and skills needed to serve as a coach for experienced teachers.	86.70%	100.00%	13.30%
6. Teacher leaders must be excellent teachers.	86.70%	100.00%	13.30%
7. Others consider me a teacher leader.	93.30%	100.00%	6.70%
8. I have the knowledge and skills needed to write curriculum for my content area so that most students learn at high levels.	93.30%	100.00%	6.70%
9. Teacher leaders must be articulate about their teaching practice.	93.30%	100.00%	6.70%
10. I have a clear definition of a teacher leader.	93.40%	100.00%	6.60%

2012 Fellows' data reveal similar findings related to teacher leadership, including having increased knowledge and skills needed to provide effective professional development for teachers, to be effective public speakers, and to serve as a coaches to other teachers. In addition, more Fellows recognize themselves as teacher leaders and have a better understanding of what it means to be a teacher leader.

Table 4. Teacher Leadership Ratings: 2012 Fellows

	Pre % 4 or 5	Post % 4 or 5	Gain
1. I have the knowledge and skills needed to provide effective professional development for teachers.	70.00%	89.50%	19.50%
2. I am knowledgeable of the No Child Left Behind Act.	70.00%	89.40%	19.40%
3. I have the knowledge and skills needed to be an effective public speaker.	60.00%	79.00%	19.00%
4. I have the knowledge and skills needed to serve as a coach for experienced teachers.	60.00%	79.00%	19.00%
5. I am knowledgeable of my state's procedure for adopting educational policy.	25.00%	42.10%	17.10%
6. I consider myself a teacher leader.	85.00%	100.00%	15.00%
7. I have a clear definition of a teacher leader.	85.00%	100.00%	15.00%
8. I have the knowledge and skills needed to write curriculum for my content area so that most students learn at high levels.	75.00%	89.40%	14.40%
9. I take on STEM leadership roles within my school.	68.50%	79.00%	11.50%
10. I am knowledgeable of the needs of educational policymakers and skilled at discussing educational policy with them.	45.00%	55.60%	10.60%

As part of the Impact Survey, Fellows were asked to identify the elements of Kenan Fellows Program that they believed most significantly impacted teacher leadership. Fellows from the class of 2011 reported the following:

- *The Summer Institute and work with my mentor gave me tools and experiences that I needed to be effective in the classroom and to help other teachers improve their understanding of curriculum mapping and lesson planning.*
- *Contact with the program opened up knowledge and access to so many resources.*
- *Participation in the program increased my credibility and recognition among fellow teachers.*
- *Confidence and experience gained from the program has made me a better teacher.*
- *Knowledge gained from networking with others has allowed me to become a technology leader in my school.*

2012 Fellows made the following comments:

- *The prestige of the Kenan Fellows Program helped to create credibility and visibility as a teacher leader.*
- *Workshops gave the ability to create inquiry-based lessons which were shared with other teachers.*
- *The ability to communicate with local industries, which created relevant STEM connections.*

Many Kenan Fellows receive awards and recognition as teacher leaders while engaged in their Fellowship. Recognition of 2011 and 20121 Fellows over the course of this year include the following:

- Sarah Kaneko spent the summer working with bugs. As a Class of 2012 Kenan Fellow, Kaneko learned about cutting-edge insect research and worked closely with faculty and staff from NC State University's Golden LEAF Bio-manufacturing Training and Education Center. Through her hands-on lab work with mentor Dr. Allen Cohen, director of Insect Diet and Rearing, LLC and adjunct professor at NC State University, she translated what she did in the lab into relevant information, ready for classroom use with her ninth grade students at C.E. Jordan High School.

  For her work, Kaneko was honored on November 5 with the 2010 Outstanding High School Teacher award from the North Carolina Entomological Society (NCES). "Ms. Kaneko stood out in the selection process because of her initiative to develop new curriculum through her partnership with Dr. Cohen," said NCES Secretary Dr. Hannah Burrack. "Her in-depth lessons are an example of the type of hands-on curriculum that raises awareness of current topics in entomology."

  "I would not have received this honor if I had not been a Kenan Fellow," Kaneko said. "The Kenan Fellows Program enabled me to do the summer research that led to creation of the curriculum."

- Kishia Moore Fletcher (Class of 2011) was nominated as Teacher of the Year at her school and was selected and participated in the 2010 K-5 Earth Science Leadership Academy in Houston, TX. Additional Teachers of the Year include Rodney Schmitz, Fredrica Nash, Aebeyo Abraha, and Kristen Hensley, who was also a finalist for Teacher of the Year in her county. All are from the Kenan Fellows Class of 2011.

- Carrie Lynn Brewington (Class of 2012) was Teacher of the Month in October 2010 at her school and also received a $2,500 grant from the North Carolina Association of Aeronautics to implement inquiry-based curriculum in her classroom. Jennifer Jones (Class of 2011) was also teacher of the month at her school.

- Sandre Lane and Fred Morris (Class of 2012) were featured in an article in the Laurinburg Exchange. The article focused on their fellowships and the benefits to their communities.

- Class of 2011 Kenan Fellow Aebeyo Abraha studied in South Africa with Mentor Solomon Bililign from NC A&T State University. Aebeyo will use research from the Africa Array Geophysics field course as groundwork for his curriculum project.

- Gail Holmes presented "Kenan Fellows Program for Curriculum and Leadership Development: Teaching Students to Think Outside the Book" at the International Conference on Technology Knowledge and Society in Balboa, Spain.

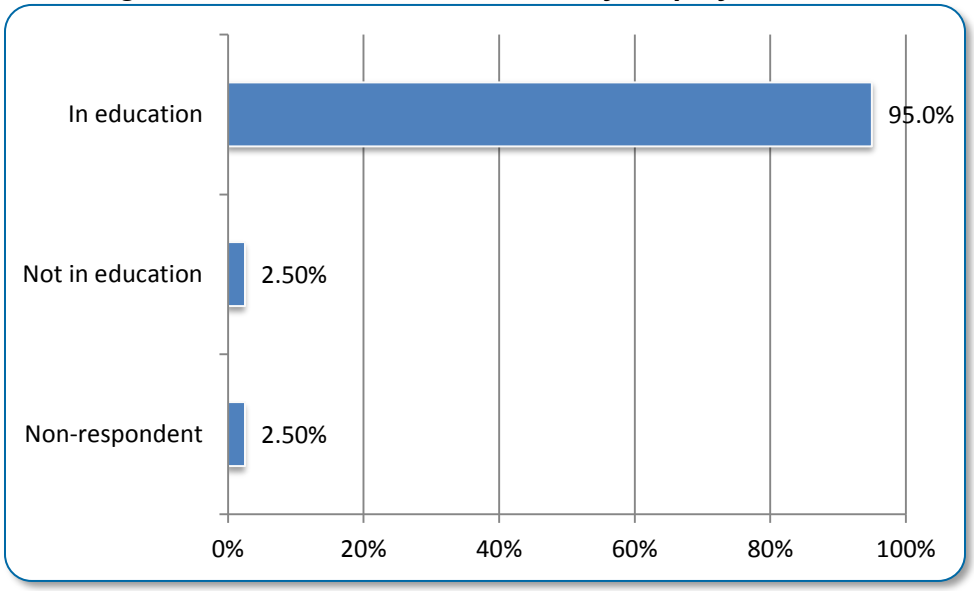
- Talia Swiney (Class of 2011) was named 2010 Teacher of the Year at Ellerbe Middle School and Outstanding Secondary School Mathematics Teacher for 2010 by NCCTM.

- Talia Swiney, Carrie Brewington, Constance Russell and Pam Roberts (class of 2011) presented their new curriculum at the NOYCE Southeast Regional Conference March 24-25, 2011.

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 only 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.[15] North Carolina's average attrition rate is approximately 14% each year over the past 7 years. Given this, one would only expect 67% or 62 Kenan Fellows to remain in education. However, as is shown below, of the 85 of 120 alumni responding to a short survey, 64 or 77% 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 95%. Thus, as a best estimate, 95% 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 by Employment Area



In addition to remaining in education, former Fellows continue to excel as teachers and leaders:

- Kenan Fellow Carol Swink Wooten (Class of 2006) received the 2008 Presidential Award for Excellence in Mathematics and Science Teaching for 2010, the highest honor a teacher can receive for outstanding teaching. Carol was recognized for her contributions to teaching and learning and her ability to help students. Carol has been a fifth grade teacher at Hunter Gifted & Talented Magnet Elementary School since 1998.

- Kenan Fellow Rebecca Hite (Class of 2010) received an invitation from the Centers for Disease Control and Prevention's Career Paths to Public Health Program. She participated in the 2009 Science Ambassador Program. The selection process was extremely competitive as applications were received from great teachers across the country. Rebecca will develop public health science-based lesson plans aligned to the National Science Education Standards.

- Kenan Fellows Chad Ogren (Class of 2008) and Debbie Massengill (Class of 2004) coached a team of students from Enloe High School for the NC Envirothon. The Envirothon is known as the "natural challenge" where five-member teams compete in five natural resource areas: soils and

[15] Report and Recommendations from the NC State Board of Education Teacher Retention Task Force, February, 2005.

land use, aquatic ecology, forestry, wildlife, and current environmental issues. "Studying for the Envirothon is different, you're outside, digging in the dirt, learning about trees, wildlife tracks and scat, and wading streams," said Sheila Jones, environmental education specialist with Wake Soil and Water Conservation District. "This is truly hands-on learning and the way many students learn best." The Enloe team, sponsored by the Wake Soil & Water Conservation District, captured 3rd Place.

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 two 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:

- *I have taught for 30 years but the time invested in creating rich resources as a Kenan Fellow has inspired me to continue my work to not only share what I have learned with students but my peers as well.*

- *It has motivated me to be a better teacher. Even if I leave the profession, I will stay in the education field, either through curriculum development or administration.*

- *The fellowship has renewed my commitment to math and science education, which has influenced the likelihood that I will remain in the education profession.*

- *My participation has helped to renew my "spark" for teaching.*

- *It has made it more likely that I will remain in the profession.*

- *I knew I was going to stay in the profession, but this has given me renewed knowledge and interest.*

Advance effective teaching that prepares students for success in the 21st Century

The Kenan Fellows Program seeks to contribute to students' 21st century success by advancing Fellows' content knowledge, research skills, and ability to use inquiry-guided classroom instruction. Data are collected to address program effectiveness in the following areas:

- Fellows' self-reports of teaching skills, professional efficacy, and use of inquiry practices, and
- Student STEM Attitude Survey

Multiple data indicate that Fellows are better able to prepare students for the 21st Century and interest them in STEM. As is shown in Table 4, 2011 Fellows indicated a strong sense of self-efficacy as a teacher, reporting greater efficacy in key areas such as influencing decision making among school leaders and policymakers, motivating and supporting students, and engaging others.

Table 5. Teacher Efficacy Ratings: 2011 Fellows

	Pre % 8 or 9	Post % 8 or 9	Gain
1. How much can you do to influence policymakers about educational issues?	13.40%	50.00%	36.60%
2. How much can you do to get students to believe they can do well in school work?	73.30%	91.70%	18.40%
3. How much can you do to gauge student comprehension of what you have taught?	66.60%	100.00%	33.40%
4. How much can you do to control disruptive behavior in the classroom?	60.00%	91.70%	31.70%
5. How much can you do to get local colleges and universities involved in working with the school?	26.60%	58.30%	31.70%
6. How much can you do to increase students' memory of what they have been taught in previous lessons?	53.30%	83.40%	30.10%
7. How much can you express your views freely on important school matters?	40.00%	66.60%	26.60%
8. How much can you do to influence decisions that are made in the school?	33.30%	58.30%	25.00%
9. How much can you do to get the instructional materials and equipment you need?	20.00%	41.70%	21.70%
10. How much can you do to get community groups, churches and businesses involved in working with the school?	26.60%	41.70%	21.70%

2012 Fellows also indicated a greater sense of self-efficacy in such areas as promoting students' interest in STEM, involving and collaborating with others, and influencing decision makers, whether at the school or district and state levels.

Table 6. Teacher Efficacy Ratings: 2012 Fellows

	Pre % 8 or 9	Post % 8 or 9	Gain
How much can you do to promote your students' interest in STEM-related careers?	0.00%	50.00%	50.00%
How much can you do to get community groups, churches and businesses involved in working with the school?	15.00%	42.10%	27.10%
How much can you express your views freely on important school matters?	25.00%	47.30%	22.30%
How much can you do to get the instructional materials and equipment you need?	5.00%	26.30%	21.30%
How much can you do to influence policymakers about educational issues?	0.00%	21.00%	21.00%
How much can you do to enhance collaboration between teachers and the administration to make the school run effectively?	30.00%	42.10%	12.10%
How much can you do to influence decisions that are made in the school?	25.00%	36.90%	11.90%
How much can you do to spark interest and enthusiasm for STEM content when teaching your high-needs students?	57.90%	68.50%	10.60%
How much can you do to adjust your lessons to meet the needs of diverse learners?	75.00%	84.20%	9.20%

Results from the Inquiry Survey suggest that 2011 Fellows better see that NC's tradition curriculum does very little to support inquiry and that teaching inquiry is critical. Self-reported behavior changes include more 2011 Fellows using inquiry and making connections between their subject areas and careers.

Table 7. Teacher Inquiry Ratings: 2011 Fellows

	Pre % 5 or 6	Post % 5 or 6	Gain
1. The curriculum I use supports inquiry instruction.	75.10%	58.00%	-17.10%
2. Teaching content is more important than teaching inquiry.	18.80%	0.00%	-18.80%

Table 8. Teacher Inquiry Behaviors: 2011 Fellows

	Pre %	Post %	Gain
1. I make assignments that have career applications.	55.50%	75.00%	20.50%
2. Inquiry plays an important role in my lessons.	72.20%	91.70%	19.50%
3. Students engage in inquiry in my class.	66.70%	83.30%	16.60%

2012 Fellows report being better able to lead students and assess their progress using inquiry, and knowing more about the science and math content standards students take prior and after their course. Self-reported changes in behavior include involving more STEM professionals in their classroom, referencing STEM professions as part of lessons and assignments, and using inquiry more often.

Table 9. Teacher Inquiry Ratings: 2012 Fellows

	Pre % 5 or 6	Post % 5 or 6	Gain
1. I can effectively lead students in inquiry.	35.00%	55.00%	20.00%
2. I know the content standards for the science/math course students took prior to my course.	15.00%	35.00%	20.00%
3. I know the content standards for the science/math course students take after my course.	25.00%	40.00%	15.00%
4. I can effectively assess my students' progress during inquiry.	40.00%	50.00%	10.00%

Table 10. Teacher Inquiry Behaviors: 2011 Fellows

	Pre %	Post %	Gain
1. I involve science, technology, mathematics, or engineering professionals in my classroom.	15.00%	40.00%	25.00%
2. I make explicit references to careers in science and math.	40.00%	55.00%	15.00%
3. I make assignments that have career applications.	40.00%	50.00%	10.00%
4. Inquiry plays an important role in my lessons.	65.00%	75.00%	10.00%

Impact Survey comments from 2011 and 2012 Fellows describe how their participation has impacted their teaching, including enhancing their confidence and skills with content knowledge, inquiry-based instruction, technology and ability to make STEM relevant to students, which are central goals of the Kenan Fellows program.

- *The Kenan Fellows Program helped me develop an innovative and challenging inquiry-based curriculum for my student.*
- *I was able to engage my students better through the inquiry-based lessons I developed.*
- *I have taken time to look into how I teach and incorporate inquiry-based techniques and technology into my classroom.*
- *I have transformed our traditional science specialist position into a true STEM K-5 special for all students in our building.*
- *Helped me to seek and create hands-on, real-world experiences and connections to the curriculum for my students.*
- *Encouraged me to analyze my own lessons and curriculum and make them more innovative and current.*
- *Workshops provided new resources to create and update teaching methods and techniques.*
- *As a result of participating in the KF Program, I have the knowledge to create a connection between curriculum and real-world issues and experiences.*
- *The KF Program has definitely made me think about the relationship between assessments, standards, and lesson plan delivery. I am revisiting my lesson plans to make better connections between these items to improve my teacher efficacy.*

Create synergy among teachers, researchers and industry to ensure STEM is relevant and that best practices are infused across the spectrum

In order to ensure STEM instruction is based on best practices and relevant to students, the Kenan Fellows Program helps Fellows build and maintain synergistic relationships and partnerships with others in the community, including university faculty, community agencies/industries and businesses, and the NC

Department of Public Instruction. The program also provides an arena for Fellows to form partnerships/relationships with one another, thus giving them a chance to interact with other teacher leaders with similar interests and skills. Kenan Fellows spend extensive amounts of time with their mentor during the summer and school year as they develop, refine and evaluate their curriculum projects.

A substantial majority (92%) of 2011 Fellows reported on the Impact Survey that the program has enabled them to build relationships/partnerships with the broader community, and 84% agreed or strongly agreed that opportunities to network with other Fellows benefits their teaching and leadership skills.

Comments from the Impact Survey illustrate how Fellows believe that the Kenan Fellows Program has benefited them in the area of professional relationship/networking/partnership-building.

- *The community of Kenan Fellows opened up a world of new ideas and encouraged creativity and a renewal of my own skills.*

- *It has allowed me to present projects that were enhanced in content, inquiry, and collaboration among students and structured development.*

- *Connections to mentors opened up access to the college environment and resources for students. Sometimes this even included donated materials.*

Develop innovative and relevant curricular tools and resources for teachers and students across North Carolina to enhance student learning

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 curricula with the support of Kenan Fellow staff, including key components of their curriculum project and how the project is aligned with national and state standards. LEARN NC provides guidance on web site development and on other statewide dissemination strategies as well. Some of the curricula developed by Fellows are posted on the Kenan Fellows Program website at http://www.ncsu.edu/kenanfellows/, at LEARN NC's website, www.LEARNNC.org, and on a national curricular platform at Curriki.org In addition, each Fellow presents at conferences such as the NC Science Teachers Association Conference, National Science Teachers Association conference, or other relevant conferences. (see previous discussion of conference presentations). Table 11 provides more 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.***

Table 11. Professional Development Provided by Fellows

Where Presented	Number of Fellows Presenting	No. of Presentations	Average Audience Size	Examples
School	17	30	25	• How Science Fits into the New Teaching Standards • Inquiry and the Nature of Science • Literacy in the Science Classroom • Differentiation • Collaborative Planning • Inquiry and Reading Strategies in Different Content Areas • Inquiry in the Classroom • STEM: Making Meaning in the Classroom
District	11	20	30	• Instructional Facilitator, District Leader, Workshops for all Science Teachers grades 5-12 • Biology Best Practices • Project-Based Learning 101 • Science Kit Training • Integrating Technology into the Math Curriculum • Engaging Students using Smartboards
State (e.g., NCSTA, NCMTA, etc.)	30	30	30	• Using Biotechnology in the Classroom • The Calculus of Animal Motion • Literacy in the Science Classroom • Miracles in Science, A DuPont Experience • Seeing, Wondering, Theorizing, Learning: A Two-Day Workshop on Inquiry-Based Instruction in K-5 Science • Teaching Green technologies through Video Gaming • Genetics and Genomics Project Based Instruction • Focusing on the Forgotten "E" of STEM

MENTOR SURVEY RESULTS

A key partner to each Kenan Fellow is the university or business/industry Mentor who serves as a research partner and 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 research externship for the benefit of students. The mentor provides input on the development of the curriculum project. During the summer, Fellows work extensively with their Mentors or a research team in the lab, 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 2011 and 2012 Fellows were surveyed in spring 2011 to assess their views of their mentee and the Kenan Fellow Program with 21 responding (response rate = 46%). As is shown in the figure below, most respondents agree or strongly agree that they have developed close and lasting professional relationships with their mentees, that this relationship has enhanced their professional

knowledge and teaching (where applicable), and that it has increased their understanding and respect for the K-12 classroom environment.

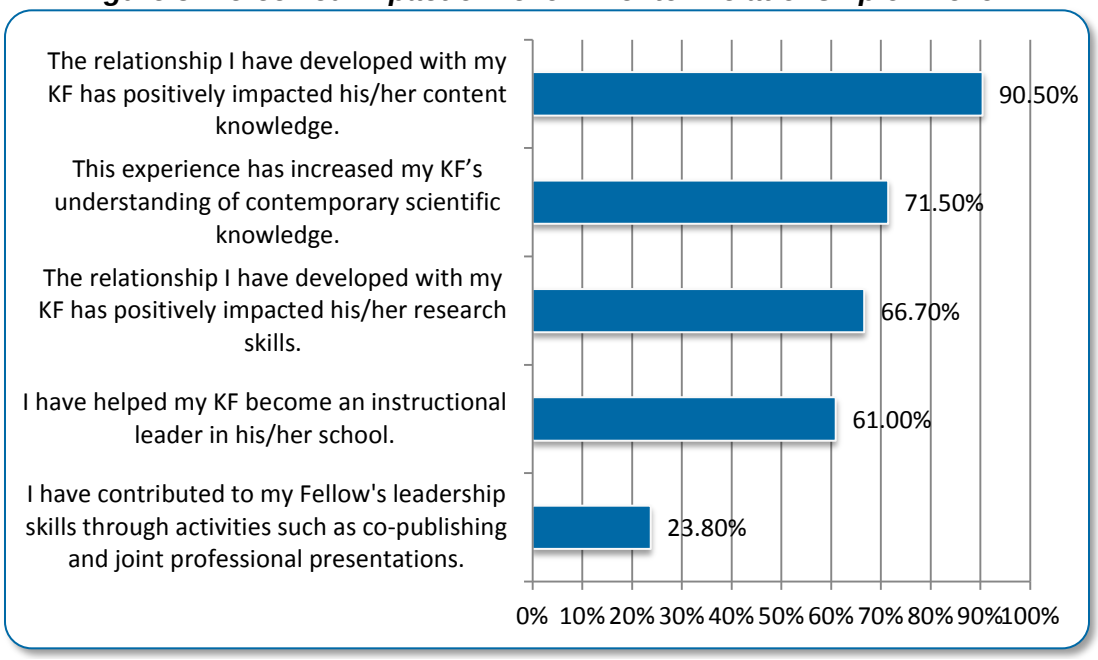
Table 12. Mentor's Perceptions of Fellow-Mentor Relationship

1. I have developed a productive professional relationship with my KF.	80.90%
2. Serving as a KF mentor has fostered my work in the area of university extension / engagement.	76.20%
3. My relationship with my KF has increased my understanding of the K-12 classroom environment.	71.50%
4. It is likely that a productive relationship with my KF will continue after the formal end of the fellowship.	66.70%
5. Serving as a mentor has had a significant impact on me professionally.	57.20%
6. My work as a KF mentor has positively impacted my scholarly contributions in my field.	57.10%
7. I feel more capable explaining my research and professional expertise in lay and K12 environments as a result of serving as a KF mentor.	57.10%
8. I am more reflective of my own teaching practices as a result of working with my KF.	57.10%
9. My work with my KF has informed the way I teach my undergraduate students.	47.60%
10. My participation as a KF mentor has helped me establish relationships/partnerships with those with similar interests in the community.	42.90%

Additionally, over half of responding Mentors agree or strongly agree that being a mentor has had a great impact on them professionally including having fostered their own work, helped them translate their work to the K-12 setting, and made them more reflective of their own teaching practices (where applicable). As one mentor commented, "The fellowship grew quickly into a partnership where she was offering support and help." Another noted, "Working with the KF Program and my mentee has given me a better perspective on instructional design for high school and community college students."

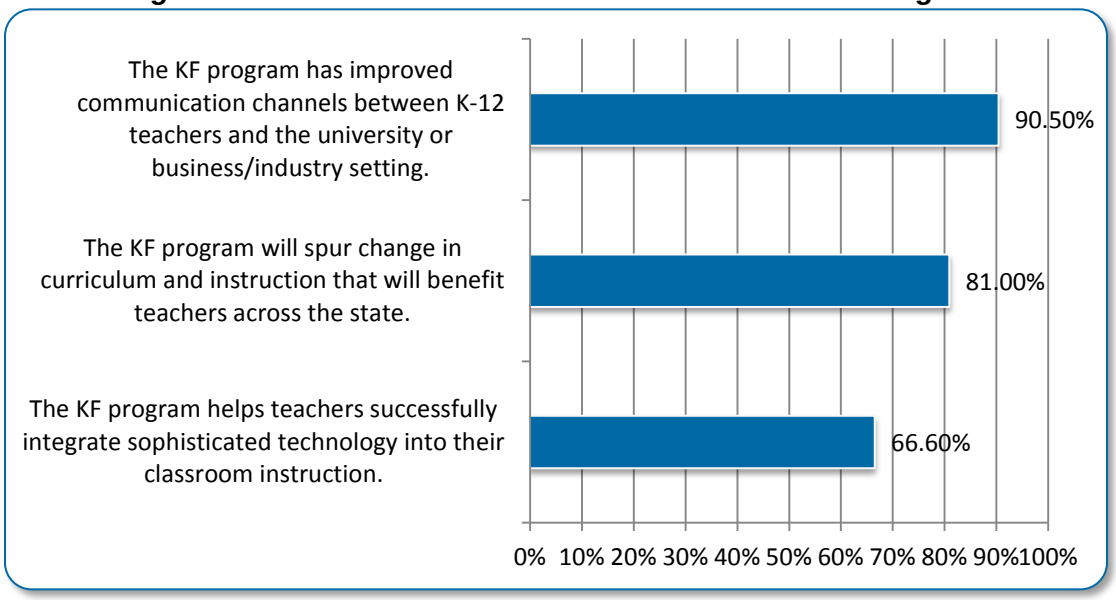
In terms of their perceived impact on their Fellow, over half of mentors agree or strongly agree that they have positively impacted their mentee's content knowledge and research skills, increased their understanding of contemporary scientific knowledge, and helped him or her to become an instructional leader (see Figure 3). Only a quarter of mentors, however, agreed that they have contributed to their mentee's leadership skills through activities such as co-publishing and joint professional presentations. As one mentor explained his rating, "My KF has gained a thorough understanding of the technical aspects of storyboarding and its interface with programming and modeling. On his own he enrolled in our Simulation Modeling Technician program to gain the skills that are required for production of interactive 3D simulations."

Figure 3. Perceived Impact of Fellow-Mentor Relationship on Fellow



Finally, Mentors provided their own assessment of the Kenan Fellows Program with most agreeing or strongly agreeing to positive statements about its impact on curriculum, other teachers, and use of technology in instruction. In addition, over 87% of Mentors agreed that they would volunteer to serve as a mentor to another Fellow in the near future or would attempt to recruit colleagues as Mentors.

Figure 4. Mentors' Assessments of the Kenan Fellow Program



SUMMARY AND DISCUSSION

Results of the evaluation of the Kenan Fellows Program for 2010-2011 provide evidence that this program is meeting its goals of 1) identifying, developing and retaining teacher leaders in the classrooms across North Carolina, 2) advancing effective teaching that prepares students for success in the 21st

Century, 3) creating synergy among teachers, researchers and industry to ensure STEM is relevant and that best practices are infused across the spectrum, and 4) developing innovative and relevant curricular tools and resources for teachers and students across North Carolina to enhance student learning.

Fellows are provided high quality professional development via workshops by those knowledgeable in their fields that focuses on teaching, leading, and learning. These opportunities, combined with their externship experiences, appear to improve Fellows' leadership skills as is shown by 2011 Fellows' post data which showed growth in multiple areas, suggesting that they:

- Are more knowledgeable of the state's procedure for adopting educational policy;
- Are more knowledgeable of the needs of educational policymakers and skilled at discussing educational policy with them;
- Are taking on more STEM leadership roles within their school;
- Have increased knowledge and skills needed to serve as a mentors or coaches, and
- Are more likely to be considered teacher leaders by others.

2012 Fellows' data reveal similar findings related to teacher leadership, including having increased knowledge and skills needed to provide effective professional development for teachers, to be effective public speakers, and to serve as coaches to other teachers. In addition, more Fellows recognize themselves as teacher leaders and have a better understanding of what it means to be a teacher leader. Also, 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.

These opportunities also appear to impact Fellows' content knowledge, research skills, and ability to use inquiry-guided classroom instruction. 2011 Fellows indicated a strong sense of self-efficacy as a teacher, reporting greater efficacy in key areas such as influencing decision making among school leaders and policymakers, motivating and supporting students, and engaging others. 2012 Fellows also indicated a greater sense of self-efficacy in such areas as promoting students' interest in STEM, involving and collaborating with others, and influencing decision makers, whether at the school or district and state levels.

Results from both 2011 and 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. 2011 Fellows better see that NC's tradition curriculum does very little to support inquiry and that teaching inquiry is critical. Self-reported behavior changes include more 2011 Fellows using inquiry and making connections between their subject areas and careers. 2012 Fellows report being better able to lead students and assess their progress using inquiry, and knowing more about the science and math content standards students take prior and after their course. Self-reported changes in behavior include involving more STEM professionals in their classroom, referencing STEM professions as part of lessons and assignments, and using inquiry more often.

As compelling as the quantitative findings are the qualitative reports by Fellows of the changes they have experienced related to their self and their roles because of their participation in the Kenan Fellowship Program. A substantial majority (92%) of 2011 Fellows reported on the Impact Survey that the program has enabled them to build relationships/partnerships with the broader community, and 84% agreed or strongly agreed that opportunities to network with other Fellows benefits their teaching and leadership skills. 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. 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, helping them translate their work to the K-12 setting, making them more reflective of their own teaching practices (where applicable). 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 Only a quarter of mentors, however, agreed that they have contributed to their mentee's leadership skills through activities such as co-publishing and joint professional presentations.

Finally, not only does the Kenan Fellow Program develop teacher leaders, it retains them as well. In fact, given that the state average turnover rate for teachers over the past 7 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 kept more than one 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 teacher leadership behaviors such as developing and sharing curricula can spark or support the drive that made them decide to be teachers in the first place.