THE UNIVERSITY OF NORTH CAROLINA SYSTEM

FEASIBILITY STUDY: IMPLEMENTING UTEACH IN THE UNIVERSITY OF NORTH CAROLINA SYSTEM

Report to the Joint Legislative Education Oversight Committee

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The University of North Carolina System
Chapel Hill, North Carolina

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Feasibility Study: Implementing UTeach in The University of North Carolina System

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CONTENT

INTRODUCTION

This study, as required by SB 315 (Session Law 2017-68), seeks to determine the feasibility of implementing the UTeach program within the University of North Carolina System. The UTeach program was originally designed by the University of Texas at Austin to recruit high-quality students majoring in STEM (science, technology, engineering, and mathematics) fields into the teaching profession by streamlining the required coursework of a traditional STEM degree with an accelerated, yet rigorous, pathway to secure teacher licensure without additional time or cost to the student.

North Carolina, as a state experiencing considerable growth, has a clear need to continue to attract top talent to our classrooms in increasing numbers and, as demonstrated by decades of data, teachers in STEM areas are consistently listed as a critical staffing need for school districts all around the state.[1] The General Assembly has shown keen interest in issues related to teacher recruitment and ensuring quality educator preparation programs; and it is fitting that the UTeach program, having demonstrated success in many other states, should be studied more carefully.

As directed by the General Assembly, this study addresses the following criteria:

1) How the UTeach program would match up with the curricula currently offered through the University of North Carolina System and what adjustments, if any, would be required for implementation for the UTeach program.
2) Which constituent institutions and which departments and programs at those institutions would participate and collaborate in the UTeach program if it was implemented.
3) The application process and time frame required to develop a UTeach program tailored to fit within the curricula of the University of North Carolina System.
4) The cost of implementing and maintaining a UTeach program and the alternatives for financing the program.
5) Any statutory amendments or other legislative action that would be needed for the implementation of a UTeach program.
6) Any other issues the President, or the President's designee, and the Board of Governors deem relevant in their evaluation of the UTeach program.

This study has been conducted in light of feedback provided by the UTeach Institute and has been informed by feedback from education deans and institutional representatives within the UNC System. System staff conducted an on-line survey of UNC Education Deans and institutional representatives to obtain a better understanding on how the UTeach program would align with the curricula currently offered at relevant institutions and what adjustments, if any, would be required for implementation for the UTeach program. The survey also assessed potential interest in the UTeach program, as well as barriers to implementation. UNC System Office staff also talked with faculty at current UTeach institutions for additional insight into the UTeach model.

Important considerations pertaining to UTeach implementation have been outlined carefully to provide the General Assembly with a clear assessment of the feasibility of implementation on any scale.

[1]North Carolina Department of Public Instruction (November 2016). *2015-2016 State of the Teaching Profession in North Carolina* [Table 11]. www.ncpublicschools.org/docs/educatoreffectiveness/surveys/leaving/2015-16turnoverreport.pdf.

ABOUT UTeach

UTeach recruits and prepares STEM majors to become middle and high school teachers. By combining coursework in STEM disciplines with core education courses that fulfill multiple degree requirements, students are able to graduate without increased costs or time. Through the program, students earn a secondary teaching certification; learn how to design inquiry-based instruction; participate in early and frequent field experience opportunities; and receive continuous, dedicated support from master teachers. UTeach students also engage in 40 hours of classroom observation before a 12-week teaching assignment in a secondary classroom. An overview of the UTeach curriculum is provided in Appendix A.

Since UTeach began twenty years ago at the University of Texas at Austin, 46 institutions have developed UTeach pathways, and in spring 2017, nearly 7,000 students were enrolled in UTeach programs across the nation. The institutions have together produced over 3,000 graduates (Table 1) and most of these graduates stay in teaching for five years or more.[2]

Table 1. UTeach Graduate Statistics

Cumulative national UTeach graduates	3,272
Underrepresented minority graduates	26%
Graduates entering teaching	86%
Graduates currently teaching	85%
Graduates currently teaching in K-12 schools with a majority low-income population	67%

The UTeach Institute supports replication of the UTeach model by assisting universities with implementation of the program and supporting the network of current UTeach institutions. The UTeach Institute also provides technical assistance to universities who already have STEM teacher preparation pathways in place and to those who are implementing new programs. The University of California Berkeley, University of California Irvine, and the University of Kansas were all institutions without prior undergraduate secondary STEM certification pathways and each are now producing over 20 UTeach graduates per year.

The Institute provides technical support to either individual institutions or state postsecondary systems. Six of the eight universities in the University of Texas System are UTeach institutions and all of the programs were started with planning grants from the system office. There are also multiple UTeach institutions in university systems in California, Colorado, Georgia, Massachusetts, and Tennessee.

Although the UTeach Institute outlines nine Elements of Success (Appendix B) that contribute to the program's effectiveness, the UTeach model can be designed and customized to meet state and university contexts. For example, in California, institutions implemented UTeach based on a flexible set of criteria developed by the system office and the UTeach Institute.

[2] UTeach Institute (2017). *UTeach at 20: Celebrating success and envisioning the future.*

Evidence of Effectiveness

While third-party evaluation of UTeach's effectiveness has been limited, a Center for Analysis of Longitudinal Data in Education Research (CALDER) review of student-level data in Texas found that students taught by UTeach teachers perform significantly better on middle school math end-of-grade tests and high school math and science end-of-course tests than students taught by the average teacher in the state. This is true across UTeach program sites, but the researchers did find an "Austin effect": graduates of the UTeach founding site at the University of Texas at Austin had larger effects on student test scores than graduates from the replication sites. The researchers caution that part of the UTeach effect for both Austin and the replication sites could be due to the program's selection process. The study also found that UTeach universities produce more STEM teachers after UTeach implementation.[3]

Cost of UTeach

The UTeach Institute guides universities through a period of comprehensive planning, followed by four years of operational and instructional implementation. During this period, the UTeach Institute offers intensive support and ongoing progress evaluation, so institutions can establish a UTeach program that will be sustainable beyond the grant.

Costs for full implementation of UTeach is approximately $3.3 million per institution over five years and is typically financed with start-up grant funds from external sources and matching funds from the institution. Program costs are low (approximately $250,000) during the planning period and increases as the program grows. UTeach expects institutions to provide increasing portions of the operating expenses (e.g., salaries, tuition reimbursements, internships, recruitment costs) over time.

UTeach Institute staff stated that the source for start-up grant funds varies by institution and state. While funding may be provided by the state for some institutions, others sought funding from local and private sources to cover implementation.

Total Costs over Five Years: $3.3 million per Institution (annual installments over the course of implementation, starting at $250,000 during planning period and increasing over the five-year period)

$2.8 million in Costs for Institutional Expenses
These funds cover the hiring of master teachers, tuition stipends to recruit students, faculty release time, student internship expenses, and financial compensation for mentor teachers.

- $1.4 million typically comes from the institution (contribution can include repurposing existing funds and personnel)
- $1.4 million typically comes from an external source (ie., private funder, state government)

$500,000 in Fees to UTeach Institute
These funds are paid directly to the UTeach Institute and cover the Institute's supports and services.

[3] Backes, B., Goldhaber, D., Cade, W., Sullivan, K., & Dodson, M. (December 2016). *Can UTeach? Assessing the Relative Effectiveness of STEM Teachers.* American Institutes for Research: Washington, DC.

FEASIBILITY ASSESSMENT

In order to assess the feasibility of applying for and implementing the UTeach program as part of the curricula offered by the UNC System, an on-line survey was administered to the fifteen UNC Education Deans and/or their designees. The survey items assessed the alignment of each university's current STEM teacher preparation programs with the UTeach Elements of Success and the UTeach Instructional Program. The survey also collected feedback on interest in UTeach implementation, potential barriers to implementation, and current STEM teacher preparation initiatives. Survey responses were received from 11 of the 15 UNC educator preparation programs (EPPs). Of the 11 institutions that responded, 5 of the institutions reported interest in implementing the UTeach program on their campuses.[4]

In addition to the survey, respondents were provided with an overview of the UTeach Elements of Success and UTeach Instructional Program Elements. As noted previously, the UTeach Elements of Success outline aspects and features of the program that contribute to its effectiveness. Based on the survey responses, many of the UNC STEM teacher preparation programs utilize similar operational structures and instructional philosophies in their program design and curriculum. Respondents were asked if each UTeach Element of Success was a current feature of their STEM teacher preparation program. If the UTeach element was not reported to be a component of the program, respondents were asked if the element would be a beneficial addition to their work in preparing STEM teachers. Survey responses are available in Table 2 below.

Table 2. UTeach Elements of Success

UTeach Element of Success	Current Component of UNC Curriculum	Beneficial Addition to UNC Curriculum (Not a Current Component)
Distinctive Program Identity	55% (6 out of 11)	100% (5 out of 5)
Cross-College Collaboration	100% (11 out of 11)	Not Applicable
School District Collaboration	73% (8 out of 11)	67% (2 out of 3)
Long-Term Institutional and Community Support	64% (7 out of 11)	100% (4 out of 4)
Compact and Flexible Degree Plans	91% (10 out of 11)	100% (1 out of 1)
Active Student Recruitment and Support	64% (7 out of 11)	100% (4 out of 4)
Dedicated Master Teachers	45% (5 out of 11)	100% (6 out of 6)
Rigorous Research-Based Instruction	100% (11 out of 11)	Not applicable
Early and Intensive Field Experiences	91% (10 out of 11)	0% (0 out of 1)
Continuous Program Improvement	82% (9 out of 11)	100% (2 out of 2)

[4] The UTeach model is specifically designed to be a partnership between STEM majors and a school of education and therefore, it should be noted that moving forward with UTeach implementation would require interest and support from the College of Arts and Sciences (or entity overseeing STEM degrees) at any participating institution.

The UTeach Instructional Program consists of a sequence of tightly articulated courses comprising 24 to 27 total credit hours. The UTeach course sequence includes four types of courses:

- UTeach Recruitment Courses: designed to encourage STEM majors to explore teaching as a career
- UTeach STEM Education Courses: based on current research in teaching and learning, specifically within the STEM domains
- UTeach STEM Content Courses: designed to fulfill multiple degree requirements while emphasizing content of particular importance to secondary math and science teachers
- UTeach Apprentice Teaching Coursework: consisting of a semester-long teaching experience and seminar that allows students to demonstrate proficiencies required for certification

UTeach also requires students to provide evidence of learning through preliminary and final portfolios of proficiency in subject matter knowledge, effective instructional design, and classroom management. In addition to this coursework, UTeach provides induction support to beginning teachers post-graduation.

Survey respondents were asked if their STEM teacher preparation programs offered a similar set of coursework to the UTeach Instructional Program. If comparable curriculum was not offered, respondents were asked if the UTeach coursework would be a beneficial addition to their programs. Survey responses are available in Table 3 below.

Table 3. UTeach Instructional Program

UTeach Coursework	Current Component of UNC Curriculum	Beneficial Addition to UNC Curriculum (Not a Current Component)
Recruitment Courses	36% (4 out of 11)	86% (6 out of 7)
STEM Education Courses	82% (9 out of 11)	100% (2 out of 2)
STEM Content Courses	91% (10 out of 11)	100% (1 out of 1)
Apprentice Teaching Courses	91% (10 out of 11)	100% (1 out of 1)
Portfolio Requirement	100% (11 out of 11)	Not Applicable
Induction Support	18% (2 out of 11)	89% (8 out of 9)

In addition to this coursework, UTeach requires extensive field work (i.e., 320 field hours, a minimum of 18 observations of the candidate in the field, and 80% of coursework focused on teaching lessons in classrooms). Of the survey respondents, 82% (9 out of 11) responded that the UTeach field requirements were at least moderately well aligned with their current STEM teacher preparation programs.

Although 82% (9 out of 11) of respondents reported that the UTeach curriculum and instructional program were at least moderately well aligned with their current approach to the preparation of STEM teachers, only 45% (5 out of 11) of the institutions surveyed reported interest in implementing the UTeach program on their campuses. Several potential *challenges* to UTeach implementation were identified including: sufficient resources (e.g., funding, infrastructure, institutional support), faculty time, required revisions to current educator preparation programs, curricular alignment, conflict with other educator preparation

program efforts, and recruitment of students. In addition, respondents highlighted several *concerns* about potential UTeach implementation including: implementation issues in other states; insufficient evidence to support the effectiveness of the UTeach program; a perceived lack of alignment between the UTeach model and North Carolina licensure requirements; and the curriculum redesign that is currently underway due to the implementation of edTPA, a nationally normed and valid pedagogy assessment of clinical practice performance (required by Session Law 2015-241).

When asked to share innovative approaches to the recruitment and preparation of STEM teachers currently employed by their institutions, respondents highlighted multiple flexible degree pathways currently available for STEM teacher preparation (e.g., undergraduate, graduate, alternative certification, and online programs), recruitment programs for transitioning soldiers with math and science related military occupational specialties, regional university-school partnership programs, lateral entry programs designed to assist mid-career professionals and STEM degree holders in transitioning to teaching, full-time recruiters employed on campuses; and annual STEM days for student recruitment.

Current UNC STEM Teacher Preparation Initiatives

Respondents also noted that there are several STEM-focused teacher preparation initiatives and grant programs with components similar to UTeach currently operating within the UNC System. A select few of these initiatives are highlighted below:

BWF Fast Track Scholars: The Burroughs Wellcome Fast Track Scholars Program began in 2006 as a partnership between the Burroughs Wellcome Fund and four University of North Carolina System campuses: North Carolina Central University, North Carolina State University, UNC Asheville, and UNC-Chapel Hill. The BWF Fast Track program was designed to create a "fast track" pathway to teacher certification for science and math majors. At each of the four participating campuses, the Provost, Dean of Education, and Dean(s) of Arts & Sciences collaborated to develop the "fast track" pathway offered to junior and senior science or math majors to obtain teacher certification in a science/math licensure area, along with a science or math baccalaureate degree. The BWF program also provided scholars with financial support and the opportunity to participate in a STEM-focused international trip as a professional development opportunity after teaching in the classroom for two years. The BWF partnership was designed to support approximately 30 slots at each participating campus. Now that most slots have been utilized, the BWF Fast Track program is nearing completion, but it remains an important example of an innovative partnership that created specific pathways to foster recruitment and preparation of high-quality STEM candidates.

NC A&Teach, UNC-BEST, and UNC Asheville: NC A&Teach at North Carolina A&T State University and the UNC Baccalaureate Education in Science and Teaching (UNC-BEST) at UNC-Chapel Hill are two examples of campus-level initiatives that mirror the UTeach program. The UNC-BEST and NCA&Teach programs recruit STEM majors in either their junior or senior year and provide an accelerated pathway to teacher licensure that includes careful instruction in pedagogy and time dedicated for students to be in a classroom environment. These abridged pathways, like UTeach, provide students with the benefit and added marketability of teacher licensure without additional time, coursework, or expense. Both serve as examples of how campuses can take the initiative to tailor pathways in a way that is organically supported by the campus leadership and faculty—particularly by independently securing grant funding for their respective efforts that allows for financial assistance to be offered to participating students. Funding from the National Science Foundation's Robert Noyce Teacher Scholarship program was utilized to support the

NC A&Teach work, and NSF Noyce funding has also supported similar STEM teacher recruitment efforts at other campuses, including Appalachian State, East Carolina, NC State, and UNC Charlotte.

While similar to UTeach, UNC Asheville's innovative approach to educator preparation provides an example of another alternative model. Students at UNCA have the opportunity to pursue a major of their choosing while attaining teaching certification in four years and the program currently offers teacher licensure in twelve areas of concentration, including middle and high school math and science.

Teaching Fellows: The North Carolina Teaching Fellows Program has a long legacy in North Carolina as an important tool to aid teacher recruitment. After Teaching Fellows' reauthorization by the General Assembly in 2017, the program has been more narrowly tailored to focus specifically on recruiting teachers into STEM and special education licensure areas. It should be noted that Teaching Fellows is not designed to compel partner campuses to make changes to their respective preparation programs. Instead, Teaching Fellows partner institutions have—and should maintain—flexibility to support students at various points of entry into the program (incoming college freshman, college transfer students, students matriculating into an educator preparation program from another course of study, and licensure-only applicants). Even so, there is still great potential for Teaching Fellows campuses to collaborate to improve and identify the best practices in attracting, preparing, and retaining high-quality teachers in these high-need subject areas—and those best practices should be brought to scale wherever possible and in partnership, rather than in competition, with other campus-driven initiatives.

The Walter and Daisy Carson Latham Clinical Schools Network: The Walter and Daisy Carson Latham Clinical Schools Network is a partnership between East Carolina University and 43 public school systems in North Carolina encompassing approximately 600 schools and 22,500 teachers. The network represents a shared responsibility for the recruitment, induction, retention, and renewal of teachers across eastern North Carolina. The network provides quality field placements for pre-service teachers in diverse settings and authentic clinical experiences that promote interaction between university faculty, public school faculty, teacher education candidates, and public school students.

Other Initiatives: Two other factors that should be taken into account when considering changes and additions to current teacher preparation practices are the edTPA and the reforms enacted by the General Assembly in Senate Bill 599—Excellent Educators for Every Classroom (S.L. 2017-189). In this study's survey of institutions, concern was expressed that the portfolio requirements of UTeach may conflict with the requirements of edTPA, the performance assessment tool already being implemented at all UNC System institutions to determine the readiness of individual teacher candidates and to provide key metrics to assess overall program outcomes. While it may very well be the case that edTPA could simply satisfy the portfolio requirement for UTeach implementation in North Carolina, a careful study would be needed to ensure that the considerable work to facilitate edTPA's implementation is not affected. Similarly, any move forward with UTeach implementation in North Carolina should be informed and guided by the revised accountability structure put in place by S.L. 2017-189, which all educator preparation programs are already working to implement in their respective institutions.

PROPOSAL FOR IMPLEMENTATION

Institution Selection

If the General Assembly elects to proceed with UTeach implementation, the UNC System would be uniquely positioned to convene a working group—including representatives from The UTeach Institute, UNC System Colleges of Education, the NC Department of Public Instruction, the Professional Educator Preparation and Standards Commission, public school STEM educators, and teacher candidates—to develop a rigorous needs assessment and selection process for participation in UTeach implementation. This working group should adopt stringent standards for the selection of state-approved and fully accredited UNC System secondary STEM teacher preparation programs. These standards should assess program effectiveness, with special consideration to programs with the highest need for an innovative evidence-based approach to the preparation and recruitment of secondary STEM teachers. These standards should integrate the program review criteria employed by the UTeach Institute and also include the following:

- A compelling need for support in the preparation and certification of secondary STEM teachers based on enrollment in STEM teacher preparation programs, academic profiles of graduates from STEM teacher preparation programs, licensure exam pass rates, and productivity of initially licensed STEM teachers
- High rates of educator effectiveness on value-added models and teacher evaluations, as well as measurable impact of prior graduates on student learning in STEM areas
- Commitment to the UTeach model indicated by strong institutional support, financial commitment, and allocation of essential resources
- Capacity to implement the UTeach program with fidelity to operational and instructional components, particularly the UTeach Elements of Success
- Sustainability beyond the initial implementation period

With support from UNC System staff, the working group should also oversee the selection process and identify constituent institutions who meet and/or exceed the selection criteria for UTeach implementation. In addition, the working group should determine those institutions that would most benefit from full implementation of the UTeach program and those that might be best suited for flexible implementation options based on available funding. A competitive Request for Proposals (RFP) or an application process could be utilized to select the most competitive applicants. The UTeach Institute has offered support in the customization of a selection process that best meets the UNC System's needs and priorities.

Timeline

The UTeach Institute has developed an application process that serves as a guide to ensure that UTeach is implemented consistently and successfully in other states. While the staff of the UTeach Institute works carefully to tailor the implementation process to each individually applying university/university system, the schedule of the application process provides a standard timeline for the general length of implementation.

The start of the application process begins with the release of the formal UTeach application, which is estimated to be released in April 2018. After the application is made available, parties interested in implementing UTeach are able to participate in a webinar that provides a basic introduction to the UTeach program as well as scheduled conference calls that provide an opportunity for interested parties to get assistance from UTeach Institute staff on institutions' applications. For those who move forward with an application, the UTeach Institute hosts an annual UTeach Conference in Austin, Texas and encourages

prospective applicants to attend. The expected deadline for UTeach applications is October 2018. Following the deadline, applications will undergo a month-long review and then receive notice of whether the application has been accepted. Institutions with approved applications will finalize their contract with the UTeach Institute and move forward into the implementation planning period.

Discussions with the UTeach Institute for purposes of this report provided a more detailed outline for the prospective timeline for implementation in North Carolina. The initial steps would be two-fold: to convene a working group, as previously noted, to develop a competitive application process to select the institutions within the University of North Carolina System that would participate as UTeach campuses and to secure the needed funding, both at the state level and institution level, so that the resources are in place to ensure successful implementation. If those steps were taken this summer, North Carolina could complete and submit an application to the UTeach Institute this fall and enter into the planning stage in early 2019, and the 2019-2020 academic year would be the first full year of UTeach implementation at the selected campuses.

Under the contractual agreement with UTeach, the UTeach Institute provides support and technical assistance for an implementation process over five years. At the end of that period, the relationship between the UNC UTeach institutions and the UTeach Institute continues. Each new UTeach campus automatically becomes a member of the UTeach STEM Educators Association (USEA) -- the network of UTeach campuses. Similarly, alumni from affiliated UTeach campuses automatically become members of the UTeach Alumni Network, which keeps members informed of various professional development opportunities. Finally, the UTeach Institute also plays a role in program accountability by collecting program outcome data from each UTeach affiliate to monitor program growth, sustainability, as well as the long-term impact of UTeach classroom outcomes.

Needed Legislative Action

The need for legislative action to aid the implementation of UTeach is largely determined by the scale of implementation that is deemed appropriate by the General Assembly. Should the General Assembly desire to have a full-scale implementation of the UTeach program in collaboration with the UTeach Institute, legislative action would be needed to provide the necessary appropriation, to provide any guidelines for the institution selection process that the General Assembly would like to require the UNC System Office to take into consideration, and to set the desired reporting criteria to ensure full transparency and accountability of the new UTeach initiative.

Outside of full-scale implementation of UTeach, this report has demonstrated that there are already other on-going, STEM-specific teacher preparation initiatives at multiple UNC System campuses. While there may be value to each of these initiatives maintaining a unique, campus-specific identity, there may also be great benefit in facilitating a more streamlined approach to capture and measure the successes of these initiatives. As an alternative to starting UTeach as a new initiative, the UNC System Office could establish a working group to take an inventory of all campus-specific initiatives and develop recommendations to ensure that ongoing policy reforms do not inadvertently limit the innovation of non-traditional, accelerated pathways like those developed by the UTeach model.

RECOMMENDATIONS AND CONCLUSIONS

Based on conversations with the UTeach Institute staff, feedback from UNC institutional representatives, and a review of current UNC and statewide educational initiatives, the following recommendations should be considered in assessing the feasibility of UTeach implementation at UNC System institutions.

1. *UTeach implementation should be considered thoughtfully.*

UTeach requires multiple colleges, K-12 and higher education partners, and private and public partners to ensure the policies and structures are in place for successful implementation across a five-year effort. As mentioned previously, institutions must commit high levels of capacity and interest as well as a significant financial investment that continues beyond the five-year grant period. UNC System staff who previously worked in institutions with the UTeach program cautioned that the costs of implementing and sustaining the UTeach model are substantial and that implementation takes considerable time. Faculty from current UTeach institutions also suggested that campuses start thinking about sustainability beyond the five-year grant period as early as the planning stage.

It is important to note that UTeach is meant to expand and enrich a program already demonstrating successful outcomes and is not designed to be a turnaround method for a program where challenges have been identified. Therefore, there should be an understanding that some of the institutions with the ability to collaborate and devote the necessary resources may be the very same institutions that lack capacity due to ongoing work on other successful educator preparation initiatives previously outlined in this report. In such a case, moving forward with UTeach implementation would likely only hamper the momentum of these campus initiatives.

2. *Implementation must ensure buy-in at campus level.*

One of the recurring themes in discussions with staff from the UTeach Institute was the vital importance of having full institutional buy-in prior to UTeach implementation. Because UTeach requires collaboration and synergy within an institution, it is essential that the leadership and faculty of the institution—not only the school of education—are committed to UTeach being part of the institutional vision. That intra-institutional collaboration paves the way for the necessary partnerships to create UTeach pathways in innovative, streamlined ways that minimize cost and time for UTeach students and that aid student recruitment efforts into the UTeach program. When asked about challenges faced during UTeach implementation, a representative from a current UTeach institution discussed difficulty with weathering leadership transitions. Since UTeach touches so many institutional divisions, the process of ensuring and encouraging buy-in could happen over and over again as new leaders enter the institution.

While surveying institutional interest is a good first step to ensure buy-in at the campus-level, a key factor that should be considered is whether a campus already has an established investment of time, energy, and resources in another educator preparation initiative. While some initiatives have already been identified in this report,[5] any process designed for the selection of institutions to participate in the UTeach program should include a comprehensive evaluation that provides an honest assessment of whether an institution has the capacity to devote the needed focus and resources to implement UTeach successfully. This assessment of whether an institution's resources are already encumbered should not be limited only to other STEM-focused educator preparation initiatives, but should take other resource-intensive projects into account (as an example, the work to establish laboratory schools at nine UNC System campuses).

[5] See "Other Initiatives" section on pages 7-8 of this report.

3. *Create a new STEM educator preparation initiative informed by best practices from current UNC initiatives.*

In light of the successful STEM-focused initiatives already underway on UNC campuses, should the General Assembly decide not to move forward with UTeach implementation, a viable alternative would be to form a working group of those institutions that currently provide innovative models for recruiting and preparing STEM educators. The purpose of this working group would be to identify the similarities between on-going initiatives, to determine best practices, and to integrate the successful elements of each distinct initiative into a unified framework that can be successfully replicated at other UNC campuses. The working group should also take a careful inventory of existing resources that could be leveraged—for example, to mirror the support that UTeach provides to teacher candidates after graduation, the work and existing partnerships of the North Carolina New Teacher Support Program could be utilized. The resulting framework, though informed by multiple strategies, should be branded distinctly and implemented with fidelity, as well as UNC System-level support.

As this report clearly illustrates, UTeach is a compelling model and may hold great promise for North Carolina. However, if UTeach implementation does not move forward, the benefits of creating a framework to improve the recruitment, preparation, and retention of STEM educators that is unique to North Carolina should be considered. This approach would recognize and build upon the existing innovative pathways within the UNC System, as well as ensure that ownership of the model is tailored specifically to our state and works in tandem with those successful efforts already in place. Such an approach would be particularly beneficial for campuses that may not otherwise have the capacity to participate in UTeach. It should be noted that many campus-level initiatives have secured grant and/or private funds for financial support; but, even so, this alternative approach may be more cost-effective than the budget for UTeach implementation previously outlined in this report.

4. *UTeach implementation should include thorough evaluation.*

A rigorous evaluation of UTeach implementation should be conducted to ensure comprehensive data are collected about program activities, the unique characteristics of the program at each institution, and the overall effectiveness of the program in recruiting and preparing STEM teachers for North Carolina. The evaluation should be conducted in close collaboration with campus implementation teams to ensure that data are used formatively to strengthen the design and execution of the program, as well as enhance overall impact. This evaluation should be conducted by an external, independent, third-party evaluator to provide an impartial account of program effectiveness and would likely incur additional costs.

In addition to an external evaluator, the UTeach Institute should also serve as an integral partner in the evaluation of UTeach implementation. The UTeach Institute is committed to assessing the long-term impact of UTeach implementation and to work with partner institutions to ensure program sustainability and growth. Once a new UTeach program is established, the institution automatically becomes a member of the UTeach STEM Educators Association (USEA). In collaboration with USEA and each individual partner institution, the Institute collects program outcome data past the initial implementation phase. On a yearly basis, program enrollment, profile, and demographic data are collected. The UTeach Institute maintains a robust database and judiciously tracks program alumni as they enter and progress in their teaching careers. These evaluation activities allow UTeach to maintain up-to-date national program outcome

metrics, including the total number of teachers produced and the number of teachers retained in the teaching profession.

5. *Implementation should involve collaboration with other stakeholders.*

UTeach Institute staff found that previous implementation processes worked well when there was substantial collaboration among the participating institutions, the postsecondary system office, K-12, private funders, and government leaders. UNC System Colleges of Education, the North Carolina Department of Public Instruction, the Professional Educator Preparation and Standards Commission, public school STEM educators, teacher candidates, and other relevant stakeholders should be consulted before and during implementation of UTeach.

As noted in the new University of North Carolina Strategic Plan, the System is committed to increasing the number of high-quality credentials awarded in STEM and K-12 education and System-level conversations with the Colleges of Education highlighted the institutions' commitment to reaching these goals. System Office staff will continue to learn about STEM teacher preparation programs at our institutions, offer peer learning opportunities so that institutions can share best practices in the development of STEM educator pathways, and examine evidence-based research to improve current policies and programs to recruit and prepare STEM teachers. These efforts will ensure that the University of North Carolina is at the forefront of this important and critical work.

THE UNIVERSITY OF NORTH CAROLINA SYSTEM

Appendix A
UTeach Elements of Success

Abbreviated UTeach *Elements of Success*

1. Distinctive Program Identity
UTeach has an established identity as a prestigious secondary STEM teacher preparation program that attracts high caliber students, experienced and successful master teachers, and tenure-track faculty who are interested in the reform of STEM education.

2. Cross-College and School District Collaboration
UTeach is a formally coordinated effort of the equivalents of the College of Education, the College of Liberal Arts, and the college(s) responsible for administering STEM degrees.

3. Long-Term Institutional and Community Support
UTeach is a long-term institutional and community priority that is sustained through ongoing financial support from university and college administrators, as well as a broader range of stakeholders concerned with STEM education reform. UTeach is afforded a level of stability similar to other university departments and is not an outreach effort.

4. Compact and Flexible Degree Plans
UTeach offers four-year degree plans that fully integrate students' STEM content major requirements and UTeach program requirements and allow students to obtain secondary STEM teaching certification while earning degrees in science, computer science, engineering, or mathematics.

5. Active Student Recruitment and Support
UTeach actively recruits to attract the greatest possible number of STEM majors and provides significant resources and encouragement to maximize program and career retention.

6. Dedicated Master Teachers
UTeach master teachers—non-tenured clinical faculty with exemplary secondary teaching experience—are exclusively dedicated to student support and program success.

7. Rigorous, Research-Based Instruction
UTeach courses are designed to develop deep understanding of content of particular importance to future secondary STEM teachers and build strong connections between mathematics and science and between educational theory and practice.

8. Early and Intensive Field Experiences
In order to promote confidence and accelerate professional development, UTeach students begin a carefully scaffolded sequence of intensive teaching opportunities in their first semester of the program and continue these field experiences throughout.

9. Continuous Program Improvement
UTeach systematically collects and analyzes both student and program level data to make informed decisions about program development and improvement.

THE UTEACH INSTITUTE

UTeach
Elements of Success

Appendix B
UTeach Curriculum Snapshot

UTeach Curriculum Snapshot

March 2013

THE UTEACH INSTITUTE

UTeach offers a streamlined, field-intensive curriculum that is firmly situated within the domains of math and science

Instructional Program Elements

Compact and Flexible Degree Plans

UTeach offers four-year degree plans that fully integrate students' STEM content major requirements and UTeach program requirements and allow students to obtain secondary teacher certification while earning a degree in science, computer science, engineering, or mathematics.

Rigorous, Research-Based Instruction

UTeach courses are designed to develop deep understanding of content of particular importance to future secondary STEM teachers and build strong connections between educational theory and practice.

Early and Intensive Field Experiences

UTeach students begin a carefully scaffolded sequence of intensive teaching opportunities in their first semester of the program and continue these field experiences throughout in order to promote confidence and accelerate professional development.

Dedicated Master Teachers

UTeach master teachers - non-tenured clinical faculty with exemplary secondary teaching experience - are exclusively dedicated to student support and program success.