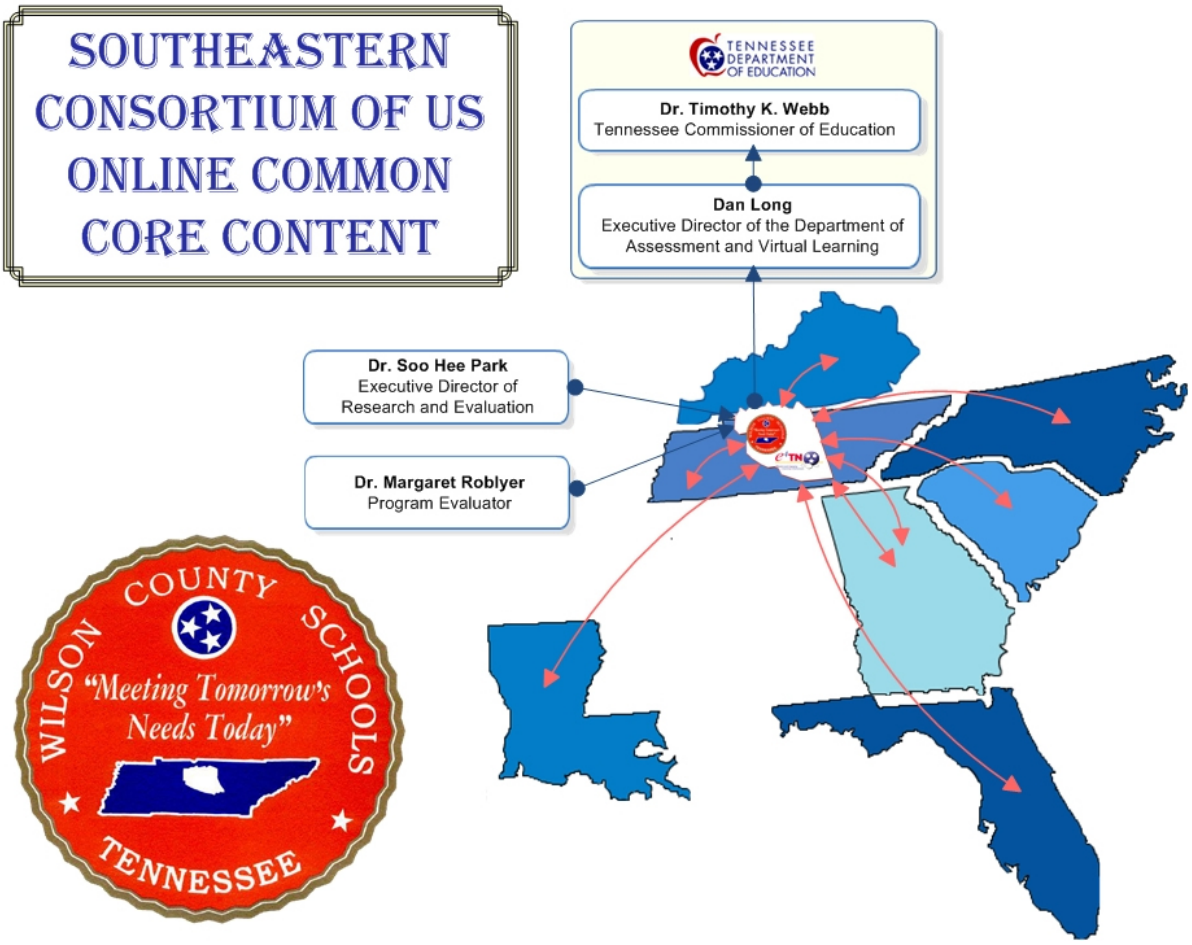
Southeastern Consortium of US Online Common Core Content (OC^3)
i3, Wilson County DOE



Objectives 8

Introduction 10

Existing Research Evidence and Need Concerning Innovations that Support Effective Teachers 13

Value-Added Models 13

The Tennessee Value-Added Model 14

Quantitative studies for K-12 online learning. 15

Need for value-added model 17

Need for professional development 17

Need for highly effective teachers in rural and high needs districts 18

Need for quasi-experimental studies with a larger sample size 19

Study Design for the OC^3 Project 20

Overview 20

Professional development. 21

Online professional development for OC3 online teachers 21

Sustainable training model 22

Increase the pool of online teachers 22

Apple Professional Development for OC^3 Participants. 23

Online professional development for teachers in traditional classrooms 24

Training and orientation 25

Data collection and analysis 25

Planning 29

Implementation and data collection 29

Dissemination of project results and lessons learned 37

Sustainability 38

Experience of the OC^3 Team 38

Wilson County Department of Education 38

e4TN, Tennessee's e-Learning Initiative. 42

Partners 45

Private Partners 46

Conclusion 49

Imagine our lives, if you will if leaders had failed to make decisions to impact the traditional or everyday ways in which we do things. Imagine for a moment how our lives would be different if…

What if?

- Albert Einstein had never immigrated into the United States in 1933?
- President Lincoln's ship didn't "weather every rack"?
- The 35th President of the United States had not been assassinated in 1963?
- Boo Radley didn't save Atticus Finch in *To Kill a Mockingbird*?
- A group of people/educators hadn't banded together to require the least restrictive environment for students with disabilities in 1975?
- Two guys had not worked together in a garage in California in 1970?

Our lives would be very different today, and at some point each of these leaders had an innovative idea with new expectations for all, an idea that has changed the lives of many and the history of our country. i3 grants are an opportunity to make such life changing occurrences for the face of education in the United States. Regarding new ideas and changing expectations, imagine what if we are…:

What if?

- A 9th grade student who is in Vanderbilt Children's Hospital can receive treatment during the day and participate in online classes at night when he is awake, after treatment without ever falling behind in his coursework, thereby graduating with his cohort.?
- A 12-year-old boy says, "We are the future. Technology is the future. Therefore, we are technology."

- Students are "Free-Agent Learners" who take responsibility for their own personalized learning?
- 72% of our students are using electronically media to communicate, but this is primarily inaccessible during the school day?
- Students metaphorically and literally "Speak Out" as our leaders in the past have?
- We take this opportunity to break the mold of A Nation at Risk (1983) and break the traditional barriers and policies that have prevented such transformational change?
- We change the face of American Education with OC^3?

According to Project Tomorrow (2009), the demand for online learning in the K12 environment is not meeting the demands of students. Forty percent of students in K12 have demonstrated an interest in taking online courses, but only 10% of those have had opportunities to take classes at their schools.

What if we CAN?

What if…

- States work together to offer online courses to students in math, science, foreign language and ACT Readiness instead of independently reinventing the wheel?
- States share common teacher training that shows research-based improved teacher quality in content, pedagogy, and student learning?
- States train their teachers the way students are learning?
- Technology allows the Southeast to overcome mountains, rivers, disasters, lakes, and oceans in order to effectively teach students?
- Technology allows students to gain confidence and not be stereotyped by race, gender, appearance, or age?

- An online consortium in the Southeastern United States prepares teachers online like Singapore and other countries with education systems the US is lagging behind?

The larger implications of the "What if" scenarios are to suggest that what if educators worked together to jointly offer the best of what we are offering independently? If we are going to follow Neil Armstrong's footsteps and land on the moon with education reform of RTTT and i3, then this will be the rocket that gets us there, as a joined effort in technical innovation.

Wilson County Department of Education in Lebanon, Tennessee, FL, NC, SC, LA, KY, TN, GA and Gwinnette County in GA, along with Apple, AT&T, ETLO, and Randa Solutions propose to conduct an i3 project that is a multistate consortium of online curriculum comprised of STEM, college preparatory, common core curriculum aligned standards in a metatagged repository that is accessible and searchable by all partners by standard. Each participating state will be allocated seats and teachers will be trained by ETLO, a nationally recognized online professional development training program for online teachers. Nationally award winning online curriculum will be provided by e4TN and Florida Virtual School. The central focus of the project is to provide effective teachers to students in online environments; however, measuring effectiveness of online teachers requires advanced thinking from the pioneers of online learning such as our partner states and district. Tennessee has led the nation in the Value-Added Model since 1996; therefore, the OC^3 proposal offers a plan for Tennessee to coordinate an effort to build a model and measure teacher effectiveness in the online medium while developing sustainability for the online learning instructional model in partner states while expanding existing capacity and building scalability through embedding field experts, curriculum, and a consortium of experienced expert state leaders in a project that will change the face of online education.

Students are demanding that technology be used in their educational settings, not just personal lives (Project Tomorrow, 2009).There is and will continue to be a shortage of highly-effective teachers certified in math, science and foreign language, especially in rural and high-needs schools. The need will increase as states adopt the American Diploma Standards requiring four years of high school math and science. Providing online courses aligned to the Common Core and national standards taught by trained highly qualified instructors is a viable solution, but there is no model for evaluating the effectiveness of teachers in the online environment. Wilson County DOE proposes to lead a project to

- Build math, science, Spanish and ACT prep for College Readiness courses aligned to Common Core standards and accessible to multiple states via traditional, online and mobile mediums.
- Increase the number of highly-effective teachers by allowing under-qualified teachers, or those adding a certification, access to these newly developed online courses to strengthen their knowledge in content and good pedagogy.
- Increase the number of highly-effective teachers through professional development for online teachers.
- Provide online courses for up to 52,000 underserved, rural, and other students in math, science, foreign language and ACT Prep for College Readiness.
- Create a quasi-experimental study to gather and analyze "policy-relevant data" about students and teachers resulting in a viable model for teacher effectiveness based on student performance.
- Form a multi-state consortium of virtual schools to allow synergistic collaboration from strengths and experience of each contributor resulting in increased student achievement.

The tiered infrastructure will allow grass roots autonomy at the district level while providing consortium wide standardized content, assessment, pedagogy and student support. This scalable model will be replicable in other regions of the United States.

Objectives

Goal 1: Create a common set of highly-effective online math, science, technology, college readiness, and foreign language courses.

Objective 1.1: Modify seven Carnegie Credit courses (Algebra I, Calculus, AP Computer Literacy, AP Statistics, Chemistry, and Spanish 1 and 2) to be 100% aligned to common core or national standards.

Objective 1.2: Create an online ACT readiness course 100% that is aligned to common core standards.

Objective 1.3: Convert all online courses to an identifiable format as learning objects that are metatagged according to the IEEE 1484.12.1 – 2002 Standard for Learning Object Metadata and built in compliance with SCORM standards for LOR compatibility.

Objective 1.4: Provide access to all online courses for multiple states and districts in the Southeast via a common learning management system.

Objective 1.5: Evaluate online course effectiveness of all courses by using a quasi-experimental design and propensity-score matching techniques to compare student achievement in online and traditional environments.

Goal 2: Create and deliver teacher training to increase numbers of highly-qualified online teachers.

Objective 2.1: Create a common online teacher training course of best practices and technical navigation to be deliverable in a common learning management system and identifiable by

learning objects that are metatagged according to the IEEE 1484.12.1 – 2002 Standard for Learning Object Metadata and built in compliance with SCORM standards for LOR compatibility.

Objective 2.2: Carry out training workshops to train a facilitator-trainer for each partner state or district who can create personalized facilitation plans to guide online course implementation.

Objective 2.3: Facilitator-trainers carry out training of online teachers within each partner state or district.

Objective 2.4: Increase the teaching pool in partner states or districts by training a maximum of 2600 teachers in OC^3 online training and ETLO online training.

Objective 2.5: Increase the number of HQE teachers in partner states and districts by providing online modeling and content review for traditional teachers in need of review and/or remediation.

Goal 3: Provide online instruction offered by HQ teachers to underserved, rural, and other students in math, science, and foreign language areas.

Objective 3.1: Increase the number of students who are being taught by highly-qualified online personnel in each partner state.

Objective 3.2: Increase the number of students taking online math, science, and foreign language courses in districts of project partners.

Objective 3.3: Increase the number of students taking online advanced electives and ACT readiness courses in districts of project partners.

Goal 4: Develop an accountability model of online teacher effectiveness based on expert input and student data.

Objective 4.1: Define, through analysis of research findings and focus group input, the quality indicators of an effective online instructor for K-12 learning environments.

Objective 4.2: Develop a model of teacher performance based on student achievement for online environments that uses the same statistical paradigm as models of teacher performance in traditional environments.

Objective 4.3: Combine quality indicators and achievement data to develop a model for evaluating online teacher effectiveness.

Objective 4.4: Implement the accountability model to measure teacher performance based on student achievement and administrative ratings for: Algebra I, Calculus, AP Computer Literacy, AP Statistics, Chemistry, Spanish 1 and 2, and ACT Readiness.

Goal 5: Develop a consortium of partner virtual schools in order to facilitate communications and collaboration on project activities and future goals.

Objective 5.1: Establish effective communication mechanisms to support collaboration for online activities.

Objective 5.2: Facilitate exchange of information between partner virtual schools on unique strengths and effective strategies to support growth of online programs.

Objective 5.3: Facilitate cooperation among project partners to obtain required data, implement personnel training, and support student success in online courses.

Introduction

Wilson County Department of Education in Lebanon, Tennessee proposes to be the project lead for a scale-up grant that will address Absolute Priority 1 – Support Effective Teachers and Principals, Competitive Preference Priority (CPP) 6 – Support College Access and Success, and CPP 8 – Serve Schools in Rural LEAs. It is recognized that the quality of teaching

is the most critical school-based factor contributing to student learning (Achieve, 2010)[*]. Both USDOE's Blueprint for the reauthorization of ESEA (ESEA, 2010) and it's National Educational Technology Plan (NETP, 2010) reinforce this central principle through calls for developing great teachers and leaders in every school and improving instruction through fostering technology-enabled Connected Teaching. The Race to the Top (RTTT) has encouraged states to adopt policies to measure effectiveness of individual teachers and to supply high-quality support. The American Diploma Project and adoption of the Common Core Curriculum (CCC) has set the stage for development of a measure of teacher effectiveness that will be generalizable from one state to another providing "effective instruction in rigorous content to *all* students, regardless of where they go to school,"(Achieve, 2010). Given all of these considerations, Wilson County Schools in partnership with multiple states and industry members proposes a strategy and collaborative project using technology to meet the diverse needs of student while embracing the opportunities offered through challenges in rural communities with technology.

In anticipation of the potential impact of online technologies for improving instruction and learning, increasing equity for educational opportunities, promoting data-driven instructional reforms, and growing online professional collaborative and training networks among educators – all concepts embraced by the ESEA and NETP – many states already have invested resources for multiple years in individual efforts to develop the technology, infrastructure, and expertise necessary to design, deliver, support, and connect teachers and students to high-quality content, resources, data, expertise, and learning opportunities. As a result, many states have begun to offer online courses as a solution to the issue of inequitable access to upper level math and science courses, as well as access to highly-qualified teachers in a wide range of subject areas,

[*] See Appendix H 1 for a complete list of references.

for rural and urban schools. As more students and schools have ventured into online learning in order to provide equitable access to courses and to meet the needs of students, quality of online instruction is of great concern to educators (SREB, 2006). Wilson County DOE in Lebanon, TN is a member of a state-wide e-learning initiative, the *e*ffective and *e*ngaging *e*-Learning *e*nvironment for Tennessee (e4TN), that has begun this process. Through e4TN, Wilson County DOE is a leader within an active online learning network of 86 Tennessee school districts which offer online courses to their students, a network that e4TN has scaled-up from an initial 7 Local Education Agency's (LEAs) to 86 in 4 years. The Southeastern Consortium of US Online Common Core Content (OC^3), as proposed in this project, will continue the scale-up process, providing nationally award winning online courses aligned to the CCC and trained highly-qualified online instructors to students of participating states. The proposed online courses for the OC^3 project are Algebra 1, Chemistry, Calculus, AP Statistics and AP Computer Literacy to address STEM objectives; Spanish 1 and 2 to supply the need for highly qualified teachers in rural districts and College Readiness; and an ACT Prep including units on English, Mathematics, Science Reasoning and Social Studies to address College Readiness. "Virtual schools, because they provide instruction via online learning management systems, have an unprecedented opportunity to collect and interpret data at student, teacher, course, program, and school levels to guide practice. When school data are joined with student and teacher demographic data, human resource data, and state achievement data, powerful patterns in teaching and learning can be identified," (Cavanaugh, 2010). Some studies of teacher effectiveness have occurred, but the field is still new in the online environment. Some promising mathematical modeling methods have been studied that may lead to a generalizable method of measuring teacher effectiveness.

Existing Research Evidence and Need Concerning Innovations that Support Effective Teachers (Including Causal Conclusions and Generalizability)

Value-Added Models. It is generally recognized that teachers have important input in student achievement. Aarons, Barrow and Sander (2007) found that teacher effectiveness is statistically important in explaining ninth-grade math test score achievement after controlling for initial ability and other student characteristics. Several researchers have developed Value-Added Models (VAM) to measure teacher effectiveness. The VAM is a statistical method to determine the impact a teacher has on a student's learning/achievement over a one-year period. New York, Ohio, Pennsylvania and Tennessee all have used a value-added model. The best known and most frequently-used value-added model is the Tennessee Educational Value-added System (TVAAS) model for evaluating teachers in the State of Tennessee (Braun, 2004). The original purpose of TVAAS was to create a system of accountability for rural school systems in Tennessee. Wilson County DOE in Lebanon Tennessee has been well-versed and practiced in TVAAS. Data collection on this model began in 1996 in Tennessee (Kupermintz, 2003). In the current and traditional, face-to-face model of teacher-effect scores a general linear model is used where data is calculated from students test scores in grades 3-8. Covariates in the formula include demographics such as race, gender, GPA and others. Additionally, the larger the sample size the greater the accuracy (Ballou, 2002; Braun, 2005). The experience of the VAM is in traditional classrooms with traditional teaching. Online learning as a field that is growing, particularly to meet the needs of measuring effective teachers in rural districts, much like the foundation of VAM in Tennessee, requires investment and strategy, particularly with a diverse sample population and vested stakeholders.

The Tennessee Value-Added Model. The State of Tennessee has found a substantial relationship between teacher effectiveness and student achievement. "Researchers in Tennessee have found that students given the most effective teacher for three years in a row made over twice the gains of comparable students assigned the least effective teachers" (Alliance for Excellent Education, 2008, p. 22; Sanders & Rivers, 1996). The TVAAS model or Tennessee's VAM was founded and designed by William Sanders and his colleagues at the University of Tennessee at Knoxville in the early 1990's. As a result of pilot studies that Sanders and his partners completed in the 1980's, Tennessee legislators embraced the TVAAS model as the accountability system for education. As a result, schools and school systems must demonstrate adequate progress in five subjects, all of which have standardized tests. The value-added scores began being publicized and assigned in 1993. The public report does not include individual teacher scores, which are provided to respective teachers and administrators. TVAAS data collection began before 1992. TVAAS is designed to measure the performance of schools, school systems and teachers through learning outcomes by means of data analysis. In theory, a teacher or school can be held accountable by the amount of learning a student gains over one-year. Expected and average gains then would be set by the State Department of Education (Bock, Wolfe, & Fisher, 1996). Online learning is becoming necessary in order for educators to meet the needs of learners. It is essential to hold online administrators, teachers and policy makers to the same level of accountability as traditional, face-to-face professionals.

With the establishment of the American Diploma Project and the Common Core Curriculum, there is a need for common assessment and a consistent method for measuring the effectiveness of teachers to assure equitable learning opportunities for traditionally underserved populations (Massell, Duffy, Levin, & Scott, 2008). The e4TN courses are already aligned with

the Common Core State Standards as published on the Common Core Standards website, http://www.corestandards.org/, and will be updated as changes are made. Tennessee is rich in longitudinal student data that can be managed between and among districts using the statistical model for value-added that has been in place for 15 years (Sanders & Rivers, 1996). Tennessee's robust data collection model used in the Tennessee Value Added Assessment System or TVAAS leads the country in measuring student growth and teacher effect. However, the dataset for online learning in Tennessee is not a large enough sample size to create a teacher effect model for online teachers (Oliver, 2010). The OC^3 project will gather and use data from students in multiple states who will take the same set of online courses built on the e4TN course design model with courses supplied as in-kind contributions from e4TN and Florida Virtual School (FLVS), a pioneer in the field of online learning in K12, to develop a more generalizable model for teacher effectiveness. The OC^3 project is based on well-established methods that have been used to perform studies with a quasi-experimental design that produced statistically significant causal conclusions.

Quantitative studies for K-12 online learning. The number of rigorous quantitative studies of teaching and learning in the online environment at the K-12 level is small since pioneering work in the field was not begun until 1996 by Virtual High School (Watson, Gemin, Ryan, & Wicks, 2009). In 1997, Florida Virtual School (an OC^3 partner) pioneered online learning at the state and now national level (Watson, et al., 2009). One of the stronger studies is that of Bakia and Caspary (May, 2010). This study was a quantitative regression analysis in which students from Florida Virtual School were matched with students in the traditional classroom environment using propensity score matching based on demographic variables. The independent variables in this study were courses passing, course grades and Stanford 10 scores

from Spring 2007; and the null hypothesis was that "the mean or proportion is the same for online and face-to-face students (Bakia & Caspary, May, 2010). Even though the study indicated that online students performed better across different outcome measures, it was limited due to available data sources in the Florida system (Bakia & Caspary, May, 2010). These authors called for access to "rich, policy-relevant data," a limitation that could be addressed in other partner states (as proposed in OC^3). Means, Murphey and Toyama (May, 2010) discussed the fact that most studies of online learning suffered from weak study design due to small sample size, failure to report vital data such as retention rates of students or possible bias from combining the role of instructor and investigator. The thought of multiple states and districts partnering to share online learning content and ownership and using shared professional development for teachers is one of a "flat world." Having multiple states working together to design a model to measure online teacher effectiveness may not have been possible 20 years ago.

Tennessee, though the design for data collection is strong, does not have a large enough sample size to measure an accurate teacher-effect model in the online learning environment (Braun, 2004; Bock, Wolfe, & Fisher, 1996, Oliver 2010). Additionally, unlike the traditional Tennessee model, which considers the student and teacher's school and district, online students and teachers may not populate the same traditional school or school districts. For example, an online student may take a course in district X while the online teacher may be working in district Y. If district X has a teacher shortage, then the online learning medium is a solution to a situation where a student would have otherwise had no opportunity to be taught by an expert teacher. This is a common scenario in rural school districts. The traditional value-added model, however, does not take this geographic barrier into account.

Need for value-added model that includes the online environment. There is a need for a value-added formula that takes into account the online medium while measuring the common skills that online and traditional teachers share. These skills include but are not limited to being knowledgeable of content, being organized, having positive attitudes, having high verbal and written communication skills, having technical aptitude and knowing student learning styles (Duebel, 2008; Hammond & Prince; Oliver, 2010, Pierce, 2008; Roblyer & McKenzie, 2000; Yang, 2005). A model that includes these measures along with administrator feedback and student gain will assist states in assuring high quality instructors for online courses using a quantifiable method, which is much needed since online learning enrollment grew 47% last year (Sloan Consortium, 2009). Since policy states that teachers must be highly-effective, which is an output variable, the method for measurement of effective instructors must be designed and put into place (Hammond & Prince, 2007). "Virtual schools, because they provide instruction via online learning management systems, have an unprecedented opportunity to collect and interpret data at student, teacher, course, program, and school levels to guide practice. When school data are joined with student and teacher demographic data, human resource data, and state achievement data, powerful patterns in teaching and learning can be identified" (Cavanaugh, May, 2010)

Need for professional development. Pedagogical training is a key factor in order for instructors to be effective (McKenzie, Mims, Bennet & Waugh, 2000; Pallof & Pratt, 2001). In order to develop a generalizable model of teacher effectiveness, consistent professional development must be provided to all teachers participating in the study. Professional development that has been thoroughly proven is available through online professional development for teachers. Rigorous research studies of effect on teacher content knowledge,

online teacher pedagogy and student achievement through online professional development were conducted by the e-Learning for Educators (efE) project and led by Boston College (Treacy, 2010, March). This study overcame limitations noted in earlier studies such as small sample size, lack of random assignment and lack of longitudinal study design. Findings from the studies conducted between 2007 and 2009 involved 369 teachers and 21,217 students in 21 states provide strong evidence that high-quality online professional development courses can positively affect teacher content knowledge, online teacher pedagogy and student achievement. The training provided through the study described above was lead by Barbara Treacy of EdTech Leaders Online. OC^3 includes EdTech Leaders as partners for the consortium in providing online professional development to provide facilitators and online professional development to consortium members.

Need for highly effective teachers in rural and high needs districts. Tennessee data suggest that high-quality teachers produce considerably increased learning gains in their students as compared with weaker instructors. This conclusion is based on value-added assessments in the traditional classroom (Deubel, 2007). Not all students have equal access to highly effective teachers in Tennessee or in the OC^3 partner states and district. The inequity in quality of education in high needs and rural schools is aggravated by the limited supply of highly effective teachers available to those schools (Darling-Hammond, 2008). One solution to this shortage is to offer online classes in schools unable to offer courses when a highly qualified teacher is not available within the school building. A great benefit to the field of education as a result of online learning is that students in various locations can have access to the best instructors. Additionally, former teachers may return to the field of education by way of teaching online as a result of part-time opportunities because the online format decreases the stress of routine

traditional teaching providing the benefit of flexible scheduling or allowing teachers to focus on individual students without traditional classroom management concerns (Barker & Wendel, 2001). The OC^3 proposal, through a collaboration of partners, would provide opportunities for states to offer highly-effective qualified teachers, even in rural districts.

Need for quasi-experimental studies with a larger sample size. It bears repeating that, since the field of online learning is relatively new, very few rigorous experimental or quasi-experimental studies of K-12 students in the online learning environment have been published. Means, Toyama, Murphy, Bakia, and Jones (2009) identified five studies that met the criteria. Two of the five studies compared learning of students in entire courses. The other three study designs involved courses in which some, but not all, of the learning environment for the treatment group was online.

O'Dwyer, Carey and Kleiman (2007) compared learning of students participating in the Louisiana Algebra I Online initiative with the learning of students in comparison classrooms with similar characteristics such as mathematical ability, environment and class size. Students in the treatment group were offered web-based learning activities in a blended learning environment, whereby the online teacher, who was teaching remotely, was the math certified teacher of record and the non-certified staff member served as a facilitator in the classroom with the students. The comparison group was offered the equivalent, paper-based activities. The effect size was +0.37 with online students performing better than those in the comparison group. The study involved four rural districts and two urban districts.

Rockman et al. (2007) used a quasi-experimental matched comparison design to evaluate the effectiveness of Spanish courses offered to middle schools in West Virginia. All of these students were taught by the same two online teachers. One held weekly phone conversations

with each class and the other graded all of the work. The mean effect size for comprehension was -0.15, not significantly different while the effect size for writing in Spanish was –0.24, with students receiving face-to-face instruction doing significantly better than those receiving the online blended version of the course. It is not clear whether the results of this study are due to the learning environment and content or to the online teachers.

These studies serve as an initial effort to provide research-based information about student learning in the K-12 online environment as it relates to effective teachers. Means et al. (2009) state that, "Educators making decisions about online learning need rigorous research examining the effectiveness of online learning for different types of students and subject matter as well as studies of the relative effectiveness of different online learning practices" (Means et al. 2009, p. 54.) There is a need for a study involving a large sample size that would provide data about student learning and teacher effectiveness for different types of students in a variety of environments. The OC^3 project will have enough experienced partners and assets to support the necessary quasi-experimental design to perform the needed large scale study, providing enough data to develop a valid model of student learning and teacher effectiveness that can meet the need expressed in Absolute Priority 1 of the i3 grant.

Study Design for the OC^3 Project

Overview. The Southeastern Consortium of US Online Common Core Content (OC^3) will provide nationally award winning online courses aligned to the CCC and train highly-qualified online instructors to teach students of participating states. The members of the consortium are currently the state online schools from Florida, Georgia, Kentucky, Louisiana, North Carolina, South Carolina, Tennessee and Gwinette County, Georgia's largest school district with the option for participation from the other eight states affiliated with SREB. The participating states

will provide highly qualified online teachers who will be trained and evaluated based on best practices for online teaching as outlined in iNACOL and SREB Standards for online teachers and programs. Students from each state will attend online classes following the standard model in each state's respective program. Common assessments, based on the CCC will be developed during year one, the planning year. Data collection protocols based on current successful procedures used by e4TN will be developed during the planning year in order to acquire "rich policy-relevant data" as called for by Means et al (2009) and Bakia and Caspary (May, 2010). This study project will contribute measurable data to help establish definitions, goals, and metrics needed to more broadly implement and support the "meaningful use" of educational and informational technology in participating states and districts, as well as beyond (NETP, 2010. p. 62.).

Professional development. The professional development (PD) component has two parts. The first is to provide PD for all online instructors participating in the OC^3 project. Standardized and proven PD will assure that all students in the study receive instruction and support based on the same teaching guidelines. The second component of the PD is that consortium states may use this program to strengthen the content knowledge and/or pedagogy for teachers in traditional classrooms. Combined, these serve to address the nationally stated goal of supporting professional educators, both individually and in teams, by technology that connects them to content, resources, expertise, and learning experiences that enable and inspire more effective teaching (NETP, 2010, p. 49).

Online professional development for OC^3 online teachers. EdTech Leaders Online (ETLO) led by Barbara Treacy will provide online professional development (OPD) for all participating online instructors and facilitators using a Train-the-Trainer model. This OPD

which addresses the iNACOL Standards for Online Teaching has been thoroughly tested in a randomized, controlled experimental research, and the research study provided evidence that this OPD has significant impact on teachers' pedagogy, content knowledge and student learning O'Dwyer, 2005). This is the largest study in online professional development for teachers to date.

Sustainable training model. An ETLO facilitator will be trained within each partner virtual school/state. This teacher facilitator will collaborate with the respective OC^3 Consortium Coordinator to create a personalized facilitation plan to guide the implementation of OC^3 online courses for teachers within each respective state or district. ETLO trains educators in cohorts of 24 or 25 participants (which may be from one or more states) in a graduate-level online course that prepares participants to facilitate online workshops for other educators; a practicum opportunity where novice instructors facilitate their first course; and a facilitated online support Forum that provides resources, social media, webinars and asynchronous discussions with other online specialists from across the country. The training course includes an in-depth exploration of the elements of effective online professional development and prepares participants to build an online learning community, address technical difficulties, use the instructor tools in the course management system, motivate and meet the diverse needs of adult learners, assess online learning and facilitate meaningful discussions. As a final product, participants create a personalized facilitation plan to guide their implementation of online courses for teachers within their states.

Increase the pool of online teachers. Up to 2600 teachers will receive training in OC^3 policy and procedures in addition to ETLO course, *Instructing Virtual School Courses*. EDC/EdTech Leaders Online (ETLO) provides training for online teachers in an online course,

Instructing Virtual School Courses, which is an instructor-facilitated, seven session (plus an orientation session), 35 hour online course which focuses on the pedagogy of teaching and learning in a hybrid or online environment. Throughout the course, participants develop effective strategies for managing and instructing students in the online course environment and explore the ways online learning can effectively support standards-based teaching and learning. Participants also learn effective teaching techniques to build student collaboration in an online learning community and to personalize the learning through online discussion and group projects. Other topics addressed include: student motivation and techniques for engagement; facilitation and management of student learning tasks; and using course management and web-based tools to deliver instruction, communicate and assess learning. This course addresses the International Council for Online Learning (iNACOL) National Standards of Quality for Online Teaching and Quality Online Course Design. Through this training, OC^3 participants will better implement and further expand upon previous work done toward further developing a teaching force skilled in online instruction (NETP, 2010. p. 50.).

Apple Professional Development for OC^3 Participants. Professional development supporting the effective use of technology by teachers and students in urban and rural areas will be offered to participating districts. Apple Professional Development (APD) will offer PD on the iPad using a "train-the-trainer" model to the population of teachers involved in each of the states. It is recommended that each district within in each of the states would send "train-the-trainers" to two 2-day sessions over the course of the first year. . Using the State of Tennessee as an example, 123 school districts might equate to approximately 360 train-the-trainers attending two 2-day Apple Professional Development workshops over the course of a year on how to use the

iPad and on strategies for integrating the iPad into learning activities in the classroom . (See Appendix H 2)

Online professional development for teachers in traditional classrooms. The OC^3 project also seeks to further disseminate, design, develop, and adopt technology based content, resources, and online learning communities that create opportunities for educators to collaborate for more effective teaching (NEPT, 2010. p. 49). To accomplish this, the OC^3 will offer access to the online content for STEM courses to teachers in participating consortium states for professional development purposes. This would be particularly effective for teachers who have demonstrated low teacher effectiveness that teach in the traditional classroom environment. The online courses will also provide content review that may be used to help teachers as they prepare for National Board Certification or take Praxis exams needed for additional certifications. Also, teachers with low traditional teacher effectiveness may review the OC^3 courses for content examples addressing new standards and common core pedagogical strategies. With CCC and common core assessments aligned with the CCC, each participating state will be rich with STEM content and ACT preparatory content that traditional teachers will have as a resource. Providing this access to teachers may address a teacher shortage as it helps teachers gain additional certifications, and it will assist in bridging the student achievement gap; for it will provide teachers with CCC curriculum as an exemplary resource. This plan maximizes the best aspects of the technology based content, resources, online learning communities, and online learning infrastructure that has already been developed by participating state education agencies and initiatives leveraging them for the greater benefit of teachers and students in all consortium states (NETP, 2010. p. 49, 62.). This helps meet the duel purposes of providing schools and districts resources to increase the capacity of their teachers to improve student college-readiness and

provide more equitable access for students in rural and high-needs schools to highly effective teachers (ESEA, 2010. p. 4-5).

Training and orientation, e4TN has developed training modules for administrative staff, student support personnel and students based on iNACOL and SREB standards for best practices in online learning as part of the e^{4000}TN Branch Outreach grant. The e4TN training staff will take advantage of the collective experience of the other consortium partners to improve these training modules and the associated evaluation instruments. The resulting training procedures and content will assure that all students receive the best available training and support as they participate in the OC^3 courses. The training and student orientation will take place at the beginning of each term for all students taking OC^3 during that term. An evaluation instrument will be developed for the training sessions to assure that the quality of training is consistent and meets OC^3 project guidelines. Each student's preferred learning style, level of computer literacy and school environment will be measured via a survey that is accessible electronically. The survey under consideration is *The Personal Style for Learning Inventory for Adolescents* (PSLIA) (Lounsbury, Sundstrom, Loveland, & Gibson, 2002). The results of this initial student survey will help staff and the online teacher to support needs revealed by the instrument. These survey results will not be used to exclude a student from taking an online class.

Data collection and analysis. Demographic and student characteristic data, such as results from the PSLIA survey, will be entered into the project database. The database will also house data about the online instructor, such as level of certification, records of participation in online professional development, assessments scores from completed online professional development, and years of face-to-face and online teaching experience. In addition, the project database will act as a student management system housing formative information such as

progress reports, student activity reports, communication logs, summative assessments and grades, and dates enrolled or withdrawn, for example. The project database will also house results of checklists and other formative assessments needed for project evaluation. The planning year will allow time to add additions to the project database as needed.

One research area included in the OC^3 project will study how does achievement of students taking online courses based on Common Core and National standards compare with that of students taking equivalent courses in the traditional environment. A second research area will measure student growth as a result of taking the courses offered through the OC^3 project. The third addresses Absolute Priority 1 in the i3 grant by developing a measurement of teacher effectiveness.

This present study has the following independent research goals:

- measuring teacher effectiveness
- measuring student growth
- finding online effect
- finding teacher contribution to student achievement (or Teacher Effectiveness)
- predicting student performance
- predicting teacher performance (or effectiveness).

Student growth is measured to evaluate whether a given amount of growth is reasonable and appropriate. Normative growth information can be used to provide information about students in relation to a reference group in the form of normal curve equivalents (NCE's) (Smith & Yen, 2005). For example, students in Tennessee, North Carolina and South Carolina all have End of Course tests (EOC's) for Algebra 1. A baseline or reference group is the scale score to NCE score table from the planning year 2011 Algebra I test results. Student growth for each student

taking Algebra 1 during years 2, 3 and 4 would then be measured by comparison with the baseline table. States will supply the OC^3 statistician with scale score distribution data from their respective EOC's for each applicable course to make baseline tables. For courses that do not yet have EOC tests, the OC^3 will develop tests by using item response theory or use a common core assessment in multiple state settings.

The online effect will be found using hierarchical linear modeling. Student achievement in the online environment will be compared with that of a control group of students in the traditional environment. Propensity score matching will be used to select the control group using demographic data as well as results from the PSLIA student survey. During the planning year the evaluation team will investigate whether the participating states have possible data sources to provide past achievement data for students such as math 8 scale scores for Tennessee algebra students, and whether inclusion of this type of data will make a valid contribution to the strength of the model. This kind of study was conducted for a smaller group of Florida students by Bakia and Caspary (2010) and will be scaled-up during the OC^3 project.

Data gathered during the OC^3 project will also be used to find teacher contribution to student achievement (or Teacher Effectiveness) using hierarchical linear modeling. This will be based on achievement of students of each teacher.

To predict student performance this study will use logistic regression, data mining models (i.e. Decision Trees or Random Forest) and latent class or latent profile analysis. The data mining approach will use demographic information as well as PSLIA student survey results to identify clusters of students that may need extra support from online teachers and facilitators. This information will not be used to exclude students from taking online classes but to help them understand and use their strengths and overcome their weaknesses.

Teacher performance (or effectiveness) will be predicted using logistic regression, data mining models (i.e. Decision Trees or Random Forest) and latent class or latent profile analysis. Teachers and administrators in the participating virtual schools will participate in focus groups to determine which types of teacher data, such as years of experience teaching face-to-face and online, gender or level of computer literacy should be incorporated into the data set. Lead teachers will perform weekly "checkpoints" to evaluate online teacher performance. This will provide an administrator evaluation component to the Teacher Performance index. Analytical Hierarchical Process (AHP) will be used to obtain weights for the student growth component, for the student performance component and for the supervisor evaluation component. The three components of the Teacher Performance index will be:

1) Cohen's d from student growth (CdSG) times weighting determined from AHP of student growth (a_{sg})
2) Cohen's h from student performance (ChSP) times weighting determined from AHP of student performance (b_{sp})
3) Cohen's d from administrator rating (CdAR) times determined weighting from AHP of administrator ratings c_{ar}.

Teacher Performance Index = CdSG x a_{sg} + ChSP x b_{sp} + CdAR x c_{ar}

In summary, this present study will employ a quasi-experimental design using propensity score to construct control groups. The statistical methods are HLM, data mining models, and latent class (or profile) analysis to answer research questions.

Year five of the grant will be used to test this model for measuring teacher effectiveness and to perform further data analysis to provide maximum benefit from this rich dataset. Results and conclusions will be shared with the grant participants and the research community at large.

Planning. Year one will serve as the planning year during which policy and procedures will be developed and standardized for the OC^3 participants in all states, the online courses will be updated if necessary to meet Common Core and National standards, the teachers and staff will be trained, student surveys will be reviewed, and modified if needed, evaluation instruments will be developed, and other planning year objectives will be met.

Implementation and data collection. During years two, three and four, students will be enrolled in the OC^3 courses, to include ACT Prep, Algebra 1, AP Computer Literacy, AP Statistics, Chemistry, Spanish 1 and Spanish 2. Surveys and assessments will be administered that are necessary for the generation and collection of data needed to facilitate the creation of a valid model to measure teacher effectiveness and to evaluate attainment of program goals and objectives. Ongoing professional development and teacher evaluations will occur, which will provide additional data to contribute to the creation of the model for teacher effectiveness.

Final data analysis, reporting and project evaluation. During year five the OC^3 team will finalize data analysis under the guidance of Dr. Soo-Hee Park. Analysis will continue until a generalizable model for measuring teacher effectiveness emerges. Project evaluation will be ongoing during the grant period under the guidance of Dr. Margaret Roblyer.

Evaluation Overview

To assure that the project meets its five target goals and achieves the impact proposed by project objectives, formative and summative data collection and evaluation activities will parallel and support all project activities. Evaluation details, including data collection and instruments and personnel responsible for completion, are shown in Table 1. Milestones shown in Appendix H reflect critical completion dates and will be the basis for formative monitoring and reporting of progress toward meeting all project goals. Summative evaluation targets, also shown in the

Appendix, will assure completion of all production and training tasks and confirm number and quality of products and training. The focus of evaluation activities in each case will be to assure timely completion of products and training, quality of products, and impact on desired numbers of educators and students. Evaluation focuses for the goals are as follows:

Administrative across-goals evaluation tasks:

- Establish criteria for performance and effective completion.
- Create formative evaluation instruments and establish data collection guidelines.
- Establish procedures for monitoring and reporting.

Goal 1: Create a common set of highly-effective online math, science, technology, college readiness, and foreign language courses.

Evaluation for this goal will establish that courses have been designed and developed to meet required technical and pedagogical standards and are as effective as traditionally-taught courses (where such courses exist).

Formative processes:

- Determine that design/development resources have been put into place to create courses.
- Assure that timely progress is being made towards creation of online courses by target dates.
- Monitor to assure SCORM compliance and compatibility.
- Carry out formative reviews of course products.

Summative processes:

- Confirm course products have been developed.
- Confirm course effectiveness through quasi-experimental study.

Goal 2: Create and deliver teacher training to increase numbers of highly-qualified online teachers.

Evaluation for this goal will focus on the quality of training and numbers of teachers and facilitators receiving quality training during each project year.

Formative processes:

- Monitor to assure SCORM compliance and compatibility.
- Carry out formative review of online course components.

Summative processes:

- Carry out evaluation of training workshops.
- Confirm course products have been developed
- Confirm numbers of personnel trained.

Goal 3: Provide online instructional opportunities to underserved, rural, and other students in math, science, and foreign language areas.

Formative processes:

- Monitor student communications and recruiting activities.

Summative processes:

- Confirm increases in numbers of HQ teachers.
- Confirm numbers of students served.
- Carry out course evaluations.

Goal 4: Develop an accountability model of online teacher effectiveness based on expert input and student data.

Formative processes:

- Monitor data collection for teacher performance model development.

- Validate selection of components to include in teacher performance model.

Summative processes:

- Confirm reliability and validity of teacher performance model.

Goal 5: Develop a consortium of partner virtual schools in order to facilitate communications and collaboration on project activities and future goals.

Formative processes:

- Monitor development of project communications mechanisms.
- Monitor quality and quantity of communications among project partners.

Summative processes:

- Confirm exchanges of data, training, and course usage among project partners.

Evaluation Plan Details

Specific activities required to carry out formative and summative project evaluation components are shown in Table 1. Milestones that serve as checkpoints for project activities are listed in Appendix H 6

Table 1

Project Evaluation Details

Objective Questions	Measures/Instruments/Materials	Personnel
Goal 1: Course development and testing		
Objective 1.1: Have courses been aligned to common standards?	Course Alignment Checklists (based on scope/sequence documentation)	E4TN course developers

Objective 1.2: Has an online ACT readiness course been created?	Course development checklists	Florida and E4TN course developers
Objective 1.3: Have all online courses been meta-tagged for SCORM compliance?	Course development checklists	E4TN staff
Objective 1.4: Have courses been uploaded to a common LMS for sharing among partners?	Online course quality rubrics	E4TN staff, verified by external evaluator
Objective 1.5: Has effectiveness been established for all online courses through an evaluation?	Common end-of-course tests and student background data (for propensity matching purposes)	E4TN staff and project data analyst
Goal 2: Teacher and facilitator training		
Objective 2.1: Has an online teacher training course been created that is aligned to standards and	Checklist of iNACOL standards	E4TN training staff and instructional designers, verified by external evaluator

meta-tagged for SCORM compliance?		
Objective 2.2: Have facilitator trainers for each partner state and district met ETLO training objectives?	ETLO course evaluation instrument	ETLO staff
Objective 2.3: Have facilitators trainer trained teachers to create facilitation plans that meet ETLO standards?	ETLO quality checklist of facilitation plans	Project training coordinator
Objective 2.4: Have online teachers been trained effectively?	Participant training evaluations Milestone check: Numbers of teachers trained	Project training coordinator, verified by external evaluator
Objective 2.5: Have traditional teachers in need of review and/or remediation accessed online courses as models of effective instructional design and pedagogy?	Milestone check: Numbers of teachers accessing online models	Project lead teacher, verified by external evaluator

Goal 3: Online instruction for students		
Objective 3.1: Have numbers of students taking online courses from HQ teachers increased?	Milestone check: Baseline data checked against numbers of HQ teachers offering courses each year	Project training staff, verified by external evaluator
Objective 3.2: Have numbers of students taking online math, science, and foreign language courses increased?	Milestone check: Baseline data checked against numbers of students taking courses each year	Project enrollment specialists, verified by external evaluator
Objective 3.3: Have numbers of students taking online advanced electives and ACT readiness courses increased?	Milestone check: Baseline data checked against numbers of students taking courses each year	Project enrollment specialists, verified by external evaluator
Goal 4: Teacher effectiveness accountability model for online instruction		
Objective 4.1: Have quality indicators for effective online teachers been established and validated?	Focus group protocols Surveys to establish expert agreement	External evaluator

Objective 4.2: Has a model of online teacher performance effectiveness been developed and validated?	Statistical outputs of validation	Project data analyst
Objective 4.3: Has a comprehensive model of online teacher effectiveness been developed?	Statistical outputs of validation	Project data analyst
Objective 4.4: Has an accountability model been successfully implemented for all courses?	Statistical model documentation (HLM, logistical regression findings)	Project data analyst
Goal 5: Multi-state consortium of partner virtual schools		
Objective 5.1: Have communication mechanisms been developed and implemented to support collaboration among	Checklist of completion for online communication resources	External evaluator

project partners?		
Objective 5.2: Have partner virtual schools exchanged information on unique strengths and effective strategies to support growth of online programs?	Surveys of project partners	External evaluator
Objective 5.3: Have project partners demonstrated cooperation through exchanges of data and other activities?	Surveys of project partners	External evaluator

See project milestones in Appendix G1

Dissemination of project results and lessons learned. OC^3 will use social media as well as monthly online meetings and quarterly face-to-face meetings to maintain communication among project stakeholders. Students will use the OC^3 website (to be created in year one) as the single sign on to access their respective state's learning portal to their courses. Updates and reports will be published online as appropriate. The final grant report as well as formative reports will be posted on the website for stakeholders in the project, and model(s) for Teacher Performance Based on Student Achievement, as determined by the study will be published.

Sustainability. Each participating virtual school has a robust funding allocation that includes an LMS. During year one, the realignment and design strategy will create a consistent metatagging system that is compliant with IEEE 1484.12.1 – 2002 Standard for Learning Object Metadata. A Learning Object Repository will provide a central location for course files, drastically reducing the costs associated with course maintenance. This, coupled with the metatagging system, will make course content easily searchable. SCORM compliancy will increase course content's portability, making it easy to transfer content from one LMS to another. With minimum system requirements such as a Pentium II processor, 128 MB of RAM, and a 56kbps internet connection, the program is able to expand its reach to lower income families and rural areas.

By training a multi-state pool of online teachers, each state will have expanded the availability of hard-to-find certified and highly qualified teachers in their small and rural districts who are able to teach STEM and college ready courses. Additionally, the design model, which requires inclusion of all curriculum materials within the online course allows students and teachers to fully access and complete all course activities electronically, defrays or eliminates many commonly recurring costs such as expenditures to acquire or replace printed textbooks, recurring fees for commercially available curriculum content, and costs of printing and copying classroom materials.

Experience of the OC^3 Team

Wilson County Department of Education. Wilson County DOE is the fiscal agent for the i3 grant. The staff is experienced in acquiring and successfully administering grants and federal programs. Wilson County has administered the Gear Up grant and the Tennessee Technology Literacy Technology Funding from 2001 to 2006. In 2006, Wilson County Board of Education

(WCBOE) received a grant award ($100,000) to participate in pilot testing Tennessee's first Online Virtual School Program, e4TN. The program's goal is to enable students to learn at their own pace, fulfill course requirements, and achieve academic success. Since 2006, the program has expanded to include all high schools and middle schools in our district, along with outreach to Upper Cumberland Regional Field Service school districts' students and teachers. As Wilson County DOE strives to reach their goals, they continue to find ways for students to gain access to challenging and engaging academic content through an online curriculum aligned to state and national standards.

Wilson County DOE, having researched the advantages of e-learning for the last eight years, is ready for the next step, creating a Southeastern regional learning repository in partnership with the Tennessee Department of Education's e4TN Program. Tennessee's e4TN Program offers rigorous and relevant courses for all students that can be completed anywhere, anytime.

Wilson County Schools has served as a point of contact for each of the regional school districts since the beginning of the e4TN grant in 2006. Over the last four years, the school system has worked in partnership with the e4TN Program to outreach to every school district in the middle Tennessee region with a total of 1038 students from this field service area participating in the program. The district's role has included recruiting, training, assisting, and monitoring e4TN students to help ensure successful e4TN Program experiences. Wilson County has taken a leadership role in the e4TN organization offering the widest variety of creative solutions to district needs among all of the districts in the e4TN consortium.

Recently, the school district received an American Recovery and Reinvestment Act (ARRA) grant award from the Tennessee Department of Education to expand opportunities for

students to enroll and succeed in online courses through the e4TN Statewide Stimulus Strategy e-learning Program (e^{4000}TN). This program provides an opportunity for Local Education Agencies (LEAs) in Tennessee to provide support for and enroll approximately 4000 TN students/enrollments in e-Learning courses. From this grant award, Wilson County Board of Education became one of three regional e4TN (e-Learning) branches that have been established in each of Tennessee's three grand divisions through this grant. The branches were selected based upon their e4TN infrastructure and solid foundation within the e4TN network. This grant award is designed to provide e-learning opportunities through a regional consortium model based on combining and sharing services through an expansion of the e4TN network.

Through the district's participation in the e4TN initiative, students have developed the skills needed to prepare for higher education or work after graduation. Since 2006, there has been a consistent increase in the number of students enrolled each semester. Along with the increase in enrollment, the percentage of students' success has increased from 38% in Spring 2006 rising to 82% in Fall of 2009. This increase shows that adjustments and modifications have been made throughout the grant period to ensure success with the program.

A wide array of ethnic groups within Wilson County is involved with the majority subgroups successfully passing online courses. The e4TN program services students from a variety of economic backgrounds with 105 students in the economically disadvantaged subgroup. WCBOE's e4TN program is geared toward all academic groups including special education and gifted. The exceptional education subgroup shows an 86% success rate. To provide an example of the student success, one of WCS's online teachers taught a Gateway Algebra class to seventeen seniors (15 special education students). All had to pass the Tennessee Gateway exam (TN EOC) in order to graduate. Every student in the course passed and graduated from high

school! The program is highly successful for ELL students. Out of 20 ELL students serviced by the program with a 90% passing rate. Rural students in online classes had pass rates

Wilson County has helped neighboring rural districts and schools find workable solutions to lack of course offerings such as AP classes and shortage of highly-qualified teachers for STEM and foreign language classes. For example, teachers offer AP Biology, AP English and Discrete Math courses in a synchronous format. Use of Adobe Connect and webcams allows students in a neighboring rural district to "attend" class with the face-to-face students. All students, both remote and face-to-face share the same online curriculum and assessments. The instructor holds live class discussions and activities with the remote students and those in the classroom. Wilson County DOE has partnered with other local education agencies such as Trousdale County DOE to share teachers to overcome borders in order to offer online courses to students, a model that is most certainly scalable given the opportunities technology now provides.

Wilson County DOE has demonstrated success in closing achievement gaps and increasing student achievement. The following is information supplied from the Tennessee Report Card. All AYP goals of K-8 and 9-12 were met at the system level. ACT scores are improving each year although still not at the national level. In looking at individual years every category score rose and each category met or bettered the state score. 9-12 math dramatically exceeded the target of 75% with 93% of all students scored proficient or advanced. A similar strength is shown in Reading/Language plus Writing with 94% proficient or advanced compared to the 90% target. Gateway Algebra has a positive growth effect and is not detectably different from the average system in the state. In reviewing the 9-12 Gateways we find that Algebra I students in all categories exhibit proficiency levels that meet the target of 75%. These are the

first time test taker scores for 2007, not the two or three year average scores In reviewing High School proficiency percentages, we find strength in that every subgroup met the target of 75% proficiency in math. All students, African American, White, and Economically disadvantaged. Asian/Pacific Islander, Hispanic, Students with Disabilities, and LEP students all show a decrease in the below proficient percentage. Academically the district continues to be stronger than state scores and in the majority of content areas continues to have increasing NCE scores. Reading level proficiency is increasing each year, even in previously low subgroups. Gain scores are improving each year.

e4TN, Tennessee's e-Learning Initiative. In 2005, the Tennessee Department of Education (TDOE) established e4TN , a statewide online learning presence using a Research, Development and Implementation (RDI) grant to fund development of online courses based on iNACOL online standards and Tennessee curriculum standards. TDOE's vision called for developing a model that empowered each district to choose its own levels of involvement in the state-wide program allowing districts to pursue and shape their own local online learning initiatives while maintaining shared leadership with a TDOE and stakeholder involved leadership team.

e4TN has developed research-based innovative approaches that have created and delivered a comprehensive online program providing an effective and engaging e-learning environment that meets the needs of secondary students throughout the state of Tennessee. By adopting a pioneering course development model that centralizes expertise and experience in curriculum, programming, instructional design, artistry, and on-line learning delivery, *e4TN* has broken new ground in creating 26 courses that provide students with an optimally engaging and

effective learning environment. e4TN students have achieved with 78% of students passing the Algebra Gateway, 80% of seniors passed courses to increase graduation rates, 86% of ELL students passed, 72% of economically disadvantaged students and 68% of African American students passed their online courses. (See Appendix H 3)

The strategic plan used by e4TN since its inception established the groundwork for a tiered infrastructure that supplies focused local and remote support for online teachers and students while providing flexibility to meet a wide variety of needs within the districts. The exponential growth supported by ARRA funds demonstrates the scalability of the e4TN plan allowing a minimum of 4000 enrollments in online courses while adding new teachers from over 60 districts to the trained online teacher pool and generating new pilots in consortiums with each of Tennessee's new branch offices.

e4TN grew from a virtual school in a single district to an eight district consortium which helped beta-test courses and established the policy and procedures for the budding state-wide initiative. Another tier of the infrastructure was added with the ARRA funds establishing three regional implementation hubs responsible for supporting regional districts, recruiting and training teachers and facilitators, and supporting students. Wilson County DOE is the hub for Central Tennessee. This design has built sustainable capacity and allowed districts to receive individualized attention to maximize sustainability and a quality online education for all e4TN students.

Through the regional consortiums in Tennessee all districts in Tennessee will have the opportunity to participate. Each branch or regional office such as Tipton County DOE will also serve as a partner. Tipton County has also been involved in e-learning in Tennessee since the

inception for the e4TN program. Each of these branch offices performs outreach to districts within their respective grand division of the state and has since 2006.

Quality of Personnel

Dr. Wendy Oliver, an original founder of Tennessee's e4TN program in 2005, who has grown the online program in Tennessee over 800% in 5 years will lead the consortium under the direction of Mr. Dan Long, Executive Director of The Department of Assessment and Virtual Learning in Tennessee and Dr. Timothy Webb, Tennessee's Commissioner of Education, who was recently recognized by the United States Distance Learning Association for "Outstanding Leadership by an Individual in the Field of Distance Learning." e4TN has been recognized nationally four times in the last two years for the quality of the program.

Mr. Mike Davis, the Director of Schools for Wilson County DOE has a specific statement in his contract that states that he will implement distance learning in all high schools. As a military veteran and experienced superintendent he understands the teamwork necessary and the level of communication required on a grand scale for the success of such a program.

Mr. Mickie Hall of Wilson County DOE has been a long standing CFO in the State of Tennessee with a superb record in managing federal budgets. His twenty years of experience, including time serving in the Tennessee comptroller's office, bring stability and confidence to the fiscal responsibilities associated with a grant of such proportion.

Kim Clemmons will serve as the OC^3 liaison with e4TN and grant coordinator with Wilson County. Mrs. Clemmons has worked with federal programs over 14 years in the areas of Title IID, Title V, and Instructional Technology. Her experience also includes state level projects designing the 21st Century Classroom curriculum with the TN Department of

Education. She currently serves as the Instructional Technology Supervisor for Wilson County DOE.

In order to deliver such a statistical wealth of data and analyses Tennessee has included the best statistician in the country, who is on loan to the State Department of Tennessee from the Korean Military. Dr. Soo-Hee Park, who is the Executive Director of Research and Evaluation in the Division of Assessment, Evaluation, and Research, is responsible for the oversight of all state tests for grades K - 12, regarding psychometric and statistical evaluation and analysis. Dr. Park will be contracted to develop the design and data analysis to meet the goals of this project.

Partners. The partners in the consortium bring a wealth of experience and qualifications. Julie Young, from Florida Virtual School (FLVS) pioneered the field of online learning beginning in 1997 and has blazed the trail to serve over 150,000. FLVS will contribute AP Statistics, Calculus and AP Computer Literacy and collaborate with e4TN to develop the ACT Prep course for the OC^3 Consortium partners. Georgia Virtual School will share its plans, policies and procedures developed in response to the mandated opportunity for all students to have the option to take an online course by 2015. Gwinette County Virtual School which serves students in the largest school district in the country, will share expertise in management of infrastructure in a high population district. Louisiana is represented by Ken Bradford, who was instrumental during an unfortunate natural disaster, where online learning quickly became the solution for many students in the state. North Carolina Virtual School has paved the way for universities to work with K-12 institutions in online learning in a program called Learn and Earn through The University of North Carolina Greensboro i-school and The North Carolina Community College system. South Carolina Virtual School will bring its experience with working with charter schools to the consortium. Tennessee's effective and engaging e-learning

environment, e4TN, will contribute online courses (Algebra 1, Chemistry, Spanish 1 and 2), expertise in understanding the student growth model, the teacher-effect model, and developing common core assessments.

Private Partners. An impressive array of private partners agreed to support the OC^3 project.

Apple Professional Development will provide training to designated trainers from each of the participating OC^3 states and districts. Each district in each of the states would send "train-the-trainers" to two 2-day sessions over the course of the first year. For example, each school district would send 1, 2, 3 or 4 teachers for training depending on the size of the district. A ratio of one train-the-trainer for every 50 or every 100 teachers might be a guideline. Using the State of Tennessee as an example, 123 school districts might equate to approximately 360 train-the-trainers attending two 2-day Apple Professional Development workshops on the iPad over the course of the year. The training would be face-to-face hands-on with a maximum of 20 participants per workshop. 360 teachers in Tennessee would require 12 2-day workshops twice over the course of the year. The train-the-trainer model is very successful when train-the-trainers are provided with time to do training in their districts during school time or after.

Focus of Professional Development on the iPad:

Workshop 1 (2-days) – "Learning with iPad"	Workshop 2 (2-days) – "Productivity with iPad
- Hardware and features - Native apps and synching - iTunes store and apps - iTunes U and podcasts	- Pages on the iPad - Keynote on the iPad - Numbers on the iPad - iWork integration strategies in the

- Accessibility features - Using digital content in the classroom Content management strategies	classroom
Suggested Timeline:	Workshop 1: As soon as possible Workshop 2: 3 to 4 months after Workshop

(See Appendix H 2)

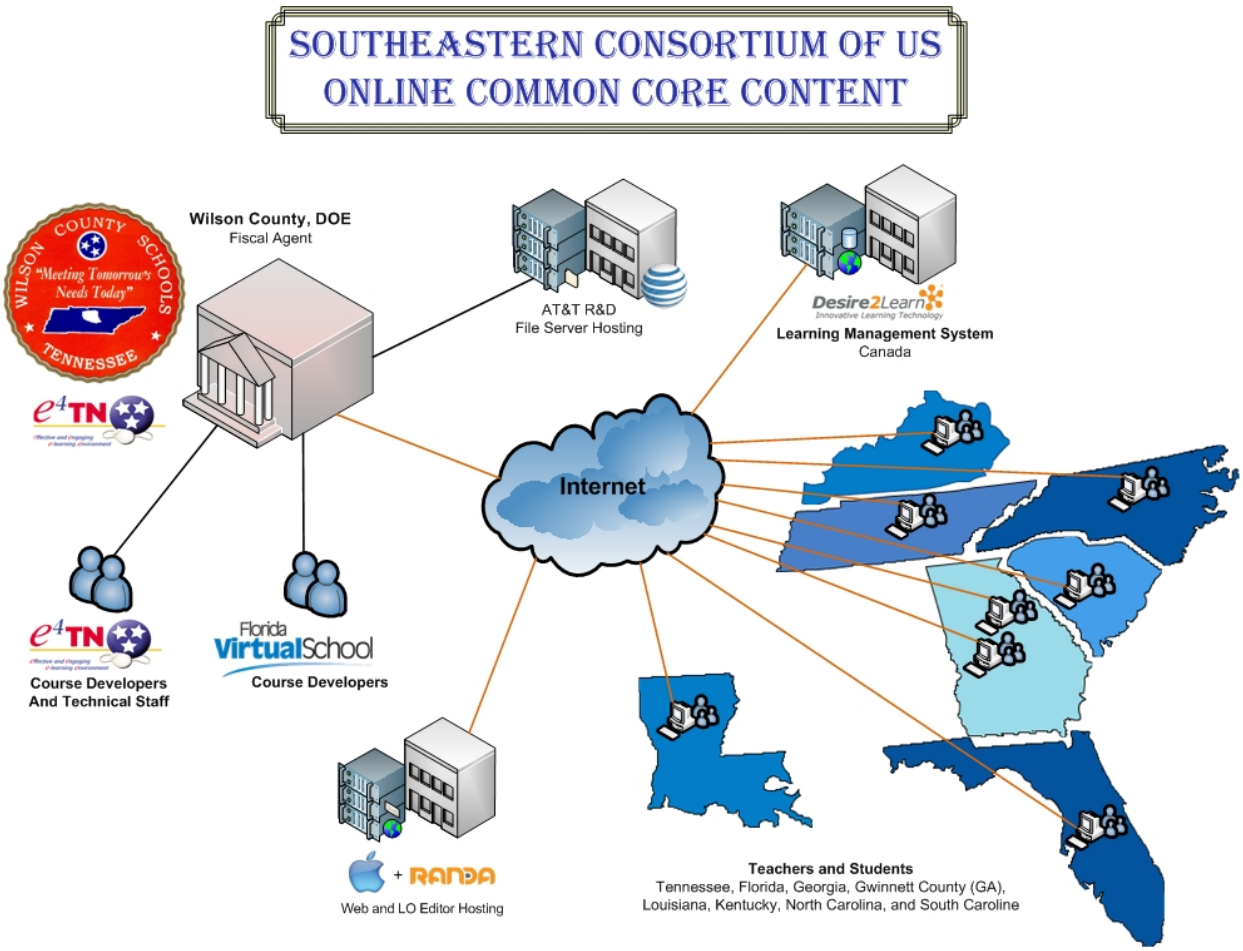
AT&T will provide server hosting offering a 20% discount on all mobile broadband services to OC^3 participants.

Desire2Learn has over five million licensed users in over 400 client locations. D2L has extensive experience in meeting client requirements similar to those of e4TN, including number of users, scalable product to support rapid growth, single enterprise installation with the option for multiple unique organizations, integration with other administrative systems, course conversions, integration with third-party tools and more. Desire2Learn leads the industry in scalability. Implementations of over 300,000 users including 40 unique organizations on a single instance.

Desire2Learn has been building tools for teaching and learning for the past nine years. The infrastructure of D2L will allow for such a wide-scale program because they have a separate product management group, development team leaders, and team of developers building the technology, and they also invest heavily into R&D projects with their clients and other academic initiatives to ensure their technology will be the leading product now and in the future.
As the flagship product, the Desire2Learn Learning Environment is a complete web-based suite of easy-to-use teaching and learning tools for course development, delivery, and management.

The Desire2Learn Learning Repository (LOR) is the first fully integrated standards-based LOR enabling the storing, tagging, searching and reusing of learning objects. With advanced tools and a user-friendly interface, the Desire2Learn Learning Repository enables users to align, share, search, harvest, and store learning objects and resources effortlessly. (See Appendix H 4)

Randa Solutions seeks to change the face of education through leveraging technology to have a real impact on the industry. Randa will provide discounted services and will host all web applications and design some web applications. Randa Solutions will also provide a disaster backup service. (See Appendix H 5).



Conclusion

What if you have the chance to fund an initiative the will "flatten" the world of education, literally, a project that knows no borders, where the best teachers can be provided to even the most rural districts. What if you have the opportunity to "tip" the field of online learning that is already at the tipping point while providing the much needed data to guide future practices and methods as the consortium extends beyond the Southeast?

Can you imagine what OC^3 will do for the face of education and what we will be saying in 50 years… What if:

- Measurements were not put in place to determine if teachers were effective online?
- States didn't work together to provide the best experts and curriculum?
- Students didn't have access to upper level math and science courses?

On the other hand…What if?

- Einstein didn't get to take physics in 11th grade because his rural school didn't have a teacher?
- American education was behind other countries as it was 50 years ago?
- i3 didn't fund the Southeastern Consortium of US Common Core Content (OC^3)

Online learning is a disruptive innovation, which means that the field will be disrupted in multiple areas. Most importantly, we have a responsibility, through the change process, to ensure quality to the children in the United States. OC^3 provides the best quality available while planning for future growth and measuring for future predictors of quality in teacher effectiveness.