

Effective Teaching Framework: 2015-16



Effective Teaching Framework (ETF): Final Report 2015-16

Abstract

The Effective Teaching Framework (ETF) initiative was designed to provide a common language and lens for understanding the skills, strategies, and resources needed for teachers and school leaders to create an optimal learning environment for all students. ETF training consisted of six full days of training for principals, assistant principals (APs), and selected Central Services staff, as well as an abridged version (24 hours) for Instructional Resource Teachers (IRTs). Beginning and mentor teachers also received some training. Training was provided to all cohorts as planned. Generally, the training sessions were well-attended and highly-rated by the participants; in 2015-16, 92.7% agreed it helped them become more effective in their roles. The trainings were supplemented by an ETF website that provided a wide range of online resources. However, the website was underutilized, with only 26.3% of teachers indicating that they used the website to improve their teaching. In most cases, implementation of ETF was limited to individuals applying their learning to classroom observations and teacher evaluations. Based on focus group interviews with APs, barriers to school-wide ETF efforts included: a) confusion about expectations for orchestrating an ETF “rollout” at their schools, b) lack of communication and follow-up from Central Services staff, c) leadership changes, d) lack of communal training and planning time among the schools’ administrative teams, and e) lack of grassroots support for the initiative at the school level. While training quality was high, building stronger buy-in before implementation, communicating clearer expectations, and implementing structures to support long-lasting roll-outs at the school level are recommended.

TABLE OF CONTENTS

Summary	3
Background	7
Methods	8
Implementation – Training Efforts	9
Implementation – School Level	14
Discussion/ Recommendations	20
Appendices	24

Authors

Andrew Jackl, Nancy Baenen, Roger Regan
Data, Research, and Accountability Department
Wake County Public School System
Raleigh, North Carolina

January 2017 | DRA Report No. 16.10

Summary

What is ETF?

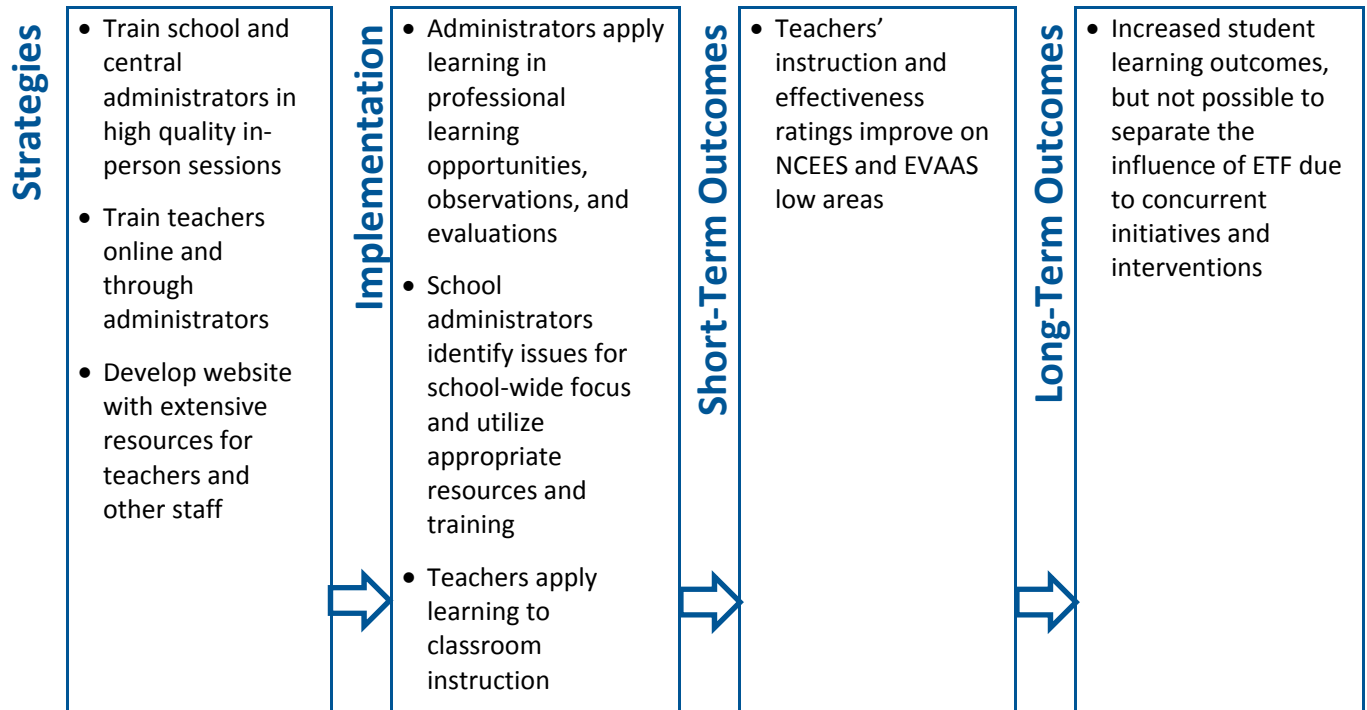
Wake County Public School System (WCPSS) developed, piloted, and delivered the Effective Teaching Framework (ETF) as a professional learning initiative over several years. ETF was designed to support the work of teachers by defining and providing models of the research-based skills and strategies considered foundational to effective teaching. Topics included essential beliefs, establishing a “growth mindset,” motivation (e.g., relationships, expectations, classroom climate), curriculum planning, instructional strategies, and cultural proficiency. A map of these pedagogical domains is included in Appendix A. Participants were introduced to ETF through six initial days of training, and received several books and other written materials related to the sessions, with special emphasis given to *The Skillful Teacher* (Saphier, Haley-Speca, & Gower, 2008) and *Mindset: The New Psychology of Success* (Dweck, 2006). To bolster ongoing learning at the school level beyond the initial training the district also developed the ETF website, which provided numerous resources for teachers related to the training and the state teacher evaluation standards. Resources on the site were indexed to reflect the content of ETF, as well as the state teacher evaluation instrument otherwise known as the North Carolina Educator Evaluation System (NCEES). Expenditures for ETF in 2014-15 were about \$687,000, with expenditures in 2015-16 of \$619,588; most of this cost each year was for development of a district ETF website and licensing for the Edivate© website. ETF also took a great deal of time for the district staff who served as trainers, as well as the trainees who attended.

What were the goals of ETF?

The Effective Teaching Framework (ETF) was designed to provide a common language and lens for understanding the skills, strategies, and resources needed for teachers and school leaders to create an optimal learning environment for all students. The *Pathway of Change* for ETF, revised in 2015-16, is provided in Figure 1. It illustrates intent for administrators to be trained, and then to apply the skills learned in observing and goal-setting with individual teachers, as well as to plan and implement school-wide training as appropriate. In turn, this was expected to impact teaching practices and student learning. The website resources were intended to support administrators and teachers in this effort. A more detailed logic model describing specific outcomes and measures over several school years can be found in Appendix B. For multiple reasons, the model and timeframes for accomplishment of these goals evolved significantly over time. Implementation data suggested that assessment of stated short and long-term outcomes would not be appropriate in 2015-16 as planned. Accomplishment of ETF’s long-term goals may still be achieved through the district’s current reshaping of its professional development infrastructure to better align with WCPSS’ *Vision 2020 Strategic Plan*.

Figure 1
Pathway of Change

Effort: Effective Teaching Framework (ETF)
Definition from Program Staff: The Effective Teaching Framework is designed to provide a common language and lens for understanding the skills, strategies, and resources needed for teachers and school leaders to create an optimal learning environment for all students.



To What Extent was ETF Implemented as Planned?

Outcomes of the training were monitored through surveys and personal feedback, but measurement of implementation after the training in schools was more difficult to secure. Nevertheless, after collecting data from multiple sources, it was determined that:

- The ETF training sessions were delivered to targeted staff as planned. In 2015-16, new principals, assistant principals (APs), and selected Central Services staff received 48 hours of training. Elementary and middle school Instructional Resource Teachers (IRTs) received an abridged version of the training totaling 24 hours of professional development. Other miscellaneous staff, such as new teachers, mentor teachers, Academically Gifted (AG) teachers, etc., received training in key elements of ETF at their regularly scheduled meetings.

- Attendance rates were exceptionally high (nearly 100%) for school-based administrators, but less so for the Instructional Resource Teachers (IRTs) and Central Services staff, especially as the training progressed throughout the academic year. Program staff reported that the lower attendance rate for IRTs was attributed to the fact that many of them worked in year-round schools and were "tracked out" on some of the training days, as well as a perceived lack of accountability to leadership if they declined to attend.
- Overall, satisfaction with the training was high, with 92.7% of the participants agreeing that the ETF training would help them become more effective in their roles. However, Chi-Square analyses showed that satisfaction with the 2015-16 training was significantly lower than 2014-15; for example, in 2015-16 only 88.4% of the participants rated the training as either "excellent" or "good," versus 98.1% in 2014-15. The most likely explanations for this variance were that: a) different classifications of staff members were being trained (mostly APs in 2014-15 versus mostly IRTs in 2015-16), b) the IRTs received a condensed version of the training, and c) much of the 2015-16 training relied on videotapes of the training from the previous year, as opposed to being almost entirely face-to-face, and the shift in delivery format was not popular with all participants.
- Data from various sources indicate that the APs found the training valuable when observing teachers, providing feedback, and directing them to additional resources. Yet, in many cases there was persistent confusion about how to implement a school-wide "rollout" of the ETF initiative. Survey data revealed that approximately two-thirds (70.8%) of WCPSS teachers were familiar with ETF; conversely, approximately one-third were not.
- The ETF website was intended to be a key resource for implementation, yet it remained underutilized. Only 37.3% of WCPSS teachers agreed that they had visited the website to gather information, and only 26.3% agreed that they used these online resources to improve their teaching.
- A sample of School Improvement Plans (SIPs) were reviewed to see if ETF had been incorporated into goals, key processes, action steps, or planned staff development activities. Approximately one-half of the plans contained terminology commonly associated with ETF (e.g., "growth mindset" or "cultural proficiency"). However, ETF is broad enough to cover virtually all best teaching practices supported by research, so it is difficult to identify language that is uniquely germane to ETF.

Results: Short and Long-Term Outcomes

Due to the significant changes to the program and the district's recent retooling of their professional development infrastructure, evaluation of short and long-term outcomes stated in Figure 1 was not

feasible. Any improvements (or lack thereof) on any of those metrics to date, even if they were measurable, could not be fairly attributed to ETF due to these midstream changes in the program.

Conclusions/Recommendations

The ETF training was, overall, well-received and well-attended. However, issues with implementation prevented ETF from becoming the far-reaching, over-arching, and heavily-used framework for instruction that was envisioned at its conception. Thus, as reflective practitioners, we should consider what can be learned from the ETF initiative that could help direct future professional learning efforts to drive district improvement. A more detailed discussion of DRA's recommendations can be found at the end of this report, but can be summarized as follows:

- **Make staff expectations clear and transparent from the onset.** Many school-based administrators were unsure about how to implement a “rollout” at their schools and what successful implementation was supposed to look like. Several administrators reported that they had delayed developing a school-based implementation plan because they were waiting for clarification from Central Services.
- **Provide a step-by-step roadmap for implementation.** The trainings and online resources associated with ETF were formidable in size and scale, and many administrators found them overwhelming. Providing guidance through more manageable "action steps" increases the likelihood of sustainable change, albeit at a slower, more incremental pace.
- **Encourage staff buy-in.** Many APs claimed they didn't have enough time to develop an ETF rollout for their school, which means, by extension, they believed other work should be given higher priority. Some APs complained that district priorities seemed to evolve from one year to the next, leading some to express skepticism about the lifespan of the ETF initiative. In short, the level of grassroots support required for sustainable change was lacking, and the district may wish to brainstorm ways to help overcome this obstacle.
- **Modify the Professional Learning Model.** When staff are trained in annual cohorts by position (first principals, then APs, then IRTs, etc.) the content of the learning evolves by the time it reaches the classroom teachers, and time constraints and scheduling made planning together as an administrative team difficult. Furthermore, a number of APs reported principal turnover at their schools, and that having new leadership contributed to a lack of continuity when it came to moving forward with ETF. An easy solution to this problem is not immediately apparent, but different rollout models are worth consideration, especially since WCPSS is moving forward with other large-scale training efforts in 2016-17.
- **Provide adequate support and follow-up.** One of the most recurrent themes to emerge from the focus group interviews was that the APs complained about a lack of follow-through after the training sessions were completed. In short, the APs said that they attended the six days of

training, but then heard little else about ETF from Central Services until the schools' administrative teams were allocated time to plan together during a summer work session in 2015. The breakdown in communication increased with the Central Services' personnel changes that occurred during the implementation phase of the initiative.

- **Intentionally build implementation science standards into all phases of large-scale initiatives, including the initial program planning, implementation, and evaluation stages.** When large, complex initiatives like ETF are “rolled out” without a solid implementation and evaluation plan in place, it is much more difficult to determine what is working and what is not. The district has expertise in implementation and research designs that can yield timely feedback during the early stages of implementation, as well as more definitive effectiveness determinations once implementation is complete. Effective communication and collaboration between WCPSS departments, Central Services, and schools will strengthen future professional development initiatives such that the intended impacts are eventually realized.

Background

What was the research underlying ETF strategies?

ETF was “evidence-based” in terms of the content of the training and the method of delivery. The content of the ETF training was largely based on research about effective instructional strategies, with extensive source material referenced in the key texts utilized (Saphier, Haley-Speca, & Gower, 2008; Lindsey, Robins, & Terrel, 2009; Dean, Hubbell, Pitler, & Stone, 2012; Dweck, 2006). ETF delivery methods were also supported by brain research on adult learning, which indicates that effective professional learning experiences builds on prior knowledge, shows respect for the learners, avoids cognitive overload (by providing short blocks of new information followed by active engagement by participants), and allows opportunities for practice and collaboration with others (Terpstra, 2012).

WCPSS also considered The *Standards for Professional Learning* (Learningforward, 2016), which are supported by research. These standards point to seven areas as critical for effective professional learning that increases educator effectiveness and improvements for students:

1. *Learning communities* committed to continuous improvement, collective responsibility, and goal alignment;
2. *Resources* which support the participants and which are prioritized, monitored, and coordinated;
3. *Learning designs* that integrate theories, research, and models of human learning;
4. *Data* of various types to plan, assess, and evaluate professional learning;
5. *Leadership* which is skilled in developing capacity, as well as advocating and creating support systems for learning;
6. *Outcomes* which are aligned with educator performance and curriculum standards; and
7. *Implementation* which reflects Implementation Science research and provides sustained support.

The implementation model for ETF reflected the first three standards from the Standards for Professional Learning more fully than the others. Standard 4 was partially addressed, with impact on teacher evaluation ratings and student outcomes impossible to assess due to the rollout design. This is in line with the findings of Guskey (2003), who reports that much of the research on effective training focuses primarily on the delivery of the training and not its impact on teachers' practices and student learning.

For more detail, see Appendix C and sections of the full report which follow.

Methods

This study of ETF provides findings that are descriptive in nature for implementation trends to date (see Table 1). A stronger research design with a comparison group was not feasible because ETF was rolled out to all WCPSS schools simultaneously. All members of a position classification group participated in the training at the same time (i.e., principals first, then assistant principals and central administrators, then Instructional Resource Teachers). Key questions addressed by the study were whether the centralized training was implemented as planned, and the extent to which the training was in turn applied at the school level.

Table 1
Study Design and Supported Conclusions

Research Design	Conclusions that Can be Drawn
<input type="checkbox"/> Experimental	We can conclude that the program or policy caused changes in outcomes because the research design used random assignment.
<input type="checkbox"/> Quasi-Experimental	We can reasonably conclude that the program or policy caused changes in outcomes because an appropriate comparison strategy was used.
<input checked="" type="checkbox"/> Descriptive <input checked="" type="checkbox"/> Quantitative <input checked="" type="checkbox"/> Qualitative	These designs provide outcome data for the program or policy, but differences cannot be attributed directly to it due to lack of a comparative control group.

Sources: List, Sadoff, & Wagner (2011) and What Works Clearinghouse (2014).

A variety of quantitative and qualitative data sources were collected for this evaluation, including registration and attendance rosters for the centralized training sessions, surveys regarding the quality of the training, interviews and focus groups with training participants, and internet resource usage data. More detailed information regarding the study methodology can be found in Appendix D.

This document serves as the final report on the ETF initiative, covering implementation up to and including the 2015-16 school year (Figure 2). Changes for 2016-17 included not renewing the Edivate® contract, moving some of the website content into Canvas, and moving other key content into the new Teaching and Learning professional development infrastructure rather than offering ETF as a separate training. As such, ETF is not continuing in its original form in 2016-17.

Figure 2
Reporting Timeline for ETF



Implementation – Training Efforts

Were the intended target groups trained?

Prior to 2015-16, central and school administrators provided ETF professional learning sessions for principals, assistant principals, and selected Central Services staff. In 2015-16, a contractor facilitated 48 hours of training for new principals, assistant principals, and additional central staff in three separate cohorts. Two additional cohorts of elementary and middle school Instructional Resource Teachers (IRTs) received an abridged version of ETF, consisting of eight three-hour sessions (24 hours). The 2015-16 training sessions utilized videos from training in 2014-15 as well as “live” presentation of material and discussion. The attendance rate for new principals and assistant principals was close to 100%, but the attendance rates for the other cohorts declined as training progressed. Finally, central staff provided training to beginning teachers, teachers for Academically Gifted students, mentor teachers, and schools (upon request).

Given the high number of teachers in WCPSS (over 10,000), it was not considered feasible to provide this extensive six-day training in-person directly to all teachers. Leadership staff decided instead to focus on those who supported teachers. The expectation was that school leadership staff would share the information most needed by their staff as a whole in group meetings, that the learning would be applied to teacher observations and evaluations, and that individual teacher feedback would incorporate key concepts from the training. Based on data from staff focus groups, the expectation for sharing key concepts related to school needs was not understood as fully as the expectation to apply the learning in observations and evaluations.

Virtually all school-based administrators, and many Central Services administrators, were trained in ETF during 2013-14 and 2014-15. In 2015-16, a contractor provided training for Instructional Resource Teachers (IRTs), selected Central Services staff, and new school-based administrators in five separate cohorts. Sessions utilized videos from 2014-15 sessions and “live” presentation of material and discussion. The Central Services staff and new school-based administrators received six full days of

training (48 hours), while the IRTs received an abridged version of the training that had been condensed to 24 total hours. Attendance was highest for new principals and assistant principals, and lower for IRTs and Central Services staff (see Table 2). Program staff suggested that the attendance was lower for the IRTs than other groups because many of them worked at year-round schools that might have been “tracked out” during the training days, and that there seemed to be a lack of accountability to leadership if they did not attend.

On a smaller scale, staff from Academic Programming and Support provided beginning teachers, mentor teachers, and Academically Intellectually Gifted (AIG) teachers with exposure to the most important elements of the ETF trainings as time permitted at their regularly scheduled meetings. They also provided training on use of the ETF website and to schools upon request.

Table 2
2015-16 ETF Attendance Summary by Cohort

Cohort	Group	n	Hours of Training	Trends/Comments from Program Staff
1	New Principals and Assistant Principals	49	48	Attendance was high - Close to 100%.
2 - 3	Central Services Staff	109	48	Attendance dropped as training progressed.
4	Elementary School IRTs	117	24	Attendance fluctuated. IRTs at year-round schools were sometimes "tracked out."
5	Middle School IRTs	35	24	Attendance was consistent. Many IRTs were part-time administrators and preferred to attend the training sessions with Cohort 1.
	Total	310		

Costs

Expenditures for ETF in 2014-15 were about \$608,875, with expenditures in 2015-16 of \$556,087. As shown in Table 3, most of this cost each year was for development of a district ETF website and licensing for the Edivate© website. Edivate© (formerly known as PD 360©) describes itself as an on-demand professional learning resource that creates a highly personalized learning experience for educators who want to improve their practice. The ETF website continues to house videotapes of each training session for use by school staff, as well as other district resources and Edivate© videos as of December 2016. WCPSS funds were not allocated to continue Edivate© in 2016-17.

ETF was delivered in multiple-day face-to-face sessions for most cohorts. In 2013-14, ETF training cohorts included primarily principals; in 2014-15, ETF involved mostly assistant principals and selected central administrators; in 2015-16, those trained included new principals, assistant principals, Instructional Resource Teachers, and others (e.g., beginning teachers) in modified formats.

Table 3
Monetary Expenditures for ETF, 2014-15 and 2015-16

Expense Description	Costs in 2014-15	Costs in 2015-16
Supplies	\$18,088.26	\$52,960.81
Stipends	\$73,793.95	\$0.00
Contractors	\$22,406.25	\$33,268.75
Edivate©	\$494,587.50	\$469,857.90
Total	\$608,875.96	\$556,087.46

Source: Oracle budget printouts from *Academics*.

In addition to these monetary costs, ETF has had large opportunity costs since the professional learning was all developed and delivered by district staff. More specifically:

- In 2014-15, the opportunity costs for the effort included the time of the 18 trainers to prepare and deliver the training on nine days, and the time of 376 participants to be away from their regular work assignments for six full days. Centrally, the program coordinator, her secretary, and two additional coordinating teachers spent a considerable amount of time on ETF training and website development. The coordinating teachers reviewed, catalogued, and posted materials to Edivate©. An Enloe High School teacher and a team of students videotaped the full training (six days total).
- In 2015-16, opportunity costs were lower, with one consultant facilitating sessions to 310 participants (Table 2) which utilized the videotapes instead of live trainers in many cases. Training for other groups was largely provided through the two coordinating teachers assigned to the effort, plus one Human Resources staff member.

While these costs are high in an absolute sense, costs per staff member impacted are also important to consider. The training could still potentially influence all 10,225 teachers in WCPSS as well as those trained directly. If ETF had impacted all teachers, the cost per teacher would be \$114 (based on 2014-15 and 2015-16 only — costs for the 2013-14 principal training were not obtained). However, the results of this study suggest that a lower percentage of teachers were impacted. While we do not have precise data on the percentage impacted, if we estimate that if only 15% of teachers are impacted, the price jumps to \$760 per teacher. As in all initiatives, implementation in schools is critical — sharing what was learned, applying it in work with teachers, and using the websites and other resources as necessary to justify the expenditures.

Was the ETF training useful and/or well-regarded?

Overall, high percentages of staff members who completed the training evaluation survey had positive views in both 2014-15 and 2015-16. However, the 2015-16 survey results were significantly lower across all items tested than they were in 2014-15. For example, 98% agreed sessions were either “excellent” or “good” in 2015-16 versus 88% in 2014-15. Slightly lower ratings may be because many staff were given an abridged version of the training, and the 2015-16 sessions relied heavily on videotapes from the 2014-15 training efforts rather than being entirely face-to-face. As the trainer noted, “some people didn’t care for the new format.” The variation may also reflect the different classifications of staff members that attended the training (e.g., mostly APs in 2014-15 versus mostly IRTs in 2015-16).

In general, training in both 2014-15 and 2015-16 was well-received and considered valuable (Jackl, 2015). For example, over 92% of respondents in both years indicated that the training helped them be more effective in their role. However, a chi-square analysis showed that the responses to every evaluation survey item in 2015-16 were significantly lower than they were in 2014-15, with the percentage of positive responses dropping between 3.1 percentage points (the training built upon my previous knowledge of teaching practices) to 12.3 percentage points (are central services’ expectations clear to you). Two of the largest differences were on the question of whether training was excellent or good (98% in 2014-15 versus 88% in 2015-16) and whether expectations were clear (91% vs. 78%).

Three differences between the 2014-15 and 2015-16 training efforts that may have contributed to the decline in ratings can be summarized as follows:

- the 2014-15 training was conducted almost exclusively by live facilitators, whereas the 2015-16 trainings relied more on video recordings from topics that had been presented the year before;
- in 2014-15 and 2015-16, the cohorts varied in staff composition (mostly school-based administrators in 2014-15 versus mostly IRTs in 2015-16); and
- the IRTs, who comprised the bulk of the 2015-16 cohort, received an abridged and condensed version of the training that may have impacted their overall perception.

While the modest decline in training ratings is statistically significant across the board, it is still important to underscore the fact that an overwhelming majority of participants found the training to be useful. Table 4 reports these data in greater detail.

Table 4
ETF Training Rating Comparison – 2014-15 through 2015-16

ETF Training Survey Item	2014-15		2015-16		Change
	SA / A		SA / A		
	%	n	%	n	
The training has already helped me to be more effective in my role.	97.5%	321	92.7%	207	-4.8%
The training built on my previous knowledge of teaching practices.	98.7%	321	95.6%	207	-3.1%
The training has provided me with more strategies to suggest to teachers or other school staff to improve their effectiveness.	98.4%	321	92.3%	207	-6.1%
The training has helped or will help me notice areas for improvement as I observe teachers.	97.8%	321	90.8%	207	-7.0%
Overall, I believe the quality of the training was "excellent" or "good."	98.1%	314	88.4%	189	-9.7%
Are central services expectations for application of our learning at the ETF sessions clear to you? (Percentage answering "yes.")	90.6%	318	78.3%	198	-12.3%
Do you need additional guidance/assistance from central services before implementing ETF at your school? (Percentage answering "no.")	73.6%	318	83.8%	198	10.2%

Note: All percentages were rounded to the nearest tenth of one percentage point.

Note: A chi-square tests showed differences between 2014-15 and 2015-16 to be statistically significant (p values ranged from .0001 to .0265).

Implementation – School Level

Did the ETF training reach WCPSS classroom teachers?

Approximately 71% of WCPSS teachers agreed that they were familiar with the ETF initiative. Approximately 80% agreed that administrators had stressed some of the “best practices” commonly associated with ETF. When surveyed, responses varied by school level; elementary and middle school teachers were the most positive; high schools teachers were the least positive.

Since 2013-14 WCPSS has asked teachers to complete an annual survey that collects data on several timely initiatives, as well as other projects such as the *WCPSS School Report Cards*. In 2015-16, four survey items were added to better assess the impact of ETF on classroom teachers (Table 5).

Overall, approximately 71% of WCPSS teachers agreed that they were familiar with ETF, ranging from 65.7% of the high school teachers to 73.1% of the middle school teachers. While approximately 80% of the teachers agreed that their school’s administrators had stressed ETF concepts such as growth mindset and/or cultural proficiency, the ETF initiative is a large enough umbrella to cover virtually every best teaching practice currently supported by research. The scope and scale of ETF make it difficult to quantify exactly how helpful district staff found the framework.

ETF was originally intended to impact every teacher in the district, but the data suggest that about one-fourth of WCPSS schools did not experience an effective school-wide “rollout” of ETF, or if they did, the “branding” or importance of the initiative was not reinforced on an ongoing basis.

Table 5
2015-16 Teachers' Report of ETF Familiarity and Implementation (Self-Reported)

Survey Item		n	Positive Agreement (SA/A)	Strongly Agree	Agree	Disagree	Strongly Disagree
I am familiar with Wake County's Effective Teaching Framework (ETF) initiative.	Elementary	4,723	72.4%	10.4%	62.0%	21.0%	6.6%
	Middle	1,887	73.1%	10.2%	62.9%	20.5%	6.5%
	High	2,404	65.7%	7.7%	58.0%	24.9%	9.4%
	All Teachers*	9,117	70.8%	9.7%	61.1%	21.9%	7.3%
My school's administrators have stressed ETF concepts (e.g., growth mindset, best teaching practices, cultural proficiency, etc.) within the past year.	Elementary	4,716	82.6%	26.5%	56.1%	12.8%	4.5%
	Middle	1,886	77.3%	22.1%	55.2%	16.4%	6.2%
	High	2,383	75.7%	19.3%	56.4%	17.3%	7.0%
	All Teachers*	9,089	79.7%	23.7%	56.0%	14.7%	5.5%

Source: DRA analysis of 2015-16 WCPSS Teacher Survey data.

Note: All percentages were rounded to the nearest tenth of one percentage point.

***Note:** Teachers working in schools with a broad range of grade levels (e.g., K-8, 6-12, etc.) were not included in the disaggregated analyses of elementary (K-5), middle (6-8), and high (9-12) schools.

Did WCPSS teachers utilize the ETF online resources?

The ETF website was not accessed by a high percentage of WCPSS teachers in 2015-16. When surveyed, only 26% of WCPSS teachers agreed that they used the ETF website to improve their teaching. When interviewed, school-based administrators expressed concerns that they did not have enough time to properly preview the quality of the resources before directing teachers to use them, and that the website had become stigmatized as being "for teachers who weren't doing very well." Website usage data indicate the number of users per month ranged from 1,769 to over 3,321 (out of over 10,000 teachers). Edviate® videos were accessed infrequently and use declined across the year. From August 1, 2015 to January 28, 2016, 82% of schools had fewer than five users of the site; 81 schools had two or fewer, and 36 schools had no users at all.

The ETF website was "soft-launched" in the spring of 2015 for principals and assistant principals, but did not have a full content "hard-launch" until August 2015 when it was made available to all of the district's teachers. The purpose of the website was to provide vetted, organized resources for school staff on various topics related to instruction for use at the school level, as well as be a resource for administrators supervising teachers who needed to grow in particular areas. The website was intended to be maintained over time so that it could be a continuing resource for school staff.

The website catalogued and aligned professional development resources (video media, books, website links, etc.) to the NC Teacher Evaluation Process Rubric for Evaluating NC Teachers (NCTEP Rubric) and

to the Critical Elements of the Map of Pedagogical Knowledge (Appendix A). The website included access to “Edivate©,” a collection of 2,500 videos featuring master teachers demonstrating skills to support teachers wanting to become more effective.

Teacher Surveys

When surveyed in 2015-16, approximately one-third (37.3%) of WCPSS teachers reported that they had visited the ETF website to gather information, and approximately one-fourth (26.3%) agreed that they used the ETF website’s online resources to improve their teaching (Table 6).

Table 6
2015-16 Teachers’ Utilization of ETF Online Resources (Self-Reported)

Survey Item	School Level	n	Positive Agreement (SA/A)	Strongly Agree	Agree	Disagree	Strongly Disagree
I have visited the ETF website to gather information.	Elementary	4,763	38.5%	4.3%	34.2%	45.8%	15.8%
	Middle	1,888	40.2%	4.6%	35.6%	44.8%	15.0%
	High	2,394	32.7%	3.3%	29.4%	44.7%	22.5%
	All Teachers*	9,099	37.3%	4.1%	33.2%	45.3%	17.4%
I make use of the ETF website's searchable database of resources (e.g., books, articles, Edivate© videos) to improve my teaching.	Elementary	4,684	27.4%	2.0%	25.4%	55.1%	17.4%
	Middle	1,880	27.3%	2.0%	25.3%	55.4%	17.3%
	High	2,380	23.2%	1.6%	21.6%	51.2%	25.7%
	All Teachers*	9,046	26.3%	1.9%	24.4%	54.1%	19.6%

Source: DRA analysis of 2015-16 WCPSS Teacher Survey data.

Note: All percentages were rounded to the nearest tenth of one percentage point.

***Note:** Teachers working in schools with a broad range of grade levels (e.g., K-8, 6-12, etc.) were not included in the disaggregated analyses of elementary (K-5), middle (6-8), and high (9-12) schools.

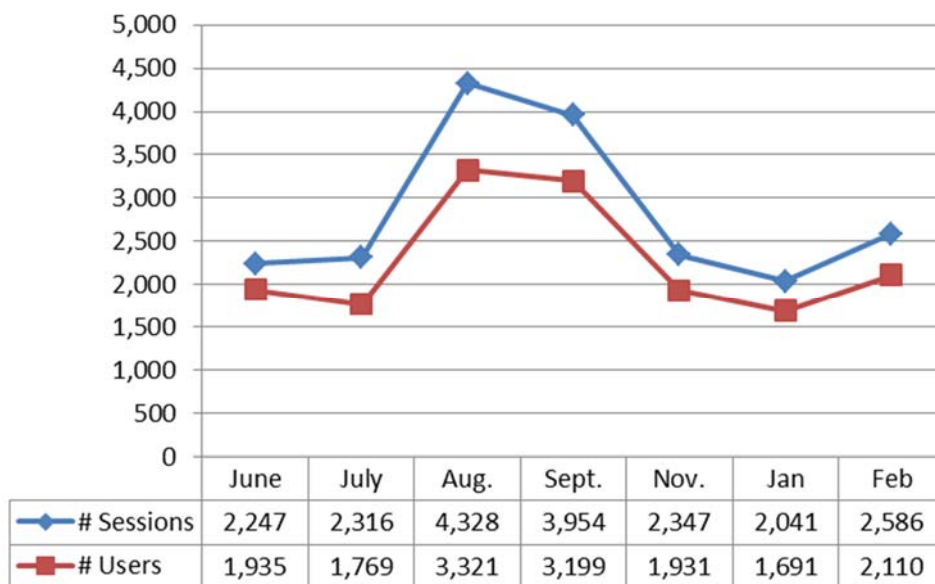
Google-Analytics©

To better assess district usage of the ETF website, data from two sources were collected. The first set of data, obtained from Google Analytics© on a monthly basis from June 2015 to March 2016, shows usage of the website as a whole. Access to the main ETF website does not require a login ID or password, so it was not possible to identify school-level usage of the website.

While Google Analytics© can be a useful tool, and proved to be a valuable data source for this evaluation, it must be noted that these data present a slightly-flawed assessment of actual website usage. This is because these data are gathered using the Internet Protocol (IP) address of the computer accessing the website. Thus, if a single user accesses the website from a work computer, and then visits the website again from a home computer, he or she would be recorded as a “new visitor” on the second visit. Conversely, if a computer is shared by several users, it is theoretically possible that new users would be incorrectly classified as “returning visitors.” Nevertheless, as noted earlier, it remains a useful tool for gathering general measures of overall website traffic.

In the eight-month period from June 2015 through February 2016, about 18,000 users accessed the ETF website, with more than half of these users categorized as “returning visitors” (See Figure 3). The number per month ranged from 1,691 to over 3,321. The number of sessions spiked during several weeks in August and September 2015 when ETF training was conducted in Central Services, but otherwise, activity was fairly flat over the course of the eight-month time period.

Figure 3
Number of ETF Website Users and Sessions June 2015 – February 2016



Source: Audience Overview Data from Google Analytics©

Note: Data could not be obtained for October 2015, and December 2015 was excluded because the winter break limited the number of instructional days.

Edivate©

The ETF website contains access to “Edivate©” (formerly known as PD 360©), which is a proprietary website that requires users to log-in with their WCPSS ID and password. Organizations that subscribe to Edivate© can receive “usage summary reports” on a monthly basis. The first report that DRA received was a five-month cumulative report covering the time period August 1, 2015 to January 28, 2016. Subsequently, monthly reports were received from February 11, 2016 through July 11, 2016. Each report lists the number of users at each school who viewed the website during the month, the total viewing time in minutes, and the number of programs viewed.

As Table 7 shows, most teachers in the district did not use the Edivate© website, and usage declined from the fall of 2015 to the winter and spring of 2016. From August 2015 to January 2016, 83% of schools had fewer than five users of the site; 30 schools had no users, and 81 schools had two or fewer. About one-fifth of schools had more than five users of the website, however, average total viewing time across all schools was only 25 minutes over the five-month period. From February to July 2016, usage of

the website was even more minimal. Only 15 schools had one or more users of the website, and no schools had more than five users.

Table 7
WCPSS Edivate© Usage from August 2015 – July 2016

Edivate© Data	Time Span	
	August 1, 2015 - January 31, 2016	February 1, 2016 - July 31, 2016
Number of users that have viewed the site (including Central Office)	950	432
Number of schools with users that have viewed site	145	24
Number of schools with fewer than five users	150 of 172 (87%)	172 of 172 (100%)
Average number of users by schools	4.3	0.16
Average total viewing time per school	25 minutes	2 minutes

Source: Usage data summary provided by Edivate©

In summary, data from Google Analytics© and Edivate© suggest that the ETF website was not used during the 2015-16 school year by most schools and teachers. Usage of the website was highest in August and September of 2015, but decreased after September and never again reached beginning-of-the-year usage levels. The website continued to attract new users in the fall and winter, but usage remained consistently low over time. Usage of the Edivate© website remained very low over the entire 11-month period, and was not funded in 2016-17.

Did ETF Impact School Improvement Plans (SIPs)?

Based on a representative sample of School Improvement Plans (SIPs), specific references to ETF were limited. However, some concepts associated with ETF, such as “growth mindset” and “cultural proficiency,” were found in one-half of the plans. The two sections that contained the most references to ETF concepts were the mission, vision, and values statements, and the summary sheet of professional development activities.

SIP Review

WCPSS schools develop School Improvement Plans (SIPs) to assess their needs and set goals, with annual updates as appropriate. In order to determine the extent to which ETF was referenced in the plans, a representative sample was examined, including the SIPs of four elementary schools, three middle schools, and three high schools.

SIP Composition

SIPs typically contain five major sections:

- a comprehensive needs assessment;
- mission, vision, core beliefs, and values statements;
- a summary of school goals, key processes, and action steps;
- a summary of professional development activities; and
- an intervention planning matrix.

While direct references to ETF were limited in most sections of the SIP plans examined, concepts associated with ETF, such as “growth mindset” and “cultural proficiency” were found in one-half of the plans in the sample review. The two sections that contained the most references to ETF concepts were the mission, vision, and values statements, and the summary sheet of professional development activities. The size and scope of the ETF initiative encompass so many best teaching practices it is difficult to claim that any language in the SIPs is uniquely germane to ETF.

Sample SIP Statements

As an example, Leesville Road Middle School’s “Values Statement” references utilization of best practices in teaching in the following statement:

- *[Utilize] academic growth as the criteria of recognizing student individuality and teaching practices focused on enhancing achievement.*

As a second example, Apex High School’s SIP “Summary Sheet of PD Activities for 2016-17” includes the following guidance for teachers setting goals:

- *A second PDP goal should outline a specific area of growth as identified through the teacher's self-assessment on the NC Teacher Evaluation instrument. This may include, but are not limited to the following:*
 - *engagement strategies;*
 - *Growth Mindset book study;*
 - *technology update; and*
 - *multiple school alignment for upcoming freshmen.*

ETF and Implementation Science Standards

The National Implementation Research Network (NIRN) has delineated frameworks and tools to guide implementers of initiatives in terms of elements which help support scale-up of effective practices in schools. The District Capacity Assessment (DCA), developed by NIRN (Ward et al., 2015), includes 26 research-supported criteria for effective implementation. The central coordinator for ETF gathered approximately 20 staff from the Central Services and school levels (principals and assistant principals) to complete the DCA for the first time in a group meeting in July 2015.

Since the ETF effort was not designed using this set of guidelines, it is not surprising that many ratings were low. The effort received the highest marks for the quality of the training itself, staff selection, and utilizing data to inform next steps in implementation. The biggest district areas of need were the establishment of district and school implementation teams. Some coaching occurred during observations and evaluations of teachers, but the key district resource, the ETF website, was never utilized extensively. The DCA was not re-administered in summer of 2016, but the key district and school implementation teams were not put in place. While it was hoped that the school leadership members who were trained would plan and facilitate implementation together, evidence suggests this did not occur on most campuses.

Discussion and Recommendations

As was noted earlier, this report compiled several data sources (listed in Appendix D) to assess the extent of ETF implementation. While the original evaluation plan called for an eventual examination of outcome variables for students and teachers (Appendix B), the issues with implementation made such analyses unfeasible at the writing of this report.

ETF will evolve as the district moves forward, most likely through the development of online training mini-modules deployed through the Canvas® interface. It is also important to remember that selected WCPSS staff, including all principals and assistant principals, received up to 48 hours of ETF training. This professional learning was, overall, well-received and well-attended, with the vast majority of participants agreeing that the training would help them be more effective in their current roles. That being said, ETF did not become the far-reaching, over-arching, and heavily-used framework for instruction that was envisioned at its conception. Thus, as reflective practitioners, we should consider what can be learned from the ETF initiative that could help direct future professional learning efforts to drive district improvement:

- **Make staff expectations clear and transparent from the onset.** As noted several times throughout this report, the ETF training was considered valuable by the trainees, and nearly all agreed that it improved their ability to observe classroom teachers and provide more meaningful feedback. Yet, when interviewed in focus groups, administrators were unsure about

how to implement a “rollout” at their schools and what successful implementation was supposed to look like. Several administrators reported that they had delayed developing a school-based implementation plan because they were waiting for clarification from Central Services; as one AP commented, “we don’t want to do a bunch of work on this [ETF] because later on we might be told that we’re doing it wrong.” Another AP told DRA staff, “we want to know what we’re going to be held accountable for doing or not doing.”

- **Provide a step-by-step roadmap for implementation.** The two expectations that were most clearly conveyed during ETF sessions and that administrators seemed to understand and apply were that they utilize the *Growth Mindset* material at their school, and that they apply ETF material to teacher observations and feedback. The trainings and online resources associated with ETF were formidable in size and scale, and many administrators found them overwhelming (e.g., there were literally thousands of training videos available through the district’s subscription to Edivate©). Providing guidance through more manageable “action steps” is more likely to lead to sustainable change, albeit at a slower, more incremental pace.
- **Encourage staff buy-in.** During focus group interviews some administrators reported that they were not aware of the ETF initiative before the trainings began, and by that point they had already scheduled staff development activities for their teachers during their early release and required workdays for the upcoming academic year. Many APs claimed they didn’t have enough time to develop an ETF rollout for their school, which means, by extension, they believed other work should be given higher priority. APs also complained of “program overload” in their schools because so many other initiatives (e.g., MTSS, SIOP, STEM, etc.) were running concurrently, and that district priorities seemed to shift and evolve from one year to the next. The end result was that several high school APs expressed skepticism about the lifespan of the ETF initiative; the elementary and middle school APs were generally more positive in their remarks. In short, however, the level of grassroots support required for sustainable change was lacking, and the district may wish to brainstorm ways to help overcome this obstacle.
- **Modify the Professional Learning Model.** Admittedly, the sheer number of school personnel in WCPSS creates a logistical nightmare for those wishing to provide district-wide staff development that touches every single teacher. Yet, when staff are trained in annual cohorts by position (first principals, then APs, then IRTs, etc.) the content of the learning evolves as it reaches each group and is watered down by the time it reaches the classroom teachers. Time constraints and scheduling issues will always remain problematic; for example, many APs complained that the ETF training sessions were conducted in different cohorts, which made planning together as an administrative team almost impossible since everyone was receiving the training at different times. Furthermore, a number of APs reported principal turnover at their schools, and that having new leadership contributed to a lack of continuity when it came to moving forward with ETF. An easy solution to this problem is not immediately apparent, but

different rollout models are worth consideration, especially since WCPSS is moving forward with other large-scale training efforts in 2016-17.

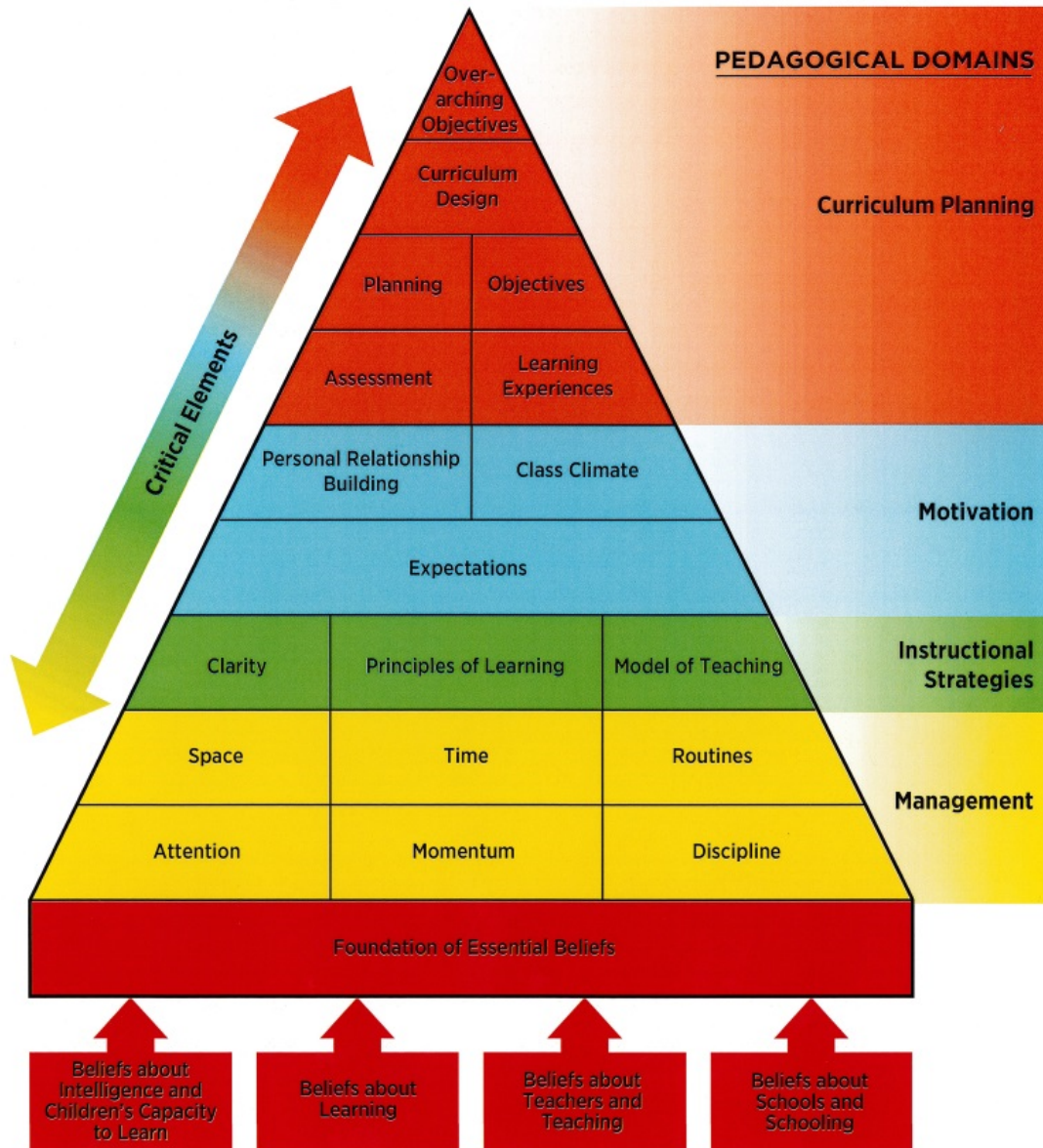
- **Provide adequate support and follow-up.** One of the most recurrent themes to emerge from the focus group interviews was that the APs complained about a lack of follow-through after the training sessions were completed. In short, the APs said that they attended the six days of training, but then heard little else about ETF from Central Services staff until the schools' administrative teams were allocated time to plan together during a summer work session in 2015. The breakdown in communication increased with the Central Services' personnel changes that occurred during the implementation phase of the initiative. As one skeptical AP asserted in 2015, "if ETF is going to last, it must become strong enough to survive leadership changes." Leadership changes certainly provide challenges for programs seeking longevity and sustainability, but such obstacles have been overcome in the past. The Professional Learning Team (PLT) initiative which began in 2010, like most programs, appeared vulnerable during its infancy. Yet, because support and follow-up were both consistent and persistent after PLTs were first introduced, the teams have continued to meet throughout the tenure of various superintendents. Now codified in Board Policy 3610, teachers collaborating within their PLTs have become a normal part of WCPSS culture – and not just another new idea to improve student outcomes.
- **Intentionally build implementation science standards into all phases of large-scale initiatives, including the initial program planning, implementation, and evaluation stages.** When large, complex initiatives like ETF are "rolled out" without a solid implementation and evaluation plan in place, it is much more difficult to determine what is working and what is not. The district has expertise in implementation and research designs that can yield timely feedback during the early stages of implementation, as well as more definitive effectiveness determinations once implementation is complete. The recommendations contained in this report can be substantiated by the National Implementation Research Network (NIRN), which has published research-based suggestions on how to overcome obstacles to change and make desired improvements "stick." In the case of ETF, a District Capacity Assessment (DCA) tool developed by NIRN was useful to program staff in 2014-15 for identifying areas of strength and weakness in the implementation stage. Effective communication and collaboration between WCPSS departments, Central Services, and schools will strengthen future professional development initiatives such that the intended impacts are eventually realized.

References

- Dean, C. B., Hubbell, E.R., Pitler, H., & Stone, B. (2012). *Classroom instruction that works: Research-based strategies for increasing student achievement (2nd ed.)*. Alexandria, VA: ASCD.
- Dweck, C.S. (2006). *Mindset: The new psychology of success*. New York: Ballantine Books.
- Guskey, T. R. *Phi Delta Kappan* 84.10 (June 2003): 748-750.
- Jackl, A. Effective Teaching Framework Status Report 2014-15. Wake County Public School System: Department of Data, Research, & Accountability. October 2015.
- Learningforward (2016). *Standards for professional learning*. Retrieved from <http://learningforward.org/standards-for-professional-learning#.VzMm7IQrKUK>
- Lindsey, R.B., Robins, K. N., & Terrel, R. D. (2009). *Cultural proficiency: A manual for school leaders*. Thousand Oaks, CA: Corwin.
- List, J. A., Sadoff, S. & Wagner, M. (2011). So you want to run an experiment, now what? Some simple rules of thumb for optimal experimental design. *Experimental Economics*, 14(4), 439–457.
- National Implementation Research Network—NIRN (n.d.). *Active implementation: Implementation Drivers*. Retrieved from: <http://nirn.fpg.unc.edu/learn-implementation/implementation-drivers>
- National Implementation Research Network (n.d.). *Active implementation: Implementation stages*. Retrieved from: <http://nirn.fpg.unc.edu/learn-implementation/implementation-stages>.
- Saphier, J., Haley-Speca, M.A., & Gower, R. (2008). *The skillful teacher: Building your teaching skills (6th ed.)*. Acton, MA.: Research for Better Teaching, Inc.
- Terpstra, Jane. (Dec. 2012). How can neuroscience inform online adult education? As included in the evolution: A Destiny Solutions Illumination, (May 9, 2016). Retrieved from http://evollution.com/revenue-streams/distance_online_learning/how-can-neuroscience-inform-online-adult-education/
- Ward, C., St. Martin, K., Horner, R., Duda, M., Ingram-West, K., Tedesco, M., Putnam, D., Buenrostro, M., & Chaparro, E. (2015). *District capacity assessment*. University of North Carolina at Chapel Hill.
- What Works Clearinghouse (2014). *WWC procedures and standards handbook, version 3.0*. Washington, DC: Retrieved January 1, 2014 from <http://ies.ed.gov/ncee/wwc/>

Appendix A
ETF Map of Pedagogical Knowledge

MAP OF PEDAGOGICAL KNOWLEDGE

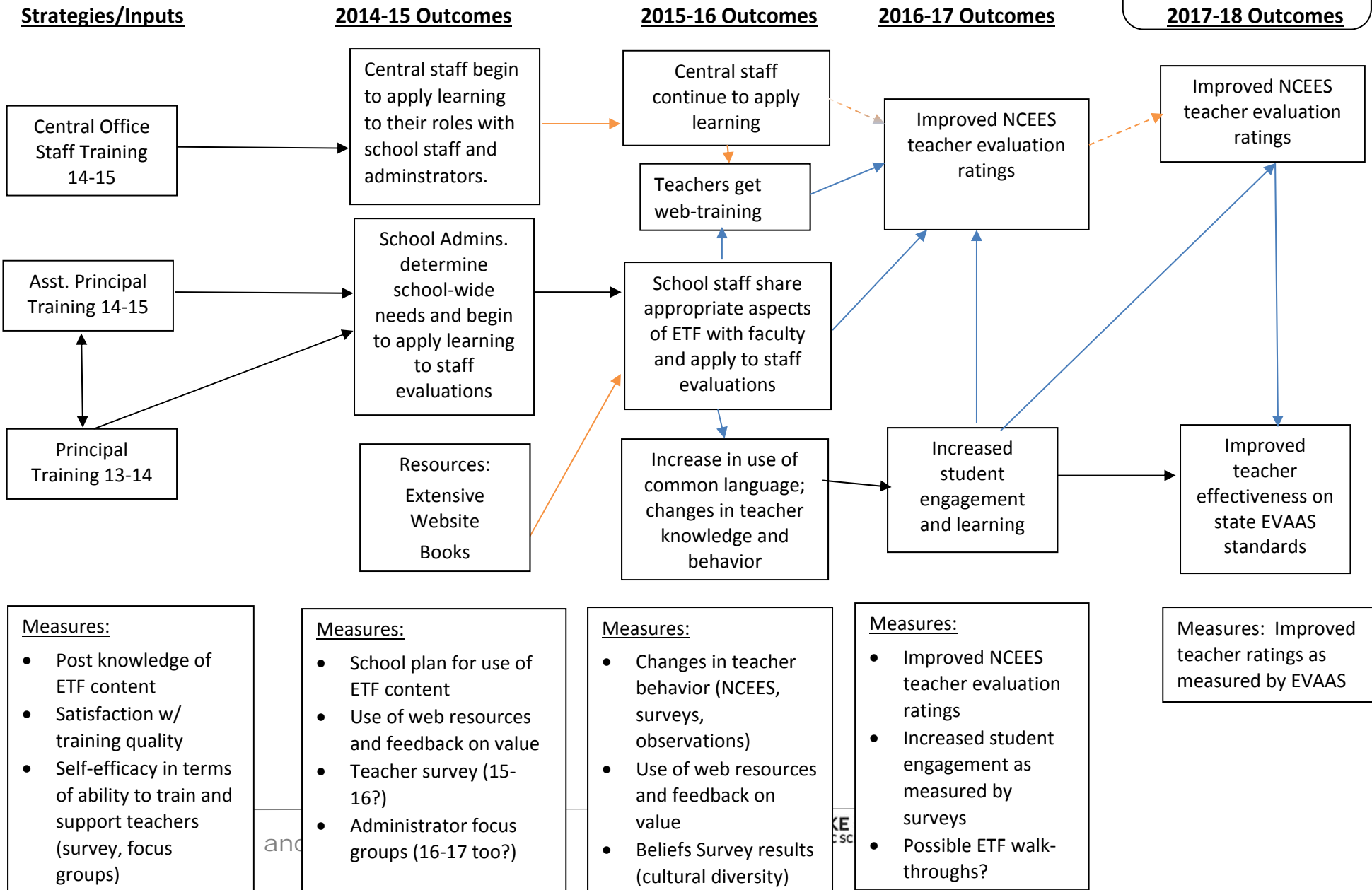
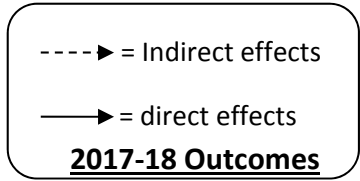


Adopted from the Map of Pedagogical Knowledge from *The Skillful Teacher: Building Your Teaching Skills* by Saphier, Haley-Speca and Gower, p. 5. 6th edition. Research for Better Teaching. www.RBTeach.com.



Appendix B:

Logic Model for Effective Teaching Framework Initiative



Appendix C

Research Related to ETF

ETF can be characterized as an “evidence-based” initiative. Research support for ETF includes studies supporting the content of the training, as well as studies supporting the method of delivery.

Content of Training

A key source of inspiration for the ETF effort was the training model developed and employed in Montgomery County, Maryland (personal communication with W. Coplen, Nov. 18, 2014) to develop a professional growth system which built teacher and administrator understanding of the teacher evaluation system and a common understanding of concepts, strategies, and vocabulary. Courses were optional but highly recommended and included 36 hours of instruction. These courses were given very favorable ratings by those who attended, but impact of the training on student learning has not been studied. This training emphasized content in *The Skillful Teacher* (Saphier, Haley-Speca, and Gower, 2008). After piloting the material with a contractor from Montgomery County, WCPSS staff decided to create a face-to-face training model for all school and selected central administrators to apply in their work which fit district needs more closely. In terms of training content, ETF training was largely based on research about effective instructional strategies, with extensive source material referenced in the key texts utilized (Saphier, et al., 2008; Lindsey, Robins, & Terrel, 2009; Dean, Hubbell, Pitler, & Stone, 2012; Dweck, 2006).

Method of Delivery

ETF delivery methods were also supported by brain research on adult learning. Terpstra (2012) summarized this research and training practices consistent with brain research. Terpstra indicates that effective professional learning experiences build on prior knowledge, shows respect for the learners, avoids cognitive overload (by providing short blocks of new information followed by active engagement by participants), and allows opportunities for practice and collaboration with others. Modeling, opportunities for discovery and creativity, challenging content, multisensory delivery, and individualized paths for learning were also cited as helpful. ETF incorporated these areas in their face-to-face training in 2014-15, with less discussion built into the abbreviated 2015-16 training.

The *Standards for Professional Learning* (Learningforward, 2016), which are supported by research, point to the following areas as critical for effective professional learning that increases educator effectiveness and improvements for students.

1. *Learning communities* committed to continuous improvement, collective responsibility, and goal alignment;
2. *Resources* which support the participants and which are prioritized, monitored, and coordinated;
3. *Learning designs* that integrate theories, research, and models of human learning;
4. *Data* of various types to plan, assess, and evaluate professional learning;

5. *Leadership* which is skilled in developing capacity, as well as advocating and creating support systems for learning;
6. *Outcomes* which are aligned with educator performance and curriculum standards;
7. *Implementation* which reflects change research and provided sustained support.

Guskey (2003) cautions that much of the research on effective training does not address the impact on teachers' practices and student learning. Three common characteristics in the 13 lists he reviewed were enhancing teacher knowledge, providing sufficient time and resources, and including procedures for evaluation, which were all reflected in the ETF effort. He cautions that all three need qualifiers for effectiveness because of inconsistent and sometimes contradictory research support for each. The ETF study was designed to examine the impact on teacher ratings in the evaluation system (NCEES), but limited school implementation and low use of the website thus far make that assessment inappropriate.

The implementation model for ETF reflected the first three standards from the Standards for Professional Learning most fully, with Standard 4 partially addressed:

- **Learning Communities:** Initially, trainees were organized for group collaboration and learning, with base learning communities of central and school staff at each table, along with variable groups for some activities. In 2015-16, some trainees (mostly Instructional Resource Teachers) received a condensed version of the training that was not as comprehensive (24 hours versus 36 hours);
- **Resources:** These were provided in the form of books and the website;
- **Learning designs:** Integrated theories, research, and models for human learning were utilized;
- **Data:** A formal evaluation plan was developed, with data on participants' reflections on training quality and focus group results considered as it was available, and these data were considered moving forward. The rollout model made teacher and student outcomes difficult to evaluate.

The leadership and outcomes standards were generally addressed, but not as fully. In terms of leadership, the presenters had a clear command of their material and utilized presentation methods to support retention of the learning. However, creating support systems for the learning after the sessions was weaker. The staff member coordinating the ETF work took a new position at the end of 2014-15, and as a result the effort had less dedicated central support in 2015-16. The website was developed as a key support, but a late release, limited training, and other issues hampered its effective use. Outcomes of the training were monitored through surveys and personal feedback, but measurement of implementation after the training in schools was more difficult to secure.

Implementation Science (NIRN, n.d.) is a relatively recent field of study which provides guidance to any program implementation to ensure that a program's intended effects reach their intended audience within a complex organization. In looking at the implementation of ETF, implementation science standards were reflected less fully, which is not surprising given that the developers were not familiar with this body of research. Implementation Science focuses on sustaining the effort in schools and applying change research was not addressed in the training very explicitly. It was clear from the training that administrators were to apply the skills learned as they observed and evaluated teachers, but a broader implementation at the schools was not explicit except for the *growth mindset* material. A

session at the district-wide leadership conference in August 2015 sought to clarify the expectations and provide administrators a chance to consider implementation plans for their school. Change research was reflected only in the sense of learning methods applied, but sharing research about building a sustained effort in schools was not addressed. Implementation Science focuses on creating conditions that make it more likely that initiatives will be implemented and sustained at the target level (in this case at the school level). Two essential components are a central implementation team, as well as school implementation teams, to provide long-term coordination and support for the effort. Neither of these were in place. In terms of resources, focus groups suggested some use of *The Skillful Teacher* and *Growth Mindset* books, but the use of the website and overall school implementation levels were low.

Appendix D

Evaluation Methods

The following appendices provide more detailed information on our study design, including evaluation methods, the ETF logic model, and each data source.

Data Source	Appendix	When Collected	Methods, Return Rates, Notes
Logic Model	B	Created in 2013-14 Modified in winter 2015	Modifications were made to the logic model after key leadership left and plans for ETF in 2016-17 became unclear. Lack of consistent implementation in schools and use of the website also contributed.
eSchools Training Records	N/A	After all training was completed by cohort	eSchool Solutions© electronic registration data, provided by the Professional Learning Department, matched to the corresponding attendance sign-in sheets from each training session.
Contractor Training Satisfaction Survey	N/A	Last day of training	An online survey developed by WCPSS staff members from the Academics Department and DRA. ETF training participants completed the survey at their final training session.
WCPSS Teacher Survey	N/A	March 2016	Return rates varied by school, but were approximately 90% across the district.
Focus Groups	N/A	Spring 2015 and Spring 2016	APs from elementary, middle, and high school levels; “n” varied by session (see text).
Interviews	N/A	Late spring, early summer	Interviewed new district leaders of the ETF initiative and two coordinating teachers plus the contractor who facilitated basic ETF training. These interviews were structured around key questions related to implementation and effectiveness of the initiative.
Website Usage Data	N/A	June 2015 through February 2016	Baseline ETF website usage data via Google Analytics© and Edivate© provided by the Communications Department.
Literature Review	N/A	May 2016	Brief literature review of books utilized in the professional learning sessions and online references sources through Google Scholar and other internet searches. Also consulted with Director of Professional Learning.

Acknowledgements

Authors

Andrew Jackl (ajackl@wcpss.net)
Nancy Baenen (nbaenen1@wcpss.net)
Roger Regan (rregan@wcpss.net)

Contributors

We appreciate the contributions and collaboration to this report
from the following WCPSS staff members:

Bradley McMillen, Assistant Superintendent – Data, Research, & Accountability
Mellisa Smith (msmith8@wcpss.net)

DRA Report No. 16.10