

CASE STUDY FOR BOTETOURT COUNTY, VIRGINIA'S IMPLEMENTATION OF THE QUALITY TEACHING AND LEARNING PROGRAM

Botetourt County engaged in the Quality Teaching and Learning (QTL) program for the teachers beginning in January 2004, becoming the first Virginia district to do so. The Centers for Quality Teaching and Learning is a non-profit educational organization that works with schools to prepare teachers to take fullest advantage of technology, while embracing the best practices of instructional strategies. "The professional development program was envisioned at the onset for district-wide faculty", says Botetourt County's Technology Integration Specialist Mike Scott. To implement such an ambitious initiative Botetourt County opened its own QTL Center, housed at the Greenfield Center, through partnership with ExplorNet's Center for Quality Teaching and Learning.

District administration had spent extensive quality time earlier aligning the County's curriculum development plan with the state's requirements, but were wrestling with how best to deliver the curriculum; how best to assimilate the plan into activities; how to institutionalize it. Furthermore, there was a strong desire to raise the level of professionalism, increase technology usage and increase the usage of best instructional practices across all the teachers. Previous training endeavors had been piecemeal at best. Dr. Diana Dixon, Botetourt County's Director of Instruction, said that when Diane Ross from ExplorNet described QTL "it hit a nerve." Later when some district administration saw the QTL in action while visiting Guilford County, Greensboro, NC, she knew that no other product came as close to addressing the district's needs. Supervisor of Support Services and Technology for Botetourt County, H. W. Scott, worked along side Dr. Dixon in spearheading the decision to endorse and to implement the QTL program across the county. He said that in order to raise the bar of teacher performance the county needed to set some foundational standards. He said, "Botetourt has done this with QTL. We established a new baseline standard."

This case study will examine the results of the implementation of the Quality Teaching and Learning program in Botetourt County. It will address the questions of was it successful and if so, to what degree was it successful. The factors contributing to the final results will be explored as well as the impact to the multiple contexts: administration, teachers and students.

This report will be divided into:

- Background;
- Evaluation Approach;
- Results of the QTL program;
- Factors Contributing to Success;
- Areas for Consideration; and
- Conclusion.

BACKGROUND

Botetourt County is nestled in the beautiful Roanoke Valley, home to a fairly stable homogeneous school population. This school district includes a broad tax base with funding not as tight as many Virginia districts. Therefore, Botetourt has been able to acquire lots of technology across the district the last few years. The school system includes 12 schools: 3 high

Botetourt Technical Education Center

James River High

Lord Botetourt High

2 middle

Central Academy Middle

Read Mountain Middle

7 elementary

Breckinridge Elementary

Buchanan Elementary

Cloverdale Elementary

Colonial Elementary

Eagle Rock Elementary

Greenfield Elementary

Troutville Elementary

The school population is near 4800 students with approximately 460 faculty members .

The introduction of the Quality Teaching and Learning program to Botetourt County happened merely by chance and to one administrator was “quite a find”. Originally Botetourt County was looking for a course to be added to the high schools’ technical education curriculum for building/repairing computers for the county and invited ExplorNet’s Diane Ross to explain her company’s products. During this meeting Botetourt County’s Dr. Dixon and H.W. Scott heard about the goals of another product, which was the Quality Teaching and Learning for K-12, and the particulars of the program ignited a strong interest in knowing more. Multiple trips were made to Greensboro, NC to see the QTL program in action. Attendees involved key decision makers at the county office level and selected principals of the schools. Dr. Dixon and H.W. Scott immediately saw the connection between the district initiatives and the QTL program. The QTL course aligned well with the directional planning of the county office. Multiple initiatives were underway, including the continued implementation of best instructional practices; the rollout of a newly updated curriculum plan; the need for more technology usage and integration of that technology into the curriculum; and a desired upgrade to the professionalism of the faculty. At the same time a newly upgraded evaluation form had been developed outlining the required instructional practices and technology usage the administration expected to see in use in the classroom. The Quality Teaching and Learning product was a great match. An elementary principal noted, “The district outlook with QTL was very consistent with what we had been doing with SIP, curriculum, evaluation and instructional practices. QTL meshed things together.” According to Mike Scott, one of the attractions to ExplorNet’s product was the blending of instructional practices with technology. He said, “QTL never treated technology separately from instruction but all the classroom activities were designed on best instruction with technology integrated.”

Dr. Dixon commented that one of the key points to note was that Botetourt County had a need to start with. She said, “This did not come from out of the blue. Furthermore it was also aligned with the School Improvement Plan (SIP) goals so there was a long term thread woven through the QTL program implementation.” Botetourt County had a vision and a directional plan to get there. ExplorNet personnel reiterated this point saying, “Botetourt County did not buy just to patch a hole. This was well thought-out, long before they hired us. We just met a need previously identified with our QTL program. The district embraced the QTL program because they had a common understanding of their needs.”

H. W. Scott remarked that the beauty of QTL for Botetourt County was that, “It brought together all the initiatives we had been working on . . . instructional focus, increased usage of technology, evaluation, staff development, and the delivery mechanism for an updated curriculum.”

Funding such an ambitious initiative was a tall order. This meant funneling all funding to one specific staff development for everyone in the district. This had not been done before and not everyone was sure they should be putting all eggs into one basket. Dr. Jack Thomas, Botetourt’s Superintendent, was a skeptic at the start and felt it was a big investment of time and dollars with no guarantee that it would work for Botetourt County. Others at the district office questioned the idea as well. One person’s trepidation was that there might not be true movement to technology since there was very little technology usage to date. Furthermore, he worried if the equipment and tools were not readily available then there would be no need to send the teachers to training. Another county office colleague felt that there might not be enough linkage between research and practice.

It was with this backdrop that the champions of the idea had to move forward. The true champion of the program was Dr. Diana Dixon. She stood her ground and kept her faith and belief that the QTL was perfect for Botetourt. She along with H. W. Scott “bulldogged” the idea through by remaining courageous and staying very involved from beginning to end.

There was no formal marketing plan per se for the rollout of the QTL staff development. However, the steps for obtaining buy-in were well thought-out by the District office. During the exploratory stage, district office personnel, along with selected school principals visited a QTL site in Greensboro, NC, for first-hand observation. As Superintendent, Jack Thomas, stated, “Some collegial approach and some dictatorial approach was taken. This was a decision that had input from some of the principals but in the end it became an across the board decision to move forward.”

At the suggestion of ExplorNet, a two-day QTL workshop was conducted for all school-wide administration to help them understand what the program entailed for their faculty. H. W. Scott said, “This was not a cold, hard sell as there was conditioning of key players in the system.” However, even with the two-day program some of the administrators admitted that they did not “get it.” Not all of the district level players were on the same page and even the Superintendent had concerns. But when he noted how serious Dr. Dixon and H. W. Scott were about the initiative he supported them and did not back down. All along the way he sought out feedback and would have killed the initiative if the situation had warranted it. When he gave his approval

he simultaneously asked for the principals' buy-in. He made it clear to them that their main job was to make certain good instructional practices were taking place and that they needed to connect the QTL program to their own School Improvement Plan (SIP). The principals followed up to make sure that the design of the QTL collaborative projects would help improve the schools' deficits listed in their schools' SIPs.

Dr. Dixon felt the two-day administrators QTL workshop was an effective approach. She noted that there was much skepticism because the QTL program was so broad (included everyone) and was so much investment in both time (7 days per participant) and in money (all staff development dollars were funneled into one program).

Another aspect of buy-in involved the newly initiated evaluation form. Teachers knew that with the new form they were being evaluated more than in the past on best instructional practices coupled with technology. The teachers were told that the QTL program would help with gaining this knowledge so the teachers could see the importance of the program day 1. Also the QTL course was registered with the college system so each participant received 90 points toward recertification out of the 180 points needed across 5 years, which was a wonderful added incentive. As H. W. Scott said, "We conveyed to teachers how important this staff development was to them personally and to Botetourt County Administration." This helped to seal the buy-in.

A final action taken by the district was to request that the principals select the most positive, progressive teachers to the earlier training sessions. This allowed these movers and shakers to return to the school environment and sell the program deeper into the faculty. H. W. Scott noted that Botetourt County took some risks but they also tried to do all they could on the front end to give the ambitious endeavor the greatest chance to succeed.

EVALUATION APPROACH

This case study was conducted beginning in April 2005. At that time about 60% of the teachers had been through the QTL staff development with cycles of training continuing throughout the case study research. Data gathered for the research employed both quantitative and qualitative methods. Data collected included: surveys (pre and post) of teachers; teacher's reflections; multiple visits to the school for faculty and student observations; one-on-one interviews with the district office personnel, principals and selected teachers from each school; and artifacts of the students' work.

A total of 44 teacher surveys and teacher's reflections were collected and analyzed. Onsite visits were made to each of the twelve schools. One-on-one interviews with Botetourt County district personnel included: Superintendent Dr. Jack Thomas; Superintendent, Dr. Tony Brads (effective July 1, 2005); Director of Instruction, Dr. Diana Dixon; Supervisor of Support Services & Technology, H. W. Scott; Deputy Superintendent, John Busher; Supervisor of Instruction, Sandra Tunnell; Technology Integration Specialist, Mike Scott; and QTL Instructor, Trevor Ruble. At each school, at least one principal or assistant principal was interviewed for his/her perspective. Each principal selected 3-5 teachers per school for one-on-one interviews and observation. The total of the one-on-one interviews was 64.

Cluster analysis was employed in the evaluation to identify patterns in data that may not be immediately obvious. The objective of cluster analysis is to sort cases into sub groups, or clusters, so that members of a particular cluster are similar to each other but members of different clusters are dissimilar. The groups are constructed based on the data cases with each case assigned to the cluster that it is most like. There were three main multi item scales: Technology Confidence/Ability, Teaching Approach (Traditional and Non Traditional), and Curriculum Technology Integration. Comparisons were made between the pre (prior to QTL) and post (after QTL) surveys for each of these scales. Pre to post differences were tested using a paired samples t-test for determining if the change in mean score was significantly different.

The intensive data collection was necessary to answer the key questions of the case study:

Was the QTL staff development successful for Botetourt County?

What were the specific results of the program?

Did the teachers increase their skills in technology?

What was the impact of the QTL participation on instructional practices and the usage of technology?

What factors contributed to these results?

RESULTS OF THE QTL PROGRAM

Results of the program were extremely positive and exceeded the original goals set by the district. The implementation of QTL was a huge success and was echoed at every level in Botetourt County. The teachers were positively impacted with increased technology skills, increased incorporation of best instructional practices and technology into the curriculum, greater collegiality, common level of teaching standards and a higher degree of professionalism. The student outcomes were perhaps the best story to tell since they were ultimately the recipients of the drastic effects. Students became more active participatory learners; very difficult, unreachable students experienced significant turnarounds and test scores correlated to the newly employed QTL techniques for reaching all students.

Successful or Not?

Unequivocally the answers were always a strong yes to the question, “Was the QTL staff development program successful for Botetourt County?” The leadership of the district clearly feels that the Quality Teaching and Learning program met and often exceeded the original goals of the initiative. The champion, Dr. Dixon stated:

“Everyone has changed as a teacher. You cannot force collaboration but this happened naturally during the QTL course. The impacts and results of the program are priceless. The philosophy of QTL was right for Botetourt County.”

H. W. Scott who worked closely with Dr. Dixon echoes this view. He noted:

“QTL had more impact than has ever been done. QTL has established a new baseline standard for everyone It has raised the bar (on teacher performance).”

The new Superintendent said:

“QTL professional development complements the district’s overall directions in a nice fashion. We were able to cover a number of bases with QTL. With the new evaluation, teachers are being pressed and QTL gives teachers more in their toolset to meet the responsibilities and expectations. We have had lots of teachers pushing to go to QTL. This reaction says a lot about the worth of the program.”

The Deputy Superintendent commented:

“QTL is the best I have ever seen because it focuses on intent with practical experience gained during the course. It has a holistic view of the classroom. We raised the bar for all Botetourt County with QTL training, by providing effective instructional practice first, then enhancing with tools and peripherals.”

Another district person stressed:

“QTL was well structured, well thought-out and fit our need. It was one of the most effective uses of instructional practices with the integration of technology for the dollars and the time. We did not have to invent; it was ready instantly.”

Other administrator comments:

“QTL worked for everyone It has been a boom to the entire system.”

“We have developed a QTL culture. Naturally we are still in transition but what is happening is extremely positive and smooth. Teachers are thrilled with the new culture and this causes the more reluctant ones to get on board. Those who have gone through QTL are dying for more, hungry to move to a deeper step. Wonderful transformation.”

“The staff says it works.” (That is a sign of success)

“There has been a systemic change It has been institutionalized across Botetourt County. That is certainly a success story.”

The school administrators’ views mimic the views of the district office. Discussions with the 12 school principals produced the resounding comments around the success of the QTL program.

Some of the principal’s remarks about the success of the program are as follows:

“This was the best professional development program we have ever had. I have not spoken to anyone that has gone through QTL that is not extremely enthusiastic about it. That fact alone speaks to the goodness of QTL.”

“QTL helped all the teachers greatly. They saw the benefits of the integration of technology that fit into their day-to-day curriculum and they began to use immediately.”

“Absolute Success. I have witnessed the comfort level change in all the teachers. They obtained cool strategies and techniques that they are utilizing on a routine basis.”

“I have seen great results. The district and schools had done lots of book study of Marzano but we had more the theory of the research, not as much the implementation. The wonderful thing about QTL is that it pulled all things together, both research and how to apply, reinforcing our previous efforts.”

“QTL has provided excellent service to the teachers and the students. The ultimate test of success is that it makes a positive difference for the faculty and students. Teachers are using what they learned immediately upon return to the classroom and passing this on to the students. The program is a great bargain for the money and the time invested.”

“QTL was very successful for our school and Botetourt County at large. QTL planted the seeds on how to support quality instruction, opening our eyes to different ways to approach the teaching and learning environment.”

“QTL has been a big success for us. The teachers are really on fire after returning from QTL training. This program forced our hand to jump into technology in pedagogy.”

“QTL was so much more meaningful and beneficial than any other professional development program. I have seen great things happening throughout the school and the county.”

“QTL made a real difference in job satisfaction for the teachers. They have gotten the picture of the ideal teaching and learning environment. They realize that they can be more of a facilitator, which takes a load off them.”

“QTL is chocked full of good research-based instructional practices with how to integrate technology as an added bonus. Teachers have come light years in a very short time. QTL brought it all together.”

“QTL has tied so many initiatives together . . . helped components gel in the minds of the teachers. Professional development has been piecemeal in the past, not a full picture of the vision before. QTL helped crystallize this for Botetourt County.”

“QTL has helped our school make great strides.”

“QTL gives teachers more tools to reach the tough students. It amazes me as to kinds of activities teachers and students are engaged in so quickly.”

“Major success to our school. It was great for those who were already technology savvy, but even better for those who thought they could never do. It has breathed new life into our schools.”

“I expected complaints but there have been none. I am surprised that there is absolutely no griping in the teacher’s lounge. The teachers truly enjoyed the staff development and they realized the value and began to utilize instantly.”

The teachers were very vocal in stating their opinions as well on the success of this ambitious rollout of QTL. Some of their statements included:

“It was the best in service staff development I have ever done. I found everything to be useful in my day-to-day teaching environment. It has totally changed my confidence level with technology. I have made major leaps in using these new techniques/practices.”

“QTL was an extremely successful program. It built a high level of confidence in the teachers because it was such hands-on training. It was the best professional development I have ever attended.”

“This was very good for the county, very good for the teachers and very exciting for the students. Without question this was the best professional development ever.”

“It was well worth the time invested. Technology has become embedded. We are using as a normal part of presenting the curriculum along with new learning styles and differentiation.”

“QTL was the best ever. It covered a much broader base – technology plus pedagogy. It shows you how to put more responsibility on the kids.”

“Phenomenal course. Best ever professional development in 27 years of teaching. Forced me as a veteran teacher to rethink how I do curriculum delivery.”

“I saw major value in the multiple intelligence and learning style inventory. I am now doing for 7th and 8th grades and it is helping me reach some of the students that I was not reaching before. To me that is success.”

“QTL has improved my professional life immensely.”

“QTL was really great. It totally empowered me as a teacher.”

“QTL has really worked for our school. We are fighting for resource usage. Great indicator that the course was successful.”

“QTL got me out of a rut.”

“QTL helped move our school upward. The timing was good with our content enhancement initiatives. We have steady progress underway with quite a few cases of huge improvements.”

“QTL helped me make connections. It was a great way to understand the school as a whole and the overall big picture of the district.”

“QTL amazed me at how it took technology and used it as second nature in the classroom. Previous technology training has been for the sake of technology. QTL was for the sake of teaching.”

“QTL far surpasses other professional development. It incorporates best practices into the classroom as a whole, setting a much higher standard of the ideal model classroom.”

“QTL covered a much broader perspective across the whole teaching and learning environment. It touches all students from gifted to those at risk. I now have techniques for reaching all kids every day.”

“QTL program taught me creative ways to apply new things. I left there with things to implement immediately.”

“QTL showed me how to apply. Many teachers know the theory not the application.”

“QTL is non-threatening and sticks with you because of the hands-on.”

“QTL’s approach to teams allowed me to learn even more through osmosis. It was a very successful endeavor.”

“QTL was the best the county has ever provided.”

“QTL was very valuable as I learned a whole lot I was missing as a teacher. It helped me to establish a new mold and standard.”

“QTL created a complete turnaround in my teaching and learning environment. I left with a wealth of information that I could incorporate immediately.”

“Other professional development classes were workshops, lectures, telling me about cutting edge strategies. Telling is not teaching. QTL builds concepts from the bottom up. Surpasses anything I have ever done.”

“QTL is about instruction and how technology can enhance this. Botetourt is strong in instruction but not on application of technology into the teaching and learning environment. QTL was a perfect professional development for the needs of the county.”

QTL taught me lots because I am very structured. It opened my eyes to new approaches that reach all learning styles of students. I am so grateful.”

“QTL was fabulous. Even though I am very comfortable with technology I still learned lots.”

“QTL helped us to know how to excite students with education. Now that is success.”

“Our school in general has experienced a major improvement. Teachers are working closely together, becoming a closer-knit group. Everyone is picking up new ideas and feeding off each other.”

“Evidences throughout the school that there has been a transformation. Higher level learning is exhibited in most of the classrooms.”

“Teaching is fun again.” (20-year veteran)

Teacher Impacts

The teacher’s impact from the QTL program was tremendous. Naturally, everyone had a different starting point. The longer-term veteran teachers were usually less familiar with the technology and perhaps with the applied best practices of instructional theories. Even though Botetourt County had devoted concentrated time on Marzano research-based instructional practices, there were missing linkages to the “how to do” portion of the theory. The recent graduates from colleges had much of the QTL principles both instructional practices and the technology applications but all of them felt they learned lots from the QTL staff development. The major impacts centered on increased technology confidence/ability; increased usage and integration of technology into the curriculum; effective use of instructional practices; greater collegiality; equalizer as teachers; and growth as professionals.

Increase of Confidence/Ability and Integration of Technology

The increase in both comfort in technology and integration of technology into the curriculum were very evident across all the participants. Ninety-one percent (91%) of respondents indicated an increase in confidence and ability related to using technology in the classroom. Prior to QTL training, 41% of the respondents indicated primarily personal use of technology and these were not sophisticated usages. Prior to QTL, 52% of respondents indicated student use of technology. However, much of the usage was lab versus classroom and was often “drill and kill” or accelerated reading testing as opposed to an extensive curriculum content learning. After the QTL staff development, the respondents’ confidence and usage had significantly changed. The classroom activity dealt with deeper usage of multiple technologies during classroom lesson plans.

Using the multi item scores from the cluster analysis the index scores for confidence and ability increased significantly from the pre to post surveys. Also the index scores for technology implementation into curriculum increased significantly from pre to post surveys.

Some evidences of the increase in technology competence and increase in usage of technology into the curriculum are proven by the participants' comments:

“I've learned how to better incorporate technology into the classroom. I recently started to use the schools LCD projector for PowerPoint presentations I am more comfortable now with PowerPoint presentations, digital cameras and Web navigation.”

“QTL has impacted my teaching practices because I now have some “hands-on” practices to incorporate into my instruction, as opposed to mere theory. Before the training, I understood the value of instructional technology; however this training has given me some practical application of instruction technology theory.”

“The QTL program has enhanced my knowledge of and improved my comfort level with technology in instructional settings.”

“QTL training has given me more confidence in using technology in my classroom as well as provided me with more strategies for keeping students interested I am more comfortable creating Internet research assignments that allow for student discovery rather than teacher-centered instruction.”

“QTL has given me the confidence to try more technology based activities with my kindergarten students.”

“I am integrating technology with more confidence and frequency in my lessons.”

“I knew much of these concepts but after QTL I am much more oriented to what and how best to use each piece learned ways to implement”

“The QTL program has been very valuable to me because it has introduced me to software that I know of but am not familiar with. It has given me hands-on experience with these programs so that I am able to incorporate this technology into my lesson plans.”

“I am no longer intimidated with technology usage in my classroom.”

“The QTL program has provided valuable information in how I can use technology in the classroom the class has given me more confidence in different ways to use PowerPoint as a teaching strategy.”

“The program has taught me how to put what I learned to use in the classroom.”

“QTL has been the best workshop for me, because it not only inspired me to make use of more technology in the classroom, but it also gave me the confidence to use it effectively.”

“I feel more confident in using technology in the classroom.”

“Previously the equipment in our school basically collected dust. Now we are constantly using the labs and every computer we can get our hands on.”

“Evidence throughout the school that there has been a transformation equipment sitting before is now fully utilized and more is requested.”

“The QTL program has given me the confidence I need to experiment with different computer programs.”

“I feel that QTL has had a positive impact on my overall confidence and ability. QTL has provided me with many new skills that I can draw on as part of my instruction.”

“I feel more confident teaching technology components to kindergarten students.”

“I had started using some technology two years ago in my classroom, but the QTL training has really boosted my confidence! I’m ready to try anything now!”

“I am using technology much more since QTL as well as the instructional strategies. We are using PowerPoint presentations and building portfolios using digital cameras.”

“We are using the lab much more often. We used to go only once a week. We have embedded technology into the curriculum as a normal part of teaching.”

“I was very limited before in the use of technology. Now I am at the middle school student’s level and I feel good about doing many practical things.”

“I am much more confident using technology and we are doing lots more in the classroom. Our lab activities are much more advanced projects that my first graders can do without difficulty.”

“I am using technology in the classroom 110% more after QTL because I am confident in using the technology and in troubleshooting.”

“I am signing up for additional lab time to use with my daily lessons as my second grade students are flourishing with these added activities.”

“Before QTL I was not confident at all, a true novice. Now I am very confident and we are using technologies tons more. I have fine tuned my lesson plans and have incorporated technology as an integral tool of my curriculum.”

“Before QTL I could use technology but it did not feel natural. Now technology has been incorporated into my day-to-day teaching and learning environment.”

“Before QTL I was average in using technology. I had some training in bits and pieces. With QTL’s intense program I learned lots and feel extremely confident employing technology. If we had more PCs in the classroom, I would integrate more. We are using the lab at least 3 times per week. My first graders are so creative with their lab activities.”

“This is my first year teaching and I know much about technology and theory based instructional theories. Yet I picked up many tips. I had never used Kidspiration and United Streaming.”

“QTL has totally changed the environment at the school, I have to hunt for available equipment and schedule checkout well in advance. The lab times are switching to flexible hours to allow appropriate time for project week. A separate K-1 lab of IMACS has been setup, which is another indicator of transformation at the school.”

Effective use of Instructional Practice

It is more difficult to quantify QTL’s impact to the participants regarding the effective implementation of instructional theories. This could be because the label is often not as paramount to the teacher as the actual application of the instructional practice. The questionnaire itself may not clarify the questions readily for pinpointing specifics. Still the number of responses to the Day 6 Reflection showed 50% of the participants indicated that QTL had made a difference on their usage of best practices of instructional theories. The one-on-one interviews drew stronger results of sound instructional practices being employed once they had had the QTL staff development. The index scores from the cluster analysis also yielded a significant rating on the increase in non-traditional teaching practices between pre QTL to post QTL. All of this analysis proves that QTL caused a more effective use of instructional practices across much of the teachers.

Some of the specific comments from teachers and administrators regarding effective instructional practices are as follows:

“I have a better understanding of learning styles and multiple intelligences I now find myself wanting to know more because I am trying different methods and styles. This was time well spent.”

“. . . . I also learned that students all have different learning styles. I learned what the term “constructive learning” means. Though I taught many lessons this way, I feel more comfortable using this strategy now”

“I am excited about the instructional tools that are included in the program and began including them in my lessons from the first day of training.”

“ . . . The program has also enabled me to “let go” more in the classroom and encourage students to use the learning strategies that work best for them.”

“ . . . I have also become a bit more comfortable with giving students more autonomy in my classroom. I am trying to understand that what may seem like chaos may be helping to accommodate various learning styles. This remains a challenge, though, when dealing with general classes where students need constant prompting.”

“I . . . try different ways to involve my students in learning. . . This class has made me more aware of these things and their importance. This course has reaffirmed some of my beliefs about student learning and made me more reflective of my teaching practices.”

“I immediately went back to the classroom and started implementing the practices that were introduced to us on day one. It has been awesome for the children and has been just as wonderful for me. They are trying things on their own now that they would have never tried and those who are more able, feel very comfortable helping those who are confused.”

“It has refreshed my memory of many of the teaching practices, theories and strategies I learned in graduate school. I have attempted to use constructivism in some of my Math and English lessons.”

“It has opened my eyes and encouraged me to take more risks with my teaching style and to dare to try new things. I also look for different ways to present material.”

“While the technology aspect of QTL was wonderful, perhaps the greatest benefit for me was learning in a concrete way how to address the multiple intelligences among my student population. Although I realized I was not reaching some of my students, I felt frustrated in finding new, practical teaching techniques. Since QTL, however, I have seen the proverbial lights come on in the eyes of my students.”

“I am able to change the dynamics of my classroom. I can utilize these learning strategies to increase student understanding and retention of the knowledge gained. Through QTL, I’ve learned that it is all right to let go of control of the class.”

“QTL has . . . helped me to be more aware of learning styles. I think that I have always been aware of them because the children I serve are extremely diverse in terms of age, abilities, and degree and impact of their impaired vision. . . The one that has been most useful to me has been multiple intelligences. I’ve really been trying to approach information and even skills learning from various approaches.”

“ . . . this will make my kids feel empowered with ownership in their learning. These new lessons will also target most learning styles, enabling my students to produce more successful results.”

“I know that I have at least been thinking more about the learning styles. There is a wide variety of activities in my classroom and I believe that many, if not all, of the learning styles have been used.”

“I am trying to give the students more say in the way they are doing things in class. I think so much of what we learned in content enhancement goes right along with QTL.”

“The first thing the QTL experience affected was my personal evaluation of my teaching practices and my thoughts toward ways in which I could improve them. I have tried to plan ways in which I could use different teaching styles, incorporate the involvement of more learning styles and use technology more in my classroom.”

“I have put my entire curriculum onto an online application and am making major leaps to using many applications. I have also begun to use rubrics for student assessment.”

“I am seeing great results. I have observed more cooperative learning and other instructional strategies.”

“I have seen many movers and shakers in our school. They are doing what they learned immediately upon return to the classroom and are passing it on to other teachers. Amazing results.”

“I am much more comfortable and there is a higher level of learning occurring in the classroom with many of the instructional practices.”

“QTL made me aware of learning styles and I am incorporating this as I prepare my lessons.”

“QTL was truly an immersion approach, giving you so much information and allowing exploration in various directions. The course takes everyone where they are and brings them along. A wonderful example of how to teach.”

“I believe in the new instructional practices from QTL. I am much more sensitive to the student’s natural curiosity, giving them more time to explore and more choices. There is much more critical thinking at play.”

“QTL provided clarification of some of the concepts that I was aware of around instructional practices. It provided the confidence I needed to utilize in my day-to-day curriculum.”

“QTL was a big plus especially the reminders around instructional theories. It reinforced things that I knew but were less top of mind than needed to be. I am employing these theories more as a norm. Once I set the boundaries and rubrics that I learned in QTL, I am more comfortable turning these students loose to learn.”

“Regarding instructional practices, I was using but did not know the proper name. It was good to reinforce the best approaches.”

“We are doing lots of similarities/differences and compare/contrast activities. The kids enjoy this.”

“During class we were encouraged to model and practice (hands on) instructional theories. This gave us the skills to do in our own world here at the school.”

“QTL taught me to observe students during lessons and go in different directions in order to reach certain kids. QTL taught me to think on my feet.”

“QTL opened my eyes. I realized that my own structured learning style was important in employing the best practices in the teaching and learning environment. I must be aware of all learning styles for each student.”

“When I employ effective instructional practices learned in QTL I change the picture of the teaching and learning environment. I can be more of a facilitator which takes a big load off me.”

“I am willing to release control to my students. As a new teacher QTL helped me to do this, letting kids make choices and ask if they need support.”

“I have learned to delegate and turn over to the students more of the ownership of the learning. Kids love it.”

“I have gone from a controlled, structured environment to multiple teams at the same time with reading corners, circle seat centers etc. I have basically taken down the fences. All the constraints were artificial that I put there myself. With QTL I learned it is OK not to lecture and to empower the kids. They are great at navigating through the problem solving and helping each other. I kept waiting for fallout but it did not happen.”

“60-70% of my time is spent more as a facilitator than a teacher. It was hard for me to give up control so I tested the waters slowly. Kids are so on task and I can even leave the room for a cup of coffee with no problem.”

“I have learned it is OK not to lecture and OK to empower kids, allowing them to navigate through the problem solving.”

“QTL was a great refresher for many of the known strategies. I am using rubrics to self assess. Even kindergarten students can do assessment using smiley faces etc. My lesson plans have changed to more exploration, inquiry learning.”

“I am more visual, possibly neglecting my audio learners. QTL helped me to think about these type things in planning my lessons.”

Collegiality

The QTL staff development broke down the isolation of the teaching profession. Communications and comraderie have been transformed throughout Botetourt County as a result of the faculty's time together. The change in social relationships among the school faculty was very obvious to the district office and school administrators. The change was so profound that one principal described QTL as not only a program of best practices for instruction with heavy technology integration but also a social development program. Administrators loved this outcome.

The teachers themselves recognized the surprising social aspect of the classroom and project activities. Initial walls were broken down throughout the professional development classes. Then during the collaborative project required by QTL for Day 7, further teamwork and stronger bonding occurred. The teachers realized the worth of working together and sharing ideas, expanding their growth as professionals. For example, a great by-product of the QTL program was the increased visibility of the Botetourt Technical Education Center (BTECH) with the two high schools. BTECH offers technical and vocational training for students from James River High and Lord Botetourt High. This created better linkages between the academic paths and the technical/vocational paths. As the principal of BTECH noted, the new awareness allowed a smoother transition of students from the high school curriculum to the BTECH courses. Prior to QTL there was not a mutual understanding and appreciation for each path. After QTL there was an overall perception change among the three schools and a new realization of how much science and math are involved in cosmetology, for example.

QTL put teachers in touch with a broader community of educators in their discipline or grade level. E-mail communications within a school as well as across other schools to teachers of similar class content have become common. They have begun to exchange ideas and share resources across the district. As one teacher said that there was no need to reinvent the wheel. When her class was ready to work on the American Indians unit she contacted a colleague at another school. She knew that her colleague had done some wonderful creative work on the unit and asked for her PowerPoint presentation and other artifacts as a starting point. She then embellished the PowerPoint presentation further and returned the updated version back to her colleague. QTL was the catalyst for these types of cross boundary sharing. Administrators see this as priceless.

As one district office person noted:

“There was a collegial aspect across the system as a result of QTL . . . created bonds between teachers, opened awareness across the board, built teamwork.”

The perspective of some very new teachers was as follows:

“Being fairly new to the Botetourt it was a joy to meet so many people in the county and feel more connected to the system. I now have resources to tap for future information.”

“I developed relationships outside the school, meeting some teachers my age. It was also a great way to meet and learn the staff from my school since this is my first year.”

“Great way to learn brand new teachers overnight.”

Other comments about collegiality included:

“The social dynamics has not been just with the teachers. We have established some tech buddies where kindergarten and 4th grade work together on projects. The teamwork was awesome and the kids loved it.”

“Since QTL we have peers teaching each other at the teacher level and the student level.”

“The whole community was brought together based on the QTL collaborative project set up to pay tribute in the loss of a teacher. Various local businesses contributed toward a garden in the teacher’s honor.”

“The social dynamics have been one of the most surprising outcomes. Groups that normally would not work together are engaged now, even having lunch together. Business and PE teachers are working together, German and World History. QTL truly brought our faculty together like no other professional development has.”

“Within our school there is a tendency to remain isolated. QTL helped me to develop great friendships and also opened my eyes about how things I am covering relate to other classes. There are linkages.”

“The social changes are incredible. Great friendships were built during QTL. Some of us went to the beach together this year.”

“QTL moved us outside our little box.”

“I see teachers going to each other for help and support with the new QTL concepts/technology.”

“Being in class with BTECH teachers was a real eye opener. Now I understand how closely their curriculum relates to the academic course structure.

“QTL sparked teachers to work together. Now we are a tighter knitted group of interdisciplinary teachers at Central Academy Middle School.”

“Teachers are closer, more cohesive and we are more dependent school-wide.”

“QTL caused faculty to talk with each other more. QTL is discussed often. Everyone wants to know what each other are doing. It is feeding on itself.”

“This has broadened my perspective. It has given me new sources to tap for future information.”

“Those teachers that are more proficient reach out to help others who are less so . . . creates stronger bonds.”

“The county-wide sharing of ideas and plans speak volumes of the impact of QTL.”

“I built even stronger relationships with those I knew and got to know teachers from other schools. This was a good by-product I was not expecting.”

“My gushing level of excitement rubs off on others less enthusiastic.”

“Resource and classroom teachers have become even more connected, integrating their work in both classes.”

“I have noted a more willingness of staff to share in general since QTL.”

Equalizer as Teachers

Botetourt County district leadership envisioned the same QTL training for every teacher and worked hard to find the funding to make this a reality. This has been a wonderful situation for the faculty. As one principal mentioned in the past there had been smatterings of training with a select group of teachers, often the most progressive. The great teachers kept getting better while the others fell further behind. Having district-wide staff development put all the teachers on equal footing. Another principal echoed the same view. She said, “We usually never sent the less likely teachers. This time with QTL everyone got the same training. Now the expectations can be the same for all. This allows follow-up and accountability. I am a major proponent of all teachers being trained.” The district-wide training allowed for fundamental changes across the entire school system. All staff returned very excited when they finished QTL and even a year later there continues to be lots of excitement and drive. QTL showed all teachers ways to incorporate technology into the curriculum and built stronger levels of confidence even in those participants who felt that they could not master it. As the new Superintendent noted, there is a goal for Botetourt County to keep all teachers at this level, indoctrinated with QTL principles. A local QTL instructor has been trained to carry on the program and to update newly hired teachers to this same professional level.

Some comments to re-iterate these equalizing results are as follows:

“QTL got all teachers exposed to the same standards. We are now on equal ground.”

“I am more willing to go out and ask for help since each teacher is speaking a common language.”

“Teachers encourage each other since all have common themes.”

“We are able to ask others for help because we are all on a common base.”

“QTL got all schools to the same level with much higher standards established. It was wonderful equalizer.”

Professionalism

An original goal from the district office was to raise the level of professionalism across the school system. This goal was certainly met with the rollout of QTL in Botetourt County. A higher standard of teaching was established. Most teachers stretched themselves far beyond their starting point, growing in skills and in knowledge. They learned the best practices related to the research based instructional theories, how to incorporate technology into these best practices and how to reach all students. Their teaching and learning environments have been elevated to best practices levels. QTL staff development creates a highly professional atmosphere to begin with. As one district office administrator said, “ExplorNet has tremendous knowledge and experience, with excellent instructors leading the daily training cycles. These instructors connect with the participants in a non-threatening/encouraging way. No matter what their starting point they are able to help the teachers move out of their comfort zones to be successful.” The teachers felt they were treated professionally, like no other staff development course before. Getting an understanding of Botetourt County’s vision of education meant so much. During the QTL rollout the faculty began to realize that Botetourt County is doing lots, cutting edge stuff, more upfront with a coherent plan laid out. Botetourt County Administration communicated the long-term vision. This made the teachers glad to be associated with this progressive school system of professionals. The entire atmosphere felt different from other staff development programs. The previous programs never had time to integrate into the classroom. The format of QTL allowed the teachers time to stop and think about how to use it. The faculty was surprised at the investment in time away from school, unencumbered because of the substitute teachers. They knew this course was different and knew administrators felt the training would positively impact the teaching and learning environment. The teachers in this school system are very dedicated and want to be successful practioners with a strong desire for students to learn. They were very aware that much time and resources must be spent to make the environment a place to learn. They also acknowledged that it is easy to get into a rut and that the QTL program helped open their eyes. It gave them an opportunity to step back and reflect.

These comments reinforced the attitudes around professionalism:

“We were treated like high-level professionals. Botetourt County did not just throw the QTL training out there. Instead they stepped up with a vision and well thought-out plan to realize the vision.”

“I am so happy to see our county keeping up with the state-of-art in education. It makes me feel honored to be part of this.”

“I very much appreciated the QTL program offered and honored with the time off to complete the class.”

“Botetourt was behind in classroom/lab usage of technology compared to my prior position in another district. I felt so limited when I began to teach here. Now I am thrilled getting this wonderful professional development and the resources to take advantage of what we learned. Because of QTL our county has leapfrogged the other district.”

“Having enough time to practice and think about what we learned contributed to the professional aspect of the program.”

“I see much higher levels of confidence in the teachers as they work with their students, implementing what they learned.”

“We were treated as professionals and that raised the bar of how we all have performed.”

“The standard of professionalism has been set much higher with the QTL program. I find myself doing more formal presentations when meeting with faculty.”

“I felt proud of myself after QTL based on how much I had learned and the degree of proficiency I was able to achieve.”

“They paid us for going. That told us it was important as well as that we were respected as professionals.”

“They gave us college credit for recertification. That meant lots to everyone.”

“The QTL classes were very professionally handled. The information was never forced on us. The program allowed experimentation to fit the components that work in my own teaching and learning environment.”

“Teachers always say that they are never given time to go to class. With QTL teachers had substitute teachers to allow dedicated, unencumbered time to learn how to support instructional classrooms. They felt like real professionals.”

“QTL was a very professional class with very knowledgeable instructors.”

“Paying the substitutes made teachers feel that they were valued as professionals.”

“I feel very valued as a teacher because I was given quality time for quality training.”

Student Impacts

A true test for gauging the success of staff development for education ultimately is by answering the question, "Did it result in a positive impact to the students?" One principal remarked that teachers would accept and adopt anything if they believe that it would help the students learn. Based on the profound acceptance and adoption rates by the teachers, it was clear that the QTL program made a big difference for the students. If the teachers felt better about what or how they were teaching then the students benefited. It was an equalizer for the students, bringing opportunities to the students systematically and equitably. All students were given the opportunity to use technology in meaningful, authentic tasks that developed higher-order thinking skills. Students at all levels were more engaged, more focused when technology was employed in the learning activity. Multiple comments regarding this intensified engagement by students indicated that students were so on task that teachers left the room with no interruption in their learning. The lower grade teachers were especially amazed. Teachers also made the point that they had learned not to underestimate what students are able to do without much teacher guidance.

An interesting phenomenon occurred as a result of the QTL initiative. A much stronger connection was created between school and home. Parents noted the remarkable changes in both behavior and the interest in school in their sons and daughters and inquired as to what was happening at school. The parents became more interested in school activities. Also students realized that they could carry work home to continue on the home PCs. Parents became more engaged with the students' homework because of the use of activities involving technology. A first grade teacher laughed while commenting that her students were so proud of themselves. She said, "These young kids tell me that they are teaching their parents how to do new things on the PC."

While there are no empirical data to gauge the most important element, which relates to student performance, there are rich anecdotal data to support a significant increase in the potential for student learning, through more active participatory learning and a greater increase in interest levels. Some teachers boldly stated they knew the difference directly related to QTL because they had seen the lights come on in some very difficult to reach students. They felt their changed teaching and learning environment had been a powerful catalyst to reach these students every day. Others felt the jury was still out but their intuition told them that most likely the student performance results would be realized. Even though no precise cause and effect can be drawn regarding student performance, Dr. Dixon does believe there is a correlation to the QTL principles and the end of year scores. For the school year 2004/2005 all schools met the AYP goals. Granted many factors were at play but the dramatic changes that have been made in the teaching and learning environment after the QTL staff development have contributed to this student performance. Struggling students, or those students who are toughest to reach, are often the ones resulting in extremely positive changes by the new QTL teaching techniques. One example explained by a high school teacher involved a brother and sister who had recently moved to Botetourt district. Both were reticent, at risk students not accepted by their peers and not engaged in the schoolwork. During the activities involving technology these two students shined. They helped others and became accepted overnight. This was a major turning point for both of them and they became fully engaged in all activities and worked hard to learn.

Another case was an ADHD elementary student who was slow starting and finishing his work. He never enjoyed class work. When he started doing projects related to technology, he became happy, exhibited leadership, tried harder and got better scores. He was so proud, sharing the results with his parents. The teacher said, "It was priceless."

An elementary school established a micro society. Everyone was assigned a job in the micro society, often based on who needed growth in a specific area. For example, a student needing to improve math skills was the banker, or a person who cannot be quiet was assigned the hall monitor. The banker became proud of his math skills and the hall monitor had a behavior modification. A learning disabled student who had problems with absenteeism became so proud of himself and his assigned position that he would not miss school at all. These positions rotated throughout the school year

Some of the comments from the teachers and administrators about student outcomes were as follows:

"I am able to reach a lot more students using technology, project-based environment than lecture."

"Some of the more difficult students at the high school like to work with new technology, often volunteering to do the work."

"The least likely to assist others are helping other students."

"There have been major attitude changes. Students are taking more responsibility for their own work."

"A very insecure student excelled at a PowerPoint presentation. She gained instant respect and also self esteem. She has made a drastic change in her appearance and attitude."

"Students love the fact that they can choose various technology. They are so creative. They participate more and remain focused."

"I had no C's in my class this year. I'm not sure I can totally attribute all to QTL learning but what is to say it was not what made the difference?"

"I have seen major progression with my students since I am using what I learned in QTL."

"Students are motivated by technology and go above and beyond the requirements of the assignment."

"Even anti-social kids tend to bloom when QTL techniques are used."

“Both learning behavior and social behavior improved with technology integration into the lessons.”

“Once the kids light up to doing the new QTL type activities with technology this helps those naysayers / draggers to get on board. They know as teachers that they will lose these students if they do not keep up.”

“Technology integrated into the curriculum helps to reach all kids. I have seen handicapped students (LD, ED and failing students) discover they can learn and they try harder and do much better. I have seen potential dropouts have a turning point when they became engaged with our new QTL approaches. The gifted, who often get ignored, can advance even further with technology projects.”

“My lower-end kids are helping the higher-end kids in some of the technology activities. Peer-to-peer teaching begins and carries over from the tech activities to other work.”

“My special education class did better than my regular class on a comparing/contrasting exercise on the American Revolution.”

“Some less academic kids showed more interest and on task in courses with technology integrated.”

“Students tell me technology helped them understand quicker.”

“Students love the open-endedness of the projects because it allows them so much creativity.”

“I can trust students with more of their learning now that I have employed QTL techniques.”

“Now that I have changed my teaching environment because of the QTL information, my kids learn faster, retain more and apply their knowledge better. This is exactly where we want them to be.”

“I have seen so much progress with students on language. I am not sure what all accounts for this but I am certain that technology helped.”

“K-2 kids need ways to connect in order to learn to read. Technology makes that link easy.”

“My students have developed friendships because they are working in small groups, paired assignments.”

“My first grade kids are 10 times better this year in writing. I account much of this to technology because it is so much more interesting and fun that the kids want to do more. They love using pictures and clipart to describe their writing.”

“When students engage in technology work they want you to see what they have accomplished. This does not occur when doing a worksheet.”

“Since QTL ideas are employed this has cut down on our discipline problems. There is none occurring in the lab anymore.”

“One of my at-risk students that has both psychological and academic needs is very mechanical. He can do great PowerPoint presentations. This has helped build his self esteem and allowed him to express himself so he is trying harder with other work.”

“When employing many of the QTL instructional practices and integrated technology, it allows higher level learning. It lets them question things and releases ownership. We had great discussion around the Great Depression and WWII.”

“Using some of the project based learning of QTL, I find my students learn the information far deeper than before. One of my kindergarten kids told me that he would never forget this as a student.”

“In my first grade there is a broad span of learning more so than other grades. Sometimes we take for granted if slow going at the beginning it is going to be slow forever. Perhaps this is true if you use the same learning approach. However, after QTL I offered different options and saw major improvements in some kid’s grasp of reading. They closed the gap by themselves.”

“Even if my first grade student is slow at reading but highly motivated with technology he becomes a contributing part of the group. Others then tend to help him, opening windows for peer-to-peer learning.”

“Many times the slow reader group is most creative and excels when doing technology related learning and critical thinking activities.”

“After QTL my students learned sentence composition faster. They learned spelling patterns better.” (1st grade teacher)

“One of my students falls into the lower reading group; does not stand out. However, in the lab she is a whiz. This has helped her overall academically. Her grades and self esteem have been boosted and the other kids have a different view of her.”

“Visual cues from the PC carryover to the reading skills.”

“Students have a greater opportunity to creatively express themselves.”

“QTL techniques give students a higher recall because they can internalize the materials more using video, Internet, slide creation etc.”

“We have inclusion in our classroom. I have 6 LD students and 1 ED student so incorporating the PCs gives them a better outlet to show what they have learned.”

“There is a greater depth of knowledge gained using some of these best practices for our units.”

“Students have improved engagement, excitement and enthusiasm. This is great to see since they can only learn if engaged.”

“Even hard to reach students participated and presented projects to the faculty. Unbelievable to witness.”

“High risk students work more diligently and produce quality work when using PCs. They can work independently.”

“I tend to get a higher quality of work from my students using QTL techniques and technology. They often take to the next level even though not required.”

“I have seen total and complete student engagement. I have not seen any behavioral issues. Amazing results.”

FACTORS CONTRIBUTING TO SUCCESS

As described earlier, clearly the QTL program rollout for Botetourt County has been an enormous success. The key factors contributing to this sweeping success can be grouped into the following areas:

- QTL Program Itself
- Leadership
 - Vision
 - Plan
 - Action
- Resources Provided
- Accountability / Measurement

QTL Program Itself

The Quality Teaching and Learning (QTL) program itself was a major contributor to the successful transformation to a higher level of professional standard for the Botetourt County

faculty. Both district and school level administrators and teachers alike reiterated the excellence of the QTL program. As a district administrator said, “The QTL program itself is excellent. It brought isolated pieces together and made practical sense.” The previous training on research-based strategies did not emphasize the how; QTL showed the teachers how-to by incorporating technology into the curriculum to enhance best practices of instruction. The program was a perfect fit for meeting the county’s needs and fulfilling the vision laid out by the district leadership. Furthermore, QTL sold itself. When the first group of participants experienced the training they spread the wonderful news to the rest of the faculty and everyone was pushing to attend.

The format of QTL is excellent as well. It meets the teachers at his/her individual starting point and builds from there. The intensive seven-day program, spread over multiple weeks, allowed depth of learning and experimentation that surpassed any other course the staff had engaged in. Having time to explore and to ponder what they had learned in the QTL classroom and then return to their own environment to put into immediate action had major impact. This extended course allowed a strong level of trust to be built between the instructor and the teacher for deeper learning opportunities. Instructors were extremely knowledgeable and brought much experience to the teaching environment. A teacher noted, “This was a course that is geared to teachers and the instructor understood us.” QTL looked at the whole teaching and learning opportunities, providing a broader perspective than any of the other targeted courses. As one administrator noted, “QTL was successful because it focused on intent.” That intent was to make the teacher the best that he can be by teaching him best instructional practices integrated with the latest technologies. As another teacher so aptly described QTL, “This course correlates directly to the students.” The heavy hands-on aspect of the program allowed quick mastery of the course content. All participants were surprised at the wealth of information gained in this course and how proficient they became in fitting what they had learned into their day-to-day curriculum. Another uniqueness of QTL that made the course superior in format is the mix of the classes. Typically teachers are isolated with little time for collaboration with peers or professional reflection. Teachers across the district attended each cycle allowing unprecedented time with their peers to develop strong personal and professional relationships. This sparked a deeper collegiality than one principal had ever imagined. He said, “This was a wonderful by-product of the program that I had not expected.” The required collaboration project of the program developed teamwork and cross-pollination of different grade teachers. Working together and sharing ideas they were able to progress even further than would have been possible on an individual basis. One teacher commented, “Our bonds are much stronger. We find the strengths of each other and stretch ourselves to be even better professionals.”

A final note about the greatness of the QTL program is that it has a perpetual life. A twenty-year teacher believes that the novelty of the QTL program has true staying power. He said, “What you learn during the classes just keeps you digging; couple that with technology and there is an endless vessel of information at your fingertips.” A very enthusiastic veteran teacher said, “The carry over of what I learned in QTL to both my professional and personal life is enormous. I have a notebook full of options to try which will last forever.” Many other teachers pointed out the cross over of information from QTL to other parts of their life. A high school principal noted the high level of excitement and drive in his school a year after all the teachers had completed QTL. That spoke volumes to him about the sustainability of the program. An assistant principal

said that the program is self-sustaining because the teachers see the benefit so they will keep embellishing what they learned for an even greater enriched teaching and learning environment. QTL is indeed a powerful class that keeps on giving!

Leadership

Vision

Leadership has been prominently exhibited from beginning to end of this endeavor. The district office established a vision, laid out a well-defined plan and then set this plan into action with strong determination. The vision for Botetourt County was derived from years of knowledge, progressive thinking, proper alignment with state requirements and collaboration within the district office. All instructional supervisors were involved in setting the direction. This vision connected the dots to many of the standalone district initiatives. The QTL program was launched with a long-term goal in mind. As one of Dr. Diana Dixon's colleagues explained, "Diana Dixon deserves much of the credit. She is a big picture person. She saw the vision and had the courage to drive forward." H. W. Scott, her partner and advocate of the QTL program, commented that she was the true champion who believed in the mission and devoted lots of time and energy to the success of QTL. District personnel were very prepared to lead this significant change initiative. A teacher referred to the central office as, "great planners, great visionaries." The big picture strategic view for education was shared with the school level administrators and they all attended a two-day workshop on QTL. Furthermore, the QTL staff development itself helped crystallize the vision for all the teachers. The district clearly understood the county's needs and took progressive steps to fill in the gaps in curriculum, instructional, professional and technological areas.

Plan

Next a comprehensive plan was laid out to describe where Botetourt County was going with the QTL staff development. This plan linked the QTL program to the SIP goals of the schools. It was envisioned from the onset that all teachers district-wide would be trained and would be provided high-quality substitute teachers to allow unencumbered time to concentrate fully on professional development. Risks were identified and obstacles to success were minimized. The biggest issue revolved around funding such a large endeavor. Creative planning was taken to make use of funds from No Child Left Behind and approvals obtained from both state and local boards.

Action

The action began once the funding was available. Dr. Dixon as champion, along with H.W. Scott, secured buy-in from top to bottom. Central administrators provided excellent support to all the attendees. They provided support with the teacher substitutes and also provided personal time at the QTL classes to listen and show their interest. The district personnel were visible throughout the classes and sought feedback. Any imperfections to progress were tweaked to allow continuous improvements to the process. Clearly not just lip service was paid to the rollout of QTL. They were talking the talk and walking the walk. Fortitude and courage were

openly displayed throughout the QTL staff development initiative. One elementary principal remarked, "At first I am not sure the total picture was clear. Administration listened to local feedback, tweaked the program, spent the dollars for the necessary equipment and showed commitment to all faculty. The central office continued to support the QTL program even when some negative comments were being made. They stuck to the plan and never wavered. This was an excellent model of leadership." Another elementary principal echoed this view. He said, "The central office saw the value of the program and did not look back. They remained committed to the goal . . . once they embarked they supported to the end." At the school level, principals were very engaged. Principals reviewed the collaborative projects ensuring tight connections between the project and the school's SIP goals. All QTL projects have been presented to all faculty of the school with ongoing QTL discussions occurring at the regular staff meetings. One high school principal stated, "We try to live what we say we must do . . . keep it front and center. This is the best way to institutionalize the QTL principles."

Additional remarks regarding leadership included:

"The leadership and support have been phenomenal. We say we want this application, we get it. We say we want this equipment, we get it. The central office is supportive in getting what we need to teach the way we want to teach."

"The district has been so generous. They have purchased many tools and made major infrastructure improvements."

"The QTL program rollout had strong leadership from the beginning to the end and felt different at the onset."

"I have seen real support with this QTL initiative. It seemed to be a well thought-out plan for our training and for getting needed resources to allow us to implement quickly so we could begin transforming our environment."

"They have gone to bat for us aligned supplies to our demands."

"I have never seen this much continued involvement from the higher level administration. It has been very different. Their presence sent a message of how important this was to Botetourt County."

Resources Provided

Funding such an ambitious endeavor was a big deal. Tapping into the No Child Left Behind (NCLB) source allowed the program to move forward and meet the goal of not being onerous to the teachers. Seven days away from their classroom was disconcerting to the teachers at first. However, paying for high quality coverage made them know this district endeavor was being taken very seriously. One assistant principal said "QTL allowed dedicated professional development time which immediately indicated this course was different and extremely

important to district leaders . . . when had they ever been given this much time before? “ Full inclusion with all teachers county-wide being trained was unusual and was another indication of the importance of the QTL staff development.

Timing was perfect for a QTL rollout. Computer labs were being replaced in several schools and Botetourt was able to make the newly refurbished labs look like ExplorNet’s model classroom . . . same computers, same applications, same network. In December 2003 the network infrastructure had been upgraded to high bandwidth and all wired for InterNet. The introduction of the new state funded instructional technology resource positions came at the perfect time. The four positions have been filled for the upcoming school year. Also a full time QTL trainer has been established to carry out the QTL follow-on training.

The biggest surprise to everyone was the amount of new equipment that was purchased for the schools. One teacher said he originally wondered, “Is this just another training course without the equipment resources to make happen?” This was proven to be just the opposite case. A district curriculum supervisor stated, “We asked the team what equipment was needed and we have tried to make it available. We are putting our money where our mouths are.” Another central office administrator said that they had tried to remove as many barriers to success by trying to meet as many equipment requests as possible. Everyone was extremely positive about the resources provided. Countless comments related to the equipment purchases and how these additional computers showed tremendous support and leadership from the district. One administrator said, “They have equipped all our schools with adequate resources to remove barriers to incorporation. Things like PCs, presentation carts, LCD projectors and cameras have been obtained. We are not where we need to be but we are getting there. We have come a long way.” A unique and special gesture of commitment and leadership was shown when the central office presented a box of digital cameras to each class during a training session.

Accountability / Measurement

Botetourt County’s philosophy is that you cannot improve on something you cannot measure. A new teacher evaluation form was underway before the QTL program was rolled out. Coincidentally the new evaluation included both an instructional practice focus as well as a technology usage requirement as both of these were desired behaviors the district expected to see in the classroom. One of the reasons teachers accepted the QTL training so readily was their desire to become more effective from an instructional and technological perspective; knowing that more emphasis was being placed on both of these. Clearly these evaluations will help reinforce and sustain the growth to best practices in the teaching and learning environment. One elementary principal’s philosophy is to keep tightening the requirement gradually. He said, “I will be working with my teachers on specific expectations about how we will grow into a totally modern teaching and learning environment.” A teacher noted that the QTL program itself forced accountability. She stated; “For the first time other grades became accountable to each other because every grade level was represented on the collaborative project.” She continued, “Student performance and SOLs will improve when we have the same standards across grade levels and content levels.” One principal mentioned that she would sustain and grow what her

staff had learned at QTL by presenting at faculty meetings what others are doing, by pairing or mentoring teachers and by emphasizing at evaluation time what the teacher needs to work on. The follow on to QTL, labeled now as QTL2, will reinforce and drive deeper into the institution of the best teaching approaches. The central office is very progressive and will remain on top of things. An extremely talented teacher pointed out, “If you have enough leadership, eventually everyone will get on board. Also continuing to set higher expectations each year will cause the best teachers to continue to progress and more and more instructional leaders will be born.” The pacing guides, SIPs and curriculum are reviewed and updated annually. During SIP reviews and other personnel reviews the QTL principles will be a focus. Intervention plans on an individual basis will be done if warranted.

AREAS FOR CONSIDERATION

During the research for this case study several issues for consideration came to light. They can be divided into two groupings – 1) those for consideration by ExplorNet and 2) those to be considered by Botetourt County. First those for ExplorNet’s review are the following:

- Managing the anxiety of Day 1 of QTL
- Additional concerns regarding the meeting of SOL testing requirements for participants from SOL grades
- Math teachers’ uniqueness and connection to technology usage
- Snow day impacts to QTL cycle scheduling

Those areas for consideration for Botetourt County district administration are the following:

- Plans to capture ideas/project work to allow cross district sharing and re-use.
- Broadcasting the continued success of QTL program to community, state leaders and other districts
- Maximum use of newly created Instructional Technology Resource Teachers (ITRTs) for the continued growth of faculty around QTL principles.

ExplorNet Consideration

Day one of QTL can be overwhelming to many of the participants. Perhaps there is a way to manage this anxiety and fear by making this day kinder and gentler. While maximizing the amount of information is important, perhaps more thought should be given in how to manage the psychological roller coaster that many are on in order to create a more palatable situation. Even one of the district leaders commented, “Most freak out on the first day.” Many of the participants shared their reactions to day one and much of their productivity was lost due to the high level of anxiety and shock experienced in the first hours of training. Consideration may be given to providing upfront “Reader Digest” versions of what to expect, both content, and the

“touchy feely” situation of the training. Being more sensitive to the psychological side of the equation could be helpful.

The grades requiring state level testing such as SOLs for Botetourt (3rd, 5th, 8th & 11th) struggled to progress past the SOL testing requirements, even though they would rather be teaching with the QTL principles. It is clear teachers teach to what is assessed. Consideration might be given to how to make the leap of faith or to share proof, if known, to these teachers so that they can still employ best instructional practices and master the state requirements at the same time. SOLs have created a climate whereby the teachers have become bogged down with meeting standards and forget about fun, creative ways to learn. The paradigm shift across the last 10 years from good instruction to good state test scores have taken their toll. While it may be an “irrational fear” that they must teach to the test, sensitivity may need to be given and point out why good instruction always works and can work for them.

A unique discovery was the degree of disconnect between applications of technology integration into curriculum with math teachers. This suggested that perhaps there needed to be given some thought to real world examples of technology application for math curriculums. Most likely certain math teachers have figured it out and these specifics could be shared during the QTL classes.

Scheduling of seven days for the participants can be a challenge. Adjusting and dealing with snow days created an even more complex scheduling difficulty. For those school systems located in colder climates and having training cycles falling within the winter months, consideration should be given to the timing of the collaborative project reviews and the student re-engagement after so many disruptions.

Botetourt County Considerations

One of the delights of the QTL implementation is the vast repertoire of project work, presentations and artifacts that could enrich many students across the district. Just like the teacher who used a colleague’s project work as a starting point for her class and embellished for greater content, this could be a model approach across the board. Discussions are underway to establish some meaningful online repository but higher priorities limit making this a reality. Re-using work and not re-inventing the wheel would go a long way in sustaining and growing the knowledge and application of QTL principles, not to mention a powerful model for education in general.

Everyday there are more stories to tell about reaching another child and making a lifelong modification for that student because of the changed and enriched teaching and learning environment. Communicating each of these defining moments to other students, teachers, school officials, parents, the community and ultimately to the state are extremely important. Since public relations and publicity are not usually a defined position for the school system, finding quality time to devote to such a cause is difficult. However, the amount of leverage gained from such publicity could be priceless. For example, touching one more student’s life because of a particular story would be immeasurable. Continuously spreading the word would also ensure

that the level of excitement for Botetourt County is sustained and would serve as a powerful reinforcement to the teachers on the line every day. Furthermore, other districts and the state-at-large might regard Botetourt County as the model to follow. Being jettisoned to this position could be repayment for the extensive effort and investment put into this staff development initiative.

The new state-required positions, known as Instructional Technology Resource Teachers (ITRTs), have a golden opportunity to further grow and institutionalize the best instructional practices with integrated technology into the teaching and learning environment. Botetourt County has hired four ITRTs to serve the twelve schools. It will be critically important that these positions guard against “doing it for” the reluctant teachers but instead help these teachers past the barriers to make them accountable. Currently the intent of the ITRTs is to mentor and bring the teachers along, but much pressure will come from the few resistant teachers. Providing the proper level of authority and support to the ITRTs will be a key to success.

CONCLUSION

Botetourt County’s implementation of the Quality Teaching and Learning program was an enormous success at all levels of the school system. The original goals established by the district office were surpassed and even additional unexpected positive by-products were realized. The district developed a clear set of goals and expectations that were well disseminated and understood throughout the Botetourt district. Appropriate evaluation procedures and tools were used to determine the impact of the QTL program. The conclusion was that fundamental changes have been made to the teaching and learning process. Powerful instruction is at work with technology being used to promote new learning goals and teaching strategies that are student-centered, collaborative, engaging and based on the development of higher-order thinking skills. The goal to reach all students so that they can achieve their highest potential as learners is being realized. QTL was an extremely effective catalyst for infusing technology into best instruction to help all students achieve higher levels of participatory learning. The growth in administrators, teachers and students was very impressive.

Administration gained much from the implementation of QTL. Separate multiple initiatives were underway by the central office with no clear linkages. The QTL model helped mesh these district initiatives into a clear vision that could be explained across the county. Even principals remarked that they understood much better the overall direction of the district leaders. Many teachers for the first time understood the long-term strategic direction and understood their role in the big picture. Now the faculty can be better advocates of the district directions because they see the connections. Furthermore, the district leadership has been elevated in the eyes of the entire faculty because of the dedicated commitment and leadership exhibited throughout the QTL program implementation.

The teachers were drastically changed. They significantly increased their technology skills, significantly increased the usage and integration of technology into the day-to-day curriculum, increased their effective use of best instructional practices and elevated their level of professionalism. Additional side benefits included putting teachers in touch with broader

communities of educators in their discipline or grade level and equalizing teachers across the system with consistent accountability for everyone.

Simultaneously the students experienced dramatic changes in attitude, behavior and performance. All of them showed more active participatory learning. Those students with behavioral and attitudinal problems showed marked improvements. In many cases, the most at risk students had remarkable turnarounds and had begun to improve in all areas of deficiencies. Indeed the most difficult students were often the examples shared by teachers in describing does QTL work?

The factors contributing to these outstanding results were primarily around leadership and the QTL program elements. The leadership at both the district and the school levels were exemplary. The district set the stage by realizing the vision, setting the expectations and maintaining the fortitude to withstand any hurdles. The keen foresight was clearly displayed by Dr. Diana Dixon and H. W. Scott. By obtaining the support of the Superintendent, the three made a formidable team to carry out a flawless implementation of the QTL staff development. Securing the funding, investing in all teachers with substitutes for classroom coverage, providing a robust infrastructure, purchasing the necessary school equipment and establishing an accountability process epitomized a perfect example of leadership. A single teacher did not overlook this. Everyone felt that the QTL program was excellent and well worth their time. Most described the QTL staff development as career changing and demonstrated this change with their drastically modified actions in the classroom.

The ongoing outlook for Botetourt County is extraordinary. Every plan in motion is for the deepening of what has begun with the sweeping changes of the QTL initiative. A QTL instructor is in place for ongoing training of newcomers to the school system. Four new ITRTs have been hired to further promote best instructional practices with technology fully integrated into the curriculum. A follow-on course to QTL, referred to as QTL2, is being designed for possible introduction second semester of the 2005/2006 school year. Botetourt County is clearly a progressive state-of-the-art school system that should be looked at as a model for other school districts.

Researchers at Mid-continent Research for Education and Learning (McREL)

What Works in Classroom Instruction

by Robert J. Marzano, Debra Pickering, and Jane Pollock.

Researchers at Mid-continent Research for Education and Learning (McREL) have identified nine instructional strategies that are most likely to improve student achievement across all content areas and across all grade levels. These strategies are explained in the book [*Classroom Instruction That Works*](#) by Robert Marzano,

Nine High Yield Instructional Strategies

1. Identifying similarities and differences
2. Summarizing and note taking
3. Reinforcing effort and providing recognition
4. Homework and practice
5. Nonlinguistic representations
6. Cooperative learning
7. Setting objectives and providing feedback
8. Generating and testing hypotheses
9. Cues, questions, and advance organizers

The following is an overview of the research behind these strategies as well as some practical applications for the classroom.

1. Identifying Similarities and Differences

The ability to break a concept into its similar and dissimilar characteristics allows students to understand (and often solve) complex problems by analyzing them in a more simple way. Teachers can either directly present similarities and differences, accompanied by deep discussion and inquiry, or simply ask students to identify similarities and differences on their own. While teacher-directed activities focus on identifying specific items, student-directed activities encourage variation and broaden understanding, research shows. Research also notes that graphic forms are a good way to represent similarities and differences.

Applications:

- * Use Venn diagrams or charts to compare and classify items.
- * Engage students in comparing, classifying, and creating metaphors and analogies.

2. Summarizing and Note Taking

These skills promote greater comprehension by asking students to analyze a subject to expose

what's essential and then put it in their own words. According to research, this requires substituting, deleting, and keeping some things and having an awareness of the basic structure of the information presented.

Applications:

- * Provide a set of rules for creating a summary.
- * When summarizing, ask students to question what is unclear, clarify those questions, and then predict what will happen next in the text.

Research shows that taking more notes is better than fewer notes, though verbatim note taking is ineffective because it does not allow time to process the information. Teachers should encourage and give time for review and revision of notes; notes can be the best study guides for tests.

Applications:

- * Use teacher-prepared notes.
- * Stick to a consistent format for notes, although students can refine the notes as necessary.

3. Reinforcing Effort and Providing Recognition

Effort and recognition speak to the attitudes and beliefs of students, and teachers must show the connection between effort and achievement. Research shows that although not all students realize the importance of effort, they can learn to change their beliefs to emphasize effort.

Applications:

- * Share stories about people who succeeded by not giving up.
- * Have students keep a log of their weekly efforts and achievements, reflect on it periodically, and even mathematically analyze the data.

According to research, recognition is most effective if it is contingent on the achievement of a certain standard. Also, symbolic recognition works better than tangible rewards.

Applications:

- * Find ways to personalize recognition. Give awards for individual accomplishments.
- * "Pause, Prompt, Praise." If a student is struggling, pause to discuss the problem, then prompt with specific suggestions to help her improve. If the student's performance improves as a result, offer praise.

4. Homework and Practice

Homework provides students with the opportunity to extend their learning outside the classroom. However, research shows that the amount of homework assigned should vary by grade level and that parent involvement should be minimal. Teachers should explain the purpose of homework to both the student and the parent or guardian, and teachers should try to give feedback on all homework assigned.

Applications:

- * Establish a homework policy with advice-such as keeping a consistent schedule, setting, and time limit-that parents and students may not have considered.

- * Tell students if homework is for practice or preparation for upcoming units.
- * Maximize the effectiveness of feedback by varying the way it is delivered.

Research shows that students should adapt skills while they're learning them. Speed and accuracy are key indicators of the effectiveness of practice.

Applications:

- * Assign timed quizzes for homework and have students report on their speed and accuracy.
- * Focus practice on difficult concepts and set aside time to accommodate practice periods.

5. Nonlinguistic Representations

According to research, knowledge is stored in two forms: linguistic and visual. The more students use both forms in the classroom, the more opportunity they have to achieve. Recently, use of nonlinguistic representation has proven to not only stimulate but also increase brain activity.

Applications:

- * Incorporate words and images using symbols to represent relationships.
- * Use physical models and physical movement to represent information.

6. Cooperative Learning

Research shows that organizing students into cooperative groups yields a positive effect on overall learning. When applying cooperative learning strategies, keep groups small and don't overuse this strategy-be systematic and consistent in your approach.

Applications:

- * When grouping students, consider a variety of criteria, such as common experiences or interests.
- * Vary group sizes and objectives.
- * Design group work around the core components of cooperative learning-positive interdependence, group processing, appropriate use of social skills, face-to-face interaction, and individual and group accountability.

7. Setting Objectives and Providing Feedback

Setting objectives can provide students with a direction for their learning. Goals should not be too specific; they should be easily adaptable to students' own objectives.

Applications:

- * Set a core goal for a unit, and then encourage students to personalize that goal by identifying areas of interest to them. Questions like "I want to know" and "I want to know more about . . ." get students thinking about their interests and actively involved in the goal-setting process.
- * Use contracts to outline the specific goals that students must attain and the grade they will receive if they meet those goals.

Research shows that feedback generally produces positive results. Teachers can never give too much; however, they should manage the form that feedback takes.

Applications:

- * Make sure feedback is corrective in nature; tell students how they did in relation to specific levels of knowledge. Rubrics are a great way to do this.
- * Keep feedback timely and specific.
- * Encourage students to lead feedback sessions.

8. Generating and Testing Hypotheses

Research shows that a deductive approach (using a general rule to make a prediction) to this strategy works best. Whether a hypothesis is induced or deduced, students should clearly explain their hypotheses and conclusions.

Applications:

- * Ask students to predict what would happen if an aspect of a familiar system, such as the government or transportation, were changed.
- * Ask students to build something using limited resources. This task generates questions and hypotheses about what may or may not work.

9. Cues, Questions, and Advance Organizers

Cues, questions, and advance organizers help students use what they already know about a topic to enhance further learning. Research shows that these tools should be highly analytical, should focus on what is important, and are most effective when presented before a learning experience.

Applications:

- * Pause briefly after asking a question. Doing so will increase the depth of your students' answers.
- * Vary the style of advance organizer used: Tell a story, skim a text, or create a graphic image. There are many ways to expose students to information before they "learn" it.

Applying an Information Problem-solving Model to Academic Reference Work: Findings and Implications.

Added on Sunday, July 1st 2001.

Updated on Thursday, August 31st 2006.

Cottrell and Eisenberg examine the usefulness of the Eisenberg-Berkowitz Information Problem-Solving model as a categorization for academic reference encounters. Major trends in the data include a high proportion of questions about location and access of sources, lack of synthesis or production activities, and consistent presence of system problems that impede the information-seeking process. *For the full text of this article, please view College and Research Libraries journal issue cited below.*(ERIC: IR544575)

Cottrell, Janet R.; Eisenberg, Michael B. Applying an Information Problem-solving Model to Academic Reference Work: Findings and Implications. *College & Research Libraries* v. 62 no4 (July 2001) p. 334-47.

Article Full Text PDF File:

<http://www.ala.org/ala/acrl/acrlpubs/crljournal/backissues2001b/july01/cottrell.pdf>

The Importance of Contemporary Literacy in the Digital Age: A Response to Digital Transformation: A Framework for Information Communication Technologies (ICT) Literacy

by: [Ferd Serim](#)

Added on Friday, May 10th 2002.

Updated on Tuesday, October 17th 2006.

Technology is the Big Bang that has propelled literacy into an expanding universe. Scientists, no longer able to keep up through printed journals, now understand each other's work online, through sophisticated visualizations and simulations made possible by supercomputing. Economists, unable to process the volume and complexity of financial transactions, employ armies of programmers to deploy powerful tools for real-time visualization of the flow of wealth. Visualization extends literacy by enabling people to perceive relationships hidden below the surface of vast amounts of data, and to synthesize meaning from these relationships. The challenge to "everyday people" to keep up with this expansion can only be met through development of a framework for Information & Communications Technology (ICT) Literacy, such as that proposed in Digital Transformation, and the resulting research based interventions. Information "thinking skills" are the true essential skills for the 21st Century.

Literacy has always been at the heart of the education enterprise. From the time of the 3Rs to now, being literate has been a consistent yet evolving foundation for citizenship in each cultural era. Literacy has also been used as a wedge, from the times of slavery (when teaching slaves to read was a felony) until the civil rights era, when literacy tests relied upon the inequality of schools to recreate a disenfranchised population by proxy.

In January 2001, Educational Testing Service (ETS) convened an international panel to study the growing importance of existing and emerging Information and Communication Technologies (ICT) and their relationship to literacy. Their report, Digital Transformation, has just been released, putting forth a framework for ICT Literacy that provides a foundation for the design of instruments including large-scale assessments intended to inform public policy and provide diagnostic measures to test skills associated with information and communication technology.

Published by Educational Testing Service's Center for Global Assessment, Digital Transformation states a definition of ICT literacy as "using digital technology, communications tools, and/or networks to access, manage, integrate, evaluate, and create information in order to function in a knowledge society." A free PDF copy of this report is available at <http://www.ets.org/research/ictliteracy/ictreport.pdf>

In Digital Transformation , Educational Testing Service (ETS) gathered a distinguished panel of international researchers, who find that "ICT literacy cannot be defined primarily as the mastery of technical skills. The panel concludes that the concept of ICT literacy should be broadened to include both critical cognitive skills as well as the application of technical skills and knowledge. These cognitive skills include general literacy, such as reading and numeracy, as well as critical thinking and problem solving. Without such skills, the panel believes that true ICT literacy cannot be attained."

Such a definition heightens the importance of the work of IT Teams at every level. Only when the people responsible for curricular, instructional, management and technical aspects of the school operate from a shared understanding of the importance of ICT Literacy can their actions align to make contemporary literacy possible for all students. Fortunately, such initiatives are already underway, and reporting significant success.

In December 2000, e-Learning: Putting a World Class Education at the Fingertips of All Children , the second National Technology Plan ever devised was released. In addressing ICT Literacy, the plan states "A meaningful, unified approach to providing students with the skills they will need for their futures must be more than a checklist of isolated technology skills, such as knowing the parts of a computer, writing drafts and final products with a word processor, or searching for information using a CD-ROM database."

"Rather, technology skills are only a first step in assuring all our children become proficient information and technology users. Also necessary are information literacy skills such as:

- o Task definition — The first step in the information problem-solving process is to recognize that an information need exists, to define the problem, and to identify the types and extent of information needed.
- o Information seeking strategies — Once the information problem has been formulated, the student must consider all possible information sources and develop a plan for searching.
- o Location and access — After students determine their priorities for information seeking, they must locate information from a variety of resources, access specific information found within individual resources, and evaluate the quality of resources.
- o Use of information — After finding potentially useful resources, students must engage (read, view, listen) the information to determine its relevance and then extract the relevant information.
- o Synthesis—Students must organize and communicate the results of the information problem-solving effort.
- o Evaluation—Evaluation focuses on how well the product meets the original task (effectiveness) and the process of how well students carried out the problem-solving process (efficiency).

The plan described above is the Big6 Approach to Information Problem Solving, the most widely known and used approach to teaching information and technology skills. The Big6 is used in thousands of K-12 schools and higher education institutions, as well as in corporate and adult training programs. An estimated 84,000 teachers have been trained in the Big6 program.

The Bertelsmann Foundation and the AOL Time Warner Foundation have joined with experts from education, business and government, recently convening an international 21st Century Literacy Summit. The Summit demonstrated notable examples of 21st Century Literacy initiatives, and to recommended to various institutions how they can support individuals in taking full advantage of the tools and resources of the Digital Age.

Cited as an exemplary practice in the Summit whitepaper , the Big6 (first developed in 1988) provides a systematic process based on six broad skill areas necessary for successful information problem-solving. This approach builds a set of skills and an organized strategy for effectively meeting information needs while developing critical thinking skills. Big6.org provides a complete library and information skill curriculum that can be used throughout a student's development.

The research basis for this approach is extensive. In her recent literature review of this research , Carrie Lowe writes "The existing body of research on information literacy can be considered in the context of three themes, which are the nature and scope of information literacy, the value of information literacy, and effective methods of information literacy skills instruction."

On the nature and scope of information literacy, Lowe notes "Kuhlthau's research contributions led to a much greater understanding of the importance of teaching information skills (such as individual steps in The Big6) in context and not as discrete tasks. Kuhlthau's (1993) research into the information seeking behavior of students contributed to her central philosophy of information literacy – that information literacy is not a set of individual tasks or skills, but rather a way of thinking that allows individuals to be the flexible thinkers and lifelong learners who will succeed in the information age."

Regarding the value of information literacy, Lowe notes that the cognitive aspects and related benefits are key. "Pitts" (1995) examination of the mental models of students engaged in the information problem-solving process found that they use different domains of knowledge to complete a task, including one responsible for information seeking and use and others related to the other aspects of the task, including subject knowledge. Pitts found that a lack of knowledge in one area (including information problem-solving skills) could limit learning and success overall."

The crucial importance of ICT Literacy heightens the value of successful implementations. Lowe reports "Eisenberg and Berkowitz (1988) found that the best way to teach information literacy skills (such as the Big6) in curriculum context is through the collaboration of classroom teachers and library media specialists. Brievik (1998) found that the same is true in higher education, as students succeed in integrated courses designed by faculty members and academic librarians."

Given the new national educational policy focus on improving student achievement, through research-based practices which document student growth, the work of the ICT is both timely and imperative. As noted in the 1999 National Research Council report *Being Fluent with Information Technology*, the "requirement of a deeper understanding than is implied by the rudimentary term "computer literacy" motivated the committee to adopt "fluency" as a term connoting a higher level of competency. People fluent with information technology (FIT persons) are able to express themselves creatively, to reformulate knowledge, and to synthesize new information. Fluency with information technology (i.e., what this report calls FITness) entails a process of lifelong learning in which individuals continually apply what they know to adapt to change and acquire more knowledge to be more effective at applying information technology to their work and personal lives."

The goal of developing measures of these skills needs to recognize both the context, as well as the nature of the process, and how this process differs from those typically measured in schools. The report notes, "Because FITness is fundamentally integrative, calling upon an individual to coordinate information and skills with respect to multiple dimensions of a problem and to make overall judgments and decisions taking all such information into account, a project-based approach to developing FITness is most appropriate."

This is precisely the approach taken by thousands of educators as they work with their colleagues in applying the Big6 Skills to their instruction and assessment. The cover story for *MultiMedia Schools* magazine May/June 2002 issue *Moving Every Child Ahead: the Big6 Success Strategy* describes how this powerful ICT strategy has resulted in improved student achievement for several years running. Instead of teaching to the test, scores are raised by improving student thinking skills.

See *MultiMedia Schools*, May 2002 issue.

<http://www.infotoday.com/MMSchools/may02/berkowitz.htm>>

Conclusion:

The Digital Transformation report and resulting Framework for ICT Literacy could not come at a better time. As both national and international agendas begin to act on the implications of the digital age on the education, workplace and civic domains, the value of reliable measures and effective interventions is unsurpassed.

About the Author: Ferdi Serim helps people learn to read, write and think, using technology to expand the boundaries of what they read, write and think about. His work as editor of *MultiMedia Schools* magazine, director of the Online Internet Institute (OII), Associate of the David Thornburg Center for Professional Development (and jazz musician) helps people understand and harness technology's transforming potentials for distributed learning and networked knowing. He is the author of *NetLearning: Why Teachers Use the Internet* (published by Songline, a division of O'Reilly and Associates) and *From Computers to Community: Unlocking the Potentials of the Wired Classroom* (published by Centrinity, inc). He can be reached at: ferdi@oii.org

New Case Study: The Big Six Information Skills As a Metacognitive Scaffold

Added on Tuesday, July 22nd 2003.

Updated on Friday, September 19th 2003.

ABSTRACT:

"Several information problem-solving models exist for teaching and reinforcing the research, problem-solving, and writing processes. The Big Six information skills model (Big6) is one that is primarily aimed at kindergarten through twelfth-grade students. This model is intended to foster the acquisition of research, problem-solving, and metacognitive skills through the cooperation of both school library media specialists and classroom teachers. While a strong anecdotal record exists supporting the use of Big6, empirical research support is less evident in library and education literature. This study examines the effect of Big6 on a class of eighth-grade students asked to research and write about events surrounding the African-American Civil Rights movement. This study describes the context of the task students were asked to complete, student's experiences and reactions, and some conclusions that might be drawn from their experiences. It is a study based on a very small and homogenous set of students, but it tends to show the value of concise models that illustrate the full problem-solving process in order for young "researchers" to perhaps more fully grasp the extent of the task facing them. Such models, maps, and organizers should continue to be tested among many groups of learners to determine the full range of their value for giving the student greater confidence and understanding of the complexities involved in information problem-solving." School Library Media Research (Vol. 6, 2003)

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Problem-Solving with Multimedia Web Design Teams

by: [Mike Frerichs](#)

Added on Tuesday, February 19th 2008.

Updated on Friday, February 22nd 2008.

In 1843, Thomas H. Jackson almost failed a course in his second year at the U.S. Military Academy at West Point. It was a course on drawing. Whatever the reason, it is significant that art was taken seriously enough, that one could fail it. In the pre-photographic age, it was essential that a military commander be able to draw an accurate sketch of a battlefield scene. If we lost that need with the advent of photography, we have come full circle today. I believe that Daniel Pink is correct: Today's world calls for left brain thinkers, those who have the ability to create and design. [Pink] The Big6 has been very useful in this endeavor.

The concept of design is built into the Big6 research process. I find that it is especially effective to teach design as part of Big6 #5, Synthesis.

Synthesis

Two fourth grade boys walked into my library media center one April morning. They were engaged in a very animated argument over when the Iroquois League of Five Nations became the League of Six Nations. The depth of their discussion impressed me, and made me wonder – what had made the students so excited?

I believe that there are several reasons that these students – and their classmates – are so unusually engaged in the topics they are studying. For one thing, these students are Big6ers. Secondly, they are in the midst of an activity that has stoked their creativity -- these fourth graders were creating their own web pages using very advanced software, such as Adobe-Macromedia Flash, Fireworks, Freehand and Dreamweaver. You can find the project on the Bardonia Elementary School Library Media Page.

<http://www.ccsd.edu/bardonia/Library/4thwebquests/NewYork/2007/index.htm>

I've worked with web design and multimedia tools for years, and have taught workshops in the use of FrontPage, Dreamweaver and Flash. It has never been easy to sell these tools to teachers. So why was this project successful?

In 2005, I was asked to write a grant proposal for our school district. I based our proposal on a digital design curriculum that Macromedia created in a partnership with a school in Washington State. "Digital Design: Foundations of Web Design"

<http://www.adobe.com/education/resources/k12/instructional/digitaldesign/casestudy.html> is a program designed for high school students using the Macromedia suite of professional web design and web-authoring tools. Our grant proposal based on the Washington State curriculum

was successful in obtaining Macromedia software and Smart boards for the schools and library media centers in the Clarkstown Central School District. Our program was unique in that it expanded the Washington State program into the elementary schools.

The Project

Once the new multimedia software was installed, I had to sell it to our teachers and students. Macromedia Dreamweaver, Fireworks, Freehand and Flash are powerful programs, but the software is a challenge to learn. Fortunately, we had some 4th grade teachers and a technology teaching assistant willing to take a risk. Every spring our 4th grade does a New York research project that they present to parents. After meeting with the teachers and the technology assistant, we put together a collaborative project where students would present using the Adobe-Macromedia software.

The collaboration team set up a timeline where students were introduced to the research project using the Big6 research skills. We intentionally did not introduce the new software to students until they had completed several weeks of basic research on their topic. We simply told students they would be building a web page with learning activities.

After students had obtained and analyzed a sufficient amount of information, we introduced the new software. We started with Fireworks, a graphic design program. I demonstrated a couple of things and told the students to “just play with it.” An interesting thing happened: Most students went to the program and tried to repeat step for step what I had showed them. They soon bogged down, and hands went flying up. Some students just gave up and opened PowerPoint. A few students in the class jumped into the program and flew with it. Within a few minutes they were creating some neat pages. It was immediately evident that these were the “right brain” people that Dan Pink writes about.

Problem-solving with Design Teams

We approached the design process as a problem solving activity. We set up design teams for the project as needed. Each design team was responsible for one phase of the project. For example, one group of students was assigned New York geography; another was assigned New York history. Teachers and support staff were a part of each team, and provided support as needed.

At each team meeting, I presented the design team with some possibilities for creating a learning activity using our design tools. One team decided to create a jeopardy-type game using Macromedia FlashMX.

FlashMX is a challenging program, however if one is familiar with the basic elements, it is possible to download a lot of open source material to build with. I found an open source jeopardy game as a starter. This was also an opportunity to review copyright and fair use basics with students. The citation for this game is found on our project page.

We downloaded the jeopardy game and opened it up. When you open a Flash program using FlashMX, it's like opening the back cover of a fine tuned mechanical watch: You can see the

gears ticking away. The questions and answers for the jeopardy game are built into the action script of the program. The students were fascinated with the action script. It wasn't long before they were able to make it work for them.

These problem solving teams often found teachers and student on equal footing. Everyone had to collaborate to solve problems that arose. For example, our technology teaching assistant worked with students in the computer lab to design web pages using Fireworks. When one student did something special, he or she would then show the others how to repeat it. Together they learned the program.

The Evaluation

The final project was well received by parents and community. The project was presented to parents and the community at a special open house. Students enjoyed challenged adults with the learning games they had created.

Students had constructed a special Big6 research page on their website with a separate link to each of the 6 elements of research. They met after the presentation to construct their evaluation page. <http://www.ccsd.edu/bardonia/FourthGrade/New%20York/2007/solve/index.htm> When students completed their self evaluation it was particularly positive. They reflected on those areas where they could have done better and discussed methods to improve their research in future projects.

This project involved collaboration between teachers, computer lab assistants, and the library media center specialist. We met on a weekly basis to plan and support the project. Our instructional team included three fourth grade teachers, Leslie Feiner, Brianna Kenna, and Brendan Nolan. Our computer lab support specialist was Doreen Maritato and our library media assistant was Rhonda Seidenberg. Our principal Eileen Mautschke provided complete support for the project.

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**EVALUATION OF THE NCEITA EDUCATION
FOUNDATION'S TECHNOLOGY
DEMONSTRATION PROJECT
AT OAK LANE ELEMENTARY SCHOOL**

EXECUTIVE SUMMARY

NCEITA awarded its second North Carolina Technology Demonstration Project to Oak Lane Elementary School in Person County.

Key activities supported directly and indirectly by the grant included:

- Replacing 51 obsolete PCs in the computer lab and classrooms with 67 state-of-the-art PCs
- Purchase of 25 laptop PCs (1 for each teacher and 6 for the mobile lab)
- Purchase of 20 inkjet printers
- Purchase of 3 laser printers
- Purchase of 4 data projectors
- Purchase of 3 SmartBoards
- Purchase of 5 scanners
- Purchase of 5 digital cameras and 1 camcorder
- Purchase of 30 AlphaSmarts
- Purchase of 6 digital microscopes
- Purchase of 31 flash drives
- Replacing 5 Ethernet switches and 1 additional switch purchase
- Purchase of additional software---Inspiration, Graph Club, Image Blender, STAR Reader and Orchard
- Purchase of 3 access points
- Purchase of 50 hours of professional development for 118 teachers
- Replacing the 256 KB link with a T1 link*
- Purchase of computer tables and chairs*
- Purchase of Library Automation Software*
- Outfitting a district training center*
- Purchase of Edutest software*
- Purchase of 19 laptop cases*
- Certification for ExplorNet's QTL BEST training course for 2 district personnel*
- Institution of an online help facility for the district*

Note: Asterisk items show indirect activities from the grant.

The combination of hardware, software and professional development provided to Oak Lane has made fundamental improvements to the teaching and learning environment. The following changes have occurred:

- Significant improvements in the comfort level with technology
- Thorough integration of technology into the existing classroom practices
- Some new usage of instructional theories and strategies not previously used
- More active and participatory learning and a greater interest from the students at all levels of performance
- Greater collaboration and more positive attitudes throughout the school
- Systemic changes occurring at other district schools
- Increased outreach to the community

To increase the impact of Future Technology Demonstration Projects, evaluation results suggest:

- Developing a comprehensive communications plan
- Developing a sustainability plan for ongoing transformation
- Stronger onsite leadership for day-to-day technology support for the teachers
- Inclusion of Teacher Assistants in the staff development program
- Consideration of a district training center for the convenient training of outer-lying schools' participation

[Read the full report.](#)