

## MEMORANDUM

**TO:** Arlington School Board

**FROM:** Career Technical and Adult Education (CTAE) Advisory Committee

**DATE:** 1-26-2011

**SUBJECT:** Recommending Year Report

### **The Office of Career, Technical and Adult Education**

The Office of Career, Technical and Adult Education is comprised of five broad programs:

- Business, Information Technology, Computer Science, and Marketing
- Family and Consumer Sciences (FACS)
- Trade and Industrial Instruction and Technology
- Arlington Education and Employment Program (REEP)
- Adult Education

### **The Career, Technical and Adult Education Advisory Committee**

The Career, Technical and Adult Education Advisory Committee (CTAE) has 15 regular members and one ex-officio member representing community leaders, universities, the business community, former teachers, parents, scientists, and former congressional staff. The committee brings a broad range of relevant knowledge, experience, and analytical tools to its recommendation process. In addition to the Department of Instruction staff liaison, meetings are commonly attended by the various Arlington Public Schools (APS) supervisors and administrative staff from FACS, Business, REEP, Adult Education, and the Career Center.

The office of CTAE works within the Department of Instruction to provide programs of instruction in career and technical education to K-12 students. The office also provides lifelong learning opportunities to adults of all ages in the Arlington community such as the Parent Academy and a variety of adult education courses, and has a close partnership with the Arlington Learning and Retirement Institute. Because APS learners are all ages, in APS communication to the community and media, the CTAE advisory committee would like to highlight that a focus on **all students**, rather than simply children, is appreciated.

Expert presentations by local, state and national education policymakers are common at meetings and inform the committee's views and recommendations. For example, David Boesel, author of the National Assessment of Vocational Education Report to Congress (Boesel, 1994) and several related books (Boesel, 1991; 1999), presented the results of a systematic external evaluation of APS CTAE programs to the committee. Betsy Brand, former Department of Education (DOE) Assistant Secretary of Adult and Vocational Education, shared her vision of the future of Career and Technical Education (CTE). Kim Green, Executive Director of the National Association

of State Directors of Career Technical Education Consortium (NASDCTEc), spoke to the committee about national trends in college and career readiness and initiatives for the next decade. Dr. Gerhard Salinger, a Director of the National Science Foundation in the Division of Research on Learning (DRL) in Formal and Informal Settings, spoke on national issues and relevant research relating to career and science, technology, engineering and math (STEM) education in the United States. Terrie Rust, an Einstein Fellow at the National Science Foundation, spoke about specific interventions and targeted programs for career and college readiness as well as STEM education in Arizona.

Locally, the committee also engaged Matt Smith, APS Information Services Special Projects Coordinator, in efforts to coordinate cost-saving recommendations regarding the use of open source software in APS.

The committee appreciates that many of its previous recommendations are being pursued by APS:

- The Governor's Career and Technical Academy of Arlington (GCTAA) continues to grow and provide students with college credit through dual-enrolled CTE programs.
- APS is making Children's Design Engineering workshops available for all elementary school teachers through professional development opportunities offered throughout the school year.
- APS has taken early steps to implement Exploring and Mapping Academics and Careers (EMAC), which, when fully implemented, should provide a user-friendly online planning tool to students, teachers, counselors and parents (a recommendation by our Committee and the Career Pathways Committee).

## **Executive Summary**

As the United States enters the second decade of the 21st century, international competition places new demands on educators to leverage and reinvigorate our traditional American strengths in ways that will prepare our students for an increasingly technological marketplace, for global competition, and for confronting the complex challenges that will define the success of our society going forward. In this global context, our primary concern locally remains ensuring Arlington students both understand and can access the 21<sup>st</sup> century opportunities that a range of CTAE programs make available. Specifically, we recommend promoting our K-12 CTE curricula, improving REEP accessibility, and supporting the Governor's Career & Technical Academy's (GCTAA) partnership with Northern Virginia Community College (NOVA). The committee also believes we need to recast APS's core instruction methods with an emphasis on skill-based and technological education to help students become the innovators and entrepreneurs crucial to the American and global economy of the future.

Two strategies to create learning environments that serve the needs of all APS students are: 1) the integration of academic and technical instruction (through the GCTAA and CTE programs throughout APS, e.g.), and 2) the implementation of project and

problem-based learning throughout the APS curricula. The committee also advocates strengthening teacher training and professional development for instructors who will deliver APS's increasingly rigorous programs. More specifically, the committee is concerned that both continuing and newly hired APS instructors have the requisite training in integrative STEM (Science, Technology, Engineering and Math) and that APS adopt a flexible competency tracking system (such as CanDo) to drive that teaching and learning relevance and rigor.

Most of the recommendations in this report reflect the broad business, industry, higher education and community expertise of the CTAE Advisory Committee, and should be applied broadly throughout APS curricula and planning; not just to CTE programs. The Committee believes APS should prepare students in all its curricula for both college and careers because students exit APS into both pathways.

### **Recommendation #1:**

#### **APS should actively promote CTE opportunities to students, parents, teachers, guidance counselors, and the broader Arlington community.**

The committee recommends increased communication with parents, teachers and guidance counselors, particularly at the middle school level, to widely disseminate information about the opportunities available to Arlington students through CTE.

APS should promote CTE programs throughout the Arlington community, including students, parents, businesses, and other citizens, as a way to develop 21<sup>st</sup> century skills of critical thinking, communication, collaboration, and creativity necessary for success in college and careers.

### ***Rationale:***

**The Changing Nature of CTE.** As the committee indicated in last year's report, "CTE teaching has so dramatically outgrown its roots in vocational training that a renewed understanding of CTE by parents, students, staff, and the broader community will lead to improved student outcomes in terms of graduation rates and college participation." During recent years, the entire country has seen a convergence of academic and technical (i.e. CTE) instruction. CTE instruction will increasingly require more than "hands on" career skills and more post-secondary education (Brand 2009a). In APS, pathways have become a guiding pedagogical principle as CTE instruction has begun integrating business, information technology, and STEM (Science, Technology, Engineering and Mathematics) curricula. Pathways acknowledge students may exit CTE curricula into a variety of lifelong learner paths and the educational system must prepare students who exit directly into careers from secondary school as well as those that exit into associate or bachelor degree programs.

Innovative thinking, entrepreneurial skills, problem-solving and critical thinking skills are all highly valued in the modern workplace, a workplace that is increasingly both highly skilled and highly educated. Historically, CTE grew out of vocational education, which was aimed at providing students with immediately useful career knowledge and skills for entry into positions seeking skilled labor. As the workplace has modernized, employers have sought a better prepared labor force with critical thinking and soft skills; this development has forced CTE instruction to integrate more business, information technology (IT), and the more academic STEM (science, technology, engineering and math) subjects.

**21st Century Skills.** Though CTE has necessarily integrated content across traditional boundaries between disciplines, student outcomes are less sensitive to “what courses you teach” and more to “how you teach them”, specifically, how teachers infuse 21st Century Skills into courses (Brand, 2009b). The committee believes CTE already fosters many of these 21st Century Skills (Partnership for 21<sup>st</sup> Century Skills, 2004), and that CTE curricula are a natural setting within which to learn and practice them. Some 21st century skills transcend content areas and concurrently prepare students for post-secondary education, including the following:

- Communication
- Teamwork
- Ethics
- Leadership
- Flexibility
- Problem Solving
- Critical Thinking

Note that many of the above 21st Century Skills are not tracked by Virginia Standards of Learning (SOLs), but are reflected in the recently modified Virginia Workplace Readiness Skills (Virginia CTE Resource Center, 2010), more accurately termed “dispositions and skills.” APS has already led the state in adopting CanDo (see below), an APS-developed software package that allows teachers to track a broader range of student “dispositions and skills” than either Virginia SOLs or grades capture. The committee commends APS on its leadership in developing CanDo.

**Dropout Prevention.** The National Dropout Prevention Center includes CTE programs as one of the strategies that has the most positive impact on high school completion rates (i.e. reducing dropout rates) (Hammond, et. al., 2007). Numerous studies, such as the National Research Center for Career and Technical Education “Dropping Out of High School and the Place of Career and Technical Education,” (Plank, et al., 2005) and “Keeping Kids in School: The Power of CTE” (Stone and Alfred, 2005) demonstrate that students have a decreased risk of dropping out of high school as they add CTE courses to their curriculum.

CTE instruction also provides an excellent return on investment. Although the committee is not aware of specific data for APS, studies in other areas show the following: “In Washington, for every dollar invested in secondary CTE programs, the state earns \$7.11 in additional tax revenues” and “In Tennessee, ... at the secondary

level, CTE program completers account for over \$13 million in annual tax revenues” (ACTE, 2010). Many other studies confirm that CTE programs positively impact districts by decreasing the dropout rate (Plank, 2001).

CTE participation can improve at-risk student outcomes (in completion rates, e.g.), and more outreach and counseling can help students realize that benefit. Specifically, among others, CTE offers engagement, relevance, and relationships that have shown to be effective at reducing dropout rates:

“... [A] study conducted in 1998 by the University of Michigan found that high-risk students are eight to 10 times less likely to drop out in the 11th and 12th grades if they enroll in a career and technical program instead of a general program. The same study also reported that a quality CTE program can reduce a school’s dropout rate by as much as 6 percent, and that CTE students are less likely than general-track students to fail a course or to be absent” (ACTE, 2007).

The committee believes students would be better prepared for a variety of post-secondary futures if they were equipped with 21st century skills in APS.

**Strategies for Promoting CTE.** Some ways APS might promote CTE are through advocacy by administrators, counselors, teachers, parents and students. The superintendent could mention the advantages of CTE in his public addresses. In news articles and communication to parents, APS could include fact sheets outlining the key benefits of CTE programs. APS could invite CTAE staff to describe benefits of CTE programs in schools (especially at the middle school level) and in newsletters. Parent Teacher Associations could invite CTAE staff to present CTE facts directly to parents.

While the committee has listed a few specific strategies and media for communication, some of which have little to no cost, the committee also appreciates there is a wide variety of other means available to APS to communicate with Arlington stakeholders. The committee would welcome the use of all appropriate and effective communication channels to promote CTE throughout APS.

**Budget Implications:**

APS staff estimate approximately \$20,000.00 could produce high quality brochures and marketing materials to highlight all CTE areas. Promotion through websites and presentations at schools would require minimal funds if existing staff took on those responsibilities. Instructional programs could also leverage student expertise in developing materials as possible class projects which would give students real world challenges (see inquiry-based learning below, e.g.).

**Committee vote: 11/11**

## **Recommendation #2:**

### **Increase College Access through the Governor's Career and Technical Academy in Arlington (GCTAA)**

Using the historical precedent of International Baccalaureate (IB) adoption and the implementation of Advanced Placement (AP) courses as a guide, the committee recommends APS promote and improve access to the GCTAA and other dual enrolled programs as an important third path to college credit during high school. APS should fully implement dual enrollment pathways in collaboration with NOVA and other participating colleges.

#### ***Rationale:***

##### **Governor's Career and Technical Academy of Arlington (GCTAA)**

The GCTAA was developed through a 2007 grant from the National Governor's Association administered through the Virginia Department of Education. The GCTAA, one of six such Commonwealth-funded programs in Virginia, was implemented in 2008 at the Arlington Career Center. The GCTAA aims to provide college access and reduced college costs to all APS students through dual enrollment programs at Northern Virginia Community College (NOVA). Dual enrollment courses provide a student with both college and high school credits for a single course; this enables students to spend credit hours on college level work without sacrificing high school credit hours needed to fulfill graduation requirements. Programmatically, dual enrollment increases college access for APS students and reduces remediation rates of APS students at NOVA. For individual students, dual enrollment lowers the total cost of a degree, time to postsecondary degree completion, and mitigates logistical issues associated with degree completion. The GCTAA supports the School Board's strategic plan *Goal 2: Eliminate the Achievement Gap* and *Goal 3: Responsive Education*.

In 2007, APS appointed a STEM task group to evaluate the GCTAA proposal, and in addition to the original proposal, the task group recommended implementing an assessment tool to track the degree to which proposal objectives were met. Quantitative assessments of costs, student outcomes in terms of graduation rates, college access, and SOL passage rates are examples. To the committee's knowledge, no such quantitative assessment of proposal objectives, costs, or student outcomes has been summarized in a report. However, a recent formative program evaluation detailed mixed progress toward the GCTAA as planned and envisioned in the original proposal (Boesel, 2010). The recent evaluation was survey-based, and not based on metrics of college access to all APS students before and after the GCTAA implementation. One key metric of success for the GCTAA is the number of students receiving college credit through dual enrollment. The committee notes that the STEM task group evaluated and endorsed the GCTAA proposal with the understanding that the GCTAA would eventually include academic subjects (APS Advisory Council on Instruction STEM Task Group, 2008).

Though challenges of academy identification, STEM integration, and teacher preparation remain (Boesel, 2010), the GCTAA continues to work with NOVA to better align the GCTAA's evolution with the college access needs of APS. In 2010-11, the GCTAA continued to enroll students by requiring them to pass NOVA's COMPASS placement test and complete a one-credit NOVA orientation. The GCTAA proposal included the following five career cluster pathways for APS:

- Engineering,
- Digital Media,
- Automotive Technology,
- Information Technology,
- Emergency Medical Technician/Physical Therapist.

All career cluster pathways have dual enrollment courses that qualify for NOVA credit except EMT, in which students can gain NOVA credit by passing a licensure exam.

Because dual enrollment is the primary route through which college credit is conferred to APS students at the GCTAA, the committee believes the key determinant of the success or failure of the GCTAA is the degree to which dual enrollment succeeds in expanding college access opportunities for GCTAA students. The lack of dual enrolled academic courses remains a key missing element of the proposed implementation of the GCTAA; dual enrolled academic courses were originally slated to be phased-in during implementation. The committee believes academic dual enrollment courses should be considered at the GCTAA, and that a review of teacher qualifications is needed to determine which teachers are qualified to teach college-level academic courses and which teachers could be qualified with additional professional development. Based on the committee's recent review of the future of CTE, and the common prediction among a wide range of experts that CTE and academic instruction will continue to converge in coming years, the committee believes incorporating dual-enrolled academic courses into the GCTAA will better prepare APS students for the future than a GCTAA that currently only dual enrolls students in specific career cluster pathways. There is also consensus among the committee that the lack of dual-enrolled academic courses will limit the ability of the GCTAA to provide college access to all APS students.

### **Budget Implications:**

The current cost of a three credit class taught by an APS teacher is \$51.00 per enrolled student. Available funds within the APS operating budget and grants have covered the cost of dual enrollment to date. As more students take advantage of increased dual enrollment offerings, more money will need to be allocated for this purpose. Professional development funds will be needed to help teachers meet the requirements necessary to teach a college class. The estimated annual cost for this professional development is \$10,000.

**Committee vote: 11/11**

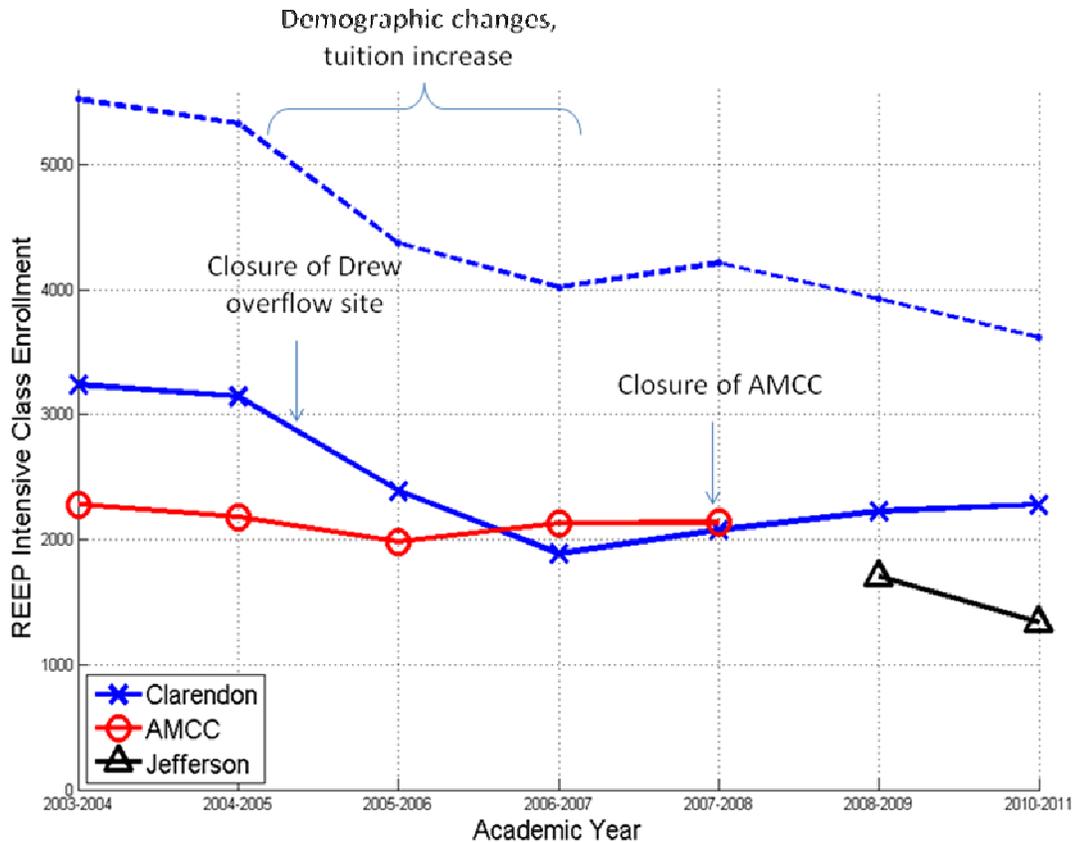
### **Recommendation #3:**

#### **Support the Arlington Education and Employment Program (REEP)**

The Committee recommends APS improve the accessibility of intensive REEP classes to target populations by 1) finding suitable space for intensive English classes accessible to target populations, including the Columbia Pike and metro-accessible sites and 2) developing a plan for maintaining metro accessibility of current REEP space given the expected expiration of the lease at the Clarendon Education Center in September 2012.

#### ***Rationale:***

The provision of convenient, adult-appropriate program space is a key factor influencing REEP's ability to serve the needs of adult English language learners in Arlington, including parents and upcoming parents of APS students. The role of instructional space location is different for adults than children. Adults are not mandated to attend classes and do not have access to school bus transportation. The CTAE Advisory Committee's 2007 report recommended that "the School Board find suitable space for adult English language learners attending REEP classes in South Arlington... in the Columbia Pike corridor." The demand for classes within walking distance and along Columbia Pike was well documented in the report. No space was located in the Columbia Pike corridor, and REEP staff eventually secured space at Thomas Jefferson Middle School/Community Center. In August 2008, the REEP/Arlington Mill Intensive Program was relocated to Thomas Jefferson Middle School, with some classes remaining at Kenmore Middle School. A similar recommendation to find space in the Columbia Pike corridor was made again in 2009 by this same committee.



**Figure 1:** Total REEP intensive class enrollment (dashed line) and its composition since 2003. The enrollments by constituent REEP hubs, Clarendon Education Center, Arlington Mill Community Center, and Thomas Jefferson Middle School (Clarendon, AMCC, and Jefferson, respectively in the chart) are plotted with x's, o's and triangles, respectively. Note that each hub also includes enrollment of overflow sites associated with that hub (such as Drew, Barcroft, and Kenmore). Relevant historical events associated with enrollment are also shown in the chart. Note that the year separation between enrollment figures for AMCC in 2007/2008 and Jefferson 2008/2009 is simply a plotting artifact; there was no gap in REEP offerings. Note that enrollment responds to REEP site relocation events, tuition increases, and demographic changes.

Following the historical and projected trends outlined in prior reports, the Thomas Jefferson hub continues to draw significantly fewer students than the Arlington Mill Community Center (AMCC) did prior to REEP class relocation (see Figure 1). The AMCC was a conveniently “walkable” location for students in the Columbia Pike corridor. During the last seven years of operation, REEP’s intensive enrollment dropped 34% from 5522 to 3618 (dashed line in chart). The reasons for this include demographic changes, tuition increases, and REEP site relocations. Note that enrollments outside Clarendon have declined by approximately 30% since the relocation of the AMCC hub to Thomas Jefferson Middle School. Current intensive classes at Jefferson draw more from other neighborhoods than from Columbia Heights West and are only projected to serve an annual enrollment of 1,376 students. In contrast, because of its proximity to the Metro, the Clarendon Intensive Program has proven to be a convenient county-wide site. While Jefferson enrollments continue to decline, Clarendon’s enrollment has been

growing over the last two and a half years; with a current quarterly enrollment of 647 (projected annual enrollment of 2,416, see chart). Note that when REEP classes were located at AMCC, 60% of students surveyed indicated they walked to class. In contrast, only 10% of students surveyed at Jefferson in summer 2010 indicated that they walked to class. Accessibility is key to both the North and South Arlington hubs. In the North Arlington hub which is Metro accessible, APS should develop a plan to maintain Metro accessibility beyond September 2012 when the Clarendon lease is expected to expire.

Historically, note that REEP enrollment increased in response to the relocation of the North Arlington hub from Wilson to Clarendon in 1995. Enrollment also increased in response to the relocation of the South Arlington hub from what was then Glencarlyn Elementary School to AMCC in November 1997, as indicated in Appendix A. In both cases, the new sites were more accessible to target populations. When North Arlington enrollment responded to tuition increases and demographic changes in 2004-2006, students preferentially selected Clarendon Education Center over Drew; and a plausible argument again is that Clarendon was more accessible. While the committee understands REEP's enrollments over the years are a complex function of location, tuition, demographics and other variables, a preponderance of historical evidence from at least four "natural experiments" in Arlington indicate that the provision of accessible space to target populations is a key consideration. If APS commits to the REEP program, it should do so by providing space in locations accessible (i.e. walkable) to those who can benefit from it.

### **Budget Implications:**

The cost of building or leasing instructional and administrative space varies based on proximity to public transportation and the target population in Arlington. The current annual rent for the Clarendon Education Center is \$1,018,300 (57,063 square feet at \$18/square foot). REEP currently uses approximately 12,000 square feet for a cost of \$216,000. REEP uses the space 6.5 hours/day on weekdays and Saturdays, and no estimate was available for other APS programs that use the same space in the afternoons, so REEP's cost to APS is less than \$216,000. If the Clarendon Education Center lease were simply renewed, there would be no net budget impact unless rent increased or decreased.

For space near the Columbia Pike corridor, the average cost per square foot is approximately \$23.00/square foot annually (so 10,000 square feet would cost \$230,000.00 annually). This \$230,000 would be a net increase from the Jefferson hub because the Jefferson space is rent free.

**Committee vote: 10/11 (1 abstention)**

**Recommendation #4:**

**Fostering Creativity and Innovation and 21st Century Skills**

The committee recommends APS promote strategies to foster innovation and creativity and other 21st Century Skills broadly throughout APS curricula. Other 21st Century Skills include critical thinking, communication, and collaboration necessary for success in college and careers.

***Rationale:***

The committee has recently solicited guidance from national educational policy experts on the future of CTE and all of them stressed the importance of “creativity and innovation,” and that CTE programs are well suited to instructional methods aimed at fostering creativity and innovation. As Virginia accountability metrics based on high-stakes exams continue to be emphasized in education reform initiatives (Virginia Department of Education, 2008), business, industry (The Conference Board, 2009), and education leaders (Zhao, 2009) grow increasingly concerned about students' ability to think critically, develop creative and innovative solutions to problems, and communicate their discoveries effectively and ethically. A recent study by Kyung Hee Kim at the College of William and Mary demonstrated that Torrance Tests of Creative Thinking (a test aimed at benchmarking creativity) had steadily risen until 1990, but had steadily and significantly declined since then (sample size was 300,000 students), and the most serious declines were observed in first through sixth graders (Bronson and Merryman, 2010).

The committee believes that while CTE is an appropriate curriculum to target for fostering innovation, creativity, and other 21st Century Skills, all subjects should infuse these skills into their delivery.

In October 2010, the Association for Career and Technical Education (ACTE), the National Association of State Directors of Career Technical Education Consortium, and the Partnership for 21<sup>st</sup> Century Skills released a report, entitled "Up to the Challenge, The Role of Career and Technical Education and 21<sup>st</sup> Century Skills in College and Career Readiness" (ACTE, 2010). The report shows that business executives indicate that they need a "workforce fully equipped with skills beyond the basics of reading, writing and arithmetic." The report highlights skills such as critical thinking, communication, collaboration and creativity as being essential for the workforce of the future to compete in a global economy. In a survey from the Conference Board in 2009, 67% of businesses indicated they seek employees who can demonstrate creativity and innovation skills. The ACTE report recommends that creativity and innovation be part of each student's educational program and believes that CTE is an ideal avenue for developing these skills through relevant topics of inquiry that engage students' interests.

Research shows that students engaged in inquiry-based learning turn information into knowledge using their own critical thinking skills. A review of the value of inquiry-based and cooperative learning strategies is given in "Teaching for Meaningful Learning" by Brigid Barron and Linda Darling-Hammond (2008).

Inquiry-based learning is a key component of the CTE program, stressing skill development, academic knowledge, and individual creativity and innovation. Inquiry-based learning provides context about what the student is learning, and helps students develop a sense of why academic subjects are relevant to their daily lives and planned career. An example of inquiry based learning is the construction of the Little Green House by high school students taking courses at the Arlington Career Center. The Little Green House, a traveling green construction exhibit, was built by students in the Career Center's construction trades, along with students enrolled in engineering, television production, photography, automotive technology and commercial arts classes. The exterior was completed during the 2008-2009 school year and the interior was finished during the 2009-2010 school year. The exhibit, which consisted of a miniature house on a trailer, was a featured attraction at Arlingtonians for a Clean Environment's "Green Living Expo" in March of 2010. Various community sites, such as county parks, libraries and schools, have also exhibited the Little Green House as a free public exhibit to promote environmentally-friendly home construction materials and building practices.

In addition to inquiry-based learning, CTE programs foster relationships among students, employers and post-secondary educators through work-based learning experiences, mentoring programs and collaborative endeavors. These relationships provide a real professional context within which students develop the workplace skills of communication and collaboration and promote the value of working in teams. Through these teams, students begin to learn to leverage their entire work group's creative and innovative capacities.

In the summer of 2005, a team developing an open-source school administration software package (called SchoolTool) partnered with APS CTE instructors to extend it with a competency tracking application called CanDo. The goal of CanDo was to couple the SchoolTool software with the Virginia CTE Resource Center's Verso database of CTE competencies in order to allow instructors to report and monitor student competency achievement. CanDo exports student competency scores to the APS eSchoolPlus database, which are state-mandated under No Child Left Behind (NCLB) and the Perkins Act; without CanDo, these mandates require manual data entry. As of 2010-2011, SchoolTool/CanDo is the competency tracking software recommended by VDOE's Dept. of CTE, and currently is being used in ten school systems in the Commonwealth, including Arlington, Spotsylvania and Chesapeake. While school systems are not required to use CanDo, they are required to report the competency achievement of their students, and CanDo is an increasingly popular means of doing so. In addition, it is promoted and supported by the CTE Resource Center. The committee applauds APS on its leadership in developing CanDo as a resource for all Virginians.

Strategies for promoting creativity and innovation are not inconsistent with other APS initiatives in curriculum and instruction. A number of APS initiatives allow and encourage students to explore and test their many ideas and solution approaches. Some of these include, backwards design (called “Understanding by Design” in APS), “Inquiry-based Science” and “History Alive,” all of which can foster creativity and innovation (Barron and Darling-Hammond, 2008). Alternatively, pedagogical approaches that reward only one “correct” answer or formula, which do not value or explore creative solutions, may stifle creativity and innovation.

One approach to effectively deploy inquiry-based learning and other strategies to foster innovation and creativity is to support teacher professional development. Effective professional development mirrors the classroom practice (examples are collaborative and inquiry-based learning) and expose teachers to pedagogies that make them comfortable with collaborative learning tools (like Google apps, e.g.), virtual learning communities, etc. within a standards-based environment. Preparing APS teachers for the modern classroom involves the following:

- providing professional development in curriculum integration and teacher collaboration, and community and business involvement;
- providing professional development in project-based learning, problem-based learning, and inquiry-driven investigation;
- supporting graduate education for teachers in integrative STEM education (in the Math-in-CTE initiative, for example, and this is the primary way most math and CTE teachers currently receive Integrative STEM training).
- supporting exemplary standards program review, an online published standards-based evaluation that facilitates ongoing program improvement and formally recognizes individual successful programs.

### **Budget Implications:**

This initiative would require funds for ongoing professional development over a number of years. Carl D. Perkins grant funds qualify for this purpose. Total costs would depend on teacher participation rates, but staff estimates \$30,000.00 could launch an effective professional development effort.

### **Committee vote: 11/11**

### **Committee members:**

Dr. John Kaufhold, SAIC, Committee Chair  
Dr. John Andelin, Community Volunteer  
David Bain, Viral Media Productions  
Ken Balbuena, Northern Virginia Community College  
Howard Feldstein, Arlington County Employment Center  
Don Hodgen, APS Parent and Community Volunteer

Dr. Terry Holzheimer, Arlington Economic Development  
Dr. Peter Joyce, Cisco Systems  
Polly Liss, Community Volunteer  
Dr. Diane Murphy, Marymount University  
Dr. Peg Pankowski, DeVry University  
Terrie Rust, NSF Albert Einstein Distinguished Educator Fellow, Observer  
Theresa Schweser, Staff Liaison  
Bill Sullivan, ex-officio  
Sue Zajac, Community Volunteer

**CTAE Staff:**

Kris Martini, Director, APS Career, Technical, and Adult Education  
Shari Brown, Coordinator, Project Y.E.S  
Dr. Jerry Caputo, Principal, Arlington Career Center  
Jim Egenrieder, STEM Education Specialist  
Marilyn Faris Scholl, Supervisor, Family and Consumer Sciences  
Phyllis Gandy, Business, Information Technology, Computer Science and Marketing  
Education  
Suzanne Grant, REEP  
Rona Hernandez, Administrative Specialist to the Director  
Raul Matos, Coordinator, Adult Education  
David Welsh, CTE Specialist, Arlington Career Center

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### Appendix A: REEP Enrollments in Response to Hub Relocations

North Arlington Hub Move from Wilson School to the Clarendon Education Center during the 4 <sup>th</sup> Quarter of 1994/1995				
	1993/1994	1994/1995	1995/1996	1996/1997
Wilson School	1569	1491		
Clarendon			1820	2165

South Arlington Hub Move from Glencarlyn Elementary School to Arlington Mill Community Center in November 1997. The first full year at Arlington Mill was 1998/1999.				
	1996/1997	1997/1998	1998/1999	1999/2000
Glencarlyn	903	1060		
Arlington Mill			1445	1680