

## CTE's Role in Adolescent Literacy



### IN THIS BRIEF:

This Issue Brief will explore the key role that CTE programs can play in increasing adolescent literacy engagement and achievement. High-quality CTE programs expose students to rigorous and relevant information-rich content that motivates them to develop their literacy skills. CTE teachers integrate content-area reading and writing strategies to aid students' learning, and courses provide numerous enrichment activities to help students apply higher-level literacy skills to their interests and future goals.

In today's ever-changing global economy, "literacy" describes a broad range of skills necessary for individual success in various aspects of education, careers and life. At its most fundamental level, literacy represents the ability to read, write and communicate—the ability to understand and use language to achieve one's goals.<sup>1</sup>

Literacy is a prerequisite to learning in all other subjects, especially as students are exposed to increasingly diverse and intricate texts from which they need to glean knowledge. Unfortunately, too many adolescents lack the literacy skills necessary to navigate the reading and writing requirements of high school and the future world in which they will work and live.

While educators around the country are seeking ways to address this challenge, career and technical education (CTE) programs are stepping up to offer students a rigorous and relevant education rich in literacy content and strategies. CTE courses, often overlooked in academic discussions, can have a

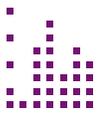
tremendous impact on students' literacy engagement and achievement, and must be considered as part of the adolescent literacy solution.

## The Concerns

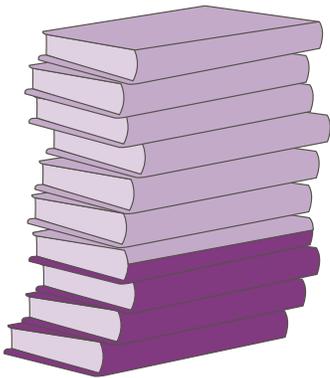
### LOW LITERACY LEVELS

In fourth grade, U.S. students read and write at levels among the best in the world and are on track to high literacy achievement. However, as students progress in grade level, this positive trend is reversed. By high school, U.S. students perform at much lower levels internationally.<sup>2</sup> Only 35 percent of 12th graders are considered proficient in reading and can demonstrate overall understanding of texts, make inferences, draw conclusions and make connections to previous experiences. These numbers are even lower for minorities, students with disabilities and English language learners.<sup>3</sup>

The reading levels of U.S. adolescents have actually declined during the past two decades. From 1992 to



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2005, the percentage of high school seniors performing at the “basic” level or above on the reading portion of the National Assessment of Educational Progress (NAEP) declined from 80 percent to 73 percent, and gaps between white students and minorities grew.<sup>4</sup> Long-term trend assessments given by the NAEP show that average reading scores declined four points for 17-year-olds from 1992 to 2008.<sup>5</sup>

Results on the 2007 NAEP writing exam are only slightly more encouraging. While scores did improve from the previous administration in 2002, only 24 percent of high school seniors scored at the “proficient” level or higher.<sup>6</sup>

Even the literacy skills of the nation’s college-bound students are eroding. On the SAT college entrance exam, students’ critical reading skills have declined four points over the past 10 years, and scores on the writing portion of the exam have also declined since its introduction in 2006.<sup>7</sup> While these lower scores have been linked to a rise in the number of test-takers, they still point to critical issues related to students’ overall literacy skills. On the similar ACT college entrance exam, only 67 percent of students graduating in 2009 met college-ready benchmarks in English, and only 53 percent were considered college-ready in reading, despite the fact that more students are taking what is considered a college-prep curriculum.<sup>8</sup>

**ECONOMIC AND SOCIETAL REPERCUSSIONS**

Unfortunately, the decline in the literacy skills of U.S. adolescents is coupled with a rise in the literacy skills needed for the

world around them. This is especially evident in the workplace, as the employment opportunities that will be available to these youth will require higher levels of literacy than ever before. The reading levels required for most entry-level jobs are well above that of the average high school student. For example, typical print materials in entry-level agriculture and natural resources fields have a readability level of 1270-1510 on the Lexile scale (which has a range of 0-2000), while average 11th graders only have a reading ability level of 940-1210 Lexiles.<sup>9</sup> In fact, the reading requirements of entry-level jobs are often higher than, and different from, those required for postsecondary education.<sup>10</sup>

The consequences of the mismatch between adolescent literacy levels and job requirements are large. While most employers rate reading and writing skills very important to career success, 72 percent of employers rate high school graduates as deficient in basic writing skills, and 38 percent consider these graduates deficient in reading comprehension.<sup>11</sup> This leads to a need for extensive remediation activities, both in postsecondary institutions and the workplace, and increases expenses for individuals, employers and taxpayers.

Adults with low literacy skills have lower participation in the labor force, lower weekly and annual earnings, and less access to critical lifelong learning. These individuals are also less likely to vote, participate in volunteer work or be engaged in their children’s education, and are more likely to participate in public assistance programs<sup>12</sup> or be incarcerated.<sup>13</sup> In short: Low literacy skills are costing the U.S. economy valuable resources.

**EDUCATIONAL DELIVERY CHALLENGES**

Efforts to address low adolescent literacy levels meet numerous challenges, chief among them the fact that formal literacy instruction ends for most students after the elementary grades. As students progress into middle and high school, they often receive no additional instruction in how to master increasingly complex subject-matter texts and assignments. While most secondary students have learned how to decode words to “read,” many lack the analytical processes necessary for true comprehension and learning. Students with low literacy levels frequently become frustrated and disengage from the education process and tend to drop out of high school at a higher rate than other students. They are unsuccessful not only in reading and writing, but in all other subjects that depend on these skills for success.<sup>14</sup>

The need for explicit literacy instruction throughout a student’s education is complicated by the fact that few secondary teach-

ers receive any formal instruction in teaching students reading and comprehension skills.<sup>5</sup> Middle and high school teachers (with the exception of some English teachers) are rarely equipped with the instructional strategies necessary to help all students navigate more demanding content-area curriculum.

There is also a disconnect between literacy instruction that is provided at the secondary level, often focused on preparation for college, and real-world literacy requirements. Many high school English courses emphasize literature, which is certainly critical to literacy development, but much of the reading and writing students will encounter in their careers is more informational and technical in nature. Some estimate that 80 percent or more of 21st century workers' reading and writing will involve the nonfiction tasks of reading and responding to quantitative information and documents, while almost 80 percent of high school focuses on fiction.<sup>6</sup> A stronger focus on technical reading and writing skills across content areas is essential to ensuring students are prepared for future opportunities.

## CTE Provides Solutions

CTE leaders have recognized these literacy challenges and have made improving their students' reading and writing skills a top priority. Today's CTE programs are both academically and technically demanding. Students must be able to read, comprehend, analyze and report on high-level information to be successful, not only in their education program, but in their future careers.

As content-area literacy programs have grown in popularity, career and technical educators have been at the forefront of integration efforts, providing a wide variety of opportunities for intensive literacy skill development. Programs have been designed to address key areas identified by research on adolescent reading—reading fluency, vocabulary knowledge, content knowledge, higher-level reasoning and thinking skills, cognitive reading comprehension strategies, and motivation and engagement<sup>7</sup>—as well as incorporate elements like collaborative and process writing.

High-quality CTE teachers expose students to rigorous and relevant information-rich content that motivates them to develop their literacy skills, integrate content-area reading and writing strategies to aid students' learning, and provide numerous enrichment activities to help students apply higher-level literacy skills to their interests and future goals.

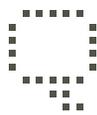
## EXPOSING STUDENTS TO RIGOROUS AND RELEVANT CONTENT

Research has shown that one of the best ways to help students gain literacy skills is to motivate and engage them with content related to their interests. Helping students make connections between reading and writing and the real world can engage reluctant readers and, at the same time, improve literacy skills.<sup>8</sup> Students typically find their CTE courses to be directly connected to their future goals and are often more willing to engage in reading and writing within the context of their CTE program. Job-specific vocabulary and authentic work situations can inspire students to apply themselves to literacy tasks that lack meaning in other contexts.

Another critical component of increasing students' literacy skills is to increase the amount of time they spend engaging in these activities.<sup>9</sup> In addition to industry-based textbooks, reading and writing opportunities can be found throughout CTE courses. For example, in the biotechnology program at Great Oaks Career Campuses in Ohio, students read news articles for information about trends in forensics and crime; at Georgia's Golden Isles Career Academy, broadcast video students use the local newspaper to gather information that is used to write news, sports and weather scripts they produce and record in the video lab.

Relevant literature is also integrated into the CTE teaching and learning environment to help students make connections across coursework. Students in health care programs often read and discuss novels containing medical issues, such as *Eleventh Hour* and *My Sister's Keeper*, while those preparing for careers in education might read *Tuesdays With Morrie* or *A Child Called "It": One Child's Courage to Survive* and report on the content in various ways.

Trade publications are used in CTE to help students stay abreast of the latest developments in a particular industry and expose them to the technical reading they will encounter in the workplace. Automotive technology students at Lowndes High School, also in Georgia, read *Hot Rod*, *Automobile*, *Car and Driver*



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In the state of Florida, students who score at “Level 1” or “Level 2” on the Florida Comprehensive Achievement Test reading exam are considered below proficiency and must enroll in an intensive remedial reading course or a content-area reading intervention course to improve their skills. In recent years, a lack of success with remedial reading has led to a rise in the popularity of the second approach—the content-area reading intervention course. CTE teachers have led the way toward improving students’ literacy skills through this option.

At Citrus High School, a Digital Design and Intensive Reading course is offered to intertwine reading skills with Digital Design I content. The course provides a way to engage reluctant readers in high-interest content and gives them a desire to read.

Students are in a structured routine to ensure all content is covered. They read self-selected materials for the first 15 minutes of class each day, complete vocabulary exercises and summarize their reading. A short whole-group instruction is followed by students moving in teams through “work stations” that are teacher-led, student-led, independent and focused on technology. The classroom is full of high-tech computers and software, but its walls are covered with vocabulary words and bookshelves.

The program at Citrus High School is part of a statewide Career and Technical Education Reading (CATER) pilot program, which provides opportunities for intensive reading intervention using the CTE course content. Participating teachers receive rigorous professional development toward a reading endorsement on their teaching certificate.<sup>22</sup>

Testimonials from students in the Citrus High School CATER course tell the story of their renewed engagement:

- “I’m learning a lot about Photoshop and I’m reading more than I usually do—and I’m not much of a reader.”
- “I like the CATER class better than the normal intensive reading class because you don’t even realize you are learning most of the time. My vocabulary skills have shot up through the roof!”
- “It is a lot about reading, but it is fun things to do so that it doesn’t get boring.”<sup>23</sup>

and *Road and Track*. Periodically, they are asked to select an article of particular interest and prepare a 200-300 word summary of the key ideas. At Wilco Area Career Center in Illinois, culinary arts students read weekly from trade staples, such as *Pastry Art and Design*, *Sizzle*, *The National Culinary Review*, *Gourmet* and *Santé*. Students summarize content and orally present this information to their classmates to improve communication skills.

Professional and technical writing are also prominent across the CTE curriculum. Students learn to write effective memos, document laboratory processes, complete work logs, prepare case studies, use vocabulary in context, proofread documents, summarize project results and develop resumes. One specific example can be found at Meridian Technology Center in Oklahoma. Business students there complete an “Invest Ed” project each year. They research stocks that they would like to purchase, then participate in a buying-and-selling simulation activity. They produce written reports using technical vocabulary at the end of the project to communicate their logic on transactions based on risk, capital, and current market trends and factors.

To further expose students to these types of literacy activities, the Davidson, North Carolina, school district has set three CTE literacy goals:

- Students will read a career-related article twice monthly and demonstrate understanding in a writing opportunity.
- Students will write weekly to complete CTE assignments.
- Students will prepare a written report and/or research study each semester in every CTE class.<sup>20</sup>

The district has provided teachers with professional development and purchased updated classroom libraries to help meet these goals. Chandra Darr, CTE director in the Davidson County Schools, sums up the efforts: “The key is students are reading and doing or doing and reading—but they are actively working with words.”<sup>21</sup>

## INTEGRATING CONTENT-AREA LITERACY STRATEGIES

Many of the texts used in CTE classrooms are at a very high reading level and often have the most difficult content of any high school textbooks, even above those traditionally seen as more demanding, such as physics or history.<sup>24</sup> All too often, CTE teachers find that their students, even those who are strong fiction readers, lack the technical literacy skills to be successful with CTE reading and writing tasks.

To address this problem, a growing number of CTE teachers have turned to content-area literacy strategies to help students not only better understand the technical material necessary for career success, but also gain literacy skills that will be useful across their educational experience. According to the International Center for Leadership in Education, “The research on improving reading skills for secondary students recommends teaching reading in the content areas as the most effective way to raise reading and information literacy levels, so students can achieve more in their subjects, in research, on tests, and in other tasks.”<sup>25</sup>

Within these content-area literacy efforts, vocabulary development is a key area of CTE focus. Word walls of key technical terms; triple-entry vocabulary journals that include definitions, examples and a visual cue; and word sorts that require students to think critically to categorize and organize vocabulary all help students gain knowledge of technical language that they may encounter in classroom activities.

Other strategies employed by CTE teachers frequently use writing and discussion to help actively engage students before,

during and after reading. There are literally hundreds of varied literacy strategies in use in CTE classrooms across the country—graphic organizers, anticipation guides, note-taking prompts, quick writes, journaling and many more. The strategies are focused on helping students master critical skills like previewing text, activating background knowledge, setting purposes, asking questions, organizing information and summarizing.<sup>26</sup>

In the precision machining classroom at Pennsylvania’s Lenape Technical School, a “K-W-L (What I Know, What I Want to Know, What I Learned)” chart has been used to help students read about and master complex mechanical procedures. Students are asked before reading to share their prior knowledge on a subject, receive a guided preview through the required chapter to highlight important concepts and then discuss what they want to learn. Instead of reading the entire chapter at once, students pair up after each portion to verbally discuss and summarize. Once the assignment is complete, students fill in the final portion of the chart and both discuss orally and write about their new knowledge on the topic.<sup>27</sup>



In Maine, a statewide CTE strategic planning process identified literacy as a key issue for CTE programs.

The state’s 27 secondary CTE centers wanted to better integrate core and CTE content, enhance coordination with partner sending high schools, and strengthen the ability of CTE students to complete the reading and writing required in rigorous CTE courses. A statewide literacy initiative<sup>28</sup> to accomplish these goals was launched during the 2005-2006 school year.

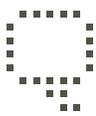
As part of a broader “Promising Practices Initiative,” the Maine Department of Education, Maine Administrators of Career and Technical Education, and CTE centers throughout Maine contracted with the Public Consulting Group’s Center for Resource Management to develop professional development activities to address the literacy challenge.

During the initial year of the project, literacy mentors were recruited from among CTE teachers in the state to engage in intensive professional development on content-area reading strategies that could be incorporated into CTE courses. These teachers experimented with the strategies, discussed results in follow-up sessions and refined activities over the course of the year. Mentors committed to sharing strategies with others in their schools, then facilitated a three-day peer-to-peer literacy training event the following summer.

The activity has been repeated in some form each year, growing the pool of literacy mentors that have the capacity to train other CTE teachers. Topics covered have included before-during-after reading strategies, vocabulary strategies and writing to learn.

Other activities that have occurred as part of the initiative include a literacy component to the statewide professional development conference each fall, site-based technical assistance to help CTE directors and teachers further their integration efforts, and a wide variety of dissemination efforts related to promising practices. A range of tools have also been developed to aid teachers, including technical assistance packets on how to analyze the literacy demands of CTE industry certification tests and prepare students to meet them, and videos of strategies in action in CTE classrooms and labs.

Support for the CTE literacy initiative is visible across the state. Twenty-four of the CTE centers have participated directly. Some of the centers have hired literacy specialists to provide additional support to teachers. CTE teachers in Maine now have a common language and common strategies they can use to ensure their students meet the literacy requirements of highly technical careers.



CTE programs provide students opportunities to extend their literacy skills through exercises involving the in-depth integration of both reading and writing, along with critical thinking and employability skills like oral communication, leadership and teamwork.

Professional development on these strategies is critical for CTE teachers. Many states and school districts have incorporated content-area literacy strategies into regular CTE professional development experiences, or established stand-alone programs. In the Arlington Independent School District in Texas, an ongoing series of workshops began during the 2007-2008 school year to help CTE teachers learn ways to increase students' reading comprehension and subject-matter learning. The series included training during the school year, a summer reading workshop and common planning time for content-area teams to infuse the literacy strategies into lesson plans.

A similar series was implemented by Arizona's Mesa Public Schools CTE Department. CTE teachers throughout the district have received training at annual Summer Institute Professional Development classes. The district has also employed CTE literacy coaches at each of its three high schools to aid teachers with the implementation of literacy strategies. The coaches work closely with CTE teachers and have developed resources, student handouts and sample lesson plans.<sup>29</sup>

### IN-DEPTH APPLICATION AND ENRICHMENT

CTE programs provide students opportunities to extend their literacy skills through exercises involving the in-depth integration of both reading and writing, along with critical thinking and employability skills like oral communication, leadership and teamwork. This higher-level literacy will be essential for students in postsecondary education and the 21st century workplace.

In many courses, CTE students apply reading and writing skills to research projects on emerging technologies or content-specific topics. For example, construction students might research and report on methods for trim and finishing, while



In Kentucky, the "Unite to Read" initiative<sup>30</sup> was launched during the 2004-2005 school year. The statewide project, now in its fifth year of implementation and continuously expanding, was originally designed by Kentucky's Career and Technical Student Organization (CTSO) state leaders in response to the growing national attention on literacy skills and the state's low reading achievement levels. The initiative has two components—a "Share a Story Night" for elementary school students and a Reading Certificate Program for middle and high school students. Both serve to motivate CTE students to engage in reading and broader literacy activities and allow them to be leaders in spreading literacy throughout their communities.

Members of all CTSOs in a high school or district, along with other student and community organizations, organize the Share a Story Nights as community events for elementary students and their families. A statewide, age-appropriate feature book is chosen each year in cooperation with Kentucky Education Television (KET). Often, a community leader is selected to read the story to attendees. After the reading, a corresponding KET video is shown and the older students provide a variety of related enrichment activities,

from puppet shows to petting zoos. More than 15,000 students participate in the program each year.

The Reading Certificate Program provides further opportunity and motivation for middle and high school students to enhance their literacy skills. At the end of each school year, the Kentucky Department of Education provides a certificate to CTSO members who have completed a set amount of reading. Reading lists have been compiled by specialists to offer suggestions to teachers on specific texts that can be integrated into their curriculum to help students meet these goals, as well as activities that can be used to encourage reading, such as breakfast book clubs and book exchanges. Students earn a gold certificate for reading 25 books or the equivalent, a silver certificate for 20 books and a bronze certificate for 15 books. The awards are presented at school or CTSO year-end ceremonies. In 2008, approximately 1,000 students received reading certificates.

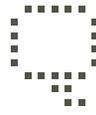
Kentucky has also engaged in a wide variety of other literacy activities, and overall results have been positive. Both reading and writing test scores of Kentucky students were higher during the 2008-2009 school year than in previous years.

information technology students might focus on problems with software and how they can be solved. Students in the Biomedical Sciences Academy at Metro Technology Center in Oklahoma participate in a semester-long project in which they explore a biomedical technology or research need and prepare and present a mock grant proposal to their teachers and classmates. Throughout these types of projects, teachers instruct students on key writing strategies, such as planning, revising and editing, and provide opportunities for collaboration and peer review.

Internships and work-based learning experiences provide more opportunities to enhance literacy skills in an authentic environment. Students engaged in internships through the health science program at the Daniel Morgan Technology Center in South Carolina put together a portfolio that includes overall reflection on their internship experiences, a journal of daily activities, a resume and letter of interest for a particular career, and a research paper. All CTE students at Mentor High School in Ohio also complete a similar portfolio project after a three-week mentorship experience that occurs at the end of their senior year. Students prepare in both their CTE and English courses by writing letters of inquiry to potential companies and updating their resumes. They must keep a daily journal during the project, then present to a group of faculty and students about their activities.

Career and technical student organizations (CTSOs) also provide students with opportunities to further cultivate their literacy skills. A large majority of the competitive events sponsored by the CTSOs require substantial reading, writing or speaking. For example, the Health Occupations Students of America's "Medical Reading" event requires students to read five health-related pieces of literature and be prepared to answer questions about their reading in both written and interview formats.

A number of the CTSOs also sponsor entrepreneurship competitions that require students to put together written business plans. At Raymond S. Kellis High School in Arizona, Advanced Marketing students use the guidelines for the DECA (the CTSO for marketing students) Entrepreneurship Written



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Event<sup>31</sup> to complete their yearly research project. The students must complete a 30-page business plan that includes an analysis of the business situation; planned operations, products and services; and financing—all items they have covered as part of their course content.

## Conclusion

The future of the U.S. economy depends on a well-educated and skilled workforce, and literacy forms the critical foundation of this education and training. Without a dramatic increase in literacy skill levels, today's adolescents will be unprepared to meet their future career and life goals.

CTE programs have a valuable role to play in improving adolescent literacy. Due to their unique combination of rigor and relevance, CTE courses can motivate students who are otherwise unengaged in the education process to read, write and apply critical thinking skills in authentic situations. Through professional development and classroom practice, CTE teachers can help students master not only new vocabulary and technical content, but active strategies to aid their reading comprehension and writing skills.

Increasing students' literacy skills will require the commitment of the entire education community. CTE teachers and administrators are primed and ready to assume a leadership role in this vital effort.

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