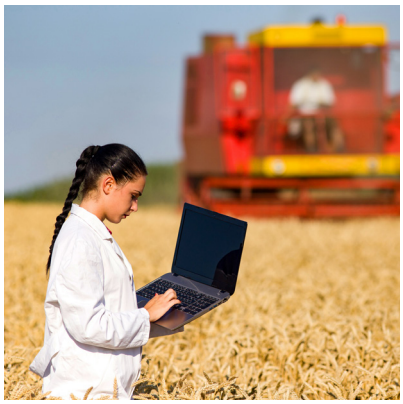
CTAE Study

Augusta-Richmond County Schools



CARL VINSON INSTITUTE OF GOVERNMENT
The University of Georgia

Richmond County School System
Learning today...Leading tomorrow

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Career Technical and Agricultural Education (CTAE) study is a collaborative effort between the Richmond County School System (RCSS) and the University of Georgia's Carl Vinson Institute of Government. The study explores current workforce trends within the Central Savannah Regional Area Regional Commission district (CSRA) and will enable the RCSS to align its current Career, Technical, and Agricultural Education (CTAE) curriculum with desired labor market skills.

Between October 2015 and March 2016, the Institute of Government administered a web survey to CSRA employers, conducted focus groups with RCSS-CTAE teachers and parents, and reviewed the current CTAE curriculum. The web survey generated a 16.2% response rate; 193 employers from 13 different CSRA counties completed the survey. After the survey, the Institute of Government conducted four focus groups, two with CTAE teachers and two with parents, to further explore perceptions of the CTAE program. Finally, a review of the CTAE curriculum was conducted in collaboration with UGA's College of Education.

SUMMARY OF MAJOR FINDINGS

Survey of Employers

- Over half of responding employers anticipate increasing the number of permanent, full-time positions in the future.
- Almost 50% of responding employers would hire more workers given a more qualified applicant pool.
- More than 30% of responding employers are experiencing skills deficits among current employees.
- Approximately 70% of responding employers say attracting skilled applicants is difficult.
- Jobs requiring advanced computer and technology skills are the most difficult positions to fill.
- Customer service and skilled trades are the skills most lacking in recent job applicants.
- 48% of responding employers are more likely to hire certified CTAE applicants with a high school diploma.

Teacher and Parent Focus Groups

- The majority of teachers interviewed were long-term CTAE instructors; only four were instructors for two or fewer years.
- Both parents and teachers stated that CTAE needs a greater marketing push for students and parents.
- Few of the parents interviewed had children involved with CTAE beyond a course or two. Only one parent discussed a pathway/credential and demonstrated in-depth understanding of the process for their child.
- The majority of parents appeared unaware of the different aspects of CTAE programming. Several suggestions were for programs, activities, or supports that already exist within CTAE. Only a few parents were aware of current industry engagement with CTAE.

- Both parents and teachers praised CTAE for its flexibility, relevancy for career-readiness, and student-centered learning that focuses less on traditional testing and more on project-based assignments.
- Common barriers were funding for equipment and technology, a desire for greater communication from the board, and a reinstatement or reconsideration of both the CTAE supervisors and pathway requirements.

Curriculum Review

- All CTAE courses are not available to all students; this varies by school.
- Students' options of CTAE pathways are based on what is offered in their locally zoned school.
- Access to computers and digital technology present challenges in achieving program excellence.
- Shifts in CTAE program administrators in each school has placed increased demands on teachers and department heads.

Recommendations

- RCSS should take advantage of opportunities to increase the technology career cluster.
- RCSS could further develop and strengthen CTAE partnerships with local businesses, industries and educational institutions.

INTRODUCTION

The Richmond County School System (RCSS), located in Augusta, Georgia, is home to more than 32,000 students in 56 schools. The school system's 11 high schools serve more than 8,000 students, preparing them for a successful transition after graduation into postsecondary education or the labor force. One key factor in equipping students with the skills they need to be "college and career ready" is the Georgia Department of Education's Career, Technical and Agricultural Education (CTAE) curriculum, which integrates academic work with technical and occupational skills. The state has identified 17 career clusters with more than 130 career pathways designed with specific knowledge, skills, and abilities for various careers. In the RCSS, the CTAE curriculum spans 16 clusters and 34 career pathways offered in its 11 public high schools.

In the fall of 2015, the Richmond County Board of Education partnered with the University of Georgia's Carl Vinson Institute of Government to examine the workforce needs of regional businesses and to assess how well the district's CTAE curriculum meets these needs. This report presents the findings from that study, which provide insight into regional labor trends and enable the RCSS to align its CTAE curriculum with industry skills needed for students to successfully enter into the workforce.

Researchers at the Institute of Government used a three-prong approach to understand current workforce trends within the Central Savannah River Area Regional Commission district (CSRA) as well as opportunities and challenges facing the CTAE curriculum in the school district. First, a web survey of 193 employers located in the 13 CSRA counties gave insights into the skills most desired by employers today. Second, in collaboration with the UGA College of Education, Institute researchers reviewed the CTAE curriculum to see how well it meets the expressed needs of area businesses. Finally, focus groups with CTAE teachers and parents of RCSS high school students explored perceptions about CTAE and how the program could be strengthened.

BACKGROUND ON CAREER, TECHNICAL, AND AGRICULTURAL EDUCATION

In a recent survey by the Manpower Group (2015), 32% of employers in the United States reported having challenges recruiting skilled workers for their business. Employers indicated that jobs in the skilled trades were the most challenging to fill, followed by sales representatives, engineers, and technicians. With projected US job growth expected to exceed 9 million over the next 10 years (Bureau of Labor Statistics, 2015), having a workforce with the skills demanded by industries is crucial to meeting the needs of a growing 21st century economy.

Industry concerns about the skills gap, the unmet demand between workforce supply and industry need, is growing. Explanations for this phenomenon point to the retirement of baby boomers, ineffective recruiting methods by industries, and the misalignment of primary and secondary school education with the needs of employers (Capelli, 2015; Cornelius, 2011; Deloitte, 2015). Many available jobs do not require an advanced degree, but do require training. These jobs are often in the fields of advanced manufacturing, health care, and information technology. Careers within these industries account for the largest portion of the US labor force (Lumina Foundation, 2015), creating an increased demand for "career-ready skills." The skills gap is expected to widen as demand for products and services continues to increase, fueling discussion among policy makers, industries, and educators alike in an effort to identify solutions to reduce this deficit and equip individuals with the necessary skills.

In Georgia, Governor Nathan Deal implemented the High Demand Career Initiative to encourage state partners to align training programs with the skills desired by industries. Total employment in Georgia is projected to exceed 4.6 million by 2020, an increase of more than 480,000 workers since 2010. Over 60% of job openings are predicted to be in careers requiring a high school diploma or its equivalent (Georgia Department of Labor, 2014). Therefore, Georgia's educational system is in a unique position to develop pathways to high-demand careers and equip the labor force with the skills necessary to compete in the marketplace.

In an effort to align the primary and high school curriculums with industry needs, the Georgia Department of Education has identified 17 career clusters that allow high school students to choose an area of interest. See Appendix Table H1 for a full listing and description of these clusters. Students take classes tailored to their cluster, which helps them navigate their way to greater success—no matter what they choose to do after high school graduation. Each cluster includes multiple career pathways. Following the career cluster model common throughout the United States, Georgia offers more than 100 career pathways to engage students in planning for college or career and professional development. Georgia's career clusters/pathways provide a structure for organizing and delivering quality CTAE programs in Georgia's public high schools. The aim of the program is to show students the relevance of what they are learning in the classroom, whether they want to attend a two-year or a four-year college, or go straight into the labor force.

The RCSS adopted the Georgia CTAE curriculum to ensure that students graduate from high school ready to succeed in college and the workplace (Georgia Standards, 2014). This curriculum provides the training needed for students to effectively compete in today's job market, as skilled workers and those with knowledge of quickly evolving technology are in high demand.

In CTAE, students explore potential career pathways through classroom instruction, experiential laboratory activities, and the extracurricular activities of Career Technical Student Organizations (CTSOs). Students also have the opportunity to participate in the workplace through the Youth Apprenticeship Program.

Currently, there are more than 12,197 CTAE educators throughout the state of Georgia (Georgia Department of Education, 2014). Within Richmond County, teachers come to CTAE via traditional paths, such as gaining their college degree in education and applying for teacher certification after graduation, or they come to CTAE after a period of time working in industry, and gain their teacher certification at that time. In FY 2014, there were 245,930 middle school students and 326,153 high school students enrolled in CTAE courses across Georgia (Georgia Department of Education, 2014).

SURVEY OF AREA EMPLOYERS

The first step in ensuring that Richmond County Schools' CTAE curriculum aligns with employer needs is to understand the skills most desired by area businesses. From October 28, 2015 through January 20, 2016, the Institute of Government administered a 31-question web-based survey to employers in the 13-county Central Savannah River Area Regional Commission (CSRA) district. The questions touched on five major content areas: required educational qualifications and technical skills, hiring needs, future hiring plans, recruitment methods for potential employees, and employee training and professional development practices. Additionally, respondents provided open-ended responses to two questions on how the Richmond County Schools' CTAE programs could better prepare students for work in the respondent's business and potential future areas of industry growth.

The Institute of Government mailed and emailed a weblink to the survey to businesses with 20 or more employees in Richmond and Columbia counties and businesses with 50 or more employees in each of the other CSRA counties. Out of 1,193 CSRA employers who received the survey, 193 completed it, for a response rate of 16.2%.

Each of the 13 counties within the CSRA were represented in the response sample. Over 75% of the responses came from employers in the Richmond County School District and neighboring Columbia County. Respondents included employers from each of the Georgia DOE's 17 career clusters.

This section provides a brief overview of survey results from each of the five survey content areas. More detailed analyses, tables, and graphics are provided in the appendices to this report.

DESIRED EDUCATIONAL QUALIFICATIONS AND TECHNICAL SKILLS

Several survey questions focused on the educational qualifications and technical skills that employers are looking for in job candidates. Overall, high school diplomas or the equivalent are the minimum requirement for many jobs in the area, and advancement and promotion are possibilities for such employees. About a third of employers in the area are currently experiencing a skills deficit, and many more face a potential skills gap in the near future.

Employers indicated that a substantial percentage of recent job openings (as of 2015) required only a high school diploma or equivalent. In larger companies, between 10% and 25% of the job openings required only a high school diploma or equivalent. Over 80% of respondents indicated that promotion and advancement were possible for employees with only high school diplomas or the equivalent. Another question asked whether applicants who had earned certification as part of their high school diploma (as occurs in CTAE programs) would be more favorably considered during the hiring process. Almost half of respondents (approximately 48%) answered affirmatively.

The survey asked respondents to estimate the current skill needs of their business. Approximately 30% of responding employers indicate that they are currently facing skills deficits. A quarter of responding employers (26%) indicated that while current positions have the technical skills needed to accomplish business and industry objectives, they are concerned that they will not have the skills needed in the next 12 to 24 months. Almost 50% of respondents would hire additional employees given a more qualified applicant pool.

HIRING NEEDS AND FUTURE HIRING PLANS

Respondents were asked about the planned hiring changes for permanent, full-time positions projected for 2016 compared to the previous year. Approximately 51% of responding employers plan to increase the number of permanent, full-time positions for 2016. Approximately 45% of employers plan to maintain the existing number of permanent, full-time positions in 2016. The survey then asked employers to rank the top three job types that they would most likely be filling in the next three to five years across six pre-selected job types: clerical/administrative, management, professional/technical, sales and marketing, skilled labor, and unskilled labor. Skilled labor was the most commonly ranked first choice, followed by professional/technical positions. Clerical and administrative positions were also highly ranked.

RECRUITMENT METHODS FOR JOB CANDIDATES

Another section of the survey examined recruitment of potential employees. Out of a list of seven possible choices—State Department of Labor, internships, job fairs, media advertising, referrals, staffing services, business website/hiring portal, and other (please specify)—respondents indicated that referrals was the most commonly used means of recruiting potential hires. The business website or hiring portal was the second most common source of recruitment, followed by job-specific advertising in the media.

The survey then asked how difficult it was to find employees with general educational qualifications, such as basic mathematical skills, basic reading and writing skills, basic computer skills, and more advanced computing skills and/or technological skills, such as coding. The largest percentage of respondent employers found recruiting job applicants with advanced computer skills to be the most difficult.

Survey respondents also identified skills in which recent job applicants were lacking, with customer service skills (29%) and skilled trades (22%) topping the list. In a separate question, respondents were given a list of 32 "soft skills" and personality characteristics (such as dependability, flexibility, and focus) and asked to rank the importance of these skills and characteristics on a five-response scale from "not important at all" to "essential" to achieving successful employment in the respondents' business environment. Within the category of "essential," the most commonly ranked items were dependability (86%), ethical behavior (79%), attendance and punctuality (74%), cooperation and teamwork (70%), personal integrity (69%), attention to detail (65%), customer service (64%), and active listening (60%).

When employers cannot recruit job candidates with the skills needed to successfully perform the work required, this is known as a skills gap. The survey asked what employers do when they identify a skills gap in the applicant pool. The majority of respondents offset skills gaps by hiring less qualified applicants, using targeted internal training programs, or outsourcing work or using temporary labor to shore up the number of qualified personnel.

EMPLOYEE TRAINING AND SKILL DEVELOPMENT PRACTICES

The survey delved into how skills requirements among businesses has changed over the past three years as well as partnerships with educational institutions as a means of increasing the skill level of employees. The majority of respondents (approximately 56%) indicated that skills requirements had increased for their business during that time period. When given a list of possible partnerships with educational institutions, a third of respondents (33%) indicated that they currently engage in continuing education and/or training, approximately 29% offer internships to students, and approximately 30% indicated no existing school-based partnerships at the time of the survey. When asked, approximately 71% of respondents indicated that they would be interested in partnering with local school systems.

SURVEY CONCLUSIONS

Overall, survey responses show that respondent employers in the CSRA anticipate increasing their workforce in the near future. The majority of respondents hire, promote, and train high school graduates, and a large number would favorably consider CTAE-trained applicants. Respondent employers anticipate that in the next three to five years they will have vacancies in skilled labor and professional/technical positions. To recruit qualified applicants, most employers rely upon referrals, their business website, or hiring portals.

The majority of respondents indicated that once applicants are vetted, hiring decisions are based on a combination of education, soft skills, and experience. Dependability, ethical behavior, attendance and punctuality, cooperation and teamwork, personal integrity, attention to detail, customer service, and active listening were among the highest ranked personality characteristics and/or soft skills that respondents equated with positive hiring experiences and job success. While one-third of respondents were engaged in some form of educational or training partnership, approximately one-third indicated they did not have any involvement with educational or training entities. Approximately 71% indicated an interest in partnering with the local school systems.

CTAE CURRICULUM REVIEW

After analyzing the survey results, the Institute of Government and UGA's College of Education faculty reviewed current CTAE program areas and career pathways offered in Richmond County to assess how well the curriculum aligns with business and industry needs and expectations.

UGA researchers catalogued the RCSS's existing career clusters and pathways based on the 17 career cluster schema developed by the Georgia Department of Education. This overview notes program areas that have achieved industry certification in any of the 14 areas where standards are in place for this credentialing.

The RCSS CTAE courses and pathways provide a broad array of opportunities for students. The RCSS offer courses in all but one (manufacturing) of the 17 state-identified clusters and provide courses aligned with 42 of the more than 100 available career pathways. While there are a few gaps in what is available, the overall program is quite robust and provides students with many options for career preparation.

In Richmond County, not all CTAE courses are available to all students. Of the 11 high schools, four function as magnet schools to which students can apply to attend. For the remainder of the high schools, residential zoning determines which school a student attends, and not all of those schools offer the same array of CTAE courses. This limits courses available and may lead to difficulties if students transfer from one school to another.

RCSS high schools have several outstanding CTAE programs led by exceptional teachers. However, when one of these teachers retires or moves to another school, the program is sometimes shut down or its quality diminishes significantly.

Other issues include the availability of needed software and unvoiced teacher concerns. Some programs lack the software necessary for student learning activities involving web materials, multimedia creation, and application programming. In addition, teachers have experienced trouble finding an adequate school-level voice in the absence of a school administrator with direct responsibility for CTAE programs.

FOCUS GROUPS WITH CTAE TEACHERS AND PARENTS

After completing the survey phase, the Institute of Government conducted four focus groups to explore how current teachers and parents perceive the CTAE program in the RCSS. Four focus group sessions took place at the Richmond County Board of Education on February 24 and 25, 2016, two with CTAE teachers and two with parents of current RCSS high school students. Prior to the focus groups, Institute of Government faculty consulted with the RCSS and a content expert with the UGA College of Education to identify questions for further research. The focus groups lasted two hours. The majority (24) of the 29 participants were female; the other five were male.

The findings in this section represent the subjective views, opinions, and perceptions of teachers and parents involved with CTAE in Richmond County. These views do not necessarily reflect the RCSS's actual practices.

PERCEPTIONS OF CTAE

Participants were asked about their CTAE experiences and perceptions. Teachers discussed their tenure with CTAE in the RCSS, and parents discussed how long their children had been involved with CTAE. Out of the 17 teachers represented in the focus groups, 13 were long-term teachers with five or more years of experience. All of the teachers teach CTAE exclusively. At least two of the teachers graduated from college with a teaching certificate, while the majority worked in industry and became teachers later. Three teachers reported that they are considered "provisional."

In the parent groups, only five of the 12 parents had children taking more than one or two CTAE courses. Only one of those five parents demonstrated an understanding that their child was engaged in a CTAE pathway; this was also the only parent that showed an in-depth understanding of CTAE.

Teachers' Perceptions of CTAE

Teachers were enthusiastic and passionate about CTAE as a program of study. While some teachers were happier than others with the existing supports for CTAE, all of the teachers displayed passion for their particular program of study. Teachers appreciated student-centered learning and flexibility as well as the opportunities that CTAE offers to nontraditional students.

Teachers stated that the quality of instruction is good, as most teachers have industry experience. Both teachers and parents expressed a desire for teachers to "go back into the field" for several hours a week to stay on top of industry changes, as with the "Teachers in Industry" program. Teachers emphasized that this can be a perk of the industry certification process, which requires teachers to re-immerse themselves in their industry. The industry certification process requires rigorous review by leaders from business and industry. Certification lasts for five years, after which programs must be re-certified. Industry-certified programs received a "stamp of excellence" from the DOE.

While parents stated that CTAE courses, primarily ROTC, provide much needed leadership skills, teachers felt that motivating students to lead and develop a work ethic is difficult. One teacher stated that students are "hit or miss," and teachers agreed that the current generation is difficult to engage. Despite this, teachers stated that job shadowing, summits, and career competitions in the Career and Technical Student Organizations (CTSO) help foster that work ethic and leadership skills. Multiple participants stated that travel to CTSO summits and competitions expands

students' horizons and minds. Many CTAE students have never left Richmond County; therefore, participation in the CTSOs (as required by CTAE) broadens student possibilities and assists in making connections across the state.

Parents' Perceptions of CTAE

The majority of parents appeared unaware of many aspects of CTAE programs. Several suggested programs, activities, or supports that already exist within CTAE, such as internships, job shadowing, and community partnerships. Parents in both groups saw a need for greater industry engagement in CTAE and were unaware of many existing partnerships. Many parents exclusively discussed ROTC as their children's CTAE experience, while other parents emphasized that their children only took a CTAE course here and there, rather than selecting a CTAE pathway. There seemed to be lack of long-term participation in other CTAE programs and, as mentioned above, only one parent had a child who was committed to a CTAE pathway.

Parents also considered CTAE instructors to be vital to the entire program's success. Parents stated that teachers must make CTAE more welcoming and that they can do so by demonstrating passion for teaching and the industry. It was generally agreed by all participants that CTAE teachers must market their program and recruit students.

STRENGTHS OF CTAE

Both parents and teachers praised CTAE for its flexibility, relevancy for career-readiness, and student-centered learning that focuses less on traditional testing and more on project-based assignments.

Teachers

Teachers stated that CTAE provides flexibility, creativity, and "real world" relevancy for students. This is enhanced through student-centered instruction that is not constrained by the curriculum. Teachers also considered the ability to use project-based learning instead of learning focused on testing as a strength of CTAE. They indicated that instruction focuses on the completion of tasks and performance-based learning.

Teachers believed that a major strength of CTAE is its co-curricular activities (i.e., CTSO activities such as Future Business Leaders of America), which expose students to opportunities beyond Richmond County. Additionally, when students commit to a CTAE pathway to certification, as opposed to only taking a course or two, CTAE creates job readiness and employability after graduation. Another advantage of CTAE mentioned by several participants is Georgia's new employability standards, which teachers believe have strengthened the programs and created a sound CTAE curriculum. These employability standards are referred to as ''performance standards" by the Georgia DOE, and are designed to provide students with knowledge and skills necessary for career readiness no matter which career students choose after graduation.

Parents

Parents reiterated many of the same CTAE strengths that teachers described in their focus groups. Parents considered their children to be more well-rounded and versatile when they add CTAE courses to their schedule. Parents believed that CTAE embraces different and alternative methods of learning, focusing on "mastery of content," not testing or "red marks" on a paper. Parents stated that CTAE provides job options and connections with technical colleges to secure their children's future. Parents also considered CTAE a "safe space" to "try out" a career path, while also teaching soft skills and industry language. Several parents agreed that the best schedule mixes CTAE courses with AP courses.

CTAE BARRIERS AND NEEDS

Both parents and teachers stated that CTAE needs a greater marketing push for students and parents. Marketing can draw parents into CTAE and mobilize them as advocates for the program. In addition, teachers discussed recent changes in the CTAE program that have weakened the ability of students to be college and career ready.

Teachers

All teacher participants stressed that the removal of CTAE supervisors from the schools has led to a lack of an administrative-level voice for CTAE. This removal has taxed teachers, especially the department chairs, who wear multiple hats and attempt to be the voice for CTAE at the same time. Department chairs expressed feeling "spread very thin." CTAE teachers now have to petition their principals to speak for CTAE in administrator meetings. There was a general perception that by removing the CTAE supervisors, CTAE teachers have lost the ability to advocate for their needs.

Equipment was another barrier that teachers discussed. This not only includes equipment for programs in general, such as technology, software, computers, and textbooks, but also program-specific equipment, such as tools for welding and dental hygienist chairs. Participants stressed that computers are on a constant "out-of-date" loop, which prevents students from staying current with industry trends. Teachers also stated that, due to system-wide protections, technology teachers cannot access the web sites or social media needed for instruction (e.g., students learning to build their own websites). Password overrides are required from RCSS for each individual student and teacher, which is potentially time-consuming for the teachers and RCSS.

Participants were unanimous that the lack of a pathway requirement is a barrier for CTAE. According to teachers, RCSS used to require students to commit to a career pathway within a career cluster. For example, a student participating in the Business Management and Administration Career Cluster can choose one of five pathways: the General Management Pathway, Business Information Management Pathway, Human Resources Management Pathway, Operations Management Pathway, or the Administrative Support Pathway. Participants stated that as a result of the pathway requirement, students had been both career- and college-ready, but now that emphasis has shifted. The elimination of CTAE pathway requirements created a "catch 22": teachers are instructed to build their CTAE programs, but without a pathway requirement, students dip in and out of courses and fail to focus on a career path. As a result, students are not committing to a pathway, and program numbers are falling. Teachers stated that not having such a requirement leaves students unprepared for the workforce.

Teachers in both focus groups expressed a sense of isolation from the RCSS Board of Education. Participants stated that there is a lack of communication with CTAE teachers, despite programmatic cuts and closures. The teacher participants perceived that CTAE staff and programs are diminishing, but there is no communication explaining why those cuts are occurring. Additionally, CTAE teachers expressed a need for greater funding transparency: teachers do not understand the current budgets for technology, programmatic closures, and teacher exits.

Participants also reported barriers in the existing rotation schedules and the student learning objective (SLO) tests. All CTAE teachers are required to teach the same pre-tests and post-tests, but there are different course lengths. In other words, one teacher may teach the course over a semester, while another teaches it over a quarter. These course rotations vary by school, but the teachers are required to meet the same testing standards. Teachers stressed that the difference in course length impacts the curriculum, creating unfair testing standards that cannot be met by all teachers. These rotations also lead to a lack of uniformity. Participants stated that a textbook system and flexibility in testing may help with these differences in course schedules.

Parents

Parent participants articulated a need for additional programs to capture students not suited for the military or cosmetology. Parents stated a desire for more CTAE programs marketed toward males, as many of the traditional programs have closed [*according to the teacher and parent groups*] such as auto or welding. Parents also expressed a need for course rotations to occur earlier in the middle grades so that students can explore potential career pathways prior to high school. Additionally, parents indicated that more consistent programming across schools would enable more students to join the programs, not just those in magnet schools. As an alternative, parents suggested that each school have a CTAE program that the school is "known for" and that students from other local schools could travel to take those courses, regardless of zoning.

Parents stated a need for a larger number of "great" and "charismatic" instructors, in contradiction with the teacher groups, who stated that instruction quality was good. Participants suggested that a quarterly "best Richmond County teacher in the industry" exchange could bring motivational teachers across the district.

Both of the above suggestions impact marketing and would draw more students to CTAE, according to parents. Further advertising and marketing for CTAE is necessary to raise awareness about the program among parents and students. Participants stated that marketing should begin with the parents and students in middle grades. Including parents in the marketing plan could spark discussions about CTAE at home. It was also suggested for parents and other community partners to volunteer in the classroom to help market to the students.

Finally, parents stated that CTAE should be more like a "course of study," suggesting that the majority of participants are unware that pathways exist. Participants stated that a required course of study would assist with employment and access to technical schools. Parents suggested that identifying students for these pathways would mean aligning programs with specific student needs, such as developing more programs as well as providing a middle school assessment to help guide students toward the appropriate CTAE program.

RECOMMENDATIONS FOR STRENGTHENING THE CTAE CURRICULUM IN THE RICHMOND COUNTY SCHOOL SYSTEM

Researchers at the UGA Carl Vinson Institute of Government analyzed the data gathered from the survey of area employers, CTAE curriculum review, and focus groups with RCSS CTAE teachers and parents to create five key recommendations for strengthening the RCSS CTAE curriculum.

1 ENHANCE INFORMATION TECHNOLOGY CAREER CLUSTER COURSE OFFERINGS.

The Georgia Department of Education CTAE information technology career cluster includes 10 career pathways: Cybersecurity, Health Information Technology, Information Support Services, Networking, Web and Digital Design, Computer Science, Game Design, Internet of Things, Programming, and Web Development. RCSS schools offer courses for five of these pathways in at least one high school. Introduction to Digital Technology, the introductory course for all of the pathways except Health Information Technology, is offered, but other courses needed to complete the Computer Science, Game Design, Internet of Things, Web Development, and Health Information Technology pathways are not available.

The CTAE information technology career cluster needs continued emphasis. The employer survey revealed that recruiting employees proficient in basic and advanced computer skills is a challenge for area businesses. Pathways such as the Internet of Things and Game Design have the potential to fill this need by attracting additional students and stimulating interest and motivation. Computer Science and Programming would challenge students seeking to prepare for mathematics-intensive technical careers.

Groundwork for enhancing the information technology career cluster has already begun, with recent changes in the content focus of business-education faculty in RCSS schools. For example, rather than focusing on teaching computer applications such as Microsoft Office, courses like Web and Digital Design and Cybersecurity reflect contemporary needs for digital literacy in the workplace. The content in these courses, however, was not even invented at the time many teachers were completing their university coursework. Some of the faculty would benefit from professional development and skills updates. When hiring new faculty, special attention should be given to job applicants with programming skills or industry experience with relevant software. Information technology careers continue to be a projected growth area. While cyber security is a very promising trajectory, additional pathways should also be provided.

2 IMPLEMENT A SYSTEM-WIDE STRATEGY FOR COMPUTER SCIENCE CODING INSTRUCTION.

Nationwide, there is a new push for students to learn how to code in schools. Respondents to the employer survey indicated that finding employees with proficiency in advanced computer skills such as coding was one of their greatest challenges.

While implementing a system-wide coding program extends beyond the specific review of RCSS CTAE programs, it is directly related to ensuring that schools are preparing students to be college and career ready. Implementing an initiative of this type would also provide a signature program for RCSS that could propel it to the forefront of educational institutions in the region and bring an elevated status that could benefit constituents, faculty, and administrators within the system.

In grades K-5, this initiative should touch all students. Instruction and learning activities that teach students to code could be integrated into every grade and classroom. The design should involve all students and not be an extra or after-school program but rather part of each teacher's curriculum.

In middle school and high school curricula, coding would be a component of CTAE courses already available or added to meet demand that might be generated by students' K-5 experiences. At the high school level, coding would bridge the CTAE information technology cluster with academics if additional computer science courses were made available. There is some debate about who will teach high school computer science courses that address in-depth programming skills, but either mathematics teachers or CTAE teachers will likely fill this role.

3 ENSURE ACCESS FOR ALL STUDENTS TO PARTICIPATE IN HIGH-QUALITY CONSTRUCTION, AUTOMOTIVE, CULINARY, LANDSCAPE DESIGN, OR COMPARABLE CTAE CAREER PATHWAY COURSES.

Not all students will pursue postsecondary education following high school. Such students need to have options in high school that will allow them to be career-ready upon graduation. For many of these students, courses that will prepare them for immediate employment are the keys to staying in school. When these courses are not available or are not of high quality, students fail to grasp the relevance of high school studies and can be tempted to drop out.

For these types of programs, it is also important for students to receive certificates or credentials that verify their readiness for employment. Although providing more certification options may require additional CTAE faculty credentialing, the value to students can be significant. Providing students with alternatives to college is essential to the success of the RCSS CTAE program.

4 DEVELOP AND STRENGTHEN CTAE PARTNERSHIPS WITH LOCAL BUSINESS, INDUSTRY, AND EDUCATIONAL INSTITUTIONS.

CTAE has close connections to business and industry. Most CTAE programs in schools have advisory committees, and frequent attention is given to aligning outcomes and standards with business and industry needs. One of the challenges, however, is for the programs and businesses to connect more than once or twice a year during evening advisory committee meetings hosted by CTAE faculty in their classrooms.

RCSS CTAE programs already have some sound and meaningful partnerships with area business, industry, and educational institutions. A partnership and MOU with Augusta Regional Airport is already in place, and previous connections with UA Local 150 and the Associated General Contractors of Georgia are being reestablished following a change in welding instructors at Hephzibah High. There is already a partnership with the city of Augusta wastewater treatment department, with plans for students to receive instruction resulting in certification related to their work in the future. Augusta Technical Institute has articulation agreements with RCSS in several areas, with dual enrollment programs and collaboration on cybersecurity, pharmacy tech, and a potential future

peace officer training academy. Work-based learning programs already place students in internships for part of the school day to gain real-world job experiences.

Despite all of these connections and programs in place, there are still opportunities for enhanced and expanded partnerships and collaboration. In the survey of employers, 71% of the respondents expressed an interest in school system partnerships, indicating a significant trove of resources if strategies can be developed to effectively tap them. New efforts would be required to make gains in this area, but the benefits could be substantial.

Partnerships with groups like the IBEW (International Brotherhood of Electrical Workers) Local 1579, or others related to the construction trades, could provide new opportunities for students planning to join the labor force directly after completing high school. Landscaping companies, building subcontractors in specific trade areas, and cabinetry shops might provide additional internship opportunities, and numerous employers might be open to students who are developing information technology skills.

Existing relationships and collaborations should also be examined for further potential. Advisory committee members may become more engaged if invited into the classroom as guest speakers. Additional areas for dual enrollment programs could be explored with Augusta Tech. Collaboration should be a real and effective objective, rather than nominal and routine. If additional resources can be tapped from area businesses and industries, the existing expenditures and resource allocation for CTAE might be leveraged for enhanced outcomes.

5 SEEK INDUSTRY CERTIFICATION FOR ADDITIONAL RCSS CTAE PROGRAMS.

The Georgia DOE embarked on an initiative to gain industry certification for CTAE programs a number of years ago. Currently, there are 14 career pathways with industry-certification standards in place. These certifications were established by the Georgia DOE to represent the pinnacle of program quality. Industry-certified programs receive an official "stamp of excellence" from the Georgia DOE. The industry certification process requires rigorous review by leaders from business and industry. This process involves verifying that a program is meeting a set of industry-recognized standards. These standards typically include benchmarks related to the instructional program, facilities, equipment, safety, public relations, budget, advisory committee, and student organizations. Certification lasts for five years, after which programs must be recertified.

Some RCSS CTAE programs are already industry certified, including Marketing and Business, IT, and Finance at Glenn Hills; Health Science at A.R. Johnson; Early Childhood at Westside; and Welding at Hephzibah. The Marketing program at Westside and the Culinary program at Richmond County Technical Career Magnet School are currently seeking certification.

Both parents and teachers stated a desire for CTAE teachers to immerse themselves in the field for several hours a week to stay on top of industry changes. This is a perk of the industry certification process, which requires teachers to engage in their industry outside of the classroom.

The process of becoming industry certified is rigorous and often requires up to a year to complete. In some instances, teacher qualifications or other barriers can preclude eligibility for a program to be certified. The standards for certification, however, should be considered for adoption by all CTAE programs even if all of them cannot be met. Standards typically include benchmarks related to the instructional program (such as the curriculum), facilities, equipment, safety, public relations, budget, advisory committee, and student organizations.

CONCLUSION

The RCSS CTAE courses and programs are providing a tremendously valuable service for both the participating students and the surrounding region. Numerous students are being touched, motivated, and prepared for a successful transition into the workforce. It is commendable that RCSS has undertaken a study to evaluate both the needs of businesses and industry in the 13 CSRA counties and the CTAE instructional programs now available. All of the recommendations provided are intended to be constructive and helpful, and when they are implemented the services provided to students will be better than ever.

REFERENCES

Bureau of Labor Statistics, US Department of Labor. (2015). Employment projections 2014-202. Retrieved from http://www.bls.gov/news.release/pdf/ecopro.pdf

Cappelli, P. H. (2015). Skill gaps, skill shortages, and skill mismatches: Evidence and arguments for the United States. *Industrial & Labor Relations Review*, *68*(2), 251-290.

Carl Vinson Institute of Government. (2014). *Governor's High Demand Career Initiative report*. Retrieved from http://www.georgia.org/wp-content/uploads/2014/04/HDCI-Report.pdf

Cornelius, D. (2011). The education and skills gap: A global crisis. *Techniques: Connecting Education and Careers*, 86(4), 50-55.

Deloitte Manufacturing Institute. (2015). *The skills gap in US manufacturing 2015 and beyond*. Retrieved from http://www.themanufacturinginstitute.org/~/media/827DBC76533942679A15EF7067A704CD.ashx

Georgia Department of Education. (2015). Career, Technical, and Agricultural Education (CTAE). Retrieved from https://www.georgiastandards.org/Frameworks/pages/BrowseFrameworks/CTAE.aspx

Georgia Department of Labor. (2014). *Georgia workforce trends: An analysis of long-term employment projections to 2020*. Retrieved from https://explorer.gdol.ga.gov/mis/Current/gaworkforcecurrent.pdf

Georgia Department of Education. (2014). *CTAE Annual Report: Educating Georgia's future workforce*. Retrieved from https://www.gadoe.org/Curriculum-Instruction-and-Assessment/CTAE/Documents/CTAE-Annual-Report-2014.pdf

Lumina Foundation. (2015). *Closing the skills gap: Companies and colleges collaborating for change*. Retrieved from https://www.luminafoundation.org/files/publications/Closing_the_skills_gap.pdf

Manpower Group. (2015). 2015 Talent Shortage Survey, 10th Annual Talent Shortage Survey. Retrieved from http://www.manpowergroup.com/wps/wcm/connect/db23c560-08b6-485f-9bf6f5f38a43c76a/2015_Talent_Shortage_Survey_US-lo_res.pdf?MOD=AJPERES