

Effect of Collaboration with Industry Professionals on 12th Grade CTE Student Achievement on
IBC Exams

A Review of the Literature

By

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Introduction

When I began designing my Innovation Plan of a CTE Collaborative Lab Learning I had a vision in mind of what it would look like in career and technical education classrooms, but through the evolution of coursework and research it has become something different that I am excited to bring to teachers and students. Too often we focus on just test scores and the narrow focus of standardized testing or an achievement gap that can only be accomplished in one isolated environment. As the Technology Facilitator at a Career and Technical Education school I saw a need for forging a relationship with industry professionals and teachers in a cohesive way with collaborative work. What this study does is opens doors for students to accomplish more even after they graduate from high school. This in turn will improve college admittance and employability after graduation. While it has become apparent that not all students will go to college, it has become increasingly clear that we must prepare them for the 21st century job market and the best way to do that is with hands-on skills preparation and what better way to do that than with real-world, hands-on preparation collaborating with industry professionals? The additional bonus this plan gives is giving the teachers this knowledge and hands-on experience as well. Many CTE teachers come from working in the industry or still do in fact and need to stay abreast of the latest and greatest in knowledge and skills in the field today. In my opinion this is a win win for the teachers and the students and something that is so needed in CTE classrooms today. What is the impact of implementing collaborative lab learning in CTE classrooms on students' performance on IBC exams in the 12th grade?

Review of the Literature

Definitions

Collaboration is the action or cooperation of working with someone to create something. (“Collaborate,” 2022). In collaboration, others need to be willing to assist someone in their endeavors to accomplish a goal. The collaborator is instrumental in helping their peer or mentee achieve success using prior knowledge and problem-solving skills within a structured environment. In this research collaboration will be explored with industry professionals in a virtual setting working with 12th grade students in a CTE classroom.

IBC-industry-based certifications. In the state of Texas, the Texas Education Agency (TEA) uses IBC’s as part of the state accountability rating. These tests are used to prepare students for post-secondary education, workforce preparedness, and military preparation. (Industry-Based Certifications | Texas Education Agency, n.d.).

Advantages of Using Collaboration

Career and Technical Education is not a new field, but it has evolved over the years. Do you remember being in woodshop or home economics class when you were in school? Well, those classes still exist, but on a whole new level and with a different caliber of instructor teaching them. The days of a woodshop teacher making clocks or a homemaker whose kids are grown teaching you how to sew are gone. We now have former industry leaders in the classrooms, and they are bringing firsthand knowledge as well as engaging in work-based experiences to keep their own knowledge up to date. The teachers will need to stay up with the most relevant trends by participating in professional learning opportunities and externships whenever possible (Brown, 2003).

It is necessary to keep not only the students but the teachers up to date on the latest trends and information in their field of study and a great way to facilitate this is via collaboration with industry leaders. We need to be able to facilitate this learning from knowledgeable experts

(Gewertz, 2017). The experts are people currently employed in the field of study that have firsthand knowledge of the subject matter that is being studied in the classroom. They can provide expertise to the teacher and students in real time and present-day scenarios.

The practical experience that is gained from collaboration is immeasurable. Without giving students the chance to be hands on prior to being on the job, they are unable to be successful (Murphrey, Miller, Harlin, & Rayfield, 2011). Through collaboration and hands-on learning there should be a better understanding of knowledge to prepare students for entering the workforce. Lab-based learning with industry professionals at the helm of the learning experience will guide this and it can be taken one step further and called work-based learning experiences. These are much more than project-based learning because students are learning firsthand with the industry professionals guiding the learning (Cohen, 2018).

The aim in this collaboration is to gain industry certifications or IBC. Vendor specific certifications can be useful for students entering the workforce in a specific field such as technical and trade schools or the network field (Gomillion, 2017). Employers have seen an increase in certifications from high school students with relevant job training entering the workforce. The benefit to students academically shows a lower likelihood of dropping out when coupled with core content and CTE courses (Glennie, Ottem, & Lauff, 2020).

IBC exams for 12th grade students are what the focus is for this study and collaboration with industry professionals and ultimately, we are looking for pass rates on these exams. Test scores can be measured on an upward trend in some studies of CTE courses as it relates to skilled and technical trades. While not every trades scores rose, it is hopeful that the trend was on the rise for students to achieve success (Michaels, & Liu, 2020).

Barriers to Implementing Collaboration

Some of the challenges that occur with collaborative work with industry professionals in lab environments with students is how can the learners experience the real world without being in the real world. Geography can sometimes be a challenge in this as the learner may be in a different location than the industry professionals they are collaborating with (Dinavence, 2021). The closer the proximity, the easier it is to collaborate, but that is not always possible for either party. We are focusing on a virtual lab environment versus face-to-face which can sometimes be more challenging for the learner and the industry professionals to gain a natural connection to the learners, however, it is a matter of building trust on both sides.

With the industry professional online, instead of face-to-face, the learners may feel isolated. Even though this is synchronous learning, it is still virtual, so it lacks the human element, and the learner may feel disconnected. Once the industry professional is finished presenting for that day, they may be unavailable for follow-up questions (Fischer, & Yang, 2022). In addition, funding is always an issue with CTE programs in general, no matter how successful a program is. There is research that shows vocational programs to be a success, yet some school leaders still won't put funding behind it for fear that it will deter from the core content courses (Castellano, Stone & Stringfield, 2005).

Technology makes this a bit easier to accomplish in the sense that we can flip classrooms to be a virtual learning environment to collaborate. In CTE classrooms the advantage that a lot of classrooms have is that they also have a laboratory environment in addition to a classroom to work. The benefit that this creates is that many of these classrooms are equipped with the tools that students will be using in the jobs that they are training for. What occurs from this is the opportunity for industry leaders to collaborate virtually with students and teachers in real time in the learning environment and work environment simultaneously.

Summary

Through this research it was learned that 12th grade students having the chance to collaborate with industry professionals in a hands-on lab environment gives every student the opportunity to enhance their workforce knowledge and skills and ultimately gain knowledge to assist them in passing the IBC exam. In passing the IBC exam, students will have the opportunity to go on to post-secondary education institutions and/or be hired by employers who value the job skills and certifications they have acquired. This type of training is both needed and valued in education and the workplace today and can be an asset in the future. Student data from IBC exams as well as student and teacher data from surveys can help determine the success of this plan once implemented.

This Review and the Field of Education

CTE is an ever-evolving field in education and too often it is overlooked as being “just an elective”. The truth of the matter is that many students today are not going to college for various reasons, and they need CTE classes to enhance their prospects after high school. In the field of education, we must prepare our students and teachers more than ever before for that reality. Many students today are using the trade skills that they acquired while in high school to work in well paid jobs until the jobs or school programs they are working to attain are available or they can afford them (Packard, Leach, Ruiz, Nelson, & DiCocco, 2012).

According to Lamichhane & Karki (2020), lab-based learning improves critical thinking and creativity. With lab-based learning and collaboration with industry leaders along with teachers participating in continued education opportunities, teachers will have more ammunition to prepare students for the IBC exams. In addition, students will have more knowledge and skills

needed to pass the IBC exams and graduate, entering the workforce and/or post-secondary education with certifications in hand.

Strengths and Weaknesses of this Body of Literature

What the literature reveals is that there is a high demand for CTE curriculum collaboration with industry professionals. There needs to be more funding placed on collaboration efforts in CTE programs according to the study done by Murphrey, Miller, Harlin, & Rayfield, (2011). In addition, IBC certification is front and center as a focus of importance in CTE classrooms. The collaboration with industry professionals has a direct correlation with hands-on lab-based learning and this leads to students earning industry certifications that can be utilized for workplace employment and/or post-secondary education (Castellano, Stone, & Stringfield, 2005).

On the other hand, what the literature does not disclose is direct evidence of collaboration with industry professionals on 12th grade CTE student achievement on IBC exams. While there is quite a bit of literature on student achievement in high school, there is no specific data on 12th grade students. IBC exams are specific to each content area and can be looked at on a wide spectrum of skills and levels and therefore cannot be narrowed to one specific CTE content area, unless the study is looked at from a narrower lens.

Focus of the Current Study

Returning to the original question; what is the impact of implementing collaborative lab learning in CTE classrooms on students' performance on IBC exams in the 12th grade? Until this study is completed, this question cannot be completely answered, however, from the literature, some questions have been addressed. How can collaboration enhance student learning? Students and teachers will be more informed of classroom content, lab learning and industry

standards by virtual collaboration with industry leaders. How can IBC exam score be improved?

With collaboration with industry leaders, students and teachers will have more knowledge of industry standards to be better prepared for industry-based certification exams. The solution here is to complete the study to make the collaborative experience available to learners and enhance student learning and achievement.

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