

THE INFLUENCE OF AP AND CTE COURSEWORK DURING SECONDARY  
EDUCATION ON POST-SECONDARY PREPARATION

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## **Abstract**

### **The Influence of AP and CTE Coursework during Secondary Education on Post-Secondary Preparation**

During secondary education, students are encouraged to pursue a variety of pathways within the post-secondary environment, but most often the pressure is to attend university. The following investigation was centered on two types of preparative coursework available within the secondary environment, AP and CTE classes, and how students as well as teachers felt that the classes in each category helped or would help within the post-secondary environment. Both AP and CTE instructors were interviewed as well as students who had participated in such coursework. Students with an AP focus tended to view CTE coursework as not as important as AP in their preparation for the post-secondary because their ultimate goals were four-year university or higher. The CTE student interviewed thought of his time in CTE as the foundation for his current career and post-secondary pathway within the Culinary Institute of America. Both instructors interviewed believed that the ultimate goal of their coursework was to prepare their students for the particular path they chose. The CTE instructor thought that the opportunity to experience and the value of hands-on career training were often overlooked and undervalued based on her communications with students already within the post-secondary environment. In conclusion, the benefit of CTE courses can often be overlooked in favor of courses that are specifically designed for college or university preparation in an environment where pressure to attend university is high. However, for those students and instructors involved in CTE, the skills and knowledge obtained within CTE courses can be extremely useful in deciding intended post-secondary pathways, not only in regards to higher education choices, but ultimate career and life goals.

## Table of Contents

Introduction.....	1
Literature Review.....	2
Research Question.....	11
Methodology.....	12
Data.....	17
Analysis.....	30
Implications/Recommendations.....	36
Conclusions.....	37
References.....	38

## Introduction

*“The greater danger for most of us lies not  
in setting our aim too high and falling short;  
but in setting our aim too low,  
and achieving our mark.”*

*– Michelangelo*

High school exists as a diving board upon which adolescents step and acts as the stage where they first begin the perilous journey into what is commonly called “adulthood.” Parents, teachers, and policy makers want these years to be productive and preparative for students. In the midst of this pressure for success, students are experiencing physical, mental, and emotional changes that also affect the choices they make. Every person involved in shaping a student’s future has their own particular goals, but the main goal is the success of the student in the real world.

Often, the mark of success is attending college, getting a good job, or both. For some students, the option to attend college is not as glamorous as it is often portrayed. Instead, college seems to be just another hoop one must go through in order to be useful in the real world. The goal of such students might be to forgo college in favor of something more tangible and relative to their potential success in the labor market or chosen career path. For others, college can act as another staging area that may lead to better career options in the future. Better academic qualifications are related to higher paying jobs, so the choice to attend university and accrue debt is not as foreboding as it may at first seem.

As an educator, the goal should always be to prepare students for whichever road they may travel in the future. This path may be a movement directly into the workforce, attending community college or technical school, or pursuing a 4-year degree at a university. Many strategies are used to help students along these paths, including rigorous coursework, career-oriented classes, or early experiences in both higher education and the work force. The dilemma that we face as educators, therefore, lies in what course of action will best prepare each student for his or her particular path.

The aim of this study is to address what we as educators can do to help prepare students as well as what we have been doing. Through the analysis of current research and a study of AP and CTE members, the goal is to determine what influence we think we have and also, what influence we truly have on students in regards to AP and CTE coursework as a preparation for the post-secondary environment.

## **Literature Review**

As an analysis of some of the literature, the following is a review of work done regarding expectations of students in the secondary education environment as well as general information regarding Advanced Placement (AP) and Career and Technical Education (CTE) courses.

### *Post-Secondary Environment: The Effect of Expectations in Secondary Education*

The goal of any secondary education course is to not only provide the information students need to make decisions in the post-secondary environment, but also to help them develop the abilities necessary to successfully follow through on those decisions. One of the biggest changes in secondary education is the expectation to pursue education beyond

high school. Nationally, the percentage of seniors in high school who intended to pursue at least a bachelor's degree increased from 35% in 1980 to 56% in 1997 (Isaacs, 2001, p. 391). In 1998, 66% of high school seniors then actually pursued education in two- or four-year universities (Isaacs, 2001, p. 391).

While a high percentage of students are expecting to or are actively pursuing post-secondary education, it appears that a significant factor in determining how successful students are in their chosen pathways are the expectations established by the students themselves, parents, and not surprisingly, teachers. Sciarra & Ambrosino (2011) conducted a large-scale study in which over 5,000 students, parents, and teachers were surveyed in regards to their expectations for the post-secondary environment. In this particular study, the focus was on post-secondary education, which includes initial expectations of three major groups (students, parents, and teachers) and educational achievement and attainment two years after initial data was collected (Sciarra & Ambrosino, 2011).

One of the major findings of Sciarra & Ambrosino in their study was that teacher expectations were a fairly accurate predictor of what pathways students chose for post-secondary. The seven categories of post-secondary expectations were examined, ranging from completing less than a high school diploma all the way to obtaining a Ph.D., M.D., or other advanced degree. Higher expectations of teachers had the most significant correlation to higher educational achievement by students within the post-secondary environment, followed by individual student, and finally parental expectations. An interesting point of note was that expectations of students were the most likely to change throughout the course of their secondary education, which the researchers attributed to

influences by teachers and by student success within the secondary environment (Sciarra & Ambrosino, 2011).

In another study based in social cognitive theory, the effects of career outcome expectations and aspirations to enter science, technology, or math (STM) careers were analyzed in relation to students' post-secondary academic motivation, both in terms of intrinsic and extrinsic motivational factors (Domene, Socholotuk, & Woitowicz, 2011). Intrinsic motivational factors are those influences that lay within the individual, such as a desire for knowledge, autonomy, and mastery of a topic rather than a specified outcome, whereas extrinsic motivational factors relate to some outcome, such as a successful career or other type of reward. Both intrinsic and extrinsic motivational factors were reviewed, with initial hypotheses assuming that students with high expectations for successful careers would have more extrinsic and intrinsic motivation than peers with low expectations. The researchers in this study were also under the assumption that students who pursued STM had a better understanding of the relationship between their career aspirations and academic motivations. Data from Domene et al. supported both hypotheses, showing that students with higher career outcome expectations were more highly motivated than peers with lower expectations, especially in STM careers. These results indicate an area of intervention for students would be attempting to enhance post-secondary engagement that stresses the relevance between education and future goals.

Another influencing factor on the initial pathway students pursue in the post-secondary environment is the applicability of different degrees. Similar to the study conducted by Domene et al. in which STM was a focus, the roll of vocational education in connecting education to future goals cannot be ignored. Although the overwhelming

attitude of most individuals is to pursue a baccalaureate degree, one of the most beneficial alternatives is to enroll in vocationally-oriented coursework (Mupinga & Livesay, 2004, p. 261). This allows students who may not initially have adequate funding or who did not have preparative coursework in the secondary environment to pursue degrees that take only one to two years and are often partnered with cooperating businesses. Such partnerships actually sponsor the cost of students attending such programs, or allow for concurrent completion of coursework and work (Mupinga & Livesay, 2004, p. 262). In addition, attending these programs as a post-secondary choice allows for reliable job opportunities within a short time span as well as the potential to pursue future educational goals (Mupinga & Livesay, 2004, p. 263).

The technical proficiency benefits of vocational education, as examined by Mupinga & Livesay, are also related to the cost to benefit relationship between career and educational decisions. Although motivational factors and applicability of post-secondary pathways are large influences on the choices of students, another unavoidable influence is that of the cost of and access to post-secondary education. Both monetary and non-monetary perceptions of, including the concept of “access” to post-secondary education can and should be addressed when students are making plans for the future (Conlon, 2006; Cote, Skinkle, & Motte, 2008). Misperceptions of short-term cost in relation to returns are often the biggest deterrent to pursuing higher education, with individuals from low socioeconomic status perceiving the initial cost as roughly five times greater than the actual cost (Conlon, 2006). In addition, monetary return on different levels of education is usually viewed as half the actual return. In relation to non-monetary perceptions, students that have identity anxiety, or those that are unsure how a post-secondary



education would affect their personal identity, in combination with misperceptions of cost-to-benefit are often the least successful in higher education and tend to not pursue it.

The returns of higher education, in both trade and university education can be misperceived by individuals, but there also exists an earnings gap between university education and trade or community college education (Caponi & Plesca, 2009). On average, those with a university education make an average of 20% more than individuals who have completed trade or other college coursework. In Caponi & Plesca's study, an examination of both innate ability and the level of post-secondary education only showed slight differences between those pursuing university educations versus trade or community college participation. These results indicate that although ability levels are nearly the same for those graduating from trade or other college coursework, individuals who attend four-year universities have a higher return and also a higher initial cost.

#### *Advanced Placement (AP)*

With increased emphasis on standardized testing and the expectation of students to pursue post-secondary education, a change in secondary education has occurred (Sciarra & Ambrosino, 2011). Advanced placement, or AP coursework is a common component of most secondary education environments, mostly for its association with college preparation. First established in 1954, The Advanced Placement Program has offered high school students the opportunity not only to experience college-level coursework while still at the secondary level, but to earn college credit based on the score received on AP exams. As of 2006, the United States had more than one million students enrolled in AP courses and more than two million AP exams were proctored

during the course of the year. With over 37 different AP courses in 22 subject areas offered, the proliferation of AP coursework in American secondary education is quite obvious for both those entering as students and as instructors in that environment (Scott, Tolson, & Lee, 2010).

Although there is increased availability of AP coursework within American high schools, there are still disparities in its overall availability as well as contention as to its effectiveness in preparing students for post-secondary education. Some contend that AP coursework is beneficial for its role in preparing students for the rigorous coursework found in post-secondary education and can also be an indicator of the proficiency level of applying students to admissions committees, regardless of other factors such as socioeconomic status or ethnicity (Scott et al., 2010; Isaacs, 2001, pp. 400-404). However, when examining subject-specific success, it appears that student performance in college-level Life and Physical Sciences, although slightly higher than students with no AP coursework, does not reflect the implied mastery associated with higher scores on AP examinations. Instead, higher performance in science coursework is related to school demographics and other high school coursework (Sadler & Tai, 2007). In addition, students who were listed as high performing in general education courses, but did not complete AP courses, showed GPAs similar to those in AP courses (Thompson & Rust, 2007).

### *Career in Technical Education (CTE)*

As a result of the increased emphasis on standardized testing and post-secondary education, vocation-oriented coursework within secondary education has been under wide debate for over a decade. One of the major contributing factors to the initial decline of vocational education was the passing of the “No Child Left Behind” act, which attempted to completely remove all budgeting for vocational education by 2003. This was proposed under the assumption that such coursework did not hold up to the standards of rigor and academic achievement upon which NCLB wanted to focus. However, the “Carl D. Perkins Career and Technical Education Act of 2006”, known as the Perkins IV, helped to re-instill confidence in and much-needed funding for American vocational programs (Friedel, 2011).

The goal of Perkins IV was to “focus on CTE [Career and Technical Education] improving the academic achievement of high school students... reflected in the core indicator of student attainment of challenging academic content and achievement standards as adopted by NCLB” (Friedel, 2011, p. 30). These standards were to include student achievement based on technical proficiency exams, similar to industry-recognized standards. In addition, Perkins IV also outlined how technical education could be used to better serve special populations, including but not limited to individuals from economically disadvantaged families and individuals with educational barriers such as limited English proficiency or disabilities (Friedel, 2011; Wallenborn, 2010, pp. 184-185).

In relation to the aforementioned accessibility of post-secondary vocational coursework, one of benefits of CTE classes within high school is that it allows students to complete certification-based programs prior to graduating (Mupinga & Livesay, 2004; Wallenborn & Heyneman, 2009). However, there are both positive and negative aspects of pursuing vocation-oriented coursework during secondary education. The major arguments in favor of offering vocational education within a secondary school environment are from the perspective of socio-economic development both nationally and globally (Wallenborn & Heyneman, 2009, p. 407; Wallenborn, 2010). Some of the programs that could be offered have relatively low costs because employers help to fund and implement training either within a high school or through hands-on training conducted at inter-company training centers (Wallenborn & Heyneman, 2009, p. 407).

Some of the more common arguments against offering vocational training within a secondary school environment are the deficiency of training opportunities within high skill areas as well as the fact that curriculum and instructors can be out-of-date in relation to current labor market standards (Wallenborn & Heyneman, 2009, p. 409). High skill areas, such as aircraft maintenance and telecommunication are often lacking in the secondary environment due to insufficient funding within the public sector, which can be supplemented through training offered in the private sector. Teachers who are both available and qualified to instruct in low or high skill labor market areas are also more difficult to find as education shifts from technical proficiency to purely academic proficiency within content areas (Wallenborn & Heyneman, 2009, p. 409; Al-Saaideh & Tareef, 2011, p. 716).

Although monetary returns are usually the major focus for students in any post-secondary pathway, the civic engagement differences in individuals in different programs can vary substantially. In a study focused on post-secondary vocational schools, Persell & Wenglinsky examined differences in private, for-profit vocational education and public, non-profit vocational education. Data from this study showed that individuals in private, for-profit vocational programs tended to have less civic engagement, including community and political involvement, most likely due to a decrease in student-to-instructor interaction and engagement within private, for-profit vocational schools (Persell & Wenglinsky, 2004). The implication in this study is that increased student-to-instructor communication can increase the likelihood of student civic engagement. Within the secondary education environment, the atmosphere of combining both mentoring and education of individuals is already present. Therefore, increased vocational opportunity as applied to individual, career, and community can help to create a more involved student population.

### *Summary*

One implication of this review of the research is that teachers can be one of the most influential components of the choices students make within the post-secondary environment. Whether this prediction is based on direct student evidence in regards to subject proficiency and attitudes, or if it is the influence of the teacher's expectations, the environment in which students find themselves during secondary education will most likely be the greatest predictor of their future choices. The attitudes teachers instill in individuals during secondary education can also be essential in developing both the intrinsic and extrinsic motivational factors that spur students to persevere within their

chosen post-secondary pathways. In addition, AP coursework, even though sometimes beneficial for students pursuing advanced post-secondary education, may not be the best choice for students who pursue direct placement into the work force after high school. Instead, advanced vocational coursework, either during or after high school, such as technical school, community college, or baccalaureate programs focused on career or technical education, can be and often is a more viable option for such students in the years directly after high school. This advanced vocational coursework can help link student perception of future goals with the education they receive during secondary because it allows students to be engaged in their potential fields of study. In addition, initial costs of trade or community college education are lower and might allow for students from lower SES to pursue education and career simultaneously. An emphasis on standardized testing and college-preparedness thus may not be the most effective in preparing students for a career if the opportunity to gain real-world experience in a career path is more easily accessible to students.

### **Research Question**

The above review has led to the following primary investigative question: How do AP and CTE coursework during secondary education prepare students for the post-secondary environment? For the following project, post-secondary environment is to include both post-secondary education and career choices. Secondary investigative questions include the following:

- 1.) What are the different attitudes of AP and CTE students towards post-secondary education?

- 2.) Does participation in AP or CTE coursework better prepare students for the path they choose in the post-secondary environment?

## **Methodology**

### *Method and Rationale*

Qualitative methodology focuses mainly on specific groups in order to interpret or understand phenomena related to that group. As a result, utilization of such methods as interview and observation are an integral component in qualitative research. Because this project focuses on the attitudes and opinions of secondary students, a qualitative methodology will be the most beneficial in collecting, interpreting, and representing data. The use of a qualitative methodology for this project is beneficial because it allows investigation into the context and environment of AP and CTE classrooms and how such an environment may influence student decisions in the post-secondary environment.

The specific qualitative method utilized in this project was a case study involving AP and CTE students. I had hoped to include both in-class observations as well as interviews, but due to time constraints and limited observational data, I have only included the interview transcripts within this manuscript. Interviews were conducted in order to interpret how AP and CTE coursework have affected and might affect secondary students in decisions relating to the post-secondary environment.

## *Sample*

My sample consisted of two major groups: students who are currently taking AP courses, both as single classes in AP Biology and across different subjects (Biology and at least one humanities course) and students taking a CTE course (Culinary Arts). The AP group of interviews will contain a sample size of four students while the CTE group will only have one student. Both class groupings consist of high school students in grades 9-12 and therefore students will be ages 14-19. Teachers for each of these classes were also interviewed.

### Interview Questions:

These questions were a guideline for the interview and may or may not have been expanded upon during the course of the interview. Any additional questions were transcribed and included within the “Data” section of this manuscript.

#### Questions for AP students

- 1.) Why did you choose to take AP courses?
- 2.) What AP courses have you taken?
- 3.) Have you ever taken any CTE courses and if so, how do your experiences in AP courses compare?
- 4.) How do you think AP courses will help you in the future?
- 5.) What are your plans for after high school?
- 6.) Have any of your friends or family taken AP courses?
- 7.) If so, what was their post-secondary experience?



### Questions for CTE students

- 1.) Why did you choose to take CTE courses?
- 2.) What CTE courses have you taken?
- 3.) Have you ever taken any AP courses and if so, how do your experiences in CTE courses compare?
- 4.) How do you think CTE courses will help you in the future?
- 5.) What are your plans for after high school?
- 6.) Have any of your friends or family taken CTE courses?
- 7.) If so, what was their post-secondary experience?

### Questions for AP and CTE teachers

- 1.) How do you feel this class has prepared your students for the post-secondary environment?
- 2.) What are your expectations for students who have completed your course?
- 3.) Have you followed up with any of your students after graduation?
- 4.) If so, what were their post-secondary experiences?

### *Instrumentation*

The specific qualitative method utilized in this project was a case study involving AP and CTE students. Student and teacher interviews were the main method of data collection performed. This was done in order to interpret how AP and CTE coursework have affected and might affect secondary students in decisions relating to the post-secondary environment.

Interviews with AP students and teachers were recorded using voice recording technology and later transcribed. Interviews with teachers in CTE courses were conducted in-person as well. The CTE student interviewed was a former Culinary Arts student and was interviewed via E-mail correspondence.

### *Analysis and Validity*

Because this project is grounded in qualitative analysis, student and teacher interviews will be conducted and examined after transcription of audio files. The use of data from multiple AP and CTE courses will allow for an adequate and credible description of themes common to both environments. Some of the major themes I will be looking for will be any shared attitudes of both students and teachers towards post-secondary education and career pathways. Content analysis of interview dialogue will be the primary technique for finding such themes and patterns. In-class observation of instruction in both AP and CTE courses would have been ideal, but time constraints of both groups made this difficult and therefore the observations I was able to conduct were not adequate to have included in this study.

In terms of validity of data, the personal observations of an outsider in the classroom as well as the dialogue conducted between that observer and active participants within the study will allow for a fairly reasonable reflection of larger populations. The study itself, which is an analysis of student and teacher attitudes, expectations, and assumptions, is one that can be applied to any environment. One of the issues that might affect validity, however, is the fact that the school in which I took my sample has a heavy focus on AP coursework and more technology- and business-based CTE courses, versus

practical or natural science-focused CTE courses such as horticulture, agricultural biology, or veterinary science. This different focus may be a result of local demographics and student/community need. The limited offerings for CTE coursework at this particular school are also due in part to being a part of WaNIC, or the “Washington Network for Innovative Careers”. The WaNIC program provides a wide variety of advanced-level Career and Technical Education courses throughout multiple school districts in the area, making the number of CTE courses at each individual school less. In addition, I was only able to successfully conduct an interview with one CTE instructor and one former CTE student.

As a researcher in a qualitative study, one of the unavoidable side effects is influence on participants. Although I do not foresee any issues when communicating with teachers and staff, the attitudes of students towards a seemingly transient entity within their classroom might prohibit honest and forthright answers during the interview process. Therefore, my goal will be to establish myself in the study environment as a valuable and trusted presence prior to initiating interviews with students. In terms of biases, the largest bias I have is the pre-existing assumption that a focus on advanced post-secondary education is not always the best option for students, despite the overwhelming expectation to do so. This assumption is based on real-world experience with students and peers who either did not have an adequate focus when pursuing post-secondary education or who did not have the funding or educational background to immediately pursue such education.

## Data

Provided below are the transcripts of interviews conducted with all participants. Most of these transcriptions, with the exception of the one CTE student interview, are based off of the audio recordings of interviews and are transcribed in such a way as to reflect the cadence of speech during the interview and include all dialogue except the initial statement of interviewee name. The portion where interviewee's provided name and profession/position were removed in order to maintain anonymity. Interviews are separated by associated headings (e.g. "*AP Teacher – Transcript of Interview*", "*AP Student 1 – Transcript of Interview*").

### *AP Teacher – Transcript of Interview*

\*\*The AP teacher interviewed teaches one section of AP Biology and has been an instructor in AP Biology for approximately 4 years.

**Me:** 1<sup>st</sup> question, how do you feel this class has prepared your students for the post-secondary environment?

**AP Teacher:** I think it does a pretty good job of getting them to a point where if they were to take the class again, they would be tremendously prepared for taking the class again. If they are able to use their experience in AP class for a college credit, um... I would say that a lot of times they leave the class at a place where they might struggle going into, kind of the *next level* of Biology if they weren't to retake the class again in, in college. So I think it's a, a good step for them to, to get ahead once they get to college, but I don't know if it's a, a fantastic jump for them if they don't have to retake the class.

**Me:** Okay, so, summarizing, what are your expectations for students who have completed your course?

**AP Teacher:** The expectation is... hmm good question... um that they have gained enough knowledge that they can be proficient on the AP exam, um that they have been given the chance to develop lab skills that allow them to uh

design, carry out, interpret experiments that they design to answer their own questions. Um, I think there's also the expectation of content, but um I think... I don't know the outcome of that until later on, like in the summer before I have a really good idea of what they've been able to, to gather by way of the class. And it's one test, one day sort of thing so.

**Me:** In terms of the AP exam?

**AP Teacher:** Yeah the AP exam.

**Me:** Okay. Um, going to students that have, that you've had and gradu- that have graduated, um, have you followed up with any of your students after graduation, and if so, what were some of their post-secondary experiences?

**AP Teacher:** So I have kept in contact with several of them. Um... They all have said that they were prepared for their Biology classes in college. Um, that they felt very confident entering into those Biology classes. A number of them have taken, um, internships at different laboratories and things like that so, um... they're definitely prepared for that post-secondary work in the field at kind of the entry level. So I, I think that they've done very well with the knowledge base that they've taken from the class, so.

**Me:** Okay. So... In terms of not only applicability to post-secondary coursework and also, but also post-secondary, um, employment?

**AP Teacher:** Yes, field work sort of stuff, yeah.

**Me:** Internships, or even entry-level employment in some instances?

**AP Teacher:** Yes."

*AP Student 1 – Transcript of Interview*

\*\*AP Student 1 is a male 11<sup>th</sup> grader. AP Biology has been his only AP course.

**“Me:** Why did you choose to take AP courses?

**AP Student 1:** Um, I chose to take AP courses because like, only to specific classes that really interest me and like, I might have a future in majoring or minoring in college.

**Me:** Ok, so what AP courses have you taken then?

**AP Student 1:** AP Biology is actually my first and only AP course so far.

**Me:** Ok, do you have plans for other AP courses?

**AP Student 1:** Yeah I do, but they're still within the science field.

**Me:** So, you're, yer stickin' with sciences then?

**AP Student 1:** Yes

**Me:** Have you ever taken any CTE – that's the career and technical education – courses?

**AP Student 1:** No, I am taking them next year.

**Me:** Ok, which ones are you taking next year?

**AP Student 1:** Digital Video Audio, and uh... photography.

**Me:** Mk, so having taken those courses, how or... 'cuz you're about to take them right, you haven't taken them yet...

**AP Student 1:** Yeah

**Me:** Ok, how do you think they'll compare to the AP course you've taken so far?

**AP Student 1:** Oh, I think they're gonna be a lot easier. I kind of wish there was no requirement for the CTE classes because I don't have any interest in them, but I'm kinda required to take them, so.

**Me:** Ok, so it is a requirement here to have that CTE course?

**AP Student 1:** Yeah, 1 year.

**Me:** Gotcha, how do you think the AP courses you plan on taking will help you in the future?

**AP Student 1:** Um, I really think that it's more of a college level class. It really goes a lot faster and more in depth than a normal high school class. So, I think college won't like, be much of a shock to you as much if you take the AP classes.

**Me:** Mk, and that's what you've gained so far from your class that you've taken, which is just AP Bio?

**AP Student 1:** Yes.

**Me:** Ok, so what are your plans for after school? You plan to go to college then?

**AP Student 1:** Yeah I plan to go to college. A four-year college, possibly a graduate school I'm not sure yet. And I plan on majoring in science.

**Me:** Ok, do you know what branch of science yet, or...

**AP Student 1:** Biology. That's as specific as I narrowed it down so far.

**Me:** Have any of your friends or family taken AP courses?

**AP Student 1:** Yes, um, a lot of my friends take AP courses.

**Me:** And I'm assuming you've taken them with your friends, or...

**AP Student 1:** Uh yeah.

**Me:** If so, do you know what their post-secondary experience is, meaning how did they use those classes after they graduated, if you know anybody that's taken AP and graduated?

**AP Student 1:** Um... Well, I don't really know anybody that has graduated that's taken AP classes. I know there's people but I don't really have connections with them right now. I'm not that close to them.

**Me:** So you know that have taken them and graduated, but not really sure what they've done with it?

**AP Student 1:** Yeah.

**Me:** Um, do you know if they've gone on to two or four year colleges, that kind of thing?

**AP Student 1:** Um, most people that take AP classes go to a four-year college.

**Me:** Ok, so that's just something you've heard and seen with people you know?

**AP Student 1:** Yeah."

*AP Student 2 – Transcript of Interview*

\*\*AP Student 2 is also a male 11<sup>th</sup> grader, but has taken multiple AP courses.

**“Me:** Why did you choose to take AP courses?

**AP Student 2:** Mainly it was financial reasons. I said I would rather take these classes here and pay \$50 for the exam than pay thousands of dollars in college. And I also wanted to challenge myself. Regular courses are a bit too easy.

**Me:** Gotcha. What AP courses have you taken so far?

**AP Student 2:** AP World History, AP U.S. History, AP Biology, AP Economics, and AP English Language.

**Me:** So a good amount. Um, and you plan on taking more next year as well?

**AP Student 2:** I plan on taking four next year. I've already taken five.

**Me:** Ok, um have you ever taken any CTE or the Career and Technical Education courses and if so, how does that compare to your AP courses?

**AP Student 2:** I haven't taken any CTE courses yet.

**Me:** Mk, are you required to take one?

**AP Student 2:** I'm taking two, I'm taking the required amount of two next year.

**Me:** Which ones are you taking next year?

**AP Student 2:** Business Law and, I believe, Personal Finance.

**Me:** Any particular reason why you chose those two?

**AP Student 2:** I'm going into finance and law in college is my destination, so I picked those courses because they're most relevant.

**Me:** Gotcha, alright so how do you think the AP courses will help you in the future that you've taken?

**AP Student 2:** These AP courses?

**Me:** Yeah.

**AP Student 2:** Oh like I said before, they'll help me save money and I think establish an attitude of challenging myself.

**Me:** And you said for after high school you plan on going into business and law?

**AP Student 2:** Yeah, business and law.

**Me:** As four-year, going on to a Masters, Doctorate...

**AP Student 2:** Yeah. Well I'll probably major in business and go into law in grad school.

**Me:** So you're shooting for at least Masters level?



**AP Student 2:** Yeah, Masters level.

**Me:** Have any of your friends or family taken AP courses?

**AP Student 2:** A lot of my friends have.

**Me:** A lot of your friends have, uh... nobody in your family's taken it, so you're kind of the first?

**AP Student 2:** Oh, they didn't go to high school in America.

**Me:** So they didn't have the opportunity to take AP.

**AP Student 2:** No, they went to college here though.

**Me:** Ok. In terms of people that you know that have taken AP courses, do you know anybody that's graduated and kind of, what they've done with their AP courses?

**AP Student 2:** Not that I know of. I haven't had the chance to ask them.

**Me:** Um, a lot of them have they gone on to college?

**AP Student 2:** Yeah, almost all of them.

**Me:** For those that didn't, did they go directly into work force or...

**AP Student 2:** M-hm."

*AP Student 3 – Transcript of Interview*

\*\*AP Student 3 is a female 10<sup>th</sup> grader and has taken multiple AP courses.

**Me:** Why did you choose to take AP courses?

**AP Student 3:** Um, I'm not really sure. I took AP Bio because I really enjoyed Freshman Biology and I just always had an interest in it. And then I took AP Spanish because I kinda had to, cuz I'm in Spanish immersion. And I'm also interested in history, so that's why I took the choice to take AP History classes.

**Me:** Mk, so you're taking AP History and AP Bio this year?

**AP Student 3:** Yeah, AP World History.

**Me:** Ok, and this is your first year in AP right, cuz you're a sophomore?

**AP Student 3:** I took AP Spanish last year.

**Me:** Last year, ok. Um, have you ever taken any CTE courses and if so, how does that compare to your AP courses.

**AP Student 3:** I took photography. It's kind of a weird comparison, cuz photography is very lax and the AP classes there's a lot of work, and such.

**Me:** Ok, so in terms of how they compare, it's just the, the workload is a lot different and the content is a lot different?

**AP Student 3:** Yeah.

**Me:** How do you think your AP courses will help you in the future?

**AP Student 3:** Uh, well they got good, like... time management for like college years because it's supposedly a college level class so the workload is probably similar. And so, I... just prepares me for the work I'm gonna have later on.

**Me:** In terms of the AP courses you're taking, are you kind of, gearing your AP courses towards what you're going to be doing in college or do you know what you're going to be doing after high school yet?

**AP Student 3:** Not really. I'm... really don't know. Like, I kinda want to do something in like Marine life, but I also want to do something like in photography, but I just don't know.

**Me:** Ok, so in terms of after high school, do you plan on going to like, two-year, four-year...

**AP Student 3:** I want to go to at least a four-year college.

**Me:** And then maybe pursue something even after that or...

**AP Student 3:** Yeah.

**Me:** Ok, um, have any of your friends or family taken AP courses?

**AP Student 3:** Yeah a lot of my friends definitely have. Uh... I'm not sure about family though, cuz my mom grew up in Asia and then I have no idea about my dad, but my friends have.

**Me:** You definitely had a lot of friends that have. So for those friends that have taken, um... AP courses, do you know what they did after high school?

**AP Student 3:** No...

**Me:** Like, do you know if they went on to four-year colleges, went straight to work...

**AP Student 3:** My cousin... I'm pretty sure my cousin took AP classes and I know she went to college and she's working to become a nurse now."

*AP Student 4 – Transcript of Interview*

\*\*AP Student 4 is also a female 10<sup>th</sup> grader who has taken multiple AP courses. However, because she is entering the UW Academy, this will be her last year of high school and AP coursework.

**Me:** Why did you choose to take AP courses?

**AP Student 4:** What was I thinking Freshman year? Um, I don't know, I uh, each one kinda had its own reason. Like, I think AP Spanish was, a lot of it was cuz I took French for a year and I did not like that, and I needed another language credit, so I just thought I'd test in and you know, fine tune my Spanish. Um, and yeah, so that was AP Spanish and I didn't think it would be too hard. AP World, a lot of sophomores were taking it and I actually had an interest in World History, so it was just one of those default APs that [High School] instills/installs for you. AP Bio was just kind of more cuz I wanted to, yeah. That was one of the more that I wanted to take it.

**Me:** Rather than having it be a requirement type thing?

**AP Student 4:** Yeah.

**Me:** So you've taken AP Spanish, World, and Biology?

**AP Student 4:** Yeah.

**Me:** And what do you plan on taking in addition to those?

**AP Student 4:** Well, I planned on taking AP – APUSH, AP US History, AP Spanish Lit, and AP Calc, but I won't be here next year.

**Me:** Oh, are you switching schools?

**AP Student 4:** No, I'm, uh leaving school just in general. I'm going to UW next year.

**Me:** Oh getting out early? Was there any reason for that or is it just like a running start type thing?

**AP Student 4:** I don't know if you've ever heard of the UW Academy, the early entrance program. You kind of drop out and just go into UW.

**Me:** So are you going to have to get a G.E.D. or...

**AP Student 4:** Nope, I just won't get a degree.

**Me:** And you'll just go straight into...

**AP Student 4:** Into college. And they said it doesn't lower your, it generally doesn't much of an issue finding jobs or anything since you'll have your college degree and so at that point, ya know.

**Me:** I hadn't heard of that one. Have you taken any CTE or the Career and Technical Education courses?

**AP Student 4:** Nope.

**Me:** Ok, so you don't have anything to say about those. Um, how do you think AP courses will help you in the future, going on what you've done so far?

**AP Student 4:** Well, I think study skills that you learn probably, and just like faster pace, more in depth, that probably helps you... prepares you, definitely prepares you more I would think for college courses than just average, because it's a lot less of busy work and a lot of actually, I don't know, being tested on what you know. It's a lot less busy work.

**Me:** A lot more content, a lot less just filling out worksheets for fun. Alright, so knowing that, your plans for after high school are pretty much doing, cuz you're done with high school this year then, and then you're going into UW early entrance. And then, do you know what you're going to major in or are you just kind of...

**AP Student 4:** I'm seriously thinking about being an English major or a Social Welfare major, just because it encompasses, social welfare because it encompasses a lot of sociology and psychology classes which are things I'm really interested in. Um, and my mom's got an MSW, a Masters in Social Work. So, that was like, just seeing what she does, I'm kind of thinking about doing that too.

**Me:** Really interested in that? I'm assuming you have a lot of friends and maybe family who've taken AP courses?

**AP Student 4:** No, actually no. Well friends yes a lot of friends. Family... well, my family is from South America so that doesn't happen there. Um, but a lot of friends cuz I make friends in class.

**Me:** Have you known anybody that's already graduated and if they've moved on to like 4-year, 2-year, or directly into work-force type stuff, or have you not met a lot of people that are already graduated?

**AP Student 4:** Young people? Because there's my parents...

**Me:** In terms of the people that you know that have taken AP, so I'm assuming you might not have known anybody in AP until this year, so for the people that you've met in AP over the last two years has anybody already graduated and then, like you've kept track of where they are or talked to them?

**AP Student 4:** Not really, a lot of the people that I knew last year who were taking AP classes, like I wasn't close enough friends to keep in touch with them afterwards, so I'm not really sure where they're at. Um, and in terms of this year, I know people that took it this year and just graduating so I don't really know where they're going to go."

*CTE Teacher – Transcript of Interview*

\*\*The CTE teacher interviewed works as the Culinary Arts instructor and has extensive experience in the field as a former chef prior to being a CTE instructor for the last seven years. Although not presented below as it was not recorded completely, we discussed briefly the importance taking CTE coursework for every year of high school as a way of students experiencing different career paths prior to entering college. The teacher brought up her daughter's experiences in pre-health CTE coursework in which having that first-hand experience helped her to decide that health-care was not her intended path. Her daughter also had expressed regret of not being able to pursue additional CTE coursework in education prior to graduating this year.

**Me:** How do you feel this class has prepared your students for the post-secondary environment?

**CTE Teacher:** Well, cooking is something you do every day of your life, so I... it prepares them for life, but I have a lot of students that go on to culinary school, or hospitality programs... some that will go into other programs and then call me a couple years later and say 'I realized how much I love that environment. What would you think if I switched from, you know, whatever their in, into this?' And I always say to them, I could have told you that when you left high school. Some kids just kind of get the bite and they're in, and they love it. And they can make careers out of it because they have the right kind of temperament to do something like this, and they really enjoy it. It's not work to them. I feel like we do a lot to... um, I teach to the course book from the Culinary Student of America so when they get there, they've had a little bit of... they've had exposure to a lot of different things, not as in depth as they'll get in culinary school, but definitely they're not going to be going 'what is he talking about' or 'what is that instructor saying to me' or 'what does that mean'. I feel like we do a really good job of giving them a really broad education that touches on a little bit of everything and gives them exposure to a lot of things...

**Me:** Within the culinary arts?

**CTE Teacher:** Within the culinary arts, because it's a really broad field. It sounds, you know people think 'oh it's just cooking' but to cook professionally it's huge. It's like another language, it's...

**Me:** Yeah. And it's especially applicable to life because I know people twice my age that don't know how to boil water.

**CTE Teacher:** Exactly! So I think that you know, we... on two fronts, we prepare them for the real world of just cooking and eating, and a situation we make every day of our lives we should know how to do it and not have to rely on someone else and be able to make good food choices and know how to get the most out of our food. And, we cook and eat every day, so they're developing their palate, and their using the skills and they keep building upon them. We don't... very few units do we just do something and then move away from it, just give them information. They're applying all of what we do, whether it's a lesson on teamwork or a lesson on sautéing; they apply those skills immediately and those tend to stay with people more than just getting some information and testing on it and then go out of your head.

**Me:** The hands-on aspect is especially helpful in that. So, you've touched on this a little bit, but what are your expectations for students who have completed your course?

**CTE Teacher:** You know, I teach to what I think is the highest level of kid in the class as far as who's going to go off to culinary school, who really has a passion. That's who I truly teach to, but I think there's knowledge in it for all of them. For my expectations, just a baseline expectation, is that they would know how to have some good knife skills, how do you properly use a knife, how to season, how to use the different cooking methods, to know boiling is different from steaming, and how you would go about doing that... um, how to handle food safely, how to be sanitary in the kitchen. Not just clean, but actually sanitary, because they get a food handler's permit checked by the health department, so they need to know that you don't put lettuce beneath raw chicken and just, you know the real basics of it.

**Me:** Ok, have you followed up with any of your students after graduation – and you talked about that a little bit with students that came back and were... expressed that passion for culinary arts again and you were like, well go for it – but are there any kind of good examples you have of that?

**CTE Teacher:** Oh, great examples. The young man that got me into teaching, that was a friend of one of my sons and said 'I think you'd be really good at this' and just kept pestering me and pestering me until I called and you know, asked about the job and took it that same day. So, he just opened his first restaurant in Denver this year. That was seven years ago. Um, I have a student that's at the Herbfarm right now, another that's a Seiu Chef at Canles, a student that dropped in to see me last week who's working at McQueena Bakery and brought me a bunch of stuff from the bake-shop [sic]. So, I have lots of connections with them. One of my former students worked with my culinary team this year to be their mentor and helped them get ready to compete so, they tend to come back.

**Me:** Yeah, and there's a lot of drive for actually completing the culinary arts program at a post-secondary level as well, when they're done here?

**CTE Teacher:** Very much so. Yeah. And I stress that, I tell them that there are many paths to working in a kitchen. You can get in there and just kind of start at the bottom and work your way up, but you always want to be the smartest chef in the kitchen."

*CTE Student 1 – Transcript of Interview*

\*\*The only CTE student interviewed is a male high school graduate (2011 graduating class) attending the Culinary Institute of America. Interview questions, which are listed in the Methodology section of this manuscript, were emailed to him and below are the responses, in order, to those questions. Some portions have been deleted in order to maintain anonymity.

“Currently I am enrolled at the Culinary Institute of America at Greystone in St. Helena, CA. As for work, I am an extern at [Restaurant] in [Location] for the next few months working 50+ hour weeks. I am 19 years old and am a member of the 2011 graduating class of [High School].

At [High School], I took 2 years of Culinary Arts with chef [CTE Teacher]. I took this class because I had been interested in becoming a chef my whole life but never really did anything about it. The class was the path I chose to get started on that journey.

Throughout high school I tried out many AP classes. Some of which include, comparative government, u.s history, world history, english composition and language, and chemistry. While they were interesting, none of them really gave me any practical knowledge for my life. A job in any of those fields never seemed exciting or worth striving after for me. The Culinary Arts class was the first and only class (other than orchestra) that really built my foundation for my career ahead of me.

The Culinary Arts class at [High School] really gave me a huge jumpstart with culinary school. Upon entering the prestigious CIA, I found myself to be one of the more prepared and confident individuals in my class, while being by far the youngest. I cannot stress how valuable it was being able to start making strides in my secondary education as a 16 year old high school student. Now i'm 11 months from being done with schooling for the rest of my life and going into industry as a chef at 20 years old.

I've had a few friends take CTE courses, all of which being [CTE Teacher]'s culinary class. Of the few people that have, one is also in culinary school, two are still considering culinary school, one went to a conventional university and is heavily regretting not going into the hospitality business, and one other is pursuing hotel management after being so immersed into the food and hospitality industry.” [sic]



## **Analysis**

### *AP Teacher Interview – Analysis*

The major goal of an AP class, according to the instructor in an AP Biology course, is to guarantee success on the AP exam and prepare students for taking that class again at the college level, or to prepare them for entry level laboratory work. However, most students are expected to struggle going into the next level after an AP class and may benefit from retaking the course. The instructor expressed that it is a “good step” and that it might not be “a fantastic jump for them if they don’t have to retake the class”. This indicates that students will only get as much out of a class as they will put in, meaning students that tend to perform well in the class will often get more out of it, and thus find it easier in the next level beyond an AP class when at the college level.

As stated in the interview the first goal is that students have “gained enough knowledge that they can be proficient on the AP exam” and second, that they have developed “lab skills that allow them to design, carry out, [and] interpret experiments that they design to answer their own questions”. One of the additional benefits of this lab preparation is that when students do enter college or entry level positions as an employee or intern, they have the introductory experience to be successful in that as well.

### *AP Student 1 Interview – Analysis*

Although AP Student 1 has not taken many AP courses, and in fact this year was his first time in an AP class, the general attitude was that the AP course he was taking would benefit him at the university level. He believed that the level of the class was higher than a normal high school class because “it really goes a lot faster and more in

depth” and is therefore “more of a college level class”. This student has aspirations of pursuing a university education in the post-secondary, with a focus on sciences. As such, he has already chosen to “take AP courses... only to specific classes that really interest” him and that he “might have a future in majoring or minoring in college”. However, the exact purpose of majoring in a science did not seem to be clear. This may be due in part to not knowing all of the available options for different scientific careers. The goal of attending four-year University was apparent. The student also knew the connection between the courses he chose to take in high school and the application to future decisions within the post-secondary.

Although he had not taken CTE courses yet, the general attitude towards CTE of AP Student 1 was that “they’re gonna be a lot easier [sic]” and that “there was no requirement for the CTE classes”, mainly due to a lack of interest in the available courses. The availability of CTE courses at this particular high school is limited as it is part of WaNIC and therefore only has a limited selection within the school. Limitations in transportation or a lack of knowledge of available courses at participating schools might have been part of the reason why there was little interest in CTE courses. Also, the selection of CTE courses related to the sciences may be limited and therefore students interested in the sciences do not have many options to choose from.

#### *AP Student 2 Interview – Analysis*

The uses of AP and CTE courses as a tool for preparation in the post-secondary were much more apparent with AP Student 2. Similar to AP Student 1, courses within AP were chosen in relation to what might be relevant, with AP Student 2 having

aspirations of “going into finance and law in college”. However, the number of AP classes taken was more a way to “establish an attitude of challenging” himself rather than direct application to his intended field of study. When choosing CTE courses, AP Student 2 had a clearer use in mind and chose “Business Law and... Personal Finance”, both of which related to his pursuit of Business and Law within the post-secondary. As these courses were to be his first in CTE, he did not have any direct commentary on how CTE related to his AP experience.

#### *AP Student 3 Interview – Analysis*

In terms of AP courses, AP Student 3 chose classes based on interest as well as application to potential college or career aspirations. For example, she stated that “I took AP Bio because I really enjoyed Freshman Biology and I just always had an interest in it”. She also mentioned wanting to pursue something in “Marine life” as well as photography. In general, the attitude towards her AP courses was that it helped develop “time management for... college because it’s supposedly a college level class so the workload is probably similar”. Again, the attitude was to attend “at least a four-year college” with the potential of continuing education after that.

Similar to AP Student 1, AP Student 3 felt that CTE classes were “very lax and the AP classes there’s a lot of work”. The only CTE course AP Student 3 had taken, however, was photography. She chose to take photography because of her interest in it, but did not express any connection between that CTE course and the future work she might pursue in the post-secondary.

### *AP Student 4 Interview – Analysis*

Because of her future participation in UW Academy, AP Student 4 did not have CTE courses to compare with, but did have multiple AP courses she had completed this year and last year as a freshman. Even with limited AP experience, AP Student 4 knew the benefits of an AP course, including the “study skills that you learn” as well as being “faster pace, more in depth” which in turn would help “prepare you more... for college courses than just average”.

### *AP Summary*

Both educators and students within the AP environment felt that college and university level post-secondary education was the inevitable “next step”. Although previous students had shown interest in internships and field work as discussed with the AP instructor, the students interviewed in this sample did not explicitly describe any set desire to pursue technical knowledge base other than that gained within the classroom. In general, students chose courses within the secondary environment that would benefit them at this collegiate and university level, either through the development of skills necessary for success or direct content/experiential knowledge within topic areas of interest.

### *CTE Teacher Interview – Analysis*

The Culinary Arts instructor interviewed, in addition to being very passionate about her course, had very detailed goals and expectations for her students. For example, the most general goal was to “prepare them for life” because “cooking is something you do every day of your life”. More specific, yet basic goals for students included “good

knife skills... how to season, how to use different methods, to know boiling is different from steaming”. These goals are specific to culinary arts, but the method of applying these techniques was also grounded in larger lessons, such as teamwork, problem solving, and application of multiple learned strategies. The CTE Teacher also stressed the importance of building on previous lessons rather than “just getting some information and testing on it and then [letting it] go out of your head”.

In terms of students who had completed her course, many actually moved on to careers in the culinary arts or hospitality as a result of being a part of the Culinary Arts class. One of her former students, who initially got her into teaching the course “just opened his first restaurant in Denver this year” and many “that will go into other programs and then call... a couple years later” to ask advice on switching back to a career in the culinary arts. In addition to students she has had within her own CTE course, she related her daughter’s experience in CTE courses. Although this after the initial interview, she mentioned her daughter’s participation in pre-health CTE courses and how after field experience, she came to the realization that a career in health was not for her. The CTE teacher then went on to say that CTE courses would allow for students to rule out potential careers while still in secondary because of the technical and field experiences they are provided within the environment of that class.

#### *CTE Student 1 – Analysis*

One of the benefits of interviewing CTE Student 1 is that this particular student had already graduated and began pursuing a post-secondary program within culinary arts

as well as employment within the field. The benefits obtained within his CTE courses can best be summed up by the following quote:

“The Culinary Arts class at [High School] really gave me a huge jumpstart with culinary school. Upon entering the prestigious CIA, I found myself to be one of the more prepared and confident individuals in my class, while being by far the youngest. I cannot stress how valuable it was being able to start making strides in my secondary education as a 16 year old high school student. Now i'm 11 months from being done with schooling for the rest of my life and going into industry as a chef at 20 years old.”

In addition, this student had also taken AP courses, but he felt that “while they were interesting, none of them really gave... any practical knowledge for my life”. For CTE Student 1, the opportunity to actively pursue coursework in his intended field offered him both content knowledge and technical proficiency once in his post-secondary program. He was able to obtain not only a “jumpstart” in comparison to fellow students in his post-secondary program, but also realize that culinary arts were his ultimate passion.

#### *CTE Summary*

Both the instructor and the student interviewed showed the “optimum” situation for CTE education in which participation in CTE courses inspired career ambitions. Within the CTE instructor interview, the previous stories of students within the classroom showed that students who were able to participate in CTE coursework relevant to potential career and post-secondary interests also had the ability to determine if those career ambitions were a “good fit”. Such decisions were often aided by the direct hands-on or field experiences associated with CTE courses, such as the instructor’s discussion of pre-health CTE coursework and the Culinary Arts student’s continued – and successful – pursuit of Culinary Arts within the post-secondary environment.

## **Implications/Recommendations**

A major implication in this research is that the benefit of CTE courses can often be overlooked in favor of courses that are specifically designed for college or university preparation in an environment where pressure to attend university is high. In addition, most high school students feel pressure to attend university because of the perceptions of university being the “next step”. This often leads to students disregarding a more technical education within the secondary, also due to the perception that college will be limited technical knowledge and more book/rote learning. However, for those students and instructors involved in CTE, the skills and knowledge obtained within CTE courses can be extremely useful in deciding intended post-secondary pathways, not only in regards to higher education choices, but ultimate career and life goals.

Although students generally take courses that they believe will be relevant to them for the future, the direct connection of some classes to those post-secondary aspirations can be lost. Therefore, a recommendation for future practices would be to provide students with more information on classes that combine technical proficiency as well as content knowledge. Most instructors attempt to do this by incorporating labs, field trips, and other events that can showcase the work people do in relation to that field, but availability to such resources can be limited within the secondary environment.

## **Conclusion**

The major conclusion of this research is that whether students take AP or CTE coursework, the development of attitudes and abilities necessary to be successful in the post-secondary environment are the key lessons learned within the secondary

environment. An individual's ability to both recognize the benefits of and employ such concepts as intrinsic and extrinsic motivation, as well as establishing a connection between educational foundations and future career and/or life goals should be stressed within the secondary environment. Also, student and teacher attitudes towards the courses they teach can be very different, especially for CTE courses where instructors have had years of experience within the field they teach. The passion that teachers have for the subject they teach will often be mirrored by students, but sometimes it is hard if students are taking a class just to take it versus taking a class because they have interest in the subject.



## References

- Al-Saaideh, M. & Tareef, A. (2011). Vocational teacher education research: issues to address and obstacles to face. *Education, 131*(4), 715-731.
- Caponi, V. & Plesca, M. (2009). Post-secondary education in Canada: can ability bias explain the earnings gap between college and university graduates? *Canadian Journal of Economics, 42*(3), 1100-1131.
- Conlon, M. (2006). The politics of access: measuring the social returns on post-secondary education. *Higher Education Management and Policy, 18*(2), 1-9.
- Cote, J., Skinkle, R., & Motte, A. (2008). Do perceptions of costs and benefits of post-secondary education influence participation? *Canadian Journal of High Education, 38*(2), 73-93.
- Domene, J.F., Socholotuik, K.D., & Woitowicz, L.A. (2011). Academic motivation in post-secondary students: effects of career outcome expectations and type of inspiration. *Canadian Journal of Education, 34*(1), 99-127.
- Friedel, J. (2011). Where has vocational education gone? *American Educational History Journal, 38*(1/2), 37-53.
- Hodges Persell, C. & Wenglinisky, H. (2004). For-profit post-secondary education and civic engagement. *Higher Education, 47*, 337-359.
- Isaacs, T. (2001). Entry to university in the United States: the role of SATs and advanced placement in a competitive sector. *Assessment in Education, 8*(3), 391-406.
- Mupinga, D.M. & Livesay, K. (2004). Consider vocational-technical education for post-secondary education. *The Clearing House, 77*(6), 261-263.
- Sadler, P.M. & Tai, R.H. (2007). Advanced placement exam scores as a predictor of performance in introductory college biology, chemistry and physics courses. *Science Educator, 16*(2), 1-19.
- Sciarra, D.T. & Ambrosino, K.E. (2011). Post-secondary expectations and educational attainment. *Professional School Counseling, 14*(3), 231-241.
- Scott, T.P., Tolson, H., & Lee, Y.H. (2010). Assessment of advanced placement participation and university academic success in the first semester: controlling for selected high school academic abilities. *Journal of College Admission, 26*-30.
- Thompson, T. & Rust, J.O. (2007). Follow-up of advanced placement students in college. *College Student Journal, 41*(2), 416-422.
- Wallenborn, M. & Heyneman, S. (2009). Should vocational education be part of secondary education? *Journal Of Educational Change, 10*(4) 405-413.
- Wallenborn, M. (2010). Vocational education and training and human capital development: current practice and future options. *European Journal of Education, 45*(2), 181-198.