Career and Technical Education Research, 39(2), pp. 137-150
DOI: 10.5328/cter39.2.137

Positioning Research and Practice in Career and Technical Education: A Framework for College and Career Preparation in the 21st Century

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Abstract

Workforce preparation, including Career and Technical Education (CTE), provides opportunities for people to become successful participants in the global workplace. To accomplish this purpose, people must be equipped with knowledge and skills necessary to fulfill personal interests and goals, develop leadership skills, and become qualified and competent members of the workforce. CTE educators are challenged with determining the best ways to prepare people for work when, in many cases, the types of work those people will perform does not yet exist. Twenty-first century jobs are evolving rapidly with some jobs going away and other types of work appearing. For CTE to remain relevant, a framework is needed that will shape and guide research and curriculum development to address an increasingly volatile and uncertain future. This article describes and explains such a framework. We argue that three key components—career navigation, work ethic, and innovation—can support educational and vocational outcomes that will be lasting and durable in the 21st century workplace.

Keywords: Career and technical education, framework, twenty-first century, career, career navigation, work ethic, innovation, workforce development

Introduction

Numerous authors have written about the significant changes in the nature of work and workplace demands that have resulted from globalization and the exponential expansion of technologies during the first decade of the 21st century (Aggarwal, 2011; Diamandis & Kotler, 2012; Herod, 2000; Karoly, 2009; Manley & Hobby, 2004; Rifkin, 2011; Sanders, 2005). Friedman (2007) described emergent economic and social phenomena as the beginning of a new normal in a *flat world*. Unfortunately, it appears that educators, including CTE professionals, and other professionals providing guidance for the future have been slow to recognize and react to the more fundamental implications represented by technological and societal change. Ford (2009) warned that economists have not fully appreciated the impact of recent or impending workplace changes and the extent to which they will impact society. The long-term economic stress experienced in the U.S., Europe, and portions of Asia, accompanied by persistently high rates of unemployment or underemployment, may provide the first evidence of fundamental shifts in work and workplace needs. In many instances workplace productivity is up, but the number of workers needed to maintain this productivity has plummeted. Further, the types of skills needed to function in modern production facilities are changing due to ever-increasing technological advances. Today, occupational prospects seem far less definable and predictable, with job transitions more frequent and difficult. These changes require workers to develop skills

and competencies that differ substantially from the knowledge and abilities required in the past. Savickas et al. (2009) suggested that the emerging workplace reflects a new social arrangement between employer and employee. Increasingly, work-related demands require workers to be "lifelong learners who can use sophisticated technologies, embrace flexibility rather than stability, maintain employability, and create their own opportunities" (p. 239).

In many ways, it appears as if we are either at or quickly approaching a crossroads in the ways we conceptualize work, career, and work preparation. In the past, several assumptions have guided our thinking. First, we have assumed that (a) people possess stable work characteristics that can be measured and used to match workers with jobs, and (b) secure work opportunities exist in bounded organizations. Career has been thought of as a fixed and stable sequence of predictable stages guided by individuals' knowledge of relevant career- and work-related information and personal agency. However, the changing nature of work puts these long-held assumptions into question, requiring us to consider the fundamental paradigms we use to conceptualize work, workforce preparation, and career in the 21st century (Savickas, 2012; Savickas et al., 2009).

For work preparation programs like Career and Technical Education (CTE) to remain viable, it is essential for curriculum, instruction, and research to reflect recent and anticipated shifts in the nature of the workplace and workforce needs. Some have recognized the changing nature of work (e.g., Brown, Eichengreen, & Reich, 2010; Gual & Ricart, 2001; Stewart, 2005), but a fundamental shift in our paradigm has not yet been fully defined or debated. An equally important issue is whether a paradigm shift would be embraced by members of the field even if the need for a new vision was recognized. Perhaps a metaphor will help to reflect this thinking.

No doubt about it, the Titanic hit an iceberg and sunk. It didn't happen in an instant, but make no mistake, eventually the unsinkable ocean liner sunk. And, it is likely that for a few minutes after the collision people debated about the severity of damage, their fate, and the best courses of action needed to save themselves and others. In hindsight, if the captain or a wealthy patron had ordered the porters to rearrange deck chairs on the Lido Deck even as the ship slowly listed into the icy Atlantic, we would call them short-sighted, blind to the facts, or ignorant to the inevitable. Even worse would be a situation where everyone had a different opinion about the problem and the best course of action, and different groups of people set off trying different things on different parts of the ship each resulting in various degrees of success but all eventually resulting in failure. And then, of course, there are those survivors fortunate enough to depart the ship on life boats. Each of these individuals would believe they were masters of their own fate and possessed some insight about how to survive in troubled times. Some of these individuals, having survived the experience, shout back words of encouragement or derision to those still clinging to the railings. They are entitled to do this, of course, since they were there and survived.

Much like this scenario, CTE has hit an iceberg. Our collision hasn't been abrupt but rather slow, steady, and unwavering; one that appears to be moving toward resolution (whether the outcome will be positive or negative is uncertain). It seems to us, at times, that CTE has been in an almost constant state of change and reinvention since the mid-1980s. Federal policy and funding has routinely shifted the focus of secondary CTE from one set of initiatives to the next, e.g., serving students with special needs, applied and integrated academic-vocational education, articulation of secondary and two-year postsecondary education (e.g., Tech-Prep, dual enrollment), high-skill programs for high-skill students, and currently, programs of study. All of these initiatives have been worthwhile, but have not produced widespread results. In fact, most

initiatives fade away from practice as money and resources are diverted to the newest CTE initiative.

Throughout all of the changes in CTE policy and practice over the past several decades, a variety of stakeholders have weighed in, including CTE researchers. However, the connections between program purpose or curriculum and the emerging realities of the workplace appear increasingly disconnected. There are growing indicators that change is needed, yet again; but what kind of change and how substantial should this change be? How can CTE possibly prepare students for the rapid changes occurring in the world of work? Individual and collective action will be needed to redefine the field and content offered IF the myriad challenges are to be met. This means rethinking how research is conceptualized, conducted, and published and how relevant that research is in shaping CTE practice, policy, and research.

Purpose

Given this context, two basic points form the basis for this article. These ideas might be thought of as a call to action or as a way to shape the impact of CTE practice and research. First, it is important for CTE professionals to reaffirm a commitment to the highest standards and quality in research. Second, the conditions in education and in work increasingly require that CTE professionals align thinking around three themes that will be important (and universal) for success in the 21st century workplace. Several questions focus our thinking about CTE for the 21st century. These fundamental questions are perennial for CTE. "How can public school (K-12) best prepare young people for the world of work?" "Should CTE be connected to academics? Work? Postsecondary education? How?" "Who should be targeted? Work-bound? College-bound? All youth?" "What do we teach?" "How do we prepare young people for work when many jobs they will fill during their lifetimes haven't yet been invented?"

Before discussing the three themes that would provide an enduring foundation for the field, we examine the world of work as it has been and the role of CTE within this historical context. Next, we describe the world of work as it currently is and as it is projected to emerge, along with several challenges that the changing nature of work in the 21st century poses for CTE research and practice. Finally, in response to the history of CTE and projections about the future, we offer a framework for adapting the role of CTE in preparing young people for postsecondary education and the world of work in the 21st century.

The State of CTE Research: What is and Has Been

Research is critical if the CTE community is to understand pressing issues, make informed decisions, and evaluate instructional programs and services in light of the rapidly changing workplace. While we remain hopeful that CTE research(ers) will engage in meaningful and timely inquiry, several issues exist that are problematic for CTE research. In identifying these concerns, our intent is not to simply criticize our collective efforts, but rather to identify issues that interfere with our ability to be successful. The exact nature of the challenges presented to CTE research(ers) are open to debate and discussion, but are ones we feel exert substantial influence on CTE research and the broader CTE community.

Loyalty to Content (Discipline) Area

Most CTE educators are loyal to an identified content area, be it agriculture, business, health, or technology. History and a sense of tradition runs deep within the various vocational content areas, generating strong allegiance and a shared sense of purpose and belonging within content areas. There is nothing wrong with this alignment, as there is much to be proud of in each of these facets of CTE. However, orientations that emphasize content areas more than a shared vision of CTE result in research being content-specific with limited or no application to other vocational areas, workforce preparation, or education as a whole. The relationship between various CTE content groups and the more general efforts of CTE is sometimes blurred or missing altogether. Examples can easily be identified of content-specific research being (mis)represented as a reflection of comprehensive CTE issues, when the work often represents limited applicability to broader CTE efforts.

Tunnel Vision

Emphasis on content area over field is also reflected by separate journals and separate professional organizations devoted to particular content areas. Separate journals and separate professional organizations reflect divided loyalties and attention, resulting in a type of tunnel vision where research is (a) often narrow in scope and hard (or impossible) to generalize to broader CTE concerns, (b) conducted with relatively small samples of convenience, and (c) largely ignored by the greater educational research community. When comparing various aspects of published CTE research to other education and social science journals, we do not fare well. For example, *Career and Technical Education Research* (CTER) is not indexed in rankings that judge the impact and quality of research publications.

CTE Research Standards and Quality

To meet the challenges posed by the emerging workplace, CTE researchers must reaffirm a commitment to maintain high standards and quality in scholarship. All too often CTE research is characterized by one-shot studies answering simple descriptive research questions that are analyzed with techniques that belie the increasingly complex nature of the environments in which we work. While this criticism is not meant to suggest that the only good research uses complex statistical methods, it is critical that our research address penetrating and relevant questions.

Changes in CTE as a Field

Changes in the composition of CTE have had an enormous influence on our ability to conduct research and, equally important, to train the next generation of CTE scholars. Thirty years ago a network of Research I institutions provided leadership in CTE; places like University of Minnesota, Virginia Tech, The Ohio State University, University of Georgia, Penn State University, and University of Illinois. These places had substantial numbers of faculty that provided leadership in research and curriculum, and shaped the CTE national agenda. Today, most of those programs no longer exist. Few faculty remain at these institutions and those who are there are often dispersed in different departments.

As state-level colleges have taken on more of the responsibility for CTE teacher preparation to fill the void caused by the demise of Research I programs, research has begun to

emanate more from these institutions. Researchers at these institutions have and will continue to publish quality research and play important roles within CTE. However, faculty at primarily teaching institutions (i.e., not Tier I or research-intensive) usually carry higher instructional loads leaving precious little time, resources, or most importantly, incentives to conduct research.

Similarly, the nature of doctoral preparation needs to be examined. For example, we believe that doctoral programs in CTE should include both qualitative and higher-level quantitative coursework. Knowledge of and ability to conduct qualitative case study or complex statistical modeling research is imperative. But, again, as programs are reigned in at Tier 1 institutions, other institutions are being asked to fill in the void. A predominantly teaching institution may not have the resources, or directives, that would result in these higher levels of research training and professional development.

The Voices of "Others" Speak for Secondary CTE

One additional feature of the evolving nature of CTE research is that other constituencies, mostly private, for-profit think tanks or education policy centers have determined the agenda, conducted the research, and become the de facto voice of secondary CTE (practice and research) over the past several decades. Other sectors of the educational community also enter the picture when there is overlap between academic and CTE content. A recent example is the inclusion of engineering in the *Next Generation Science Standards*. Science teachers are now looking at ways to include engineering instruction and activities within their curriculum and CTE professionals who have also embraced engineering as a central theme (Wicklein, 2006) are scrambling to retain a place at the table.

These are several of the more prominent factors that influence research in CTE. Within this context, we are challenged to make our research relevant, timely, and incorporated into the larger body of scholarship for education and work.

The Changing Nature of the Workplace-CTE Connection

State of Work: Past

CTE has always been about work. Beginning with the Smith-Hughes Act of 1917, the focus of secondary vocational education has been about work preparation. So, what attributes best characterized work from a historical perspective? Until recently, work has been based on physical labor and, more recently, mental labor. Regardless, work has been characterized as being stable and long-term (i.e., dependable, "cradle-to-grave"), based on mutual loyalty from company and workers, local, usually structured around an 8 hour day/5 days per week schedule, based on knowable job duties, encompassed a personal network of friends, staffed with relatively young workers, and union-friendly. Work was predictable, constant, and offered opportunities for work-bound youth with minimal training prior to entering the workforce. The world of work in the past required a variety of skills, not just intellectual ones, presented job options not requiring postsecondary education or training, provided plentiful production jobs, and posed minimal need for workers to retrain throughout their work lives. CTE was conceptualized and delivered from this traditional perspective and experience of work.

CTE (all education for that matter) is viewed as a basic input-output model. And, this approach has served us pretty well. The model has reflected work and our work reflected the model...well, sort of. The basic input-output model is useful and pragmatic for explaining what

CTE does and for cataloguing our research as long as work and the workplace is considered structured, orderly, and predictable. Agendas for CTE research have also reflected this general model (Cheek, 1988; Lambeth, Joerger, & Elliot, 2009; Nimon, 2012; Phelps & Hughes, 1986; Rojewski, 1991; Rojewski & Meers, 1991). And, it is important to remember, that these frameworks have been helpful and relatively accurate in the past. However, this general conceptualization of CTE poses problems when considering the purpose of secondary (postsecondary) CTE and CTE research in light of emerging and projected changes to the world of work.

State of Work: Emerging

So, where are we going? How is the world of work changing? What types of challenges do these changes present to young people preparing to enter the world of work in the 21 century? What do these challenges pose for CTE practice?

The amazing technologies and products predicted for the near future are, quite simply, spectacular; representing a revolution in how we think about work, family, and society. Nanotechnology, 3-D printing, intelligent machines, robotics, medical engineering, and renewable energy sources are all poised to make exponential leaps in complexity and applications in the next several decades. Diamandis and Kotler (2012) provide descriptions of how these technologies have the potential to alleviate shortages and resolve some of the challenges that have long beset people in many parts of the world.

Two challenges, for example, are having sufficient energy supplies for human consumption and providing adequate clean water for crops, animals, and people. In the case of energy Diamandis and Kotler (2012) point out that 174 petawatts of solar energy strike the earth's atmosphere and that approximately half that amount reaches the earth's surface. In 2008 the total human consumption of energy was 16 terawatts annually so the solar energy striking the earth is more than five thousand times greater than the total energy in use by the world population today. The challenge is how to harness this practically unlimited source of energy.

In a similar way, fresh water is becoming increasingly scarce but water on earth is abundant. The Earth's surface is 70 percent covered by water. The problem is that 97.3 percent of this water is too salty to drink or to use in watering crops. If an economical technology became available to desalinate and purify water, and transportation systems were in place to distribute it, water for use by humans would be abundant.

Both of these examples can be pooh-poohed and discarded the same way informal language is traditionally eliminated in scholarly manuscripts. The reality, however, is that for the first time in history technology is making it possible to do things we could never do before. "Humanity is now entering a period of radical transformation in which technology has the potential to significantly raise the basic standard of living for every man, woman, and child on the planet" (Diamandis & Kotler, 2012, p. 9).

Ford (2009) focused on the impact of this exponentially expanding technological capacity with respect to work and employment. He pointed out that few economists have ever considered the idea that technology could replace a large percentage of the human workforce. However, permanent, structural unemployment is a very real possibility in a world where people can use 3-D printers to produce the products they need and intelligent robots perform medical procedures once conducted by skilled human physicians. Ford (2009) pointed out that there has always been a general belief "that the trends toward globalization and automation may create temporary

displacements and pockets of unemployment, but ultimately, technological progress creates new jobs and makes all of us more wealthy" (p. 8). In the 21st century this belief might no longer hold true. How well is today's CTE preparing students to cope with a world that is radically transformed with regard to employment and work?

Increasingly, the world of work is requiring different things from workers. Work in the 21st century is being steadily redefined as short-term, project-based efforts encompassing multiple tasks, part-time or transient, sporadic and subject to global factors, international in scope, structured around a 24 hours per day/7 days per week schedule, rapid change, being harder to predict the future, a network developed via social media, staffed with aging workers, and union-unfriendly. The emerging world of work requires higher intellectual skills and postsecondary education or training for initial entry into the workplace because of an increasing dependence on technology. Constant retooling throughout life is becoming the norm rather than the exception.

Savickas et al. (2009) have emphasized the shift from a stable and predictable world of work where adults passed through life stages in a set sequence to a shifting and dynamic work environment where human flexibility, adaptability, and lifelong learning are essential. An appropriate metaphor would be the movie set where actors and crew come together to produce a motion picture. They work closely together to accomplish a set goal in a specified period of time and then they go their separate ways, hopefully to another production project, but likely with an entirely different cast and crew. Secure jobs in bounded organizations are becoming fewer and less typical and many, if not most, CTE students are headed for a world of work people are just beginning to experience.

Most of the readers of this manuscript are likely not dealing with all of these things in their everyday work practice, yet; but, think about how our own work has already changed over the past several decades. We used to go to the library frequently to find articles, read, and study. Today, we stay in our office or at home and access periodicals and books online, being more productive in a couple of hours through the Internet than ever imagined. Changes have also altered the look of our physical office spaces. Fewer people are around the office throughout the day...they don't need to be at work to do their work. Technology has also required us to rethink how we deliver our courses...more through online delivery, with fewer face-to-face classes.

Keywords to describe the emerging workplace are unpredictability, rapid change, and instability. Characteristics that described work in the past are not as apparent anymore. Increasingly, the complexity of work and work demands make specific job preparation at the high school level, the types of preparation CTE has always provided, not only increasingly irrelevant but also potentially harmful to adolescents who must think about postsecondary training and a lifetime of learning to stay competitive and employed. Robinson (TED Talks, 2007) goes so far as to suggest that creativity is becoming as important as literacy in a world where work and life in general are increasingly unpredictable. He points out that, unfortunately, education often teaches the creativity out of children by focusing on college entry through disparate academic disciplines.

Challenges Facing CTE

Our collective past, current situation, and what we can envision as the future of education and work present us with challenges in attitudinal, systemic, and societal perspectives toward work preparation, and economic factors. While myriad challenges and issues face CTE, several are long-standing and critical in shaping CTE curriculum and research, including attitudes (e.g.,

negative attitudes toward CTE, lack of positive work attitudes in young people), structural and societal barriers to vocational preparation and change (e.g., lack of attention to career issues in public education, limited support for adolescents as they transition from school to postsecondary and work), and economic forces (e.g., uncertain about nature of work in future, and job shortages and stagnant economies) that are shaping our efforts and the world of work. These are not new challenges; each has been around for a while. The difference right now is that these challenges are more volatile, less predictable, and affecting adolescents earlier in their lives.

Not one of the six challenges we listed suggests a need for placing greater emphasis on teaching young people occupationally-tethered work-place skills, the very things that CTE has offered for almost a century. It doesn't suggest our current efforts are a bad thing, but our efforts are unduly limited. Recently, we read about proposals to expand career pathways and programs of study from 8 to 16 to address the expanding range of occupational alternatives available to young people. That's a good thing of course, but we wonder what will happen when 16 programs is no longer enough to meet changes in the workplace, or when several of the 16 are no longer viable career options. While skills development is important, it seems that if skills training is the primary or sole focus, CTE will always be, at best, one-step behind.

Given the context of emerging work and the purpose of secondary CTE to help prepare young people for work and postsecondary education, we need to reformulate our perspective about CTE practice and research. We are not advocating that content area domains be eliminated. But, we are proposing that we realign our thinking and communication to support the preparation of adolescents and young adults as they face an uncertain work future. What if we looked at the work we do in secondary CTE as a way to provide young people with the career preparation and skills they need to be successful, regardless of specific occupational content? Sure, the content for some will be very important, but orientation to work and individual roles in it are for everyone.

Vision for Secondary CTE research and Practice

We propose a different way to think about the role of CTE in preparing young people for postsecondary education and work by focusing on three aspects of work and work preparation (see Figure 1). We offer a brief look at three areas—career navigation, work ethic, and innovation—that should be stressed and used to organize our thinking and explain the mission of CTE.

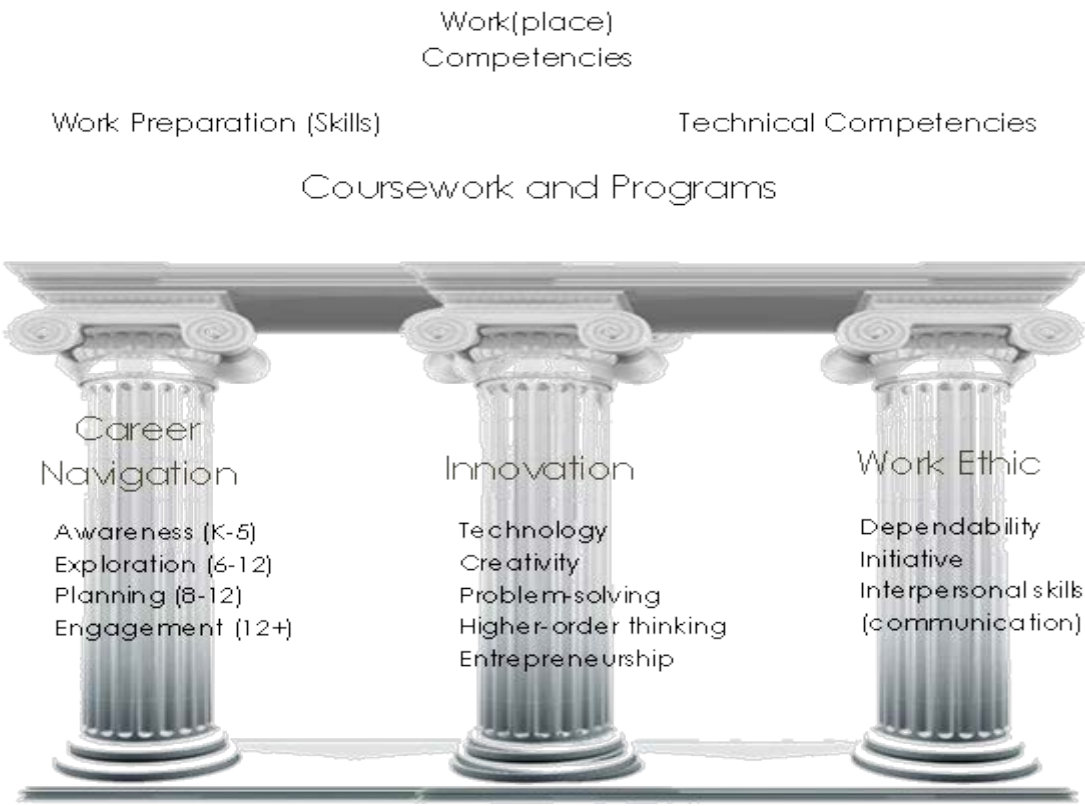

Figure 1. Three elements of proposed CTE framework for research and practice in the 21st century.

Career Navigation

How much *career* is actually in career-technical education? Young people in grade school can usually identify with 25-35 separate occupations, most of them ones that are encountered in daily life. In contrast, over 12,000 documented occupations exist in the Dictionary of Occupational Titles (DOT). Youth today have a pretty narrow awareness of work possibilities. Unfortunately, the number of jobs young people can identify as they transition into high school doesn't grow that much.

We can and do offer opportunities for students to learn about several facets of career knowledge, such as knowledge about the types of work available, workplace demands, and self as a worker. Identifying personal interests and abilities, as well as the preparation needed to achieve work-related goals are priceless. Workers who can understand and navigate a dynamic workplace using career-related information about self and the world of work will most likely enjoy successful careers in the 21st century workplace. Self-awareness, information about the world of work, career exploration, career decision-making, and career planning are things we (CTE) do know.

Work Ethic

Dependability, taking initiative (rather than standing against a wall texting your friends during work hours), and most importantly interpersonal skills are things that CTE has done and will continue to do. Among the most important interpersonal skills for 21st century workplace

success is communication skills. CTE courses often include content that allows students to develop skills in this area, but greater emphasis and purposefulness is needed to focus on this and other work ethic components.

One of the challenges for CTE educators when addressing work ethic instruction is having appropriate curriculum materials to guide instruction. Chester (2012) has developed some commercially available resources on this topic and Hill (2004) continues to make a 10-day unit of instruction available at no cost to educators who request it by email.

Innovation

In the workplace, creative and innovative responses to achieve market growth, gain new customers or simply maintain current ones, or simply survive are touted as critical elements for success (Howkins, 2007). More and more, work in the 21st century is demanding this same set of skills of all workers, not just a select few. The more emerging technologies become integrated into the workplace, the greater the need for innovation. Decision-making, problem solving in ill-structured settings, and application of technologies in novel ways to address problems will increasingly be the currency of valued workers, just as physical labor was to the industrial age. School has traditionally rewarded conformity and singular achievement, while work is becoming a team-oriented, project-based enterprise.

Implementing the New Model of CTE

There are a lot of ways we could respond to the emerging needs when considering work preparation. But, if we start where we are right now, we could easily begin to address the three elements—career navigation, work ethic, and innovation—by weaving (or infusing) them into existing curriculum and research. We already do a lot of these things. The difference would be the way these elements are embedded within our work. We are not prescribing a single way to implement this conceptual framework. Rather, flexibility is needed for different courses of study or content; emphasis might vary at different times for different classes or programs. The important point is that these areas—career navigation, work ethic, and innovation—be taught through specific intervention and curriculum. But, more importantly, these emphases could also be inextricably woven into the curriculum of existing programs so that accountability measures would emphasize these outcomes in all programs. How would this work in a school curriculum?

At first thought, this type of implementation doesn't seem to be very different than what we are already doing. But the act of refocusing our *efforts* and *explanations* of what we are doing would begin to redefine the purpose of CTE curriculum and provide inclusive goals for all students. In this way, CTE could also be infused throughout the academic curriculum and not limited to a series of 4 or 5 courses in a selected occupational area. Figure 2 offers just one way to consider the use of our three themes in program development and delivery. In our example, work ethic issues are emphasized in grade school, learning about the world of work occurs primarily in middle school, and tentative career-related planning is supported in high school. All of these efforts are supported by CTE intervention.

Rather than existing CTE content areas being an end unto themselves, they become a vehicle to achieve more comprehensive and inclusive goals, enhanced knowledge and skills related to career, work ethic, and innovation. While Figure 2 provides one view, we could easily construct a variety of different trajectories for each of the elements, individual students, or specific schools. Not only would CTE programs be consistent in mission and share a core

commonality, but our work could be readily explained and understood by constituent and stakeholder groups. The point to make is that even as new occupations emerge and content area programs compete with each other to remain afloat in schools or to have the most up-to-date occupational cluster or program of study, these three areas of work-related skills will remain important and equip people for success in work and life.

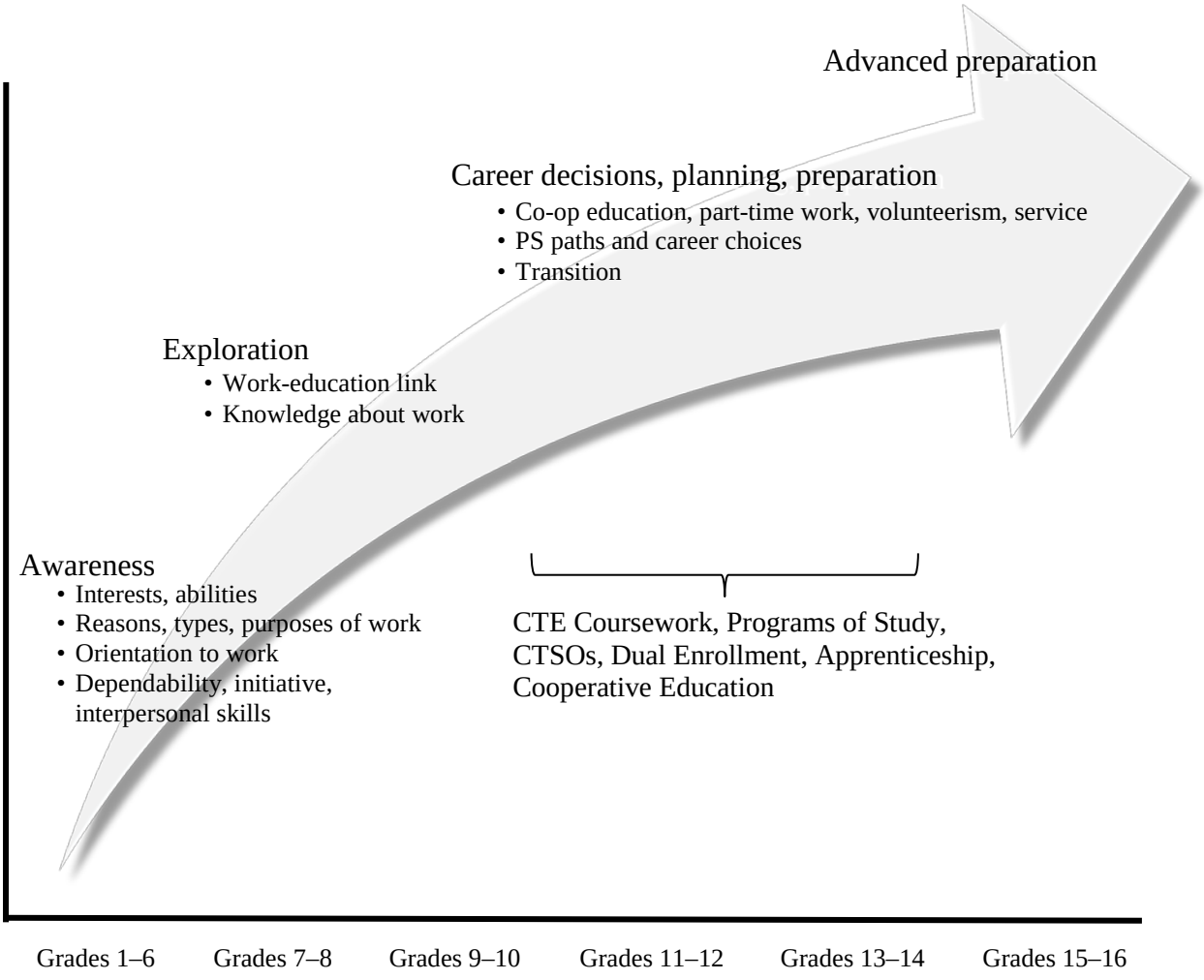

Figure 2. Timeline of possible curriculum content and interventions for CTE research and practice to meet work demands in the 21st century.

Recommendations

We have several choices: (a) We can defend the status quo; (b) We can initiate small but ineffective change, not unlike rearranging the deck chairs on the Titanic; or (c) We can recognize the need for change and implement steps to design and administer secondary CTE that is viable and relevant to young people in the 21st century. What we have described in this paper is our way of beginning to do that. Thoughtful, collective, and research-based action is needed if we are to be successful in the future. As starting points we believe there are several steps that can be taken immediately:

1. Use the three integrated components of career navigation, work ethic, and innovation as focal points for organizing CTE research and practice.
2. Determine how existing content area programs and research currently reflect these three components.
3. Revise existing courses and create new courses (programs) that emphasize the proposed strands.
4. Investigate ways to build and disseminate research around the framework elements.
5. Initiate and sustain an inclusive conversation about the future of CTE.

Concluding Thought

As we developed this paper, we were reminded of the Kodak company. Eastman-Kodak was, at one time, a powerhouse in American business. The company enjoyed an overwhelming market share in photography products like film, photography equipment, and supplies. In fact, Kodak invented digital photography, among many other things. What happened? The fate of Kodak was sealed because of miscalculations about the importance of its product and a reluctance to tamper with its position in the marketplace. To maintain their sizable market share selling film, the company did not actively pursue digital photography. We know the rest of the story; other companies did pursue the technology, and in a relatively short period of time digital photography has replaced film photography. In an effort to hold on to what they had, Kodak lost everything. We do not want to end up like Kodak, because of misjudging the importance of the challenge or missed opportunities. CTE researchers and educators must be perceptive and sensitive to the changes occurring in the world of work, and take action to modify curriculum and efforts to best prepare young people for a very different work world. Narrow vision, reluctance to give up our turf, and comfort (complacency) with traditional thinking contribute to lack of decisiveness and change. Therefore, we urge a reaffirmation of our commitment to the highest standards and quality in our research, and realignment of our thinking to anticipate the contributions that secondary CTE can have in preparing young people for postsecondary education and work in the 21st century. The issues of career navigation, work ethic, and innovation can be key components of CTE practice and research that bind all areas of CTE together and organize research.

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