Trends in Career and Technical Education Research

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Hutchinson and Lovell (2004) observed that professional journals serve an important function. They offer a mechanism by which professionals communicate ideas, stimulate discussion (as well as controversy), and share information, often in the form of research findings" (p. 383). Given the key role peer-reviewed journals play in the development, promotion, and maintenance of a profession, periodic examinations of scholarly journals are a widely-reported practice across education and social science professions (Bangert & Baumberger, 2005; Elmore & Woehlke, 1998; Goodwin & Goodwin, 1985; Rojewski, 1997).

Career and technical education is an integral part of secondary and postsecondary public education and is designed to educate about, through, and for careers.

> Career technical education provides students and adults with the technical skills, knowledge and training necessary to succeed in specific occupations and careers. It also prepares students for the world of work by introducing them to workplace competencies that are essential no matter what career they choose. And, career technical education takes academic content and makes it accessible to students by providing it in a hands-on context. (National Association of State Directors of Career Technical Education Consortium, 2003, p. 1)

Given this broad mission, the purpose of this literature review was to identify current trends and issues in research focusing on career and technical education. The term career and technical education (CTE) was viewed from a broad perspective that included workforce education, technical education, secondary CTE, 2-year postsecondary CTE, technical college, and community college. Results should allow researchers, practitioners, and policymakers to identify immediate and emerging research needs in career and technical education, build on or fill gaps in existing knowledge, support similar research efforts, allow researchers to position particular projects within a broader research framework, and provide potential funding agencies a list of priority areas in need of investigation along with a rationale for their importance (Reddy, 2001).

METHOD

A research synthesis strategy (Cooper & Hedges, 1994) was adopted. This strategy supported our efforts to examine primary or original scholarship on various aspects of career and technical education for the purpose of describing, integrating, and synthesizing the contents of this scholarship (Cooper, 1998). Our purpose in reviewing the extant literature was to identify and analyze recent trends and issues in selected research publications.

Sources of Literature

The primary sources of literature for this review included all research articles published in three refereed scholarly journals—*Career and Technical Education Research, Journal of Career and Technical Education,* and *Journal of Industrial Teacher Education*—during a recent 3-year period (2002, 2003, and 2004). These journals were purposefully selected for their focus on career and technical education.

Results from this review provide an indication of the trends and issues reflected in what we termed "*unsolicited* research." It is unsolicited in the sense that the scholarship published in these journals reflects the interests of independent researchers working on personal agendas, as opposed to making pre-determined contributions to a unified or coordinated agenda. Results show the range of topics and issues of importance to researchers in the field.

Content Review: Instrumentation

We developed a coding sheet, similar to the one described by Hutchinson and Lovell (2004), to guide our content analysis of each article included in the three journals we selected for review. The coding sheet included sections for recording information on identifying characteristics, type and design of article, main research topic, main source of data, and data analysis methods.

Prior to beginning our review we excluded several types of contributions from consideration including introductions and book reviews. We followed the protocol described by Hutchinson and Lovell (2004) by developing operational definitions for the non-statistical aspects of our data collection, including article type and design, the research topic, and main source of data. For *type*, articles were coded into one of four possible categories: expository/opinion (e.g., editorial in nature), expository/conceptual supported by data (no original data collection), original research (qualitative or quantitative), and literature review. All articles that described original quantitative research were classified as belonging to one of four distinct research designs, including descriptive, causal comparative (ex post facto), quasi-experimental, and experimental.

The main *source* of data for each article was coded as being generated by survey (questionnaire), tests or outcome measures (scales or inventories with psychometric properties reported), interview (face-to-face, e-mail, telephone), documents (school reports, internal memos, newsletters), or observation. Our list of data analysis methods for quantitative studies was fashioned after the list used previously by Goodwin and Goodwin (1985) and Swanson and Alford (1987). This approach grouped analyses into three groups—basic (statistics typically covered in a first semester, introductory-level course), intermediate (statistics taught in a second or third semester course), and advanced (statistics normally requiring classes for a fourth semester or more)—based on the degree of training needed to conduct and interpret the analysis. Since many of the studies we examined conducted multiple statistical analyses, we coded analyses in terms of their sophistication—only the most sophisticated technique was recorded for each article.

We recorded the institutional affiliation of authors using a simple method devised by Howard, Cole, and Maxwell (1987) for assigning numeric value for the relative contributions of authors to published research, based on the assumptions that authorship order reflects the relative contribution of each author and that as the number of authors increases, the relative contribution of each author diminishes (American Psychological Association, 2002). Howard et al.'s formula to calculate contribution scores is:

$$\frac{(1.5^{n-i})}{\sum_{i=1}^{n} 1.5^{n-i}}$$

where n is the total number of authors in the paper, and i is the order of the specific author. According to Howell et al.'s formula, each article is worth a total of 1.0. Therefore, a single authored article would receive 1.0 point for affiliation and author. A co-authored article would be worth 0.6 point for the first author and 0.4 point for the second author. An article authored by three people would be represented by 0.47, 0.32, and 0.21 points, respectively. Four authors would receive .042, 0.28, 0.18, and 0.08 points, respectively; while five authors would receive 0.38, 0.26, 0.17, 0.11, and 0.08 points, respectively. Loveland, Buboltz, Schwartz, and Gibson (2006) applied the same formula to reflect institutional affiliation of published authors.

RESEARCH THEMES AND ISSUES

Articles published in three scholarly journals identified as having a general, comprehensive scope in career and technical education were reviewed. These journals were *Career and Technical Education Research (CTER), Journal of Career and Technical Education (JCTE),* and *Journal of Industrial Teacher Education (JITE).* These three journals are respected and possess a relatively high degree of prestige in the field. All three journals are sponsored by professional associations, governed by an external board of reviewers, and use a blind review process. *Career and Technical Education Research* (2006), formerly *Journal of Vocational Education Research*, is published three times per year by the Association for Career and Technical Education Research. CTER contains refereed articles that represent a variety of conceptual and methodological bases, and examine research and research-related topics in career and technical education, vocational education, preparation for work, and the workplace. The *Journal of Career and Technical Education* (2006) is a refereed publication, published twice per year, sponsored by Omicron Tau Theta, a national, graduate honorary society of career and technical education. JCTE typically publishes scholarly work that focuses on career and technical education philosophy, theory, or practice. The *Journal of Industrial Teacher Education* (2006) is a refereed publication, issued four times annually, by the National Association of Industrial and Technical Teacher Education (NAITTE). Manuscripts published in the JITE include research articles reporting scholarly inquiry and opinion/conceptual work providing commentary on issues broadly related to industrial and technical teacher education, and military or industrial training.

A total of 129 articles in 9 volumes (27 issues) were published in the three journals over a 3-year period (2002-2004). When examined by the type of article, just slightly over half of all published articles reported the results of quantitative research. Data provided in Table 1 identifies that two-thirds of the JCTE articles were quantitative, compared to less than half for each of the other two journals. Another quarter of the articles were labeled as *expository or conceptual supported by data,* but revealed very different percentages for individual journals. Only 11.8% of the JCTE were of this type, compared to 26.8% for CTER and 31.5% for JITE. A relatively small percentage of articles were expository (7.0%). However, all but one of these articles was published in the JITE.

TABLE 1
Research, by Type, Published in Selected CTE Scholarly Journals, 2002-2004

Type of research	CTER						JCTE						JITE						Totals	
	2002		2003		2004		2002		2003		2004		2002		2003		2004		*n*	%
	n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%		
Expository/opinion	—	—	1	7.7	—	—	—	—	—	—	—	—	8	36.4	—	—	—	—	9	7.0
Expository/conceptual supported by data	8	50.0	2	15.4	1	8.3	—	—	1	10.0	3	27.3	6	27.3	5	31.3	6	37.5	32	24.8
Original research	2				—		2				1		1				1			
Qualitative	12.5		4	30.8	—		5.4		1	10.0	9.1		4.6		2	12.5	6.3		14	10.9
Quantitative	6		5	38.5	9		11		5	50.0	7		7		8	50.0	9		67	51.9
	37.5				75.0		84.6				63.6		31.8				56.3			
Literature review	—	—	1	7.7	2	16.7	—	—	3	30.0	—	—	—	—	1	6.3	—	—	7	5.4

CTER=Career and Technical Education Research, JCTE=Journal of Career and Technical Education, JITE=Journal of Industrial Teacher Education. Column totals (% per volume series) may not equal 100.0% due to rounding error.

Three-quarters of all articles reflected a descriptive research or investigative design. Data provided in Table 2 reveals that two-thirds of CTER and JCTE articles and 81.5% of JITE articles were identified as descriptive. Qualitative, causal-comparative, and quasi-experimental designs were each utilized 7-10% of the time. CTER authors (14.6%) were twice as likely as those in JITE (7.4%) to utilize qualitative research designs. A dramatic difference exists in the use of causal-comparative designs, where 14.6% of CTER and 17.7% of JCTE articles reflected this type of design. In contrast, only 9.3% of JITE articles reflected a causal comparative design.

TABLE 2
Research Designs Employed for Studies Published in Selected CTE Journals, 2002-2004

Design	CTER			JCTE			JITE			
	2002	2003	2004	2002	2003	2004	2002	2003	2004	Totals
	n %	*n* %	*n* %	*n* %	*n* %	*n* %	*n* %	*n* %	*n* %	*n* %
Qualitative	2 2.5	4 30.8	— —	2 15.4	1 10.0	1 8.3	1 4.6	2 12.5	1 6.25	14 10.9
Descriptive/Correlational	12 75.0	6 46.2	9 75.0	5 38.5	8 80.0	9 83.3	21 95.4	11 68.75	12 75.0	93 72.1
Causal-comparative	2 12.5	3 23.1	1 8.3	5 38.5	1 10.0	— —	— —	— —	1 6.25	13 10.1
Quasi-experimental	— —	— —	2 16.7	1 7.7	— —	1 8.3	— —	3 18.75	2 12.5	9 7.0
Experimental	— —	— —	— —	— —	— —	— —	— —	— —	— —	— —

CTER=Career and Technical Education Research, JCTE=Journal of Career and Technical Education, JITE=Journal of Industrial Teacher Education. Column totals (% per volume series) may not equal 100.0% due to rounding error.

Research Topics

The 129 articles included in our review were sorted into 5 pre-determined categories reflecting the general trends, priorities, and themes emanating from federal policy and legislation pertaining to secondary career and technical education. These categories were accountability, articulation and transition, career pathways and course sequencing, integration of academic and career-technical education, and recruitment and retention of career and technical education professionals. During the sorting process (and accounting for our simultaneous review of postsecondary articles), a category containing articles on online/distance education and instructional methods and strategies was added. Data in Table 3 indicates that this instruction-focused research accounted for 19.4% of articles published during the 3-year reporting period. A miscellaneous category was also used to group topics not easily incorporated into one of the pre-existing categories. In this latter category, a group of articles focusing on student characteristics and related student issues emerged, accounting for 10.1% of published work. An additional 16 articles (12.4%) focused on various aspects of the field, including research issues (e.g., design and methods) and current status.

TABLE 3
Research Topics of Studies Published in Selected CTE Journals, 2002-2004

Research themes and topics	CTER	JCTE	JITE	Totals
ACCOUNTABILITY (*n*=16, 12.4%)				
Curriculum assessment	1	— —	1	2
Industry standards	2	2	2	4
Student achievement (e.g., standardized testing, technology proficiency)	3		5	10
INTEGRATION of ACADEMIC and CTE (*n*=11, 8.5%)				
Curriculum development	2	1	1	4
Curriculum integration	2	—	5	7
CAREER PATHWAYS / COURSE SEQUENCING (*n*=4, 3.1%)	—	1	3	4
Advisement (inc., student mentoring) / Career guidance / Course-taking patterns				
ARTICULATION and TRANSITION (*n*=7, 5.4%)				
Business-industry partnerships	1	—	1	2
High school-postsecondary collaboration (e.g., Tech Prep, dual credit)	1	1	1	3
HRD	1	—	—	1
School-to-work	1	—	—	1
ALTERNATIVE INSTRUCTIONAL DELIVERY (*n*=25, 19.4 %)	4	2	4	10
Distance education, Internet-based learning, technology	3	5	7	15
Instructional methods/strategies/learning (e.g., cognitive apprenticeship, teaching methods, contextual teaching-learning, entrepreneurship, information processing, job shadowing)				
RECRUITMENT / RETENTION of CTE PROFESIONALS (*n*=31, 24.0%)	—	—	1	1
Leadership development (e.g., administrator mentoring)				
Professional development	2	1	1	4
Alternative certification	4	2	—	6
Traditional certification/preparation	4	9	5	18
General professional development issues	1	1	—	2
Job stress/burnout				
MISCELLANEOUS (Not otherwise captured; *n*=35, 27.1%)				
Policy	1	—	4	5
Students characteristics and issues (e.g., demographics, learning style, aspirations)	4	5	4	13
Research on career and technical education as a field	3	4	9	16
Welfare-to-work	1	—	—	1

CTER=Career and Technical Education Research (*n*=41), JCTE=Journal of Career and Technical Education (*n*=34), JITE=Journal of Industrial Teacher Education (*n*=54).

The topic of recruitment and retention of CTE professionals garnered the largest number of articles from our review. Almost one-quarter (*n*=31) of the articles dealt with various aspects of teacher preparation, certification, and the experiences and needs of first-year career-technical teachers. Alternative instructional delivery (*n*=10) and instructional methods (*n*=15) composed slightly less than 20 percent of the articles. Numerous instructional approaches were addressed in these articles such as cognitive and traditional apprenticeship, contextual teaching-learning, and job shadowing. Topics addressing accountability, most often student achievement, represented 12.4% of the total. Standardized testing, student proficiency, and industry standards were several of the topics included in this category.

Data collection methods were classified using 5 primary types and results are reflective of the types of articles published. Data in Table 4 shows that approximately one-third of articles relied on surveys to collect data. Fifteen of the 34 JCTE articles used survey (44.1%), compared to about one-quarter of the articles for CTER (24.4%) and JITE (29.6%). Another one-third of articles with the JITE was most likely to use written documents (*n*=26, 48.2%), while JCTE was least likely (17.7%).

TABLE 4
Sources of Data for Research Studies Published in Selected CTE Journals, 2002-2004

Source of data	CTER			JCTE			JITE			Totals	
	2002	2003	2004	2002	2003	2004	2002	2003	2004	*n*	%
	n %	*n* %	*n* %	*n* %	*n* %	*n* %	*n* %	*n* %	*n* %		
Survey	4 25.0	1 7.7	6 50.0	6 46.2	5 50.0	4 36.4	6 27.3	5 31.3	5 31.3	42	32.6
Tests/Outcome measures	1 6.25	4 30.8	4 33.3	4 30.8	1 10.0	3 27.3	1 4.6	4 25.0	4 25.0	26	20.2
Interview	3 18.75	5 38.5	— —	3 23.1	1 10.0	1 9.1	1 4.6	1 6.3	1 6.3	16	12.4
Document	8 50.0	3 23.1	2 16.7	— —	3 30.0	3 27.3	14 63.6	6 37.5	6 37.5	45	34.9
Observation	— —	— —	— —	— —	— —	— —	— —	— —	— —	—	—

CTER=Career and Technical Education Research, JCTE=Journal of Career and Technical Education, JITE=Journal of Industrial Teacher Education. Column totals (% per volume series) may not equal 100.0% due to rounding error.

Data in Table 5 identifies that slightly over 70% (*n*=48) of quantitative research articles reported basic statistics for data analysis, which included descriptive (44.2%) or one-way analysis of variance (ANOVA; 16.9%) procedures. A majority of articles in both JCTE and JITE relied on basic statistics; 75.0% and 80.8%, respectively. In contrast, only about one-half of CTER articles (57.1%) relied on descriptive statistics as the primary means of analyzing research data. One-quarter of all articles (25.4%) used intermediate statistics such as factorial ANOVA, multiple regression, or factor analysis. When examined by journal, CTER (33.3%) was more likely to publish articles using these more sophisticated analyses than JCTE (25.0%) or JITE (19.2%). Only two articles using advanced statistics (multiple analysis of variance, structural equation modeling) were identified, both published in CTER.

TABLE 5
Types of Data Analysis in Studies Published by Selected CTE Journals, 2002-2004

Data analysis	CTER			JCTE			JITE			Totals	
	2002	2003	2004	2002	2003	2004	2002	2003	2004		
	n	*n*	*n*	*n*	*n*	*n*	*n*	*n*	*n*	*n*	*%*
	%[a]	%	%	%	%	%	%	%	%		
Basic statistics											
Descriptive	1	—	5	2	5	5	5	6	5	34	
Correlation	16.7	—	50.0	28.6	83.3	71.4	71.4	60.0	55.6	44.2	
Nonparamteric tests	—	—	—	—	—	—	—	—	—	—	—
t-test/One-way ANOVA	—	—	—	—	—	—	—	—	—	1	1.3
	—	1	—	—	—	—	—	—	—	13	
	—	20.0	—	—	—	—	—	—	—	16.9	
	2	1	2	1	1	1	1	2	2		
	33.3	20.0	20.0	14.3	16.7	14.3	14.3	20.0	22.2		
Intermediate statistics											
Factorial ANOVA	—	—	—	1	—	1	—	—	—		
ANCOVA	—	—	—	14.3	—	14.3	—	—	—		
Multiple regression	—	—	—	1	—	—	—	1	—	2	2.6
Factor analysis	—	—	—	14.3	—	—	—	10.0	—	2	2.6
Cluster analysis	2	1	2	2	—	—	—	1	1	9	11.7
	33.3	20.0	20.0	28.6	—	—	—	10.0	11.1	4	5.2
	—	1	1	—	—	—	1	—	1	—	—
	—	20.0	10.0	—	—	—	14.3	—	11.1		
	—	—	—	—	—	—	—	—	—		
	—	—	—	—	—	—	—	—	—		
	—	—	—	—	—	—	—	—	—		
	—	—	—	—	—	—	—	—	—		
Advanced statistics	—	—	—	—	—	—	—	—	—		
Discriminant analysis	—	—	—	—	—	—	—	—	—		
Path analysis	—	—	—	—	—	—	—	—	—	—	—
Canonical correlation	—	—	—	—	—	—	—	—	—	—	—
MANOVA	—	—	—	—	—	—	—	—	—	—	—
Structural equation	—	1	—	—	—	—	—	—	—	1	1.3
modeling	—	20.0	—	—	—	—	—	—	—	1	1.3
Meta-analysis	1	—	—	—	—	—	—	—	—	—	—
	16.7	—	—	—	—	—	—	—	—		
	—	—	—	—	—	—	—	—	—		
	—	—	—	—	—	—	—	—	—		

CTER=Career and Technical Education Research, JCTE=Journal of Career and Technical Education, JITE=Journal of Industrial Teacher Education. Totals may not equal 100.0% due to rounding error. [a]Column percentages reflect total number of studies using some type of statistical analysis, per volume.

Author Affiliation

Howard et al. (2005) noted that the quality of work at a university has traditionally been assessed on the basis of reputation or research productivity. And, despite objections, productivity

scores are useful in tracking institutional contribution to the body of literature in a particular discipline. Institutional affiliation, or institutional productivity, was "compiled on the basis of frequency and order of authorship. A single authored article netted that author's institution a single unit of credit. In multiple authored articles, credit was assigned proportionately" (p. 976). Thus, the productivity index represented the relative contribution of authors/institutions to the research literature, higher scores representing greater contribution. Scores lower than 1.0 indicate that the author/institution contributed less than the equivalent of 1 journal article to the research literature in the selected journals.

We present only the top producing institutions, indicated here by a contribution of 1 or more published articles. This approach is in line with previous research examining the scholarly productivity of authors and institutions (Howard et al., 2005; Loveland et al., 2006). We initially separated institutional productivity scores into 2 groups, those with total combined scores equal to or greater than 1.0 and those with scores less than 1.0. Since our purpose was to identify leading contributors to the research literature, we did not further examine the institutional affiliation of authors with productivity scores less than 1.0 (n=38). For authors/institutions in this group, total contribution to the literature was less than the equivalent of 1 article.

Because of the relatively large number remaining (n=47), we further divided institutions into those with total scores equal to 1.0 and those greater than 1.0. Twenty-five institutions had total contributions equal to 1.0, or the equivalent of 1 article. Ten institutions were represented in the CTER data, including Bowling Green University, Drexel University, Michigan State University, Mississippi State University, Oregon State University, University of Delaware, University of Nijmegen, Virginia State University, Wisconsin Indianhead Technical College, and Wright State University. Six institutions were recorded for JCTE, including Central Connecticut State University, Middle East Technical University, Temple University, University of Florida, University of Regina, and the World Bank. JITE had 9 institutions in this category, including Appalachian State University, Clemson University, College of New Jersey, Georgia Institute of Technology, Hofstra University, National Changhua University of Education, University of Maryland, University of Washington, and the Washington State Department of Education.

Data in Table 6 includes all institutions with total scores greater than 1.0 in rank order. The University of Minnesota ranked the highest with a score of 10.08. Several highly ranked institutions had representation in all 3 journals, including the University of Minnesota, Ohio State University, and University of Illinois. Authors affiliated with Ohio State University were also represented in all but 1 (JITE, 2004) of the 9 volumes included in this analysis. In contrast, 4 of the top 9 ranked institutions—Illinois State University, Oklahoma State University, Pennsylvania State University, and Purdue University—were predominantly or solely represented in the JITE. Institutions making the highest contributions to the other journals included University of Minnesota and Ohio State University for CTER, and University of Georgia and University of Minnesota for the JCTE.

TABLE 6
Rank Order of Institutional Affiliation of Authors Published by Selected CTE Journals, 2002-2004

Affiliation	CTER			JCTE			JITE			Totals
	2002	2003	2004	2002	2003	2004	2002	2003	2004	
University of Minnesota	1.0	2.0	2.4	—	1.0	2.68	1.0	—	—	10.08
Illinois State University	—	.6	.6	—	—	—	1.0	2.0	4.0	8.20
University of Georgia	1.8	1.0	—	3.13	—	1.6	—	—	—	7.53
Ohio State University	2.0	1.0	1.0	.4	.21	.4	1.0	1.0	—	7.01
University of Illinois	2.6	—	1.0	.28	—	.6	2.0	—	—	6.48
Oklahoma State University	—	—	1.0	—	.6	—	—	—	4.0	5.60
Pennsylvania State University	1.0	—	—	.6	—	—	.4	.6	2.0	4.60
Purdue University	—	.4	—	—	—	1.0	.4	1.4	1.0	4.20
Ball State University	—	1.0	—	1.36	—	1.0	—	—	—	3.36
Louisiana State University	—	.4	1.0	—	1.0	—	—	—	—	2.40
North Carolina State University	—	—	1.0	.4	—	—	—	1.0	—	2.40
University of Arkansas	—	—	—	—	—	—	1.4	1.0	—	2.40
Georgia State University	—	—	—	—	—	—	—	2.0	—	2.00
Old Dominion University	—	—	—	—	—	—	1.0	1.0	—	2.00
Southern Illinois University @ Carbondale	—	—	—	—	1.0	1.0	—	—	—	2.00
University of Arizona	—	1.0	—	—	1.0	—	—	—	—	2.00
University of Tennessee	—	1.0	—	—	—	1.0	—	1.0	—	2.00
Iowa State University	—	1.0	—	—	—	.53	—	—	.4	1.57
University of British Columbia	—	—	—	—	—	—	.4	1.0	—	1.40
Texas A&M University	—	—	—	.4	.4	—	—	.4	—	1.20
Washington State University	—	—	—	—	—	—	—	—	1.19	1.19

CTER=Career and Technical Education Research, JCTE=Journal of Career and Technical Education, JITE=Journal of Industrial Teacher Education. Only those institutions with total scores greater than 1.0 are included.

CONCLUSION

The purpose of this analysis was to identify current trends, issues and needs in published research focusing on career and technical education. During the 3-year reporting period, quantitative research methods were utilized three-fourths of the time. A relatively small percentage of the articles represented qualitative research methodologies. Numerous topics reflecting the needs of the field and issues affecting the profession were noted. The topics of teacher recruitment and retention of CTE professionals, teacher preparation and certification, and instructional approaches were of concern to the field. A total of 85 institutions were represented by the authors who published in selected peer reviewed journals with a majority being affiliated to University of Minnesota, Illinois State University, University of Georgia and Ohio State University.

So what does this mean? For CTE to continuously reposition and meet its goals and objectives in our schools, a constant review of issues, trends, and needs affecting the field should be examined. Each of us can make important contributions by actively participating in solving noted issues and utilizing various research methodologies to constantly review, conduct, or duplicate scholastic work as reported by independent researchers and policy groups. So much more needs to be done, especially in encouraging young scholars and institutions that offer career and technical education to voice their opinions and concerns affecting their practice by conducting research utilizing qualitative methodologies and seeking to publish in peer reviewed journals.

Developing such a practice not only emphasizes the concerns and research needs as reported by practitioners, independent researchers, and policy groups but also lays a foundation for innovative curricular changes and program design while providing an ideal platform to reexamine the directions of the field. Perhaps this is the most important contribution that any of us can make to CTE education whether as a classroom teacher, through service in think tank groups and school boards, or as a member of an advisory committee on issues in which we have needed expertise. It is hoped that this review can be a starting point for periodic evaluation of CTE-related research to inform our understanding of trends and issues in the field and a call for more research activities from various professionals and institutions that have an interest in CTE. In doing so, we will have taken a large step forward in sustaining and reforming career and technical education research and practice.

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