

ADDRESSING COMPLEX PROBLEMS:

Using Authentic Audiences and Challenges to Develop Adaptive Leadership and Socially Responsible Agency in Leadership Learners

Abstract

Researchers have found many career and technical education administrators are not fully prepared for the unique challenges found in the administrative domain of career and technical education (CTE). Tools for identifying specific needs of CTE administrators are lacking, thus prompting the development of the CTE Administrator Self-Efficacy (CASES) survey instrument. The CASES survey instrument can identify professional development and instructional training necessary for enhancing the CTE administrator's leadership and management abilities. CTE administrators will benefit from the CASES self-assessment by identifying their strengths and weaknesses. CASES will affect change within the field of CTE, as it will set the stage for training and professional development needed to assure the success of CTE administrators as sound leaders of their school communities. CASES is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License and can be accessed at the following URL: <https://digitalcommons.murraystate.edu/faculty/22/>

Introduction

Research is plentiful in regards to the high demand for CTE teachers as our nation needs many workers for job opportunities which may be provided through secondary CTE course pathways and industry certifications (Wilkin & Nwoke, 2011). This study began as an effort to determine what research had been conducted specifically regarding the self-efficacy of Career and Technical Education (CTE) administrators. A quick google search confirmed the paucity of literature related to this topic and the need for further investigation. Research regarding CTE administrator responsibilities, licensure requirements, and preparation of the CTE administrator in various states (Zirkle, 2017) is closely related to the current study. While Zirkle (2017) outlined the various methods states are utilizing to prepare CTE administrators, the study did not address the need for CTE administrator self-

efficacy to address the needs and shortcomings of the current system which were illuminated through the study. Self (2001) made the case that new CTE teachers are very difficult to retain and the predominant factors that contributed to the high attrition rate were lack of administrator support and administrator recognition. As many CTE teachers enter the classroom without any formal teaching methodology training, the skill set for and the role and responsibilities of the CTE administrator are very challenging.

As we drafted the first CTE Administrator's Self-Efficacy Survey (CASES) and presented it at the national Southern Regional Education Board (SREB) High Schools that Work 2017 Conference, it was evident that participating CTE administrators were eager for an instrument to help highlight their needs and self-perception, one that would help them grow and prosper in their role at the secondary level. In light

of these findings, we recognized that many career and technical education administrators are not fully prepared to meet a number of the unique challenges found in career and technical education (CTE). To begin addressing this problem, a self-efficacy survey that targets selected administrative areas in CTE is needed. Such an instrument can be used to identify professional development and instructional training necessary for enhancing the CTE administrator's leadership and management abilities (Tuckwiller, Yost, Conrad, Watkins, Parr & Gordon, 2017).

Leaders of CTE programs or career centers are often seen as similar to traditional principals or superintendents and many states have developed a general administrative credential for CTE administrators (Clark & Cole, 2015; Zirkle & Jeffery, 2017). Clark and Cole (2015) found, however, "having a principal certification is not enough to be an effective CTE administrator" (p. 76). State CTE directors had concerns regarding CTE administrators' appropriate CTE programming and instructional knowledge, CTE facility and equipment management, and working with industry/business advisory groups (Clark & Cole, 2015). CTE administrator preparation requires additional knowledge and skills related to CTE program costs and funding, marketing CTE programs, safety & liability concerns, data-driven decision-making, needs of future employers, business/industry partnerships, industry standards, changes in student demographics, CTE policy development, academic and technical skill performance, and CTE teacher recruitment and licensure (Clark, Farmer, & Welch, 2010; Zirkle & Jeffery, 2017; Zirkle, Parker, & McCaslin, 2005). Clark & Cole (2015) state that "it is deeply concerning that administrators with little experience in the pedagogy, expectations, accountability, and theoretical frameworks of CTE are hiring and evaluating instructors and providing leadership for cutting edge CTE" (p. 76).

As most self-efficacy surveys currently target education administrative leadership in general,

a specific instrument to target areas associated with CTE and CTE administration has not been addressed. This is problematic as CTE administrators should understand the budgeting requirements, teaching strategies, classroom requirements, and lab requirements necessary to prepare students with the knowledge and skills required to be both college and career ready. The development of the CTE Administrator Self-Efficacy Survey (CASES) is anticipated to contribute to the body of knowledge assessing the preparation of administrators for the challenges of the CTE school community.

Problem Statement

In general, CTE administrators are not receiving adequate preparation for leading and managing the unique aspects of CTE. For many years principal preparation programs have been criticized in areas such as selection and recruitment, lack of understanding between practice and theory, weak principal candidates and faculty, as well as a lack of experience in the school communities in which they lead (Levine, 2005). To begin redesigning administrator programs, many alternate programs have developed in local school districts known as "grow your own" leadership preparation programs (Joseph, 2009). In spite of these efforts, CTE administrator specific preparation and the self-perceptions of CTE administrative abilities have garnered little attention from research.

Theoretical Base

The theoretical framework for this pilot study was self-efficacy. Self-efficacy provides a conceptual framework to examine the factors of effective CTE administrator leadership and management (Bandura, 1997). A CTE administrator with a strong sense of self-efficacy: a) views challenges and problems as tasks to be mastered; b) develops a deeper interest in the

community in which they lead; c) holds a strong sense of commitment to those they lead; and d) rebounds quickly from setbacks (Cherry, 2017). Leader self-efficacy can have a positive influence in motivating teachers as well as students to achieve (Goddard & Salloum, 2011) and a CTE administrator's self-efficacy perception is vital to develop effective leadership training.

Self-Efficacy. In 1977, Bandura introduced and developed the concept of self-efficacy which he identified to be a key self-regulatory method in affecting behavior. Bandura (1986) defined self-efficacy as an individual's belief in the ability to successfully handle specific situations or duties required of him/her. As identified by Bandura (1982), self-confidence requires an assessment of his/her beliefs (self-efficacy) in the ability to successfully handle specific situations or duties required of him/her. An administrator's self-perceived capabilities to perform cognitive and behavioral functions are necessary to leading and managing others toward achievement of goals for meeting students' educational achievement (McCormick, 2001). According to Bandura (1997), the four sources of self-efficacy are mastery experience, physiological arousal, vicarious experience, and verbal persuasion. An administrator with high self-efficacy is more likely to use personal power, such as expert, informational, and referent power, when carrying out their role (Lyons & Murphy, 1994). Bandura (2001) has made several recommendations for the construction of self-efficacy measures. Self-efficacy beliefs are context specific and measurements should examine both the level and strength of self-efficacy.

Leadership. Leadership and management are functions that anyone might accomplish; however, the effectiveness may vary dependent on the confidence one has in that role. A leader's belief in his/her own capabilities to execute courses of action to achieve given results is evident in an organization's success (Bandura, 1997). Since 1986 research has continued on leadership and management and one's ability to self-identify strengths and weakness. Just because one holds a leadership position does not necessarily

mean he/she is a leader (Kellerman, 2012).

Neck and Manz (2010) outlined the importance of understanding the process that develops a leader of an institution or organization. This understanding is echoed by Ross (2014) as self-leadership which identifies controlling one's option of situations to participate in as a leader. An individual's positive self-concept enables him/her to develop self-leadership growth and to recognize opportunities for personal and professional growth as a leader (Ross, 2014). One's self-concept or self-confidence signifies his or her belief in the ability to lead (Neck and Houghton, 2006).

Education. Self-efficacy surveys and questionnaires have been developed to highlight authentic leadership traits for organizations and the workforce (Gardner, Cogliser, Davis, & Dickens, 2011). As well, Tschannen-Moran and Gareis (2004) researched the efforts of principals at the school level and their ability to handle today's school reform efforts. This research resulted in the development of a principal questionnaire designed to better understand challenges that a principal faces day-to-day. This questionnaire provided general items faced by a school principal; however, it did not focus on specific items that are encountered by Career and Technical Education (CTE) administrators. The CTE administrator must be familiar with the primary role of CTE programs which is to prepare students for both college and the workforce. Spearheading school vision and culture, management responsibilities, ethical behavior and the context in which schools operate are vital duties of a CTE administrator. Additionally, these administrators must be proficient in the understanding of workforce trends, program requirements to prepare students for work, integrating core academics, and budget responsibilities necessary to manage funding for CTE programs.

Purpose and Objectives

The purpose of this descriptive research study was to explore the literature and develop the CTE

Administrator Self-Efficacy survey instrument. The survey was piloted in four states to establish reliability and validity. The specific objective of this study was to develop a valid and reliable CTE administrator self-efficacy survey instrument.

Research Methods and Data Analysis

After reviewing the literature, two self-efficacy models were referenced to develop the CASES:

- a. The Leadership Self-Efficacy Scale (Bobbio & Manganelli, 2009) and
- b. The Principals' Sense of Efficacy Questionnaire (Tschannen-Moran & Gareis, 2004).

The Leadership Self-Efficacy Scale originally contained six dimensions, including: 1) starting and leading change processes in groups; 2) choosing effective followers and delegating responsibilities; 3) building and managing interpersonal relationships within the group; 4) showing self-awareness and self-confidence; 5) motivating people; and 6) gaining consensus of group members (Bobbio & Manganelli, 2009). Reliability of the original Leadership Self-Efficacy scale (21 items) was $\alpha=.91$ (Bobbio & Manganelli, 2009). Coefficients of plus or minus .60 or .70 are usually considered adequate for group prediction purposes (Gay, Mills & Airasian, 2006).

Tschannen-Moran and Gareis (2004) concluded that the Principals' Self-Efficacy Scale (18 items) was insufficient with Cronbach's alpha reliability ranging from 0.34 to 0.61. Though the reliability was considered to be low, researchers believed some of the items in the scale could be useful if revised.

The language of the items from the original Leadership Self-Efficacy scale was modified. The original scale utilized full sentences for each item, but to align both scales and use a sentence lead, the items in the original scale were modified for a common sentence lead ("As a district/building level CTE administrator to what extent can you . . ."), followed by an abbreviated version of each of the 21 items. The Principals' Self-

Efficacy Scale (18 items) was also modified slightly, changing the word "school" in each statement to "school/district," as many CTE Administrators do not administer a single school. The two scales merged together to create the original CASES with 39 items. Following a review of the items by the research team, it was decided that four items needed more specificity for CTE to include community needs, parent communication, and academic core teachers (as opposed to CTE teachers).

The draft of the CTE Administrator's Self-Efficacy Survey (43 items) was then presented by the research team at the national Southern Regional Education Board (SREB) High Schools that Work (HSTW) 2017 Conference. During the presentation, participants engaged in question and answer and open discussion sessions, completed the pilot survey, assessed the validity of the survey and provided feedback on the validity of the content. Topics CTE Administrators commented on as being missing, but important, during the session included: raising student achievement of career/college ready knowledge/skills; working with business and industry partners to best understand industry needs for workers; developing internship and work-based learning opportunities for students in the workplace; meeting federal requirements for Perkins funds and reporting; supporting the transition to teaching by non-traditional instructors; and the successful management of relationships with academic teachers, counselors, and other administrators (Tuckwiller, Yost, Conrad, Watkins, Parr & Gordon, 2017). Following the SREB presentation, this feedback from participants was used to revise the survey to better reflect these topics in the four-state pilot study. These revisions added 8 additional CTE specific items.

Setting and Sample. Following Institutional Review Board approval, the revised CASES was sent out to the four states identified for the pilot study using an online application through SurveyMonkey. An informed consent statement was emailed to a total of 378 CTE district and building level administrators with an invitation to participate in the survey. Of those invited to participate, 88 (23.28%) responded

with a total of 85 completing the entire survey (Table 1).

Participants in the pilot study were predominately male between ages 46-55 and white (Table 2).

As outlined in Table 3, more than a quarter of participants (N= 22, 25.88%) had no CTE teaching experience and a significant portion had less than 5 years of CTE administrator experience (N=29, 34.12%).

Table 1.
Participants in the CASES 4-State Pilot Study.

Invitations	Total Responded	Completed Entire of Survey	Completed Portion of Survey
N= 378	N=88 (23.28%)	N= 85 (22.49%)	N= 3 (00.79%)

Table 2.
CASES Participants by Gender/Age/Race

Gender	N	Age	N	Race	N
Male	57	36-45	16	Hispanic	1
Female	28	46-55	44	White	80
		56-65	23	Other	3
Not Reported	0	Not Reported	2	Not Reported	1
Total	85	Total	85	Total	85

Table 3.
CASES Participants by CTE Teaching Experience & CTE Administrator Experience

Years of CTE Teaching Experience	N	Years of CTE Administrator Experience	N
None	22 (25.88%)	< 5 Years	29 (34.12)
<10 Years	22 (25.88%)	5-10	31 (36.47%)
10-20 Years	26 (30.59%)	10-20	23 (27.06%)
20-30 Years	8 (9.41%)	20-30	2 (2.35%)
>30 Years	6 (7.06%)	>30 Years	0
Not Reported	1 (1.18%)	Not Reported	0
Total	85	Total	85

Results

Reliability Analysis. Participants of the CASES 4-state pilot study completed the 51-item survey. Using SPSS statistical software, reliability was calculated (Table 4).

Cronbach's alpha reliability coefficient normally ranges between 0 and 1. George and Mallery (2003)

provide a rule of thumb scale for reliability that places this study's reliability of .960 within the excellent scale ($\geq .9$).

A factor analysis was conducted using the Maximum Likelihood Extraction method using the Oblimin rotation method with Kaiser Normalization. The results of this analysis revealed three factors (Table 5).

Table 4.

CASES Data Analysis/Reliability of 51 Item 4-State Pilot.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.960	.962	51

Table 5.

CASES Factors Resulting From 51 Item 4-State Pilot, Organized by Factor

	<i>Factor</i>		
	1	2	3
Item_1	.632	.124	.471
Item_2	.557	.126	.494
Item_4	.362	.240	.215
Item_5	.652	.074	.442
Item_6	.542	.237	.371
Item_7	.629	.388	.493
Item_8	.556	.076	.524
Item_9	.656	.296	.405
Item_10	.688	.193	.599
Item_12	.514	.284	.389
Item_13	.798	.071	.150
Item_14	.798	.220	.210
Item_15	.817	.169	.240
Item_20	.650	.274	.480
Item_21	.409	.152	.272
Item_22	.713	.298	.514
Item_23	.701	.208	.532
Item_24	.658	.288	.568
Item_25	.710	.172	.487
Item_27	.673	.461	.445
Item_30	.449	.292	.432
Item_31	.510	.120	.450
Item_37	.655	.235	.574
Item_38	.714	.257	.572
Item_39	.706	.200	.594
Item_40	.589	.117	.577
Item_46	.586	.036	.509
Item_47	.559	.112	.554
Item_49	.613	-.029	.310
Item_51	.382	.079	.189
Item_3	.264	.818	.158
Item_11	.300	.708	.321
Item_16	.211	.750	.270
Item_17	.020	.825	.149
Item_18	.135	.712	.360
Item_26	.342	.550	.348
Item_28	.268	.504	.458
Item_19	.499	.236	.515
Item_29	.379	.384	.537
Item_32	.471	.235	.502
Item_33	.335	.326	.616
Item_34	.350	.275	.513
Item_35	.271	.499	.564
Item_36	.425	.227	.737
Item_41	.445	.410	.697
Item_42	.465	.312	.697
Item_43	.396	.375	.795
Item_44	.565	.433	.739
Item_45	.461	.224	.590
Item_48	.361	.144	.738
Item_50	.384	.199	.611

After analysis, these factors were labeled as: a.) Factor 1 - Administrative Management Factors (N= 30), b.) Factor 2 - Personal Management Factors (N= 7) and c.) Factor 3 - Professional Growth Factors (N= 14). Administrative Management items seemed directly tied to the successful operation of CTE programs or a career center. Example items for the Administrative Management factor included:

- Generate enthusiasm for a shared vision for the district/school
- Raise student achievement of career/college ready knowledge/skills
- Motivate teachers
- Support the transition to teaching by non-traditional instructors
- Meet federal requirements (Perkins funds and reporting)

The Personal Management factor seemed to be those personal qualities that make a successful administrator. This factor included items such as:

- Handle the paperwork required of the job

Establish very good relationships with the people I work with

Cope with the stress of the job

Prioritize among competing demands of the job

The final factor, labeled Professional Growth, seemed most related to the skills needed in CTE administration to build or expand successful CTE programs. Examples of Professional Growth items included:

- Help group members reach group goals using your experience/skills
- Gain consensus of all district/school members
- Effectively meet the needs of your community
- Work with business and industry (workplace) partners (advisory committees, meeting industry needs for workers, developing internship possibilities, etc.)

Table 6.
Reliability Associated with CASES Factors Resulting From 51 Item 4-State Pilot Factors.

	Cronbach's Alpha	Cronbach's Alpha Base on Standardized Items	N of Items
Administrative Management	.954	.956	30
Personal Management	.870	.868	7
Professional Growth	.910	.915	14

Considering the length of the survey and the wide disparity in number of items per factor, we decided to evaluate all items for possible elimination from the final instrument. The reduction in the total number of items specifically targeted the Administrative Management subscale, as 30 items loaded to this factor. Review of the items was three-fold, first focusing on the correlation of the items within factor 1, then focusing on the perception of duplicative items, and finally considering the practical significance of items to the CTE administrator position. In so doing, items that had lower correlations were not necessarily deleted. The actual job duties of a CTE administrator and the previous feedback collected was reviewed to ensure that the items retained were reliable for the scale, but also maintained the content validity specific for CTE administration.

The Administrative Management factor was reduced from 30 to 14 items. Items deleted included those that seemed more relevant to other district positions (Manage change in your district/school; Foster school spirit among a large majority of the student population; Promote a positive image of your district/school with the media; Shape the policies/procedures necessary

to manage your district/school; Effectively handle student discipline in your district/school; Successfully manage relationship with academic teachers; Successfully manage relationships with counselors), were repetitive with other items (Create a positive learning environment in your district/school; Confidently build an effective/efficient group; Identify within a group to which member to delegate a specific task; Delegate responsibilities to teachers; Develop teachers' leadership skills), or were considered to be more the responsibility of a CTE teacher (Effectively manage Career & Technical Student Organizations; Effectively communicate with parents/caregivers; Effectively establish program recruitment plans). One item that was deleted, "Work with sending schools (for area career centers)," did not have a high correlation, and we believed this was due to the fact that not all of the states involved in the study had area career centers. Since the scale is being developed for use nationally, it was decided to not include the item. Reliability coefficients of the remaining 35 CASES items and three subscales are displayed in Table 7.

This finalized the CASES with 35 items and produced an instrument to measure CTE Administrator Self-Efficacy with very high reliability.

Table 7.
CASES Data Analysis/Reliability of 35 Item 4-State Pilot Final Survey and Factors.

	Cronbach's Alpha	Cronbach's Alpha Base on Standardized Items	N of Items
CASES	.946	.948	35
Administrative Management	.910	.914	14
Personal Management	.870	.868	7
Professional Growth	.910	.915	14

Discussion, Conclusions, and Recommendations

Discussion. Although educational leadership standards have become less differentiated over the years and CTE Administrator preparation programs have dwindled (Zirkle & Jeffery, 2017), how these leadership standards are actualized in CTE is quite different from traditional K-12 educational administration. Thus, to better understand the needs of CTE administrators with respect to the responsibilities they are required to fulfill, we developed a CTE Administrator Self-Efficacy Survey. The survey was piloted in four states to establish a reliable and valid CTE administrator self-efficacy survey. The researchers used the 51 item CTE Administrator Self-Efficacy Survey (CASES) for data collection and analysis and were able to reduce the full scale to a highly reliable, 35 item instrument for future use.

Conclusions. Based on the theoretical framework of self-efficacy as defined by Bandura (1997), CTE administrator's self-perceived capabilities to perform the cognitive and behavioral functions necessary to lead and manage others toward the attainment of goals for meeting students' educational achievement is essential (McCormick, 2001). In CTE, many teachers come from non-traditional educational backgrounds, facilities and equipment needs differ from typical educational environments, and workforce influence on the educational process is foundational to program quality. Having CTE administrative leaders who are capable and confident in handling these and other CTE specific administrative responsibilities is crucial to program, teacher and ultimately student success.

CTE administrators must be proficient in understanding workforce trends, grasping program requirements to prepare students for work, integrating core academics, and managing budget responsibilities necessary to administer funding for CTE programs. For this proficiency to be mastered, the CTE administrator must first evaluate and understand their strengths and weaknesses in order to determine

their personal professional development needs. The CASES survey instrument holds potential as an initial assessment tool. After pilot data collection and analysis, we revised the instrument to 35 items in order to eliminate redundant items and those items more aligned with district or teacher responsibilities, and to reduce the time needed to complete the survey. The Cronbach's alpha for the 35-item CASES survey remains excellent ($\alpha = .946$).

Recommendations. While providing a new tool designed specifically for CTE administrators, findings from this pilot research raise questions for further study. The new CASES 35-item instrument needs further refinement. An expansive national study will allow for more comprehensive data collection and analysis to ensure the survey is a valid instrument for determining self-efficacy of CTE administrators. A validated CASES could also be used practically to inform training and professional development of CTE administrators and the impact of such training.

While many states are eliminating unique CTE administration certification requirements in favor of broader educational administration requirements, the impact of these decisions holds serious consequences in the leadership of innovative CTE programs (Clark & Cole, 2015; Zirkle & Jeffery, 2017). A valid self-efficacy instrument could also be utilized to compare the self-efficacy of those CTE administrators with specific CTE backgrounds and certification and those with only broad educational administration preparation.

CTE programs have a strong tradition of and responsibility for addressing workforce needs. Having a strong belief in one's ability to successfully lead Career & Technical Education programs is essential to developing, implementing and maintaining the cutting-edge CTE programs needed for the future workforce. The CTE Administrator Self-Efficacy Survey provides CTE administrators and administrator educators with a sound, reliable and valid tool for assessing self-perceptions on CTE administrative tasks and abilities. Use of a tool such as this can enhance the shaping of future CTE leaders

and leadership initiatives for professionals in career and technical education administration. The ultimate beneficiary of improved leaders is our students.

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