Perceived Teaching and Learning Professional Development Needs of Idaho Secondary Career and Technical Education Teachers

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Abstract. *This study's purpose was to identify the teaching and learning professional development needs of Idaho secondary CTE teachers (N = 725). Teachers' perceived level of importance and competence for 35 teaching and learning competencies were used to calculate mean weighted discrepancy scores (MWDS). A little more than 61% (n=446) of the teachers participated in the study. The MWDS indicated that the most needed training areas for the teaching and learning construct were "Teaching students to think critically and creatively", "Motivating students to learn", "Designing and developing digital-age learning experiences", "Designing and developing digital-age learning assessments", and "Utilizing website development software". Individuals involved with teacher preparation and in-service training can use the findings to inform the development of pre-service curriculum and in-service educational offerings.*

Keywords: *Career and Technical Education, Workforce Education, Secondary Education, Teacher Professional Development, In-Service training needs*

he prosperity, security, and future well-being of the nation are dependent upon an educational system that prepares students with the knowledge and skills required to successfully compete in an evolving global economy. Teachers play a vital role in preparing students to meet the opportunities and challenges of the modern workforce. Melinda Gates of the Gates Foundation wrote, "The key to helping students learn is making sure that every child has an effective teacher every single year" (Gates, 2010, p. E2). Career and technical education (CTE) teachers are valuable components in the nation's educational system. It is important that effective teachers meet the needs of CTE students.

In order to be effective in a CTE classroom, a teacher must stay current with good teaching practices and content area industry trends. Professional development can be defined as the learning activities and experiences educators engage, from pre-service education to retirement, in order to increase career related performances (Fullan & Steigelbauer, 1991; Rhodes, Stokes, & Hampton, 2004; Ruhland & Bremer, 2002). Professional development activities developed for

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pre-service CTE teachers through university teacher education programs or for in-service CTE teachers through state CTE workshops provide the opportunities for a teacher to improve their practice. CTE teachers must have access to training which deals with current practices and trends in order for beneficial change to occur in the classroom and laboratory (Wash, Lovedahl, & Page, 2000). Research in the area of professional development needs for teachers is a segment of the national CTE research agenda (Lambeth, Elliot, & Joerger, 2008). Researchers agree that appropriate professional development training must be provided to pre-service and in-service CTE educators; it is more difficult to determine the training that is most appropriate and needed. This study sought to identify Idaho CTE teacher's perceived professional development needs as they pertain to teaching and learning.

THEORETICAL & CONCEPTUAL FRAMEWORK

A twofold theoretical framework guided this study. The first aspect is based on theory espoused by Baker and Trussell (1981) and embraced by Findlay (1992) and Duncan, Ricketts, Peake, and Uessler (2006). As cited by Findlay (1992) the theory stated,

> …the gap between theory and practice could be eliminated by reducing theory to what was needed to perfect the practice (teaching). The prospective teacher would then be trained to reach competence in each of the tasks in order to cope with whatever situation may be encountered in the school of the real world (p.28).

To reduce theory to what is needed, it is vital that the professional development needs of those engaged in the teaching profession, including career and technical education teachers, be identified.

The second aspect of the theoretical framework is based on Knowles' (1980) adult learning theory. Knowles (1980) theorized that the adult learner will have a higher level of motivation to learn for that which is perceived as a need. There will be disengagement by the adult for those learning activities for which there is no perceived need (Knowles, 1980; Layfield & Dobbins, 2002). Also, according to Knowles, it is important that adults be actively engaged in planning for learning experiences such as professional development activities (Knowles, 1980; Layfield & Dobbins, 2002).

Career and Technical Education curriculums are aligned with industry standards and include the program areas of agriculture, business and marketing, family and consumer sciences, health occupations, skilled and technical sciences, and technology. Teachers in CTE must undertake professional development activities to remain current with good teaching practices related to pedagogy and program management. In order to meet the professional development demand of this group of teachers; state CTE administrators, university teacher educators, and educational professionals need to provide timely learning opportunities. Through in-service training activities, CTE educators are able to expand their knowledge and improve pedagogical and program management skills.

As mentioned earlier; professional development is the sum of learning experiences, both formal and informal, which takes place throughout a teacher's career from pre-service training to retirement (Fullan & Steigelbauer, 1991; Rhodes et al., 2004; Ruhland & Bremer, 2002). Professional development activities are often delivered by university teacher educators and state CTE staff (Barrick, Ladewig, & Hedges, 1983). A proven method for identifying CTE professional development needs and at the same time engaging the teacher (adult learner) in the process is the Borich Needs Assessment (1980). This model utilizes a descriptive survey and evaluates the "perceived level of importance" and "perceived level of competence" of teachers

in regards to professional competencies identified by previous research (Duncan et al., 2006; Garton & Chung, 1996; Joerger, 2002; Layfield & Dobbins, 2002;).

For many years, researchers have modified the Borich Needs Assessment instrument to determine in-service needs of secondary agricultural education teachers. Garton and Chung (1997) surveyed the in-service needs of beginning agricultural instructors. After comparing a direct assessment methodology to a ranking based on a mean weighted discrepancy score (*MWDS*), (i.e., the Borich model) Edwards and Briers (1999) determined that the latter method was more effective. Because of revision and refinement by Edwards and Briers (1999) and Garton and Chung's (1997) revision and refinement, the Borich model was determined to be the best model for instrument development to achieve the purpose of this study.

Previous research to determine CTE secondary teacher professional development needs has been carried out primarily in the content area of agricultural education (Duncan et al., 2006; Edwards & Briers, 1999; Garton & Chung, 1996, 1997; Joerger, 2002; Layfield & Dobbins, 2002; Mundt & Connors, 1999). Beginning agricultural teachers were the focus of several of these studies (Garton & Chung, 1996, 1997; Edwards & Briers, 1999; Joerger, 2002; Mundt & Connors, 1999). In regards to the area of teaching and learning, Garton and Chung (1996, 1997) identified motivating students to learn as the most important professional development need. Mundt and Connors (1999) found classroom management/student discipline, time/organizational as the teaching and learning professional development needs which were the most pressing. In their research, Edwards and Briers (1999) found the highest ranked teaching and learning professional development need to be using the internet as a teaching tool. A cohort of beginning agricultural teachers identified managing student behavior, determining curriculum content, and motivating students to learn as the top three teaching and learning professional development needs respectively (Joerger, 2002). However, the same researcher found that a different cohort of beginning agricultural teachers the next year identified the top in-service need as motivating students to learn followed by managing student behavior and teaching students problem solving skills (Joerger, 2002).

The in-service needs of experienced as well as novice agricultural teachers have been the focus of recent studies. Using computers in classroom teaching, using multimedia equipment in teaching, and teaching recordkeeping skills were identified by Layfield and Dobbins (2002) as the highest priority in-service needs. Duncan et al. (2006), identified the pedagogical professional development needs of agricultural education teachers as motivating students to learn, assisting students to increase critical thinking skills, and managing student behavior.

Aside from agricultural education, there is limited research into secondary CTE teacher professional development needs. In the content area of business education; classroom management, curriculum development, computer application skills, student motivation, and instructional strategies were identified by in-service teachers as the most pressing professional development needs for pre-service teachers (Crews & Bodenhamer, 2009). Dual enrollment, integration of academics, reading programs, career clusters, and technical skill updating were identified as the highest priority professional development needs by state CTE directors (Wichowski & Heberley, 2004). Classroom management, curriculum development, and working with special populations were identified by novice CTE teachers as professional development needs that were particularly important (Ruhland & Bremer, 2002). Systems-related problems such as inadequate orientation, equipment, and supplies; student related problems such as lack of motivation and undesirable behavior; and personal struggles with self-confidence, time management, and organizational skills were identified by Heath-Camp and Camp (1990) as areas of concern for beginning CTE teachers.

As stated earlier, the findings of Garton and Chung (1997) and Edwards and Briers (1999) have lead to the determination that the Borich model is the most effective means of identifying teacher professional development needs. This model adds validity to the process of assessing respondents' perception about the importance and competence of educational programming needs particularly in the area of professional development education for a homogeneous group of people, such as secondary CTE teachers. Therefore, the researchers determined that a modified Borich model to be the best to pattern for instrument development in order to achieve the purposes of this study.

RESEARCH OBJECTIVES

The purpose of this study was to determine the perceived teaching and learning professional development needs of Idaho secondary career and technical education teachers. This was accomplished by using teachers' perceived level of importance and competence as related to specific teaching and learning competencies. This information was then used to identify perceived professional needs of this population. More specifically, the following objectives guided this study:

1. Determine the demographic characteristics and educational background of Idaho CTE teachers;
2. Describe Idaho CTE teachers' perceived importance and perceived competence in specific areas of teaching and learning; and
3. Determine perceived professional development needs of Idaho CTE teachers in the specific area of teaching and learning.

METHODOLOGY AND PROCEDURES

This study used a descriptive research design with a survey method. Data, which described perceived level of importance and competence across a variety of pedagogical and program management tasks and duties, was collected from secondary CTE teachers ($N = 725$) employed in Idaho. A 59-item survey instrument was developed and adapted from previous research on agricultural teachers by Duncan et al. (2006). The Duncan et al. (2006) instrument was modeled after the *Minnesota Beginning Agricultural Education Teacher In-Service Programming Needs Assessment* (Joerger, 2002). The Minnesota assessment was modified from research by Garton and Chung (1996), which was based on the Borich Needs Assessment Model (Borich, 1980). Thirty-five of the survey items were specific to teaching and learning. The instrument design allowed teachers to rate each of the 35 items on two distinct Likert type scales, perceived level of importance (1=Not Important, 2=Little Importance, 3=Somewhat Important, 4=Important, 5=Very Important) and perceived level of competence (1=Not Competent, 2=Little Competence, 3=Somewhat Competent, 4=Competent, 5=Very Competent).

Faculty from the University of Idaho, University of Georgia, a CTE teacher, and four pre-service business and marketing teachers comprised the panel of experts used to evaluate the instrument for face, content, and construct validity. Reliability of the instrument was assessed through an analysis of the collected data. Reliability coefficient alphas were calculated for the items on both "Importance" ratings ($\alpha = .908$) and "Competence" ratings ($\alpha = .941$). These reliability statistics indicate an instrument with a high degree of internal consistency. The data collected from this process, along with further review and analysis by the panel of experts, refined the instrument into its final form.

Due to the use of a census population, the researchers did not utilize sampling methods. Therefore, generalizability of the findings may be limited to the population of this study. The instrument was administered to the population through an online survey using procedures suggested by Dillman (2007). Implementation of the survey online was chosen because of time, cost, accuracy, and efficiency advantages over other methods (Puig, 2002; Shannon, Johnson, Searcy, & Lott, 2002). An initial invitation to participate was sent via e-mail to teachers identified by state CTE administrators. Follow-up prompts for participation were delivered after two and four weeks of initial implementation. In all, 446 (61.5%) CTE teachers completed the survey instrument.

Collected data were analyzed using Excel™ and the Statistical Package for the Social Sciences (SPSS) software. The importance and competence scores were used to calculate the teacher preparation and in-service needs by calculating a mean weighted discrepancy score for each item. This score was calculated by subtracting the competency score from the importance score, multiplying that number by the mean importance rating of the item, and then calculating the average of these values across cases (Borich, 1980; Joerger, 2002).

Non-response bias was of concern and examined by the researchers. After a review of pertinent literature, non-response bias was evaluated by comparing the average importance and competence ratings between early respondents (n = 79) to late respondents (n = 34) through the use of an independent sample t tests (Lindner, Murphy, & Briers, 2001; Miller & Smith, 1983; Radhakrishna & Doamekpor, 2008). No statistically significant difference was found in the importance ratings between early respondents (M = 4.09, SD = 0.58) and late respondents (M = 4.01, SD = 0.48) ($t(111)$ = 0.715, p > .05). The results of the independent sample t tests comparing competence ratings between early responders (M = 3.59, SD = 0.63) and late responders (M = 3.53, SD = 0.57) found no statistical difference between groups ($t(111)$ = 0.425, p > .05). Based on these findings, the sample data was determined to be representative of the population from which it was drawn.

This study was part of a project to assist Idaho CTE staff and university teacher educators in the planning of professional development activities for pre-service and in-service secondary teachers. The CTE program areas included in this study were business and marketing, family and consumer sciences, health occupation, skilled and technical sciences, and technology education.

FINDINGS

OBJECTIVE ONE: DETERMINE THE DEMOGRAPHIC CHARACTERISTICS AND EDUCATIONAL BACKGROUND OF IDAHO CTE TEACHERS

Table 1 provides a demographic picture of the respondents to this study. Of the population (N = 725), 446 CTE teachers (f = 61.5) participated. The CTE content area which had the highest number of respondents was business (n = 131, f = 29.4). More female teachers (f = 56.3) completed the survey than males (f = 43.0). Teachers whose highest level of education was a bachelor's degree comprised nearly 50 percent of the respondents (f = 49.8), and most teachers had over six years of teaching experience. At little under half of the teachers (f = 41.5) were employed in communities with a population of 25,000 or greater.

Table 1. *Demographic Characteristics of Idaho Career and Technical Teachers (n=446 of N=725)*

		n	*f*
Content Area	Business	131	29.4%
	Marketing	15	3.4%
	FACS	86	19.3%
	Health	43	9.6%
	Technology Education	46	10.3%
	Technical Sciences (T & I)	109	24.4%
	Not Indicated	16	3.6%
Gender:	Female	251	56.3%
	Male	192	43.0%
	Not Indicated	3	0.7%
Education:	High School Diploma	9	2.0%
	2-year Associates degree	26	5.8%
	4-year degree (Bachelor)	222	49.8%
	Masters degree	169	37.9%
	Specialist	16	3.6%
	Doctorate	3	0.7%
	Not Indicated	1	0.2%
Teaching Exp.:	0 (just completed teacher training)	5	1.1%
	1-2 years	59	13.2%
	3-5 years	69	15.5%
	6-10	93	20.9%
	11-20	122	27.4%
	>= 20	93	20.9%
	Not Indicated	5	1.1%
Community Population:	<1,000	63	14.1%
	1,000-4,999	95	21.3%
	5,000-9,999	48	10.8%
	10,000-25,000	45	10.1%
	>25,000	185	41.5%
	Not Indicated	10	2.2%

OBJECTIVE TWO: DESCRIBE IDAHO CTE TEACHERS' PERCEIVED IMPORTANCE AND PERCEIVED COMPETENCE IN SPECIFIC AREAS OF TEACHING AND LEARNING

Table 2 reports the mean scores for perceived importance and perceived competence of 35 items related to the teaching and learning construct. The five teaching and learning construct items which had the highest mean scores for importance were "Motivating students to learn" (M = 4.79, SD = 0.48), "Teaching students to think critically and creatively" (M = 4.78, SD = 0.48), "Classroom management" (M = 4.72, SD = 0.55), "Integrating life skills into the curriculum" (M = 4.67, SD = 0.62), and "Teaching problem-solving & decision-making skills" (M = 4.67, SD = 0.63). The five construct items which had the highest mean scores for competence were "Teaching proper safety attitudes in the classroom" (M = 4.23, SD = 0.83), "Teaching proper safety practices in the lab" (M = 4.22, SD = 0.92), "Classroom management" (M = 4.22, SD = 0.82), "Integrating life skills into the curriculum" (M = 4.21, SD = 0.84), and "Teaching problem-solving & decision-making skills" (M = 4.15, SD = 0.83).

Table 2. *Importance and Competency Ratings of Teaching and Learning Construct Items for Idaho Secondary CTE Teachers (n=446)*

Topic	Importance		Competence	
	M^1	SD	M^2	SD
Motivating students to learn	4.79	0.48	3.98	0.82
Teaching students to think critically and creatively	4.78	0.48	3.97	0.83
Classroom management	4.72	0.55	4.22	0.83
Integrating life skills into the curriculum	4.67	0.62	4.21	0.84
Teaching problem-solving & decision-making skills	4.67	0.63	4.15	0.83
Teaching proper safety practices in the lab	4.65	0.78	4.22	0.92
Teaching proper safety attitudes in the classroom	4.65	0.72	4.23	0.83
Assessing and evaluating student performance	4. 61	0.60	4.11	0.81
Use multimedia equipment in teaching	4.48	0.74	4.02	0.93
Developing performance based assessment instruments	4.43	0.74	3.87	0.90
Integration of technology standards into the CTE curriculum	4.41	0. 82	3.85	0.99
Utilize productivity software (word processing, spreadsheets, presentation software)	4.35	0.89	4.11	1.02
Use digital tools to facilitate student learning, creativity, and innovation	4.30	0.89	3.67	1.02
Organizing and supervising teaching laboratories	4.26	0.90	4.01	1.01
Embedding graduation standards into the CTE curriculum	4.24	0.84	3.61	0.98
Teaching gifted and talented students	4.23	0.83	3.65	0.90
Integration of reading standards into the CTE curriculum	4.22	0.90	3.69	0.96
Integration of writing standards into the CTE curriculum	4.18	0.89	3.62	0.98
Integration of math standards into the CTE curriculum	4.17	0.91	3.55	1.04
Teaching learning disabled students	4.10	0.97	3.46	1.00
Use digital tools for face-to-face instruction	4.09	0.93	3.73	1.02
Promote and model digital citizenship and responsibility	4.03	1.08	3.50	1.20
Use non-computer technology in teaching	4.02	0.96	3.88	1.02
Design & develop digital-age learning experiences	4.00	0.96	3.20	1.11
Integration of science standards into the CTE curriculum	3.92	1.05	3.28	1.11
Use digital tools for blended instruction	3.91	1.02	3.41	1.10
Design & develop digital-age learning assessments	3.84	1.04	3.03	1.17
Teaching using experiments	3.78	1.07	3.48	1.15
Utilize graphic design & publishing software	3.73	1.15	3.20	1.30
Use digital tools for on-line instruction	3.61	1.21	3.12	1.21
Utilize website development software	3.42	1.21	2.63	1.27
Utilize database software (e.g., MS Access)	3.30	1.15	2.96	1.23
Utilize drafting/CAD software	2.89	1.40	2.01	1.35
Develop applications through programming languages	2.47	1.24	1.72	1.06
Utilize Computer Numerical Control (CNC) software and applications	2.46	1.32	1.32	1.68

[1]Scale of 1=Not Important, 2=Little Importance, 3=Somewhat Important, 4=Important, 5=Very Important.
[2]Scale of 1=Not Competent, 2=Little Competence, 3=Somewhat Competent, 4=Competent, 5=Very Competent.

Table 3. *Teaching and Learning Priority Areas for Professional Development of Idaho Secondary CTE Educators*

Topic	Rank	MWDS[1]
Teaching students to think critically and creatively	1	3.92
Motivating students to learn	2	3.87
Design & develop digital-age learning experiences	3	3.20
Design & develop digital-age learning assessments	4	3.06
Utilize website development software	5	2.72
Use digital tools to facilitate student learning, creativity, and innovation	5	2.72
Embedding graduation standards into the CTE curriculum	7	2.65
Teaching learning disabled students	8	2.64
Integration of math standards into the CTE curriculum	9	2.59
Utilize drafting/CAD software	10	2.56
Integration of science standards into the CTE curriculum	11	2.54
Developing performance based assessment instruments.	12	2.52
Integration of technology standards into the CTE curriculum	13	2.47
Teaching gifted and talented students	14	2.44
Teaching problem-solving & decision-making skills	14	2.44
Classroom management	16	2.40
Integration of writing standards into the CTE curriculum	17	2.37
Assessing and evaluating student performance	18	2.34
Integration of reading standards into the CTE curriculum	19	2.22
Integrating life skills into the curriculum	20	2.16
Promote and model digital citizenship and responsibility	21	2.10
Use multimedia equipment in teaching	22	2.06
Teaching proper safety practices in the lab	23	2.00
Teaching proper safety attitudes in the classroom	24	1.96
Use digital tools for blended instruction	25	1.95
Utilize graphic design & publishing software	26	1.93
Utilize Computer Numerical Control (CNC) software and applications	27	1.89
Develop applications through programming languages	28	1.84
Use digital tools for on-line instruction	29	1.76
Use digital tools for face-to-face instruction	30	1.45
Organizing and supervising teaching laboratories	31	1.11
Teaching using experiments	31	1.11
Utilize database software (e.g., MS Access)	31	1.11
Utilize productivity software (word processing, spreadsheets, presentation software)	34	1.04
Use non-computer technology in teaching	35	0.57

[1]Mean Weighted Discrepancy Score

OBJECTIVE THREE: DETERMINE PERCEIVED PROFESSIONAL DEVELOPMENT NEEDS OF IDAHO CTE TEACHERS IN THE SPECIFIC AREA OF TEACHING AND LEARNING

Professional development needs of CTE teachers were determined by calculating the mean weighted discrepancy score. The score, reported in Table 3, was calculated by subtracting the competency mean scores from the importance mean scores and then multiplying by the mean importance ratings for each item to produce an average score for each teaching and learning

construct. The highest rated teaching and learning professional development need was "Teaching students to think critically and creatively" (*MWDS* = 3.92). The remaining top five items were "Motivating students to learn" (*MWDS* = 3.87), "Design & develop digital-age learning experiences" (*MWDS* = 3.20), "Design & develop digital-age learning assessments" (*MWDS* = 3.06), and "Utilize website development software" (*MWDS* = 3.06).

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

This study sought to determine the professional development needs for Idaho secondary career and technical education teachers using a modified version of the Borich Needs Assessment Model adapted from prior research in agricultural education (Duncan et al., 2006; Garton & Chung, 1996; Joerger, 2002;). Teacher educators and state CTE staff should give priority to the professional development needs with the highest ratings (Garton & Chung, 1997). Through an analysis of the mean weighted discrepancy scores, it was determined that "Teaching students to think critically and creatively" and "Motivating students to learn" were the highest rated professional development needs. Prior research in CTE, mostly in agricultural education, reported similar findings (Duncan et al., 2006; Edwards & Briers, 1999; Heath-Camp & Camp, 1991; Joerger, 2002; Layfield & Dobbins, 2002; Mundt & Connors, 1999). Other construct items; "Teaching learning disabled students", "Teaching problem-solving and decision making skills, and "Classroom management", were rated higher in previous studies (Duncan et al., 2006; Mundt & Connors, 1999; Ruhland & Bremer, 2002;)

Teaching students to think critically and creatively is very important in the emergence of the global economy. Critical and creative thinking skills are needed by students as they prepare for education beyond high school or entry into the workforce. Because of the rapid change in technology; teachers are preparing students for careers that do not yet exist, and many students will change jobs numerous times during their careers. Strong critical thinking skills are vital for successful career experiences. Along those same lines, it is imperative that teachers provide learning experiences that take advantage of advances in technology. There are many exciting applications that can be implemented into the CTE curriculum which will promote student learning.

Motivation is an important aspect of student learning (Hunter, 1995). Providing professional development activities which will help teachers to develop learning activities which generate and build student interest strengthens student learning and achievement. The scope of this study was the identification and ranking of professional development needs, further research should be conducted to disseminate motivation theory and to determine pre-service and in-service activities which will provide teachers with the tools to take advantage of each student's motivation. Professional development activities related to student motivation can also be used to address classroom management. Well planned classroom and laboratory learning experiences lead to a peak in student motivation (Hunter, 1995). In turn, students will be actively engaged in the learning process resulting in fewer classroom management/student discipline problems (Reardon & Derner, 2004; Pogrow, 2009).

This study joins a growing list of research that has had utilized the Borich Needs Assessment Model. The researchers for this study modified previous studies, specifically the Duncan et al. (2006) work in Georgia. Using thoroughly researched survey methodology and taking advantage of web technology (Dillman, 2007; Puig, 2002; Shannon et al., 2002); the researchers were able to conduct this study in a manner that efficiently used limited time and financial

resources. Researchers in other CTE content areas can use this and previous studies as a guide in developing methodology for future professional development needs assessment.

This study was part of a larger project to determine the professional development needs of Idaho CTE secondary teachers, thus contributing to the national research agenda. Findings for the specific CTE content areas of Business and Marketing, Family and Consumer Sciences, Health Occupations, Technology Education, and Skilled and Technical Sciences will be reported in content specific literature and proceedings. In summary, the following are specific recommendations from this study:

- Teacher educators and Idaho CTE staff should use the results in developing future professional development activities;
- Researchers in CTE should use this study and studies from agricultural education which used the Borich Model to conduct thorough professional development needs assessments across all content areas of CTE;
- Researchers should use the results of this study as a guide in determining the specific content of professional development activities in order to meet the identified needs;
- Follow-up evaluations should be conducted in order to determine the effectiveness of professional development activities to meet the identified needs; and
- The Idaho CTE staff and teacher educators should develop a timeframe to conduct future in-service needs assessment.

Professional development of teachers is an important segment of the national CTE research agenda (Lamberth et al., 2008). The findings of this study can be used to provide resources to teachers, therefore enhancing professional development and strengthening the educational experience of CTE students.

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