Developing competencies for dental hygiene program assessment

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Abstract

The challenge in dental hygiene education is to develop valid indicators with a reliable questionnaire to establish a qualifying list of dental hygiene program competencies that aligned with the Commission on Dental Accreditation (CODA) standards. The first phase of the study was the creation of a questionnaire and performing a Cohen's Kappa statistical analysis to establish the inter-rater reliability of the indicators during the pre-stage development. The second phase was to qualify these indicators using the content validity ratio proposed by Lawshe with Subject Matter Experts (SME's). The SME's were asked to rate the level of representativeness of indicators in each skill set on the questionnaire. Indicators that were deemed essential suggested alignment with the CODA standards and incorporated into the researcher's dental hygiene program assessment manual.

Keywords: dental hygiene competencies, program assessment, Content Validity Ratio, Cohen's Kappa, CODA

INTRODUCTION

The Commission on Dental Accreditation (CODA) has developed academic standards for dental hygiene programs. Dental hygiene programs must demonstrate they are compliant with each standard in their self-study report to receive accreditation status. The CODA document for dental hygiene accreditation consists of six standards. In Standard 2: Education Program, CODA outlines the program curriculum requirements. CODA mandates each dental hygiene program to define and list the competencies based on skill sets of knowledge, skills, and values. Also, these competencies must apply a student evaluation method that measures all defined program competencies (Commission on Dental Accreditation, 2018). Therefore, each dental hygiene program needs to independently develop program competencies and evaluation assessments to measure these skill sets. This approach to competency development has proven to be a challenge to dental hygiene educators because there are no national criteria standards for these skill sets. In June 2018, CODA reported (from January 1, 2014, to October 31, 2017) out of 409 site visits there were 1,793 cites of non-compliance in dental hygiene programs (Smith & Johnson, 2018). Of these 1,793 cites, 956 were in Standard 2 which illustrates the problem dental hygiene educators have in assessing required skill sets (Smith & Johnson, 2018).

DENTAL COMPETENCY-BASED CURRICULUM HISTORY

The development of a competency-based dental education was introduced in 1993 with the publication of Chamber's article titled, "Toward a Competency-Based Curriculum" (Chambers, 1993). This article created a paradigm shift in dental education by changing curricula from a content-based to a competency-based (Byers, 2015). Chambers (1993) refers to competencies as skills that graduates need to obtain before they start the practice of dentistry. In 1998, CODA adopted a predoctoral dental program accreditation standards requiring competency-based assessment (Kassebaum, Hendricson, Taft, & Haden, 2004). This educational pathway of the competency-based curriculum was based on a five-stage development continuum. Hendricson (2006), stated the premise of this approach was that individuals proceeded through five stages where cognitive and manual skills fall along the following continuum: novice, beginner, competent, proficient, and expert. Therefore, the primary mission of dental educators was to produce an entry-level practitioner who could function independently without supervision (Byers, 2015).

Dental hygiene educators adopted the concept of a competency-based curriculum because it involved a performance assessment using student activities or products to assess knowledge, skills, and development (McCann, Campbell, & Schneiderman, 2001). In 2004, the American Dental Education Association (ADEA) drafted a document which defined five domains. The five fields were in the areas of Core Competencies; Health Promotion and Disease Prevention; Community Involvement; Patient Care; and Professional Growth and Development (American Dental Education Association, 2004). These domains were to serve as guidelines for dental hygiene educators in curriculum development (Byers, 2015). Also, with the paradigm shift to competencies, the profession changed from being technical to knowledge-based. Therefore, traditional approaches to student assessment needed to be modified to allow the integration of knowledge-based teaching strategies into the curriculum. Again, as indicated by Smith and Johnston (2018), the compliance to this charge is failing.

In 2011, ADEA revised the five domains in dental hygiene competencies. The new document states explicitly, "Program faculty should define actual competencies and how competence is measured for their program" (American Dental Education Association, 2011). Again, the idea of these competencies was to act as a guide for individual program competency development. Unfortunately, many dental hygiene educators used these competencies as written without modification. The issue using these guidelines without revisions becomes apparent when juxtaposing the CODA standards with the ADEA competencies. There lacks consistency between the CODA standards and the ADEA competencies in identifying available skill sets for the dental hygiene graduate. The problem with this alignment is a distinction between constructs classified as either knowledge, skills, and values. Also, the majority of the ADEA competencies are not written with Bloom's taxonomy action verbs therefore not measurable. Currently, the difficulty for dental hygiene educators is to provide reliable and valid skill sets written with quantifiable action verbs that use assessment measures which aligns with CODA standards. The researcher's intent in conducting this study was two-fold. First, was to identify reliable and valid indicators for student learning outcomes that aligned with CODA standards. Secondly, produce a manual that would assist dental hygiene educators in program development and assessment.

DEVELOPMENT OF THE SUPERTASKS AND INDICATORS

The researcher investigated other professional accreditation agencies which required the assessment of entry-level competencies to the workforce. The result of this inquiry found the Council of Chief State School Officers (CCSSO) document titled "InTASC Learning Progressions for Teacher1.0: A Resource for Ongoing Teacher Development" which provided a detailed description of career-ready standards for teachers (Council of Chief School Officers and Interstate Teachers Assessment and Support Consortium, 2013). The Interstate Teachers Assessment and Support Consortium (InTASC) document provide educators with standards, skill sets for performances (skills), essential knowledge (knowledge), critical dispositions (values), and learning progressions (Council of Chief School Officers and Interstate Teachers Assessment and Support Consortium, 2013). This format provided a template that allowed the researcher to organize the CODA standards into skill sets of knowledge, skills, and values. Guidelines for the content as well as resources for curriculum development were obtained from the ADEA document titled "ADEA Compendium of Curriculum Guidelines (Revised Edition) Allied Dental Education Programs" (American Dental Education Association, 2015). Thirteen supertasks emerge which were: Assessment; Dental Hygiene Diagnosis; Treatment Planning; Implementation; Evaluation; Documentation; Effective Communication; Community Oral-based Programs; Medical Emergencies; Ethics, Professionalism, Legal, and Regulatory Application; Self-assessment and Lifelong Learning; Scientific Literature Evaluation; and Problem-solving and Critical Thinking.

The next step was to define indicators in the constructs of knowledge, skills, and values. Review of literature discovered research from Almerico, Johnston, Henriott, and Shapiro (2011) which created a disposition assessment tool that identified a descriptor which defined a given disposition. Using this approach, the researcher developed two hundred and seventy-seven (N=277) indicators for knowledge, skills, and values for the thirteen supertasks.

The researcher explored different types of assessment instruments that would allow a panel of experts to validate the indicators. Work from Notar, Riley, Taylor, Thornburg, and Cargill (2009) suggested assessing indicators with the use of checklists, self-reflection, rubrics,

and rating scales. Also, Almerico et al., (2011), created a disposition assessment instrument that used a questionnaire with a Likert Scale ranging from 1 to 4. Combining both approaches the researcher decided to develop a questionnaire and rate the operationalization of each indicator.

In determining the type of questionnaire appropriate for the study, the researcher reviewed the article by Wilson, Pan, and Schumsky (2012) titled, "Recalculation of the Critical Values for Lawshe's Content Validity Ratio." Research by Wilson et al., (2012) used the Lawshe method which involves a panel of experts to quantify content validity. Instead of using a Likert Scale, they used rating items with three categories: Essential; Useful, but not Essential; or Not Necessary (Wilson et al., 2012). Additional research by Johnston, Wilson, and Almerico (2018) supported this methodological approach to defining indicators by meeting psychometrics requirements using a panel of experts. This statistical approach led to the development of the questionnaire which the researcher used the Lawshe method that asked a panel of Subject Matter Experts (SME's) the essentialism of an operational task.

SUMMARY OF THE RELIABILITY PROCESS

The Q-sort method was used to assess the reliability of the indicators during pre-stage questionnaire development. The approach utilized is based on the research by Nahm, Rao, Solis-Galvan, and Ragu-Nathan (2018) that used agreement between two raters during questionnaire testing (Nahm, Rao, Solis-Galvan, and Ragu-Nathan, 2018). The evaluators were two dental hygiene educators (N=2). The Cohen's Kappa Index was used to established performance levels as indicated in Table 1 (Appendix). An inter-rater agreement value was calculated. Indicators identified as vague were reworded to improve understanding between the raters. This process was repeated until a perfect agreement level was obtained (Viera & Garrett, 2005). Two Hundred and seventy-seven (N=277) indicators were determined to be in perfect agreement as indicated in Table 2 (Appendix).

SUMMARY OF THE VALIDITY PROCESS

The research instrument was designed using the Lawshe method. Lawshe created the Content Validity Ratio (CVR) which gauged the content validity of items on an empirical measure (Johnston & Wilkinson, 2009). Content validation aims to assure that an instrument measures the content area that it is expected to quantify (Ayre & Scally, 2014). The process involved using a panel of eleven SME's (N=11) rating items into three categories: Essential; Useful, but not essential; or Non-essential. "Essential" items or assessment tasks are ones that best represent the desired goal (Johnston & Wilkinson, 2009). The SME's consist of the dentists (N=3), practicing dental hygienists (N=3) and dental hygiene educators (N=5). The measurement item, in this case, were the indicators in the skill sets of knowledge, skills, and values within the thirteen supertasks.

The final questionnaire was sent to SME's. They were asked to rate the level of representativeness of indicators in each category. The Lawshe's CVR was used to measure the content validity of the indicators. Indicators that were deemed "essential" and "useful, but not essential" were considered aligned with the CODA standards and incorporated into the researcher's dental hygiene program assessment manual. Lawshe's CVR values range from -1.00 to +1.00, where a CVR value of .636 (N=9) demonstrate agreement of essentialness between the SME's as indicated in Table 3 (Appendix).

RESULTS OF THE STUDY

The Cohen's Kappa Index for inter-rater reliability for the questionnaire indicators were 1.00. This demonstrates the two rater's performance levels and strength of association was perfect (Viera & Garrett, 2005). Guidelines used to interpret Cohen's Kappa Index degree of agreement was based on research by Landis and Koch (Landis & Koch, 1977).

The Lawshe CVR was calculated for each indicator. Two Hundred (N=200) out of two hundred and seventy-seven (N=277) indicators were considered essential as indicated in Table 4 to Table 16 (Appendix). Combining the "essential" with the "useful but not essential score," all were considered necessary as indicated in Table 17 to Table 29 (Appendix). Results suggested strong indications of alignment.

DISCUSSION

The study provided necessary data for alignment of indicators to CODA standards for curriculum development. The first phase of the study, two raters demonstrated perfect agreement in reliability using Cohen's Kappa Index for the supertask indicators during survey development. This index provided a reliable questionnaire from which the SME's could rate the "essentialism" for each indicator.

The second phase of the study revealed an overall agreement of the indicators with two hundred (N=200) out of two hundred and seventy-seven (N=277) were considered essential by the SME's. However, there were areas of discrepancy especially in the following supertasks: Community Oral-based Programs; Self-assessment and Lifelong Learning; Scientific Literature Evaluation; and Problem-solving and Critical Thinking. The SME's considered the indicators in these supertasks as "useful, but not essential" rather than "essential" tasks. However, when combining the "essential" with the "useful, but not essential" classification, all of the indicators were considered necessary. This indicates that all of the SME's valued the indicators to use as teaching strategies and methodologies in a dental hygiene program.

The causation for the scoring in the "useful, but not essential" category can be contributed to the paradigm shift of the dental hygiene profession. Referring to 2004, when CODA adopted a competency-based approach for dental hygiene programs, it changed the direction of the profession from being predominately a technical vocation to a knowledge-based healthcare facilitator. However, educating the dental hygiene student still require a strong foundation in clinical skills. This dichotomy between technical and knowledge abilities is evident when the SME's scored higher in the supertasks of Assessment; Dental Hygiene Diagnosis; Treatment Planning; Implementation; Evaluation; Documentation; and Medical Emergencies. These supertasks are mostly skilled-base. Whereas, supertasks such as Self-assessment and Lifelong Learning, scored lower because their focus is knowledge-based. On the whole, the SME's agreed with having 72% of the indicators in the "essential" category and the other 28% in the "useful, but not essential" grouping. The SME's agreed 100% when combining these two categories on the questionnaire.

The study provided a solid foundational base for curriculum development to better prepare the dental hygiene student for the workforce. The majority of the skill sets identified aligned operationally with the CODA standards. The results of this study will offer a guide to dental hygiene educators in their quest to develop a cohesive curriculum that supports CODA standards for accreditation. Finally, the data obtained allowed the development of a

comprehensive dental hygiene program assessment manual with measurable student learning outcomes that demonstrate students have mastered the necessary skill sets required by CODA.

PERMISSION TO USE INDICATORS

Evidence of reliability and validity was designed carefully with consideration of using psychometric properties so that any inferences made about the indicators are more than likely to be true. The researcher adhered to the measurement standards delineated by the American Educational Research Association, the American Psychological Association and the National Council on Measurement in Education (American Educational Research Association, American Psychological Association & National Council on Measurement in Education, 2014). The author reminds readers they will need request permission before they use the supertasks and indicators researched in this study.

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APPENDIX

Table 1

Cohen's Kappa Value Index: Landis and Koch's Interpretative Guidelines

Performance Level	Kappa Strength of Association
Less than chance agreement	<0
Slight agreement	0.01-0.20
Fair agreement	0.21-0.04
Moderate agreement	0.41-0.61
Substantial agreement	0.61-0.80
Almost perfect agreement	0.81-0.99
Perfect agreement	1.00

Table 2

Cohen's Kappa Value Index Average for the Final Supertask Indicators

Task	Cohen's Kappa Index Knowledge	Cohen's Kappa Index Skills	Cohen's Kappa Index Values
Assessment	1.00	1.00	1.00
Dental Hygiene Diagnosis	1.00	1.00	1.00
Treatment Planning	1.00	1.00	1.00
Implementation	1.00	1.00	1.00
Evaluation	1.00	1.00	1.00
Documentation	1.00	1.00	1.00
Effective Communication	1.00	1.00	1.00
Community Oral-based Programs	1.00	1.00	1.00
Medical Emergencies	1.00	1.00	1.00
Ethics, Professionalism, Legal, and Regulatory Application	1.00	1.00	1.00
Self-assessment and Lifelong Learning	1.00	1.00	1.00
Scientific Literature Evaluation	1.00	1.00	1.00
Critical Thinking and Problem-solving	1.00	1.00	1.00

Table 3

$CVR_{critical}$ one-tailed test ($\propto = 0.05$) based on exact binomial probabilities

N (panel size)	Proportion agreeing essential	$CVR_{critical}$ exact values	One-sided p-value	$N_{critical}$ (minimum number of experts required to agree item essential)
11	.818	.636	.033	9

Table 4
CVR for Indicators (N=11) Assessment Supertask: Essential Ratings

Assessment Supertask	Knowledge CVR Value	Skills CVR Value	Values CVR Value
	Indicator 1: 1.00	Indicator 1: .454	Indicator 1: .818
	Indicator 2: .818	Indicator 2: .454	Indicator 2: 1.00
	Indicator 3: .454	Indicator 3: .090	Indicator 3: 1.00
	Indicator 4: 1.00	Indicator 4: 1.00	Indicator 4: 1.00
	Indicator 5: .454	Indicator 5: .636	
	Indicator 6: 1.00	Indicator 6: .636	
	Indicator 7: .636	Indicator 7: .454	
	Indicator 8: .818	Indicator 8: -.090	
	Indicator 9: 1.00	Indicator 9: .090	
	Indicator 10: 1.00	Indicator 10: .090	
	Indicator 11: .454	Indicator 11: 1.00	
	Indicator 12: .454	Indicator 12: 1.00	
	Indicator 13: -.090	Indicator 13: 1.00	
	Indicator 14: 1.00	Indicator 14: 1.00	
	Indicator 15: 1.00	Indicator 15: 1.00	
	Indicator 16: 1.00	Indicator 16: 1.00	
	Indicator 17: 1.00	Indicator 17: 1.00	
	Indicator 18: 1.00	Indicator 18: 1.00	
	Indicator 19: .818	Indicator 19: 1.00	
	Indicator 20: 1.00	Indicator 20: 1.00	
	Indicator 21: .636	Indicator 21: 1.00	
		Indicator 22: 1.00	
		Indicator 23: 1.00	
		Indicator 24: 1.00	
		Indicator 25: 1.00	
		Indicator 26: 1.00	
		Indicator 27: 1.00	
		Indicator 28: .818	
		Indicator 29: -.272	
		Indicator 30: .272	
		Indicator 31: -.090	

Table 5
CVR for Indicators (N=11) Treatment Planning Supertask: Essential Ratings

Treatment Planning Supertask	Knowledge CVR Value	Skills CVR Value	Values CVR Value
	Indicator 1: 1.00	Indicator 1: .818	Indicator 1 1.00
	Indicator 2: .818	Indicator 2: 1.00	Indicator 2: 1.00
	Indicator 3: 1.00	Indicator 3: .636	Indicator 3: .636
		Indicator 4: -.090	

Table 6
CVR for Indicators (N=11) Dental Hygiene Diagnosis Supertask: Essential Ratings

Dental Hygiene Diagnosis Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	.636	Indicator 1:	.818	Indicator 1:	.818
	Indicator 2:	.818	Indicator 2:	.636	Indicator 2:	1.00
	Indicator 3:	.818	Indicator 3:	.636	Indicator 3:	.818
					Indicator 4:	.818
					Indicator 5:	.818
					Indicator 6:	.818
					Indicator 7:	.636
					Indicator 8:	.454
					Indicator 9:	-.272

Table 7
CVR for Indicators (N=11) Implementation Supertask: Essential Ratings

Implementation Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	.454
	Indicator 2:	1.00	Indicator 2:	.818	Indicator 2:	1.00
	Indicator 3:	.454	Indicator 3:	.636	Indicator 3:	1.00
	Indicator 4:	1.00	Indicator 4:	.818	Indicator 4:	.818
	Indicator 5:	.818	Indicator 5:	.818	Indicator 5:	1.00
	Indicator 6:	1.00	Indicator 6:	1.00	Indicator 6:	1.00
	Indicator 7:	1.00	Indicator 7:	1.00		
	Indicator 8:	1.00	Indicator 8:	.818		
	Indicator 9:	.272	Indicator 9:	.090		
	Indicator 10:	-.090	Indicator 10:	-.090		
	Indicator 11:	1.00	Indicator 11:	.454		
	Indicator 12:	1.00	Indicator 12:	.090		
			Indicator 13:	1.00		
			Indicator 7:	.636		
			Indicator 8:	.818		
			Indicator 9:	1.00		

Table 8
CVR for Indicators (N=11) Evaluation Supertask: Essential Ratings

Evaluation Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	.636
	Indicator 2:	.818	Indicator 2:	.818		
	Indicator 3:	.818	Indicator 3:	1.00		
	Indicator 4:	.818	Indicator 4:	1.00		
	Indicator 5:	1.00	Indicator 5:	1.00		
	Indicator 6:	1.00	Indicator 6:	1.00		
	Indicator 7:	1.00	Indicator 7:	.454		

Table 9
CVR for Indicators (N=11) Documentation Supertask: Essential Ratings

Documentation Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	.636	Indicator 1:	1.00	Indicator 1:	1.00
	Indicator 2:	.818	Indicator 2:	1.00		
	Indicator 3:	1.00	Indicator 3:	1.00		
	Indicator 4:	.818	Indicator 4:	.636		
			Indicator 5:	1.00		
			Indicator 6:	1.00		
			Indicator 7:	.636		
			Indicator 8:	.818		
			Indicator 9:	1.00		
			Indicator 10:	1.00		

Table 10
CVR for Indicators (N=11) Effective Communication Supertask: Essential Ratings

Effective Communication Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	.818	Indicator 1:	.818	Indicator 1:	1.00
	Indicator 2:	.818	Indicator 2:	1.00	Indicator 2:	1.00
	Indicator 3:	.818	Indicator 3:	.818	Indicator 3:	1.00
	Indicator 4:	.818	Indicator 4:	1.00	Indicator 4:	1.00
	Indicator 5:	1.00	Indicator 5:	-.900	Indicator 5:	.818
	Indicator 6:	.818				
	Indicator 7:	.818				

Table 11
CVR for Indicators (N=11) Community Oral-based Programs Supertask: Essential Ratings

Community Oral-based Programs Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	.818	Indicator 1:	.454	Indicator 1:	-.272
	Indicator 2:	.636	Indicator 2:	.454	Indicator 2:	-.272
	Indicator 3:	.636	Indicator 3:	.272		
	Indicator 4:	.636	Indicator 4:	.454		
	Indicator 5:	.454				
	Indicator 6:	.454				

Table 12
CVR for Indicators (N=11) Medical Emergencies Supertask: Essential Ratings

Medical Emergencies Supertask	Knowledge CVR Value	Skills CVR Value	Values CVR Value
	Indicator 1: 1.00	Indicator 1: 1.00	Indicator 1: .636
	Indicator 2: 1.00	Indicator 2: 1.00	Indicator 2: .818
	Indicator 3: 1.00	Indicator 3: 1.00	Indicator 3: 1.00
	Indicator 4: 1.00	Indicator 4: 1.00	
	Indicator 5: .818	Indicator 5: 1.00	
	Indicator 6: .818	Indicator 6: .818	
		Indicator 7: .636	
		Indicator 8: .818	

Table 13
CVR for Indicators (N=11) Ethics, Professionalism, Legal and Regulatory Application: Essential Ratings

Ethics, Professionalism, Legal, and Regulatory Application Supertask	Knowledge CVR Value	Skills CVR Value	Values CVR Value
	Indicator 1: 1.00	Indicator 1: .454	Indicator 1: .818
	Indicator 2: .636	Indicator 2: 1.00	Indicator 2: .636
	Indicator 3: .636	Indicator 3: .636	Indicator 3: .818
	Indicator 4: .818	Indicator 4: .636	Indicator 4: 1.00
	Indicator 5: .818	Indicator 5: .636	Indicator 5: 1.00
	Indicator 6: 1.00	Indicator 6: .818	Indicator 6: .818
		Indicator 7: 1.00	Indicator 7: 1.00
		Indicator 8: .818	Indicator 8: 1.00
		Indicator 9: .818	Indicator 9: 1.00
		Indicator 10: 1.00	Indicator 10: .818
			Indicator 11: 1.00
			Indicator 12: 1.00
			Indicator 13: 1.00
			Indicator 14: 1.00
			Indicator 15: .818
			Indicator 16: 1.00
			Indicator 17: .818

Table 14
CVR for Indicators (N=11) Self-assessment and Lifelong Learning Supertask: Essential Ratings

Self-assessment and Lifelong Learning Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	-.090	Indictor 1:	-.454	Indicator 1:	.454
	Indicator 2:	.454	Indicator 2:	-.818	Indicator 2:	.818
	Indicator 3:	-.454	Indicator 3:	.272	Indicator 3:	.818
	Indicator 4:	-.272	Indicator 4:	-.090		
	Indicator 5:	-.090	Indicator 5:	-.272		
	Indicator 6:	-.272	Indicator 6:	-.090		

Table 15
CVR for Indicators (N=11) Scientific Literature Supertask: Essential Ratings

Scientific Literature Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	.272	Indicator 1:	.090	Indicator 1:	-.272
	Indicator 2:	.272	Indicator 2:	.090	Indicator 2:	.272
	Indicator 3:	-.272	Indicator 3:	.090		
	Indicator 4:	.272	Indicator 4:	.636		
	Indicator 5:	.272	Indicator 5:	.090		
	Indicator 6:	.272				
	Indicator 7:	-.272				
	Indicator 8:	-.090				
	Indicator 9:	-.090				
	Indicator 10:	.454				

Table 16
CVR for Indicators (N=11) Problem-solving and Critical Thinking Supertask: Essential Ratings

Problem-solving and Critical Thinking Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	.818	Indicator 1:	-.454	Indicator 1:	.818
	Indicator 2:	.636	Indicator 2:	.272	Indicator 2:	.636
	Indicator 3:	.818	Indicator 3:	-.090	Indicator 3:	1.00
	Indicator 4:	1.00	Indicator 4:	.090		
	Indicator 5:	.636	Indicator 5:	.090		
	Indicator 6:	.276	Indicator 6:	-.090		
	Indicator 7:	.818	Indicator 7:	-.272		
	Indicator 8:	.090	Indicator 8:	.090		
	Indicator 9:	.090				
	Indicator 10:	-.090				

Table 17
CVR for Indicators (N=11) Assessment Supertask: Essential and Useful, but not Essential Ratings

Assessment Supertask	Knowledge CVR Value	Skills CVR Value	Values CVR Value
	Indicator 1: 1.00	Indicator 1: 1.00	Indicator 1: 1.00
	Indicator 2: .818	Indicator 2: 1.00	Indicator 2: 1.00
	Indicator 3: .454	Indicator 3: .818	Indicator 3: 1.00
	Indicator 4: 1.00	Indicator 4: 1.00	Indicator 4: 1.00
	Indicator 5: .818	Indicator 5: 1.00	
	Indicator 6: 1.00	Indicator 6: 1.00	
	Indicator 7: 1.00	Indicator 7: 1.00	
	Indicator 8: 1.00	Indicator 8: .636	
	Indicator 9: 1.00	Indicator 9: 1.00	
	Indicator 10: 1.00	Indicator 10: 1.00	
	Indicator 11: 1.00	Indicator 11: 1.00	
	Indicator 12: 1.00	Indicator 12: 1.00	
	Indicator 13: 1.00	Indicator 13: 1.00	
	Indicator 14: 1.00	Indicator 14: 1.00	
	Indicator 15: 1.00	Indicator 15: 1.00	
	Indicator 16: 1.00	Indicator 16: 1.00	
	Indicator 17: 1.00	Indicator 17: 1.00	
	Indicator 18: 1.00	Indicator 18: 1.00	
	Indicator 19: .818	Indicator 19: 1.00	
	Indicator 20: 1.00	Indicator 20: 1.00	
	Indicator 21: .636	Indicator 21: 1.00	
		Indicator 22: 1.00	
		Indicator 23: 1.00	
		Indicator 24: 1.00	
		Indicator 25: 1.00	
		Indicator 26: 1.00	
		Indicator 27: 1.00	
		Indicator 28: 1.00	
		Indicator 29: .818	
		Indicator 30: 1.00	
		Indicator 31: .818	

Table 18
CVR for Indicators (N=11) Treatment Planning Supertask: Essential and Useful, but not Essential Ratings

Treatment Planning Supertask	Knowledge CVR Value	Skills CVR Value	Values CVR Value
	Indicator 1: 1.00	Indicator 1: 1.00	Indicator 1: 1.00
	Indicator 2: 1.00	Indicator 2: 1.00	Indicator 2: 1.00
	Indicator 3: 1.00	Indicator 3: 1.00	Indicator 3: 1.00
		Indicator 4: 1.00	

Table 19
CVR for Indicators (N=11) Dental Hygiene Diagnosis Supertask: Essential and Useful, but not Essential Ratings

Dental Hygiene Diagnosis Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	1.00
	Indicator 2:	1.00	Indicator 2:	1.00	Indicator 2:	1.00
	Indicator 3:	1.00	Indicator 3:	1.00	Indicator 3:	.818
	Indicator 4:	1.00			Indicator 4:	1.00
	Indicator 5:	1.00			Indicator 5:	1.00
	Indicator 6:	.818			Indicator 6:	1.00
					Indicator 7:	.818
					Indicator 8:	1.00
					Indicator 9:	.818

Table 20
CVR for Indicators (N=11) Implementation Supertask: Essential and Useful, but not Essential Ratings

Implementation Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	1.00
	Indicator 2:	1.00	Indicator 2:	.818	Indicator 2:	1.00
	Indicator 3:	1.00	Indicator 3:	1.00	Indicator 3:	1.00
	Indicator 4:	1.00	Indicator 4:	1.00	Indicator 4:	1.00
	Indicator 5:	1.00	Indicator 5:	1.00	Indicator 5:	1.00
	Indicator 6:	1.00	Indicator 6:	1.00	Indicator 6:	1.00
	Indicator 7:	1.00	Indicator 7:	1.00		
	Indicator 8:	1.00	Indicator 8:	1.00		
	Indicator 9:	.818	Indicator 9:	.818		
	Indicator 10:	.818	Indicator 10:	.818		
	Indicator 11:	1.00	Indicator 11:	.818		
	Indicator 12:	1.00	Indicator 12:	.818		
			Indicator 13:	1.00		

Table 21
CVR for Indicators (N=11) Community Oral-Based Programs Supertask: Essential and Useful, but not Essential Ratings

Community Oral-based Programs Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	.636	Indicator 1:	.818
	Indicator 2:	1.00	Indicator 2:	.818	Indicator 2:	.636
	Indicator 3:	.818	Indicator 3:	.818		
	Indicator 4:	.818	Indicator 4:	.818		
	Indicator 5:	.818				
	Indicator 6:	.818				

Table 22
CVR for Indicators (N=11) Evaluation Supertask: Essential and Useful, but not Essential Ratings

Evaluation Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	1.00
	Indicator 2:	1.00	Indicator 2:	1.00		
	Indicator 3:	1.00	Indicator 3:	1.00		
	Indicator 4:	1.00	Indicator 4:	1.00		
	Indicator 5:	1.00	Indicator 5:	1.00		
	Indicator 6:	1.00	Indicator 6:	1.00		
	Indicator 7:	1.00	Indicator 7:	1.00		

Table 23
CVR for Indicators (N=11) Documentation: Evaluation Supertask: Essential and Useful, but not Essential Rating

Documentation Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	1.00
	Indicator 2:	1.00	Indicator 2:	1.00		
	Indicator 3:	1.00	Indicator 3:	1.00		
	Indicator 4:	1.00	Indicator 4:	1.00		
			Indicator 5:	1.00		
			Indicator 6:	1.00		
			Indicator 7:	1.00		
			Indicator 8:	.818		
			Indicator 9:	1.00		
			Indicator 10:	1.00		

Table 24
CVR for Indicators (N=11) Effective Communication Supertask: Essential and Useful, but not Essential Ratings

Effective Communication Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	1.00
	Indicator 2:	1.00	Indicator 2:	1.00	Indicator 2:	1.00
	Indicator 3:	1.00	Indicator 3:	1.00	Indicator 3:	1.00
	Indicator 4:	1.00	Indicator 4:	1.00	Indicator 4:	1.00
	Indicator 5:	1.00	Indicator 5:	.818	Indicator 5:	1.00
	Indicator 6:	.818				
	Indicator 7:	1.00				

Table 25
CVR for Indicators (N=11) Medical Emergencies Supertask: Essential and Useful, but not Essential Ratings

Medical Emergencies Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	1.00
	Indicator 2:	1.00	Indicator 2:	1.00	Indicator 2:	1.00
	Indicator 3:	1.00	Indicator 3:	1.00	Indicator 3:	1.00
	Indicator 4:	1.00	Indicator 4:	1.00		
	Indicator 5:	1.00	Indicator 5:	1.00		
	Indicator 6:	1.00	Indicator 6:	1.00		
			Indicator 7:	.636		
			Indicator 8:	1.00		

Table 26
CVR for Indicators (N=11) Ethics, Professionalism, Legal, and Regulatory Application Supertask: Essential and Useful, but not Essential Ratings

Ethics, Professionalism, Legal, and Regulatory Application Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	.818
	Indicator 2:	1.00	Indicator 2:	1.00	Indicator 2:	.818
	Indicator 3:	1.00	Indicator 3:	1.00	Indicator 3:	1.00
	Indicator 4:	1.00	Indicator 4:	1.00	Indicator 4:	1.00
	Indicator 5:	1.00	Indicator 5:	1.00	Indicator 5:	1.00
	Indicator 6:	1.00	Indicator 6:	1.00	Indicator 6:	1.00
			Indicator 7:	1.00	Indicator 7:	1.00
			Indicator 8:	1.00	Indicator 8:	1.00
			Indicator 9:	1.00	Indicator 9:	1.00
			Indicator 10:	1.00	Indicator 10:	1.00
					Indicator 11:	1.00
					Indicator 12:	1.00
					Indicator 13:	1.00
					Indicator 14:	1.00
					Indicator 15:	1.00
					Indicator 16:	1.00
					Indicator 17:	1.00

Table 27
CVR for Indicators (N=11) Self-assessment and Lifelong Learning Supertask: Essential and Useful, but not Essential Ratings

Self-assessment and Lifelong Learning Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	1.00	Indicator 1:	1.00
	Indicator 2:	1.00	Indicator 2:	1.00	Indicator 2:	1.00
	Indicator 3:	.818	Indicator 3:	1.00	Indicator 3:	1.00
	Indicator 4:	1.00	Indicator 4:	.818		
	Indicator 5:	1.00	Indicator 5:	.818		
	Indicator 6:	1.00	Indicator 6:	.818		

Table 28
CVR for Indicators (N=11) Scientific Literature Supertask: Essential and Useful, but not Essential Ratings

Scientific Literature Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	.818	Indicator 1:	1.00
	Indicator 2:	.818	Indicator 2:	1.00	Indicator 2:	1.00
	Indicator 3:	.818	Indicator 3:	1.00		
	Indicator 4:	.818	Indicator 4:	1.00		
	Indicator 5:	1.00	Indicator 5:	1.00		
	Indicator 6:	1.00				
	Indicator 7:	.818				
	Indicator 8:	.818				
	Indicator 9:	.818				
	Indicator 10:	1.00				

Table 29
CVR for Indicators (N=11) Problem-solving and Critical Thinking Supertask: Essential and Useful, but not Essential Ratings

Problem-solving and Critical Thinking Supertask	Knowledge CVR Value		Skills CVR Value		Values CVR Value	
	Indicator 1:	1.00	Indicator 1:	.818	Indicator 1:	.818
	Indicator 2:	1.00	Indicator 2:	1.00	Indicator 2:	1.00
	Indicator 3:	1.00	Indicator 3:	.818	Indicator 3:	1.00
	Indicator 4:	1.00	Indicator 4:	.636		
	Indicator 5:	1.00	Indicator 5:	.636		
	Indicator 6:	1.00	Indicator 6:	.818		
	Indicator 7:	1.00	Indicator 7:	.818		
	Indicator 8:	.818	Indicator 8:	.818		
	Indicator 9:	.818				
	Indicator 10:	.818				