

DEVELOPMENT AND VALIDATION OF A PORTFOLIO EXAMINATION FOR INITIAL DENTAL LICENSURE

Submitted to:

Dental Board of California
2005 Evergreen Street
Suite 1550
Sacramento, California 95815



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Prepared by:

PSI Services LLC
2950 North Hollywood Way
Suite 200
Burbank, California 91505

EXECUTIVE SUMMARY

This report describes major aspects of the Portfolio Examination that are essential to implementation for six subject matter areas: oral diagnosis and treatment planning, direct restoration, indirect restoration, removable prosthodontics, endodontics and periodontics.

The report includes the procedures used to define the competencies to be tested, provides background research that underlies the Portfolio Examination, describes the establishment of minimum clinical experiences and development of clinical competency examinations. Because the portfolio is an examination, it must meet the Standards for Educational and Psychological Testing (1999) to ensure that it is fair, unbiased, and legally defensible. The purpose of applying the Standards to the validation process is to ensure that the Portfolio Examination can provide evidence that entry level dentists possess the minimum competencies necessary to protect public health and safety.

The most important step in establishing the validity of the Portfolio Examination was to define the competencies to be tested in the examination. Separate focus groups of key faculty from six Board approved dental schools were convened to identify minimum clinical experiences and clinical competency examination content for oral diagnosis and treatment planning, direct and indirect restoration, removable prosthodontics, endodontics, and periodontics. Basically, focus group participants identified the competencies to be assessed in a systematic way beginning with an outline of major competency domains and ending with detailed rating (grading) scales for evaluating candidate performance. All participants provided input in a systematic, iterative fashion, until consensus is achieved. The competencies identified from this process served as the framework for the training and calibration procedures for examiners and audit procedures for evaluating the efficacy of the process.

- Section 6 lists the major competencies and the subcomponents within each competency.
- Section 7 describes basis for the evaluation system and procedures required to design it.
- Sections 8, 9, 10, 11, 12, and 13 describe the minimum clinical experiences, patient parameters and scoring (rating) criteria.
- Section 14 describes the procedures for training and calibrating examiners.
- Section 15 describes procedures that for establishing audit procedures for ensuring that the examination accomplishes its objectives.

The foundation of the Portfolio Examination is already in place at the dental schools. All six dental schools---University of Pacific, University of California San Francisco, Loma

Linda, University of Southern California, University of California Los Angeles and Western University of Health Sciences---had a great deal of consistency in their evaluation system. The schools use similar criteria to evaluate students' performance and use similar procedures to calibrate their faculty according to performance criteria. This finding had important implications for the implementation of the Portfolio Examination because the evaluation systems currently used by the dental schools will not require major changes.

The only difference between the current systems and the Portfolio Examination is that the competencies and the system to evaluate them would be standardized across schools. Therefore, the Portfolio Examination process will be implemented within the dental schools without additional resources. It is anticipated that the students will find the Portfolio Examination as a reasonable alternative pathway for initial licensure.

In summary, the dental schools reached consensus in identifying critical competencies to be measured in the Portfolio Examination, thereby standardizing the competencies to be measured, providing the framework for the evaluation (grading) system, training and calibration procedures for examiners, and audit procedures for evaluating the efficacy of the process.

TABLE OF CONTENTS

SECTION 1 – INTRODUCTION	1
OVERVIEW	1
UTILIZATION OF EXPERTS	2
PSYCHOMETRIC STANDARDS.....	2
LEGAL STANDARDS.....	2
SECTION 2 – HISTORY.....	3
EXISTING PATHWAYS.....	3
AUTHORIZATION OF THE PORTFOLIO EXAMINATION PATHWAY	3
REQUIREMENTS FOR PORTFOLIO EXAMINATION.....	3
OTHER REQUIREMENTS	4
SECTION 3 – BACKGROUND RESEARCH.....	5
PSYCHOMETRIC ISSUES.....	5
INITIAL LICENSURE REQUIREMENTS IN OTHER JURISDICTIONS.....	6
COMPARISON OF REQUIREMENTS IN THE U.S. AND CANADA	9
EXISTING COMPETENCY EXAMINATIONS.....	10
CALIBRATION OF CLINIC EXAMINERS IN SCHOOLS	13
SECTION 4 – THE PORTFOLIO EXAMINATION	15
DEFINITION	15
PREMISE	15
DISTINGUISHING CHARACTERISTICS	16
RE-EXAMINATION.....	17
ROLE OF THE BOARD	17
ROLE OF THE SCHOOLS	18
SECTION 5 – CONTENT VALIDATION PROCESS	19
APPLICABLE STANDARDS.....	19
METHODOLOGY	20
PROCESS.....	20
PROCEDURE.....	21
SECTION 6 – MAJOR COMPETENCIES ASSESSED	22
SECTION 7 – EVALUATION SYSTEM.....	24
APPLICABLE STANDARDS.....	24
BEHAVIORALLY ANCHORED RATING SCALES	25
MINIMUM COMPETENCE	25
SECTION 8 – ORAL DIAGNOSIS /TREATMENT PLANNING	26
PURPOSE.....	26

MINIMUM CLINICAL EXPERIENCES	26
OVERVIEW	26
PATIENT PARAMETERS.....	26
SCORING.....	27
ELEMENTS OF THE ODTP PORTFOLIO.....	27
ODTP SCORING CRITERIA	29
SECTION 9 – DIRECT RESTORATION	34
PURPOSE	34
MINIMUM CLINICAL EXPERIENCES	34
OVERVIEW	34
PATIENT PARAMETERS.....	35
SCORING.....	35
ELEMENTS OF THE DIRECT RESTORATION PORTFOLIO	36
DIRECT RESTORATION SCORING CRITERIA	37
SECTION 10 – INDIRECT RESTORATION	43
PURPOSE	43
MINIMUM CLINICAL EXPERIENCES	43
OVERVIEW	43
PATIENT PARAMETERS.....	44
SCORING.....	44
ELEMENTS OF THE INDIRECT RESTORATION PORTFOLIO.....	45
INDIRECT RESTORATION SCORING CRITERIA.....	47
SECTION 11 – REMOVABLE PROSTHODOTICS.....	53
PURPOSE	53
MINIMUM CLINICAL EXPERIENCES	53
OVERVIEW	53
PATIENT PARAMETERS.....	54
SCORING.....	54
ELEMENTS OF THE REMOVABLE PROSTHODONTICS PORTFOLIO.....	54
REMOVABLE PROSTHODONTICS SCORING CRITERIA	57
SECTION 12 – ENDODONTICS	65
PURPOSE	65
MINIMUM CLINICAL EXPERIENCES	65
OVERVIEW	65
PATIENT PARAMETERS.....	65
SCORING.....	65
ELEMENTS OF THE ENDODONTICS PORTFOLIO	66
ENDODONTICS SCORING CRITERIA.....	68
SECTION 13 – PERIODONTICS.....	73
PURPOSE	73
MINIMUM CLINICAL EXPERIENCES	73
OVERVIEW	73
PATIENT PARAMETERS.....	73

SCORING.....	74
ELEMENTS OF THE PERIODONTICS PORTFOLIO	75
PERIODONTICS SCORING CRITERIA.....	77
SECTION 14 – EXAMINER TRAINING AND CALIBRATION.....	83
APPLICABLE STANDARDS.....	83
EXAMINER SELECTION CRITERIA.....	83
STANDARDIZED TRAINING PROCESS	84
TYPES OF RATING ERRORS	85
CROSS TRAINING OF EXAMINERS.....	86
SECTION 15 – AUDIT PROCESS	87
APPLICABLE STANDARDS.....	87
ROLE OF THE BOARD	87
ROLE OF AUDIT TEAM	88
DOCUMENTATION FOR VALIDITY EVIDENCE	88
SCHEDULE FOR AUDITS	89
AUDIT CHECKLIST	90
AUDIT SITE VISIT REPORT	90
SECTION 16 - REFERENCES	92

LIST OF TABLES

Table 1 – Summary of existing requirements for initial licensure	7
Table 2 – Comparison of practices in U. S. and Canada for initial licensure.....	9
Table 3 – Competency examinations: Loma Linda University	10
Table 4 – Competency examinations: University of California Los Angeles	11
Table 5 – Competency examinations: University of California San Francisco	11
Table 6 – Competency examinations: University of the Pacific.....	12
Table 7 – Competency examinations: University of Southern California.....	13
Table 8 – Major competencies and subcomponents to be assessed.....	22
Table 9 – Content-specific documentation.....	89

LIST OF APPENDICES

APPENDIX A - CONSULTANT BACKGROUND	95
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SECTION 1 – INTRODUCTION

OVERVIEW

The Portfolio Examination captures the strength of traditional portfolios used to assess learning progress and has the additional advantage of being integrated within the current educational process and within the context of a treatment plan of a patient of record. Instead of developing a traditional portfolio and having it evaluated, the Portfolio Examination requires documentation of clinical cases which are competency evaluations of required procedures assembled in either paper or electronic format. Candidates are evaluated in real time during the normal course of patient treatment and normal course of clinical training.

The Portfolio Examination was approached with the understanding that the outcome would directly impact predoctoral dental education at every dental school in California and could provide the framework for evaluating predoctoral dental competencies in dental schools across the nation.

The overarching principle for development of the Portfolio Examination pathway was consumer protection. The consultants worked closely with dental school faculty to derive the framework and content of the examination; moreover, procedures were conducted in an objective and impartial manner with the public's health, safety, and welfare as the most important concern.

First, consultants met with deans and dental school faculty who represented major domains of practice as well as legislative sponsors from the California Dental Association to present the Portfolio Examination concept and answer faculty questions regarding impact on their respective programs. Second, consultants conducted separate face-to-face meetings with representative faculty from each of the Board approved dental schools to individually present the concept and discuss their concerns. Third, consultants conducted discipline-specific focus groups of faculty¹, e.g., oral diagnosis and treatment planning, direct and indirect restoration, removable prosthodontics, periodontics, and endodontic, to develop the content for the examination.

From these meetings, consultants gained an understanding of the predoctoral dental competencies that were critical to development of the Portfolio Examination and creating supporting documentation that would be used in the formulation of Assembly Bill 1524. The consultants also conducted an extensive review of written documentation of each school's competency examinations to gain insights into the procedures used in competency examinations and associated scoring systems.

¹ Face-to-face focus groups were conducted at the University of the Pacific, the University of California San Francisco, the University of Southern California, and Western University of Health Sciences.

UTILIZATION OF EXPERTS

Committees of subject matter experts knowledgeable in the six subject areas, including section chairs, department chairs and/or other faculty who were knowledgeable in the six subject areas of interest, were consulted throughout the process to provide expertise regarding the competencies acquired in their respective programs and the competencies that should be assessed in the examination.

PSYCHOMETRIC STANDARDS

The Standards for Educational and Psychological Testing (1999) set forth by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education serve as the benchmark for evaluating all aspects of credentialing, including professional and occupational credentialing. The Standards are used by the measurement profession as the psychometric standards for validating all examinations, including licensing and certification examinations.

Whenever applicable, specific Standards will be cited as they apply to definition of examination content, rating scales, calibration of raters, and auditing procedures to link the particulars of the Portfolio Examination to psychometric practice.

LEGAL STANDARDS

Because the Portfolio Examination is a state licensure examination, it must also meet legal standards as explicated in Sections 12944 of the California Government Code and Section 139 of the California Business and Professions Code. Section 12944 relates to establishment of qualifications for licensure that do not adversely affect any class by virtue of race, creed, color, national origin/ancestry, sex, gender, gender identity, gender expression, age, medical condition, genetic information, physical disability, mental disability, or sexual orientation. Section 139 of the California Business and Professions Code states occupational licensure examination programs must be based upon occupational (job/practice) analyses and examination validation studies.

SECTION 2 – HISTORY

EXISTING PATHWAYS

The Dental Board of California (hereafter, the Board) currently offers two pathways that predoctoral dental students may choose to obtain initial licensure:

- A clinical and simulation examination administered by the Western Regional Examining Board, or,
- A minimum of 12 months of a general practice residency (GPR) or advanced education in general dentistry (AEGD) program approved by the American Dental Association’s Commission on Dental Accreditation.

All applicants are required to successfully complete the written examinations of the National Board Dental Examination of the Joint Commission on National Dental Examinations and an examination in California law and ethics.

AUTHORIZATION OF THE PORTFOLIO EXAMINATION PATHWAY

Assembly Bill 1524, introduced in February 2009, eliminated the clinical and written examination offered by the Board. Provisions of the bill allow the Board to offer the portfolio examination as an alternative to initial licensure for general dentists in addition to other pathways available to students graduating from dental schools in California, i.e., the Western Regional Examining Board (WREB) examination and “Licensure by Credential” (PGY-1).

“...The bill would abolish the clinical and written examination administered by the Board. The bill would replace the examination with an assessment process in which an applicant is assessed while enrolled at an in-state dental school utilizing uniform standards of minimal clinical experiences and competencies and at the end of his or her dental program.”

REQUIREMENTS FOR PORTFOLIO EXAMINATION

Section 3 of the Business and Professions Code is amended to read:

1632. (a) The Board shall require each applicant to successfully complete the written examinations of the National Board Dental Examination of the Joint Commission on National Dental Examinations.

1632. (b) The Board shall require each applicant to successfully complete an examination in California law and ethics developed and administered by the Board. The Board shall provide a separate application for this examination.....the only other requirement for taking this examination shall be certification from the dean of the qualifying dental school attended by the applicant that the applicant has graduated, or will graduate, or is expected to graduate.

1632. (c) The Board shall require each applicant to have taken and received a passing scoreon the portfolio assessment (examination) of the applicant's fitness to practice dentistry while the applicant is enrolled in a dental school program at a Board approved school in California. This assessment shall utilize uniform standards minimal clinical experiences and competencies. The applicant shall pass a final assessment at the end of his or her dental school program.

OTHER REQUIREMENTS

Students who participate in the portfolio examination pathway must:

- (a) Be in good academic standing in their institution at the time of portfolio examination and be signed off by the dean of their respective schools.
- (b) Have no pending ethical issues at the time of the portfolio examination and must be signed off by the dean of their respective schools.

SECTION 3 – BACKGROUND RESEARCH

PSYCHOMETRIC ISSUES

Use of Portfolio as an examination. Portfolio assessment can provide a powerful approach to assessing a range of curriculum outcomes not easily assessed by other methods and provides a more in-depth picture of student competence than the snapshot obtained in a traditional examination (Davis, Friedman Ben-David, Harden, Howie, Ker, McGhee, Pippard & Snadden, 2001, p. 364). Furthermore, the real value of portfolio assessment is that it provides a basis for judgment of the student's professional fitness to practice (p. 364).

Some researchers comment that if portfolios are used for *summative* (examination) rather than formative (learning) purposes, the portfolios must meet stringent psychometric requirements including standardization, rater training with structured guidelines for making decisions, and large numbers of examiners to average out rater effects (Driessen, van der Vleuten, Schuwirth, Tartwijk & Vermunt, 2005, p. 215). Davis and Ponnampersuma (2005, p. 282) note that the one of the advantages of portfolio is that it can be standardized and used in summative assessment.

Validity of inferences made. Friedman Ben-David, Davis, Harden, Howie, Ker, and Pippard (2001) note that the validity of the inferences made about the portfolio depend on the reliability of the test. If the test scores or ratings suffer from low interrater agreement or poor sampling, inferences cannot be made. Moreover, there should be a clear definition of the purpose of the portfolio and identification of the competencies to be assessed. Webb, Endacott, Gray, Jasper, McMullan and Scholes (2003) and McMullan (2003) cite several criteria that should be used to evaluate portfolio assessments, namely, explicit grading criteria, evidence from a variety of sources, internal quality assurance processes, and external quality assurance processes.

Content validation by job analysis. Content validity is important in developing an examination for initial licensure (Chambers, 2004) such that there should be a validation process that inquires whether tasks being evaluated should be representative of tasks critical to safe and effective practice. A recent paper by Patterson, Ferguson, and Thomas (2008) calls for validation by using a job analysis to identify core and specific competencies.

Use in dental licensure. A recent paper entitled "Point/Counterpoint: Do portfolio assessments have a place in dental licensure?" addresses many of these issues specifically as they pertain to the purpose of licensure rather than education (Hammond & Buckendahl, 2006; Ranney & Hambleton, 2006).

Hammond and Buckendahl do not support the use of portfolios for dental licensure. They cite two issues as important in considering the use of portfolio assessments for licensure purposes. First, standardizing the training and evaluation across a broad range of locations would be difficult. Second, demonstrations of abilities in past records would need to be verified so that there is an evaluation of the current range of competencies. These authors contend that the portfolio does not provide an assessment of minimum skills that is administered *independent* of the training program to support licensure decisions; and therefore, provides no external validation and verification of the students' competence. Moreover, there may be measurement error, or low reliability, within the system as a result of errors in content sampling, number of observations of performance, number of examiners rating the student's performance, assumptions of unidimensional relationships between items, lack of interrater agreement, and reliance on pairs rather than triads of examiners for all students.

In an opposing point of view in the same article, Ranney and Hambleton (2006), support the use of portfolios for dental licensure. According to these authors, testing agencies have published little or no data to allow an assessment of reliability or validity of their examinations. Variability in the reliability of clinical licensure examinations and pass rates among testing agencies may reflect lack of reliability or validity in the examination process, and, omission of skills necessary to practice safely at the entry level, not just changes in student populations. The authors recognize that several criteria would need to be met before portfolio assessment could be implemented. The most important of these criteria are: administration by independent parties, inclusion of a full continuum of student competencies for comprehensive evaluation, and, evaluating competence within the context of a treatment plan designed to meet the patient's oral health care needs. In their discussion, the authors believe that portfolio assessments could work if the developers considered which tasks to measure, how the tasks would be scored, calibration protocols for examiners, and how performance expectations would be set.

INITIAL LICENSURE REQUIREMENTS IN OTHER JURISDICTIONS

According to the American Association of Dental Examiners "Composite" issued in January 2009, virtually all states and U. S. territories require applicants to pass an examination administered by the National Board of Dental Examiners.

- Forty-seven jurisdictions accepted a regional clinical examination, e.g., WREB, SRTA, CRDTS or national clinical, e.g., ADEX, ADLEX.
- Four jurisdictions, other than California, administered a state clinical examination.
- Forty-three jurisdictions administered a jurisprudence examination.
- Four states, other than California, granted licensure after completion of an accredited, 12-month, postgraduate residency program.
- Six states allow applicants to take any state or regional clinical examination. Virginia explicitly states that the clinical examination must use live patients.

- Two states (Montana and Utah) accept California's (former) clinical examination.

Table 1 – Summary of existing requirements for initial licensure²

State	National Board	Regional clinical	State clinical	Jurisprudence	Other
AL	Y	N	Y	Y	
AK	Y	Y (WREB)	N	Y	
AZ	Y	Y (WREB)	N	Y	
AR	Y	Y (SRTA)	N	Y	
CA	Y	Y (WREB)	Y	Y	PGY-1
CO	Y	Y (CRTDS)	N	Y	
CT	Y	Y (NERB OR DSCE)	N	N	PGY-1
DE	Y	N	Y	Y	DOR
District of Columbia	Y	Y	Y	Y	
FL	Y	N	Y	Y	
GA	Y	Y (CRDTS)	N	Y	
HI	Y	N	N	N	ADEX
ID	Y	Y (WREB, CRDTS)	N	Y	ADEX
IL	Y	N	N	N	ADEX
IN	Y	Y (WREB, SRTA, CRDTS, NERB)	N	Y	
IA	Y	Y (CRDTS, WREB)	N	Y	ADEX
KS	Y	Y (WREB, SRTA, CRDTS, NERB, CITA)	Y	Y	
KY	Y	Y (SRTA, WREB, CRDTS, NERB)	N	Y	ADEX not accepted
LA	Y	Y (CITA, CRDTS, NERB, SRTA, WREB)	N	Y	ADEX
ME	Y	Y (NERB)	N	Y	
MD	Y	Y (NERB)	N	Y	
MA	Y	Y	N	Y	
MI	Y	Y (NERB, DSCE)	--	--	
MN	Y	Y (NDEB, WREB)	N	Y	PGY-1, ADLEX, ADEX
MS	Y	Y	N	Y	
MO	Y	Y (Any state or regional examination)	N	Y	
MT	Y	Y (WREB, CRDTS, WREB, SRTA, NERB)	N	Y	State clinical examinations from CA, DE, FL, and NV

² Examination acronyms for states which specified regional examinations: ADEX = American Board of Dental Examiners; ADLEX = American Dental Licensing Examination; CITA = Council of Interstate Testing Agencies; CRTDS = Central Regional Dental Testing Service; DOR = Dental Operating Rooms at Naval dental facilities; DSCE = Dental Simulated Clinical Examination; NERB = North East Regional Board; NDEB = National Dental Examining Board of Canada; SRTA = Southern Regional Testing Agency; WREB = Western Regional Examining Board

State	National Board	Regional clinical	State clinical	Jurisprudence	Other
NE	Y	Y (CRDTS, NERB)	N	Y	
NV	Y	N	--	Y	ADEX; no licensure by credential
NH	Y	Y (NERB)	N	Y	
NJ	Y	Y (NERB)	N	Y	ADEX
NM	Y	Y (WREB, CRDTS)	N	Y	
NY	Y	N	N	N	CDA approved residency; one-time jurisprudence examination
NC	Y	Y (CITA)	N	Y	Sterilization/infection control examination
ND	Y	Y (NERB, CRDTS)	N	Y	ADEX
OH	Y	Y (CRDTS, SRTA, WREB, NERB)	N	Y	
OK	Y	Y (WREB)	N	Y	
OR	Y	Y	N	Y	Accepts any state or regional examination
PA	Y	Y (NERB)	N	N	ADLEX
Puerto Rico	Y	CITA	Y	Y	CITA in lieu of state clinical examination
RI	Y	Y (NERB)	N	N	
SC	Y	Y (SRTA, CRDTS)	N	Y	ADLEX
SD	Y	Y (CRDTS, WREB)	N	Y	Accepts any state or regional examination for licensure by credential
TN	Y	Y (SRTA, WREB)	N	N	
TX	Y	Y	--	Y	Accepts any state or regional examination for licensure by credential
UT	Y	Y (WREB, SRTA, NERB, CRDTS)	N	N	California state examination, Hawaii examination
VT	Y	Y (NERB, WREB, SRTA, CRDTS, CITA)	N	Y	
VA	Y	Y (SRTA, WREB, DRDTS, NERGE, CITA)	--	Y	Accepts any state or regional examination for licensure by credential (only if live patients used)
U. S. Virgin Islands	--	--	--	--	

State	National Board	Regional clinical	State clinical	Jurisprudence	Other
WA	Y	Y	N	Y	PGY-1; Accepts any state or regional examination
WV	Y	Y	N	Y	Any state or regional examination
WI	Y	Y (CRDTS, WREB, NERB)	N	Y	ADEX I and II
WY	Y	Y (CRDTS, WREB, NERB)	N	Y	Part IV of ADEX

COMPARISON OF REQUIREMENTS IN THE U.S. AND CANADA

In their 2001 review of dental education and licensure, the Council on Dental Education of the American Dental Association (ADA) compared practices for initial dental licensure in the United States and Canada. Their findings indicate that initial licensure in the United States and Canada are very similar; however, Canada relies on the use of the Objective Structured Clinical Examination (OSCE), which requires students to answer multiple-choice questions about radiographs, case histories, and/or models in a series of stations. In the OSCE, simulated patients (manikins) rather than actual patients are used as subjects for examination procedures.

Table 2 – Comparison of practices in U. S. and Canada for initial licensure

Requirement	United States	Canada
Graduation from an accredited program	Yes; program is accredited by the ADA Commission on Dental accreditation	Yes; program is accredited by the Commission on Dental Accreditation of Canada
Written examination	Yes: National Dental Board Examinations (NDBE) Parts I and II	Yes; National Dental Examining Board of Canada Written Examination (NDEB)
Clinical examination	<ul style="list-style-type: none"> Regionally administered clinical examinations Central Regional Testing Services (CRTS); Northeast Regional Examining Board (NERB), Southern Regional Testing Agency (SRTA), Western Regional Examining Board (WREB) offered once to multiple times, depending on the testing agency 10 states (CA, DE, FL, HI, IN, LA, MS, NC, NV plus Puerto Rico and the Virgin Islands) offer state administered examinations Each state determines which clinical examination results are accepted for the purpose of licensure All states require completion of both written and clinical examinations before being eligible for licensure Some states also require additional criteria such as proof of malpractice insurance, certification in Basic Life Support, or a jurisprudence examination 	<ul style="list-style-type: none"> OSCE offered three times a year Quebec requires an NDEB certificate or a provincial examination. Some provinces require completion of an ethics examination

EXISTING COMPETENCY EXAMINATIONS

As expected, all of the California schools included competencies which met minimum standards set forth by the Commission on Dental Accreditation for predoctoral dental education programs (2008, Standard 2-25, p. 15): “At a minimum graduates must be competent in providing oral health care with the scope of general dentistry, as defined by the school, for the child, adolescent, adult, and geriatric patient, including:

- a) Patient assessment and diagnosis;
- b) Comprehensive treatment planning;
- c) Health promotion and disease prevention;
- d) Informed consent;
- e) Anesthesia, and pain and anxiety control;
- f) Restoration of teeth;
- g) Replacement of teeth;
- h) Periodontal therapy;
- i) Pulpal therapy;
- j) Oral mucosal disorders;
- k) Hard and soft tissue surgery;
- l) Dental emergencies;
- m) Malocclusion and space management; and,
- n) Evaluation of the outcomes of treatment.”

Key faculty from five Board approved schools³ were interviewed regarding the clinical dimensions of practice assessed in competency examinations within their predoctoral programs. All of the schools provided a list of the clinical competencies assessed during predoctoral training. A list of each school’s competency examination is presented in the Tables 3, 4, 5, 6 and 7.

Table 3 – Competency examinations: Loma Linda University

<i>Comprehensive diagnosis and treatment planning</i>	<ul style="list-style-type: none"> • Oral diagnosis examination • Radiology interpretation (FMX pathology) • Radiology interpretation (normal and errors) • Radiology techniques
<i>Direct restoration</i>	<ul style="list-style-type: none"> • Class II composite resin • Class II amalgam • Class III composite
<i>Indirect restoration</i>	<ul style="list-style-type: none"> • Full gold crown, partial coverage crown, full coverage ceramic crown, fixed partial denture <u>or</u> multiple tooth restoration
<i>Removable prosthodontics</i>	<ul style="list-style-type: none"> • Rest seat preparation • RPD design • CD setup
<i>Periodontics</i>	<ul style="list-style-type: none"> • Preclinical OSCE (5) • Scaling and root planning (2) • Oral health care (2)
<i>Endodontics</i>	<ul style="list-style-type: none"> • Endodontic qualifying examination (to treat patients in clinic) • Endodontic section of Fall mock board • Endodontic qualifying examination (to take WREB)

³ When the Portfolio process began, there were five Board approved dental schools.

Table 4 – Competency examinations: University of California Los Angeles

<i>Comprehensive diagnosis and treatment planning</i>	<ul style="list-style-type: none"> • Oral diagnosis • Head and neck examination • Treatment planning • Caries management by risk assessment
<i>Direct restoration</i>	<ul style="list-style-type: none"> • Class II amalgam (2) • Class II composite (1) • Class III composite or Class V composite (2) • Two buildups (core, pin, prefabricated post and core, <u>or</u> dowel core)
<i>Indirect restoration</i>	<ul style="list-style-type: none"> • Two restorations (PFM, bonded ceramic, full gold crown <u>or</u> partial veneer crown)
<i>Removable prosthodontics</i>	<ul style="list-style-type: none"> • Complete denture • Immediate full denture • Removable partial denture • Reline
<i>Periodontics</i>	<ul style="list-style-type: none"> • Periodontal diagnosis and treatment plan • Periodontal instrumentation • Re-evaluation of Phase I therapy • Periodontal surgery
<i>Endodontics</i>	<ul style="list-style-type: none"> • Endodontic case portfolio

Table 5 – Competency examinations: University of California San Francisco

<i>Comprehensive diagnosis and treatment planning</i>	<ul style="list-style-type: none"> • Medical/dental history taking • Infection control • Practice management • Oral diagnosis and treatment planning OSCE • Caries risk assessment • Complete oral examination/treatment planning • Radiology • Emergency • Baseline skills attainment • Pediatric comprehensive oral examination • Outcomes of care
<i>Direct restoration</i>	<ul style="list-style-type: none"> • Class I composite or preventive resin restoration • Class I amalgam • Class II amalgam • Class II composite • Class III or IV composite • Class V composite, glass ionomer <u>or</u> amalgam • Pediatric restorative
<i>Indirect restoration</i>	<ul style="list-style-type: none"> • Mounted diagnostic cast • Die trimming • Casting (PFM, all gold, <u>or</u> all ceramic crown)
<i>Removable prosthodontics</i>	<ul style="list-style-type: none"> • Removable prosthodontics (partial <u>or</u> full denture)
<i>Periodontics</i>	<ul style="list-style-type: none"> • Instrument sharpening • Instrument identification and adaptation • Scaling and root planning
<i>Endodontics</i>	<ul style="list-style-type: none"> • Single-root root canal • Multi-root root canal on typodont

Table 6 – Competency examinations: University of the Pacific

<i>Comprehensive diagnosis and treatment planning</i>	<ul style="list-style-type: none"> • Oral diagnosis and treatment planning
<i>Direct restoration⁴</i>	<ul style="list-style-type: none"> • Class I resin • Class II resin • Class II amalgam • Class III resin • Class V resin
<i>Indirect restoration</i>	<ul style="list-style-type: none"> • All cases evaluated for case management, buildup (if needed), preparation and temporization • Crown preparation and crown (FVM, PFM <u>or</u> all ceramics) • CIMOE (cementation) • Impression
<i>Removable prosthodontics</i>	<ul style="list-style-type: none"> • Complete denture, immediate complete denture <u>or</u> other removable prosthetic device
<i>Periodontics</i>	<ul style="list-style-type: none"> • Periodontal oral diagnosis and treatment planning • Periodontal diagnostic competency • Calculus detection and root planing • Instrument sharpening • Periodontal re-evaluation
<i>Endodontics</i>	<ul style="list-style-type: none"> • Endodontic radiographic technique • Cleaning and shaping (single canal) • Coronal access anterior • Coronal access posterior • Obturation (single canal)

⁴All direct restoration cases are evaluated for case management, preparation and restoration. Typically Class III and Class V resins are performed in the anterior segments; several posterior Class II restorations are completed including a mandatory mock board scenario—mixed between amalgam and resin

Table 7 – Competency examinations: University of Southern California

Competency domain	Specific competencies
<i>Comprehensive diagnosis and treatment planning</i>	<ul style="list-style-type: none"> • Oral radiology (OSCE in radiology) • Physical evaluation • Ultrasonic instrumentation/ultrasonic scaler • OSCE in vital signs, extra- and intraoral examination and infection control
<i>Direct restoration</i>	<ul style="list-style-type: none"> • Class II amalgam • Composite restoration (Class II, III, IV, <i>or</i> V)
<i>Indirect restoration</i>	<ul style="list-style-type: none"> • Crown preparation (PFM, full gold, partial veneer gold, <i>or</i> ceramic) • Crown cementation (PFM, full gold, partial veneer gold, <i>or</i> ceramic)
<i>Removable prosthodontics</i>	<ul style="list-style-type: none"> • Preliminary Impression • Outline tray(s)/ custom tray(s) • Final impression(s) • Final survey • Framework try-in (retention/occlusion) • Jaw record(s)/ tooth selection • Teeth try-in/ remount jig • Prosthesis placement/ clinical remount • Final adaptation and articulation
<i>Periodontics</i> ⁵	<ul style="list-style-type: none"> • Diagnosis and comprehensive treatment planning • Ultrasonic instrumentation for scaling and root planning • Scaling and root planning • Mock board examination (WREB compatible)
<i>Endodontics</i>	<ul style="list-style-type: none"> • Access • Instrumentation • Obturation

CALIBRATION OF CLINIC EXAMINERS IN SCHOOLS

During visits to the dental school clinics and interviews with faculty, it was clear that the dental schools did an exceptional job in calibrating their examiners and were consistent in their methodology to ensure that common criteria were used to evaluate students' performance on competency examinations. The faculty were calibrated and re-calibrated to ensure consistency in their evaluation of the student competencies and the processes used by the dental schools for assessing competencies was very similar. In every case, minimum competency was built into the rating scales used to evaluate the students in their competency examinations.

The general rule was that two examiners must concur on failing grades. If there is disagreement between the two examiners, a third examiner was asked to grade the student. One school specifically mentioned that examiners were designated full-time faculty who were familiar with the grading criteria and the logistics of competency examinations. Other schools mentioned that their examiners (part-time and full-time faculty) were provided extensive materials to read and review prior to hands-on training with experienced examiners. These materials included detailed examiner training manuals, detailed slide

⁵ Diagnosis and comprehensive treatment planning, ultrasonic instrumentation, scaling and root planing are performed in the junior year; mock board examination performed in the senior year

presentations (Powerpoint), sample cases, and sample documentation. Hands-on training and calibration sessions were conducted to ensure that the examiners understood the evaluation system and how to use it.

SECTION 4 – THE PORTFOLIO EXAMINATION

DEFINITION

Albino, Young, Neumann, Kramer, Andrieu, Henson, Horn, and Hendricson (2008, p. 164) define clinical competency examinations as performance examinations in which students perform designated tasks and procedures on a patient without instructor assistance. The process of care and the products are assessed by faculty observers typically guided by rating scales.

Here, the Portfolio Examination can be conceptualized as a series of examinations administered in a multiple patient encounters in six subject areas. Candidates are rated according to standardized rating scales by faculty examiners who are formally trained in their use.

The Portfolio Examination is a performance examination that assesses skills in commonly encountered situations, which includes components of the clinical examination administered by a traditional testing agency. Performance is measured during competency evaluations conducted in the schools by calibrated examiners who are members of the dental school faculty. Thus, the Portfolio Examination involves hands-on performance evaluations of clinical skills as evaluated within the candidate's program of dental education.

PREMISE

The Portfolio Examination is an alternative examination that each individual school may elect at any time to implement or decline to implement.

The Portfolio Examination allows candidates to build a portfolio of completed clinical experiences and clinical competency examinations in six subject areas over the normal course of clinical training. Both clinical experiences and clinical competency examinations are performed on patients of record within the normal course of treatment. The primary difference between clinical experiences and clinical competency examinations is that the clinical competency examinations are performed independently without faculty intervention unless patient safety issues are imminent.

The Portfolio Examination is conducted while the applicant is enrolled in a dental school program at a California Board approved dental school. A student may elect to begin the Portfolio Examination process during the clinical training phase of their dental education, with the approval of his/her clinical faculty.

The Portfolio Examination follows a similar structure for candidate evaluation that currently exists within the schools to assess minimum competence. The faculty observes the treatment provided and evaluates candidates according to

standardized criteria developed by a consensus of key faculty from all of the dental schools. Each candidate prepares and submits a portfolio of documentation that provides proof of completion of competency evaluations for specific procedures in six subject areas: oral diagnosis and treatment planning, direct restoration (amalgam/composite), indirect restoration (fixed prosthetics), removable prosthodontics, endodontics and periodontics.

If a candidate fails to pass any of the six Portfolio competency examinations after three (3) attempts, the applicant is not eligible for re-examination in that competency until he or she has successfully completed the minimum number of required remedial education hours in the failed competency. The remedial course work content may be determined by his or her school and may include didactic, laboratory or clinical patients to satisfy the Board requirement for remediation before an additional Portfolio competency examination may be taken. When a candidate applies for re-examination he or she must furnish evidence of successful completion of the remedial education requirements for re-examination to the examiner. The remediation form must be signed and presented prior to re-examination.

DISTINGUISHING CHARACTERISTICS

There are 10 distinguishing characteristics of the Portfolio Examination:

- *First*, the Portfolio Examination is considered a performance examination that assesses candidates' skills in commonly encountered clinical situations. Consequently, the Portfolio Examination must meet legal standards (Sections 12944 of the Government Code, Section 139 of the Business and Professions Code) and psychometric standards set forth by the Standards for Educational and Psychological Testing.
- *Second*, the Portfolio Examination is a summative assessment of a candidate's competence to practice independently. Therefore, candidates perform clinical procedures without faculty intervention in the competency examinations. If a candidate commits a critical error at any time during a competency examination, the examination is terminated immediately in the interests of patient safety.
- *Third*, it includes components of clinical examinations similar to other clinical examinations, and, is administered in a manner that is similar to other clinical examinations encountered in the candidates' course of study. The multiple clinical examinations allow for an evaluation of the full continuum of competence. No additional resources are required from candidates, schools or the Board.
- *Fourth*, treatments for candidates' clinical experience and competency examinations are rendered on patients of record. This means that candidates' competence is not evaluated in an artificial or contrived situation, but on patients who require dental interventions as a normal course of treatment and

their progress can be monitored beyond the scope of the clinical experiences or competency examinations.

- *Fifth*, candidates must complete a minimum number of clinical experiences as required for each of six competency domains.
- *Sixth*, readiness for the Portfolio competency examinations is determined by the clinical faculty at the institution where the candidate is enrolled.
- *Seventh*, each of the schools will designate faculty as Portfolio competency examiners and is responsible for administering a Board approved standardized calibration training course for said examiners. The schools are also responsible for the calibration of Portfolio examiners' performance to ensure consistent implementation of the examination and a standardized examination experience for all candidates.
- *Eighth*, candidates' performance is measured according to the information provided in competency evaluations conducted in the schools by clinical faculty within the predoctoral program of education.
- *Ninth*, it produces documented data for outcomes assessment of results, thereby allowing for verification of validity evidence. The data provides the foundation of periodic audits of each school conducted by the Board to ensure that each school is implementing the Portfolio Examination according to the standardized procedures.
- *Tenth*, there are policies and procedures in place to treat candidates fairly and professionally, with timely and complete communication of examination results.

RE-EXAMINATION

If a candidate fails to pass any of the six Portfolio competency examinations after three (3) attempts, the applicant is not eligible for re-examination in that competency until he or she has successfully completed the minimum number of required remedial education hours in the failed competency. The remedial course work content may be determined by his or her school and may include didactic, laboratory or clinical patients to satisfy the Board requirement for remediation before an additional Portfolio competency examination may be taken. When a candidate applies for re-examination he or she must furnish evidence of successful completion of the remedial education requirements for re-examination to the examiner. The remediation form must be signed and presented prior to re-examination.

ROLE OF THE BOARD

Oversight of the Portfolio Examination is maintained by the Board. The Portfolio Examination includes a mechanism to administer the program and grant the

license, as well as maintain authority to monitor school compliance with the standardized examination process.

ROLE OF THE SCHOOLS

Schools are responsible for selection and calibration of Portfolio examiners. Faculty who wish to become a Portfolio examiner will be required to submit credentials to document their qualifications and experience in conducting examinations in an objective manner. Faculty who are selected as Portfolio examiners are required to participate in Board approved calibration training courses for the competency domain of interest, e.g., oral diagnosis and treatment planning, endodontics, etc.

Schools are also responsible to maintaining the calibration of Portfolio examiners by regularly providing opportunities for re-calibration as needed.

SECTION 5 – CONTENT VALIDATION PROCESS

APPLICABLE STANDARDS

Since criterion related evidence is generally not available for use in making licensure decisions, validation of licensure and certification tests rely mainly on expert judgments that the test adequately represents the content domain of the occupation or specialty. Here, content related validity evidence from a job analysis supports the validity of the Portfolio Examination as a measure of clinical competence. The Standards contain extensive discussion of validity issues.

“Test design generally starts with an adequate definition of the occupation or specialty, so that persons can be clearly identified as engaging in the activity.” (p. 156)

“Often a thorough analysis is conducted of the work performed by people in the profession or occupation to document the tasks and abilities that are essential to practice. A wide variety of empirical approaches is used, including delineation, critical incidence techniques, job analysis, training needs assessments, or practice studies and surveys of practicing professionals. Panels of respected experts in the field often work in collaboration with qualified specialists in testing to define test specifications, including the knowledge and skills needed for safe, effective performance, and an appropriate way of assessing that performance.” (p. 156)

“Credentialing tests may cover a number of related but distinct areas. Designing the testing program includes deciding what areas are to be covered, whether one or a series of tests is to be used, and how multiple test scores are to be combined to reach an overall decision.” (p. 156-157)

There are also specific standards that address the use of job analysis to define the competencies to be tested in the Portfolio Examination.

Standard 14.8

“Evidence of validity based on test content requires a thorough and explicit definition of the content domain of interest. For selection, classification, and promotion, the characterization of the domain should be based on a job analysis.” (p. 160)

“The content domain to be covered by a credentialing test should be defined clearly and justified in terms of the importance of the content for credential-worthy performance in an occupation or profession. A rationale should be provided to support the claim that the knowledge or skills being assessed are required for credential-worthy performance in an occupation and are consistent with the purpose for which the licensing or certification program was instituted” (p. 161)

METHODOLOGY

The methodology used to validate the content of the competency examinations comprising the Portfolio Examination is a commonly used psychometric procedure called job (aka practice) analysis. Job analysis data is typically obtained through multiple sources including interviews, observations, survey questionnaires, and/or focus groups.

This methodology has been used extensively in the measurement field and is described in detail in many publications in the psychometric literature as a “table-top job analysis,” e.g., Department of Energy (1994). Basically, focus groups identify the competencies to be assessed in a systematic way beginning with an outline of major competency domains and ending with a detailed account of major and specific competencies organized in outline fashion. All participants provide input in a systematic, iterative fashion, until consensus is achieved.

PROCESS

Separate focus groups of subject matter experts from six Board approved dental schools were convened to define the content for the Portfolio Examinations for six competency domains to be assessed in the Portfolio Examination: oral diagnosis and treatment planning, direct and indirect restoration, removable prosthodontics, endodontics, and periodontics.

The content was developed at two levels of analysis. The first level of analysis was to develop a consensus at a broad level regarding the major competencies to be assessed. The faculty indicated that the competencies were acceptable to the schools as the basis for the Portfolio Examination. They further understood that the major competencies were likely to be included in proposed legislation in order to implement the Portfolio Examination.

The second level of analysis produced detailed procedures for measuring specific subcomponents within each of the six competency domains. The detailed procedures were used to develop the Portfolio Examination.

PROCEDURE

The procedure was conducted systematically in several steps:

<p>Step 1 <i>Orient focus group</i></p>	<ul style="list-style-type: none"> • Present participants with an outline of topics to be covered for a given competency domain • Orient participants as to the goal of the process and how the results will be used
<p>Step 2 <i>Review subject matter</i></p>	<ul style="list-style-type: none"> • Have participants explain how their program currently conducts competency examinations • Review the topics involved in a given competency domain, e.g., periodontics, endodontics, etc.
<p>Step 3 <i>Identify major competencies</i></p>	<ul style="list-style-type: none"> • Identify major competencies to be assessed • Discuss implications of the competencies at each participant's program until consensus is reached
<p>Step 4 <i>Identify specific competencies</i></p>	<ul style="list-style-type: none"> • Identify specific competencies within each content domain to be assessed • Discuss implications of the competencies at each participant's program until consensus is reached
<p>Step 5 <i>Sequence competencies</i></p>	<ul style="list-style-type: none"> • Sequence the competencies until consensus is reached
<p>Step 6 <i>Develop competency statements</i></p>	<ul style="list-style-type: none"> • Rephrase each competency in terms of a consistent format that includes an action verb and direct object (c. f., Chambers & Gerrow, 1994)
<p>Step 7 <i>Refine competencies</i></p>	<ul style="list-style-type: none"> • Make final edits to the wording of the competencies until consensus is reached
<p>Step 8 <i>Re-evaluate competencies</i></p>	<ul style="list-style-type: none"> • Discuss the list of major and specific competencies until consensus is reached

SECTION 6 – MAJOR COMPETENCIES ASSESSED

The Portfolio Examination is comprised of performance examinations in six competency domains identified by the focus groups using a “table-top job analysis” methodology described in Section 5. The competencies and their subcomponent competencies provide the most fundamental type of validity evidence for the Portfolio Examination, that is, content validity. The subcomponents of each major competency domain are presented below.

Table 8 – Major competencies and subcomponents to be assessed

ORAL DIAGNOSIS AND TREATMENT PLANNING	<ul style="list-style-type: none"> I. Medical issues that impact dental care II. Treatment modifications based on medical conditions III. Patient concerns/chief complaint IV. Dental history V. Significant radiographic findings VI. Clinical findings VII. Risk level assessment VIII. Need for additional diagnostic tests/referrals IX. Findings from mounted diagnostic casts X. Comprehensive problem list XI. Diagnosis and interaction of problems XII. Overall treatment approach XIII. Phasing and sequencing of treatment XIV. Comprehensiveness of treatment plan XV. Treatment record
DIRECT RESTORATION	<ul style="list-style-type: none"> I. Case presentation II. Outline and extensions III. Internal form IV. Operative environment V. Anatomical form VI. Margins VII. Finish and function
INDIRECT RESTORATION	<ul style="list-style-type: none"> I. Case presentation II. Preparation III. Impression IV. Provisional V. Candidate evaluation of laboratory work VI. Pre-cementation VII. Cementation and finish

REMOVABLE PROSTHODONTICS	<ul style="list-style-type: none"> I. Patient evaluation II. Treatment plan and sequencing III. Preliminary impressions IV. RFP design (if applicable) V. Tooth modification (if applicable) VI. Border molding and final impressions VII. Framework try-in VIII. Jaw relation records IX. Trial dentures X. Insertion of removable prosthesis XI. Post insertion (1 week) XII. Laboratory services for prosthesis
ENDODONTICS	<ul style="list-style-type: none"> I. Pretreatment clinical testing and radiographic imaging II. Endodontic diagnosis III. Endodontic treatment plan IV. Anesthesia and pain control V. Caries removal, removal of failing restorations, evaluation of restorability, site isolation VI. Access opening VII. Canal preparation technique VIII. Master cone fit IX. Obturation technique X. Completion of case
PERIODONTICS	<ul style="list-style-type: none"> I. Review medical and dental history II. Radiographic findings III. Comprehensive periodontal data collection IV. Evaluate periodontal etiology/risk factors V. Comprehensive periodontal diagnosis VI. Treatment plan VII. Calculus detection VIII. Effectiveness of calculus removal IX. Periodontal re-evaluation

SECTION 7 – EVALUATION SYSTEM

A standardized evaluation system was developed to evaluate candidates' performance in the competency examinations. The competencies and their subcomponents defined in Section 6 provided the framework for the evaluation system that assesses the candidates' competencies in the procedures. Faculty from six Board approved dental schools were involved in the process so that the final evaluation system represented rating criteria applicable to candidates regardless of predoctoral programs.

The evaluation system is designed to be used for *summative* decisions (high stakes, pass/fail decisions) rather than formative decisions (compilation of daily work with faculty feedback for learning purposes). The evaluation system provides quantitative validity evidence for determining clinical competence in terms of numeric scores.

APPLICABLE STANDARDS

The evaluation system must meet psychometric criteria to provide the measurement opportunity for success for all candidates.

- Standard 3.20* “The instructions presented to test takers should contain sufficient detail so that test takers can respond to a task in the manner that the test developer intended. When appropriate, sample material, practice or sample questions...should be provided to test takers prior to the administration of the test or included in the testing material as part of the standard administration instructions.” (p. 47)
- Standard 3.22* “Procedures for scoring and, if relevant, scoring criteria should be presented by the test developer in sufficient detail and clarity to maximize the accuracy of scoring. Instructions for using rating scales or for deriving scores obtained by coding, scaling, or classifying constructed responses should be clear.” (p. 47)
- Standard 14.17* “The level of performance required for passing a credentialing test should depend on the knowledge and skills necessary for acceptable performance in the occupation or profession and should not be adjusted to regulate the number or proportion of persons passing the test.” (p. 162)

BEHAVIORALLY ANCHORED RATING SCALES

Behaviorally anchored rating scales have unique measurement properties which have been used extensively in medical and dental education as a tool to assess performance. They rely on critical incidents of behavior which may be classified into dimensions unique and independent of each other in their meaning. Each performance dimension is arrayed on a continuum of behaviors and examiners must select the behaviors that most closely describe the candidate's performance.

There were several steps to develop behaviorally anchored rating scales for the Portfolio Examination evaluation system:

1. Use the competencies and their associated subcomponents defined by the table-top job analysis discussed in Section 5 as the framework for the evaluation system, e.g., comprehensive oral diagnosis and treatment planning, direct restoration, indirect restoration, removable prosthodontics, endodontics, periodontics.
2. Generate critical incidents of ineffective and effective behavior.
3. Create performance dimensions that describe the qualities of groups of critical incidents (Flanagan, 1954).
4. Define performance dimensions in terms of numeric ratings, e.g., 1 to 5, 1 to 7, 1 to 9.
5. Retranslate (reclassify) the critical incidents to ensure that the incidents describe the performance dimensions.
6. Identifying several incidents for each performance dimension.
7. Refine standardized criteria for each of the competency domains and their subcomponent competencies.
8. Establish minimum acceptable competence criteria (passing criteria) for competency examinations.

MINIMUM COMPETENCE

The passing standard for all of the competency examinations is built into the rating scales when the grading criteria are developed. The rating criteria for minimum competence was developed by representative faculty who have a solid conceptual understanding of standardized rating criteria and how the criteria will be applied in an operational setting.

SECTION 8 – ORAL DIAGNOSIS /TREATMENT PLANNING

PURPOSE

The competency examination for oral diagnosis and treatment planning (ODTP) is designed to assess the candidate's ability to identify and evaluate patient data and clinical findings; formulate diagnoses; and plan treatment interventions from a multidisciplinary perspective.

MINIMUM CLINICAL EXPERIENCES

The documentation of oral diagnosis and treatment planning clinical experiences will include a minimum of 20 patient cases.

Clinical experiences for ODTP include:

- Comprehensive oral evaluations,
- Limited (problem-focused) oral evaluations, and,
- Periodic oral evaluation

Each examination, ODTP clinical experience requires medical and dental history, identified problem(s), diagnoses, treatment plans, and informed consent.

OVERVIEW

- Fifteen (15) scoring factors.
- Initiation and completion of one (1) multidisciplinary Portfolio competency examination.
- Treatment plan must involve at least three (3) of the following six disciplines:
 - > Periodontics
 - > Endodontics
 - > Operative (direct and indirect restoration)
 - > Fixed and removable prosthodontics
 - > Orthodontics
 - > Oral surgery

PATIENT PARAMETERS

- Maximum of ASA II.
- Missing or will be missing two or more teeth, NOT including third molars.
- At least moderate periodontitis (probing depths of 5 mm or more).

SCORING

Scoring points for ODTP are defined as follows:

- A score of 0 is unacceptable; candidate exhibits a critical error
- A score of 1 is unacceptable; major deviations that are correctable
- A score of 2 is acceptable; minimum competence
- A score of 3 is adequate; less than optimal
- A score of 4 is optimal

ELEMENTS OF THE ODTP PORTFOLIO

The ODTP portfolio may include, but is not limited to the following:

- a) Medical history for dental treatment provided to patients. The medical history must include: an evaluation of past illnesses and conditions, hospitalizations and operations, allergies, family history, social history, current illnesses and medications, and their effect on dental condition.
- b) Dental history for dental treatment provided to clinical patients. The dental history must include: age of previous prostheses, existing restorations, prior history of orthodontic/periodontic treatment, and oral hygiene habits/adjuncts.
- c) Documentation of a comprehensive examination for dental treatment provided to patients includes:
 - (1) Interpretation of radiographic series
 - (2) Performance of caries risk assessment
 - (3) Determination of periodontal condition
 - (4) Performance of a head and neck examination, including oral cancer screening.
 - (5) Screening for temporomandibular disorders
 - (6) Assessment of vital signs
 - (7) Performance of a clinical examination of dentition
 - (8) Performance of an occlusal examination
- d) Documentation the candidate evaluated data to identify problems. The documentation of the data evaluation includes:
 - (1) Chief complaint
 - (2) Medical problem
 - (3) Stomatognathic problems
 - (4) Psychosocial problems
- e) Documentation the candidate worked up the problems and developed a tentative treatment plan. The documentation of the work-up and tentative treatment plan includes:

- (1) Problem definition, e.g., severity/chronicity and classification
- (2) Determination if additional diagnostic tests are needed
- (3) Development of a differential diagnosis
- (4) Recognition of need for referral(s)
- (5) Pathophysiology of the problem
- (6) Short term needs
- (7) Long term needs
- (8) Determination interaction of problems
- (9) Development of treatment options
- (10) Determination of prognosis
- (11) Patient information regarding informed consent

f) Documentation the candidate developed a final treatment plan. The documentation includes:

- (1) Rationale for treatment.
- (2) Problems to be addressed, or any condition that puts the patient at risk in the long term.
- (3) Determination of sequencing with the following framework:
 - Systemic: medical issues of concern, medications and their effects, effect of diseases on oral condition, precautions, treatment modifications
 - Urgent: Acute pain/infection management, urgent esthetic issues, further exploration/additional information, oral medicine consultation, pathology
 - Preparatory: Preventive interventions, orthodontic, periodontal (Phase I, II), endodontic treatment, caries control, other temporization
 - Restorative: operative, fixed, removable prostheses, occlusal splints, implants
 - Elective: esthetic (veneers, etc.) any procedure that is not clinically necessary, replacement of sound restoration for esthetic purposes, bleaching
 - Maintenance: periodontic recall, radiographic interval, periodic oral examination, caries risk management

ODTP SCORING CRITERIA

FACTOR 1: MEDICAL ISSUES THAT IMPACT DENTAL CARE

4	3	2	1	0
<ul style="list-style-type: none"> Identifies and evaluates all medical issues Explains dental implications of systemic conditions Identifies and assesses patient medications 	<ul style="list-style-type: none"> Misses <u>one</u> item that would NOT cause harm 	<ul style="list-style-type: none"> Misses <u>two</u> items that would NOT cause harm 	<ul style="list-style-type: none"> Misses <u>more than two</u> items that would cause potential harm 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Misses medical or medication items that would cause potential harm

FACTOR 2: TREATMENT MODIFICATIONS BASED ON MEDICAL CONDITIONS

4	3	2	1	0
<ul style="list-style-type: none"> Identifies all treatment modifications 	<ul style="list-style-type: none"> Misses <u>one</u> item that would NOT cause harm 	<ul style="list-style-type: none"> Misses <u>two</u> items that would NOT cause harm 	<ul style="list-style-type: none"> Misses <u>more than two</u> items that would cause potential harm 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Misses treatment modifications that would cause potential harm

FACTOR 3: PATIENT CONCERNS/CHIEF COMPLAINT

4	3	2	1	0
<ul style="list-style-type: none"> Identifies all patient concerns including chief complaint 	<ul style="list-style-type: none"> Identifies chief complaint <u>but</u> misses <u>one</u> patient concern 	<ul style="list-style-type: none"> Identifies chief complaint <u>but</u> misses <u>two</u> patient concerns 	<ul style="list-style-type: none"> Identifies chief complaint <u>but</u> misses <u>more than two</u> patient concerns 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Chief complaint NOT identified

FACTOR 4: DENTAL HISTORY

4	3	2	1	0
<ul style="list-style-type: none"> Identifies all parameters in dental history 	<ul style="list-style-type: none"> Misses <u>one</u> parameter in dental history 	<ul style="list-style-type: none"> Misses <u>two</u> parameters in dental history 	<ul style="list-style-type: none"> Misses <u>more than two</u> parameters in dental history 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Neglects to address dental history

FACTOR 5: SIGNIFICANT RADIOGRAPHIC FINDINGS

4	3	2	1	0
<ul style="list-style-type: none"> Identifies all radiographic findings 	<ul style="list-style-type: none"> Misses <u>one</u> radiographic finding that does NOT substantially alter treatment plan 	<ul style="list-style-type: none"> Misses <u>two</u> radiographic findings that do NOT substantially alter treatment plan 	<ul style="list-style-type: none"> Misses <u>more than two</u> radiographic findings that do NOT substantially alter treatment plan 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Misses radiographic findings that substantially alters treatment plan

FACTOR 6: CLINICAL FINDINGS

4	3	2	1	0
<ul style="list-style-type: none"> Identifies all clinical findings 	<ul style="list-style-type: none"> Misses <u>one</u> clinical finding that does NOT substantially alter treatment plan 	<ul style="list-style-type: none"> Misses <u>two</u> clinical findings that do NOT substantially alter treatment plan 	<ul style="list-style-type: none"> Misses <u>more than two</u> clinical findings that do NOT substantially alter treatment plan 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Misses clinical findings that substantially alter treatment plan

FACTOR 7: RISK LEVEL ASSESSMENT

4	3	2	1	0
<ul style="list-style-type: none"> Risk level (risk factors/indicators and protective factors) identified Relevance of risk level identified 	<ul style="list-style-type: none"> Risk level and relevance of risk level identified <u>but</u> misses <u>one</u> item (risk factors/indicators and protective factors) 	<ul style="list-style-type: none"> Risk level and relevance of risk level identified <u>but</u> misses <u>two</u> items (risk factors/indicators and protective factors) 	<ul style="list-style-type: none"> Risk level identified <u>but</u> misses <u>more than two</u> items (risk factors/indicators and protective factors) Relevance of risk level NOT identified 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Risk level NOT identified

FACTOR 8: NEED FOR ADDITIONAL DIAGNOSTIC TESTS/REFERRALS

4	3	2	1	0
<ul style="list-style-type: none"> Prescribes/acquires all clinically necessary diagnostic test and referrals with comprehensive rationale 	<ul style="list-style-type: none"> Identifies need for clinically necessary diagnostic tests and referrals with limited rationale 	<ul style="list-style-type: none"> Identifies need for additional diagnostic tests and referrals without rationale 	<ul style="list-style-type: none"> Identifies need for additional diagnostic tests and referrals without rationale <u>and</u> prescribes non-contributory test or referrals 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Does NOT identify clinically necessary diagnostic tests or referrals

FACTOR 9: FINDINGS FROM MOUNTED DIAGNOSTIC CASTS

4	3	2	1	0
<ul style="list-style-type: none"> Casts and mounting reflect patient's oral condition Identifies all diagnostic findings from casts 	<ul style="list-style-type: none"> Casts and mounting reflect patient's oral condition Misses <u>one</u> diagnostic finding that does NOT substantially alter treatment plan 	<ul style="list-style-type: none"> Casts and mounting reflect patient's oral condition <u>but</u> misses <u>two</u> diagnostic findings that do NOT substantially alter treatment plan 	<ul style="list-style-type: none"> Casts and mounting reflect patient's oral condition <u>but</u> misses <u>more than two</u> diagnostic findings that do NOT substantially alter treatment plan 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Casts and mounting do NOT reflect patient's oral condition Misses diagnostic cast findings that substantially alter treatment plan

FACTOR 10: COMPREHENSIVE PROBLEM LIST

4	3	2	1	0
<ul style="list-style-type: none"> All problems listed 	<ul style="list-style-type: none"> <u>One</u> problem NOT identified without potential harm to patient 	<ul style="list-style-type: none"> <u>Two</u> problems NOT identified without potential harm to patient 	<ul style="list-style-type: none"> <u>Two or more</u> problems NOT identified without potential harm to patient 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Problems with potential for harm to patient NOT identified

FACTOR 11: DIAGNOSIS AND INTERACTION OF PROBLEMS

4	3	2	1	0
<ul style="list-style-type: none"> All diseases correctly diagnosed All interactions identified 	<ul style="list-style-type: none"> <u>One</u> missed diagnosis or interaction without potential harm to patient 	<ul style="list-style-type: none"> <u>Two</u> missed diagnoses or interactions without potential harm to patient 	<ul style="list-style-type: none"> <u>More than two</u> missed diagnoses or interactions without potential harm to patient 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Missed diagnosis or interaction resulting in potential harm to patient

FACTOR 12: OVERALL TREATMENT APPROACH

4	3	2	1	0
<ul style="list-style-type: none"> All treatment options identified within standard of care; provides rationale which is <u>optimal</u> 	<ul style="list-style-type: none"> All treatment options identified within standard of care; provides <u>acceptable</u> rationale 	<ul style="list-style-type: none"> All treatment options identified within standard of care <u>and</u> lacks sound rationale for treatment 	<ul style="list-style-type: none"> Incomplete treatment options <u>and</u> lacks sound rationale for treatment 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Treatment options presented are NOT within standard of care

FACTOR 13: PHASING AND SEQUENCING OF TREATMENT

4	3	2	1	0
<ul style="list-style-type: none"> Treatment optimally phased and sequenced 	<ul style="list-style-type: none"> Treatment phased correctly but <u>one</u> procedure out of sequence with no harm to patient 	<ul style="list-style-type: none"> Treatment phased correctly but <u>two</u> procedures out of sequence with no harm to patient 	<ul style="list-style-type: none"> Treatment NOT phased correctly <u>but</u> no potential harm to patient 	Critical errors <u>include</u> : <ul style="list-style-type: none"> Treatment NOT phased nor sequenced with potential harm to patient

FACTOR 14: COMPREHENSIVENESS OF TREATMENT PLAN

4	3	2	1	0
<ul style="list-style-type: none"> Treatment plan addresses all problems All treatment procedures are indicated 	<ul style="list-style-type: none"> <u>One</u> treatment procedure that is NOT indicated but will NOT result in harm to patient <u>but</u> treatment plan addresses all problems 	<ul style="list-style-type: none"> <u>Two or more</u> treatment procedures that are NOT indicated but reflect problem list <u>but</u> treatment plan addresses all problems 	<ul style="list-style-type: none"> <u>Two or more</u> treatment procedures that are NOT indicated and do NOT reflect problem list Treatment plan is incomplete but does NOT cause harm to patient 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Treatment plan is incomplete and causes potential harm to patient Treatment procedures included that are NOT indicated resulting in harm to patient Treatment procedures are missing from treatment plan resulting in harm to patient

FACTOR 15: TREATMENT RECORD

4	3	2	1	0
<ul style="list-style-type: none"> Summarizes all data collected, diagnoses, and comprehensive rationale for treatment options Documents presentation of risks and benefits of all treatment options 	<ul style="list-style-type: none"> Summarizes all data collected, diagnoses, and treatment options, documents presentation of risks and benefits of all treatment options <u>and</u> provides limited rationale 	<ul style="list-style-type: none"> Summarizes all data collected, diagnoses, and treatment options, documents presentation of risks and benefits of all treatment options <u>but</u> provides no rationale 	<ul style="list-style-type: none"> Summarizes all data collected, diagnoses, and treatment options, <u>and</u> documents presentation of risks and benefits only for preferred option 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Does NOT summarize all data collected, diagnoses and/or treatment options Does NOT document presentation of risks and benefits of all treatment options

SECTION 9 – DIRECT RESTORATION

PURPOSE

The competency examinations for direct restoration are designed to assess the candidate's independent ability to restore teeth with interproximal primary carious lesions to optimal form, function and esthetics.

MINIMUM CLINICAL EXPERIENCES

The documentation of direct restorative clinical experiences includes 60 restorations.

The restorations completed in the clinical experiences may include any restoration on a permanent or primary tooth using standard restorative materials including:

- Amalgams,
- Composites,
- Crown buildups,
- Direct pulp caps, and,
- Temporizations.

OVERVIEW

- Seven (7) scoring factors.
- Two (2) restorations:
 - > Class II amalgam or composite; maximum one slot preparation, and,
 - > Class III or IV composite
- Restoration can be performed on an interproximal lesion on one interproximal surface in an anterior tooth that does not connect with a second interproximal lesion which can be restored separately.
- Requires a case presentation for which the proposed treatment is appropriate for patient's medical and dental history, is in appropriate treatment sequence, and treatment consent is obtained.
- Requires patient management. Candidate must be familiar with patient's medical and dental history.
- Medical conditions must be managed appropriately.

PATIENT PARAMETERS

Class II – Any permanent posterior tooth

- Treatment needs to be performed in the sequence described in the treatment plan.
- More than one test procedure can be performed on a single tooth; teeth with multiple lesions may be restored at separate appointments.
- Caries as shown on either of the two required radiographic images of an unrestored proximal surface must extend to or beyond the dento-enamel junction.
- Tooth to be treated must be in occlusion.
- Must have an adjacent tooth to be able to restore a proximal contact; proximal surface of the dentition adjacent to the proposed restoration must be either natural tooth structure or a permanent restoration; provisional restorations or removable partial dentures are not acceptable adjacent surfaces.
- Tooth must be asymptomatic with no pulpal or periapical pathology; cannot be endodontically treated or in need of endodontic treatment.
- Tooth with bonded veneer is not acceptable.

Class III/IV – Any permanent anterior tooth

- Treatment needs to be performed in the sequence described in the treatment plan.
- Caries as shown on the required radiographic image of an unrestored proximal surface must extend to or beyond the dento-enamel junction.
- Carious lesions must involve the interproximal contact area.
- Must have an adjacent tooth to be able to restore a proximal contact; proximal surface of the dentition adjacent to the proposed restoration must be either natural tooth structure or a permanent restoration; provisional restorations or removable partial dentures are not acceptable adjacent surfaces.
- Tooth must be asymptomatic with no pulpal or periapical pathology; cannot be endodontically treated or in need of endodontic treatment.
- Approach must be appropriate for the tooth.
- Tooth with bonded veneer is not acceptable.

SCORING

Scoring points for direct restorations are defined as follows:

- A score of 0 is unacceptable; candidate exhibits a critical error
- A score of 1 is unacceptable; multiple major deviations that are correctable
- A score of 2 is unacceptable; one major deviation that is correctable
- A score of 3 is acceptable; minimum competence
- A score of 4 is adequate; less than optimal
- A score of 5 is optimal

ELEMENTS OF THE DIRECT RESTORATION PORTFOLIO

The Direct Restoration portfolio may include, but is not limited to the following:

- a) Documentation of the candidate's competency to perform a class II direct restoration on a tooth containing primary carious lesions to optimal form, function and esthetics using amalgam or composite restorative materials.

The case selection must be based on minimum direct restoration criteria for any permanent posterior tooth. The treatment performed should follow the sequence of the treatment plan(s). More than one procedure can be performed on a single tooth; teeth with multiple lesions may be restored at separate appointments. Each procedure may be considered a case. The tooth being restored must have caries that are evident on either of the two required radiographs.

The tooth involved in the restoration must have caries which penetrate the dento-enamel junction and must be in occlusion. Proximal caries must be in contact with at least one adjacent tooth, a natural tooth surface or a permanent restoration; provisional restorations or removal partial dentures are not acceptable adjacent surfaces. The tooth must be asymptomatic with no pulpal or periapical pathosis and cannot be endodontically treated or in need of endodontic treatment.

- b) Documentation of the candidate's competency to perform a class III/IV direct restoration on a tooth containing primary carious lesions to optimal forms, function and esthetics using composite restorative material. The case selected must be on any permanent anterior tooth and treatment needs to be performed in the sequence described in the treatment plan.

More than one procedure can be performed on a single tooth; teeth with multiple lesions may be restored at separate appointments. Each procedure may be considered a case. The tooth being restored must have caries that are evident on either of the two required radiographs. The tooth involved in the restoration must have caries which penetrate the dento-enamel junction.

The tooth to be restored must have an adjacent tooth to be able to restore a proximal contact. Proximal surface of the dentition adjacent to the proposed restoration must be natural tooth structure or a permanent restoration, provisional restorations or removable partial dentures are not acceptable adjacent surfaces. The tooth involved in the restoration must be asymptomatic with no pulpal or periapical pathosis and cannot be endodontically treated or in need of endodontic treatment. The lesion is not acceptable if it is in contact with circumferential decalcification. The approach must be appropriate for the tooth. Teeth with bonded veneers are not acceptable.

DIRECT RESTORATION SCORING CRITERIA

FACTOR 1: CASE PRESENTATION

5	4	3	2	1	0
<ul style="list-style-type: none"> • Obtains informed consent • Presents a comprehensive review of medical and dental history • Provides rationale for restorative procedure • Proposes initial design of preparation and restoration • Demonstrates full understanding of the procedure 	<ul style="list-style-type: none"> • Slight deviation from optimal case presentation 	<ul style="list-style-type: none"> • Moderate deviation from optimal case presentation 	<ul style="list-style-type: none"> • Major deviation from optimal case presentation 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal case presentation 	<ul style="list-style-type: none"> • Critical errors in assessing patient's medical and/or dental history • Unable to justify treatment • Proposed treatment would cause harm to patient • Proposed treatment not indicated • Misses critical factors in medical and/or dental review that affect treatment or patient well being

FACTOR 2: OUTLINE AND EXTENSIONS

5	4	3	2	1	0
<ul style="list-style-type: none"> • Optimal outline and extensions <u>such as:</u> <ul style="list-style-type: none"> > Smooth, flowing > Does not weaken tooth > Includes the lesion > Breaks proximal contacts as appropriate > Appropriate cavosurface angles > Optimal treatment of fissures > No damage to adjacent teeth > Optimal extension for caries/ > decalcification > Appropriate extension requests 	<ul style="list-style-type: none"> • Slight deviation(s) from optimal; minimal impact on treatment 	<ul style="list-style-type: none"> • Moderate, clinically acceptable deviation(s) from optimal; minimal impact on treatment 	<ul style="list-style-type: none"> • Major deviation from optimal <u>such as:</u> <ul style="list-style-type: none"> > Irregular outline > Outline weakens the tooth > Does not include the lesion > Contacts not broken where appropriate > Proximal extensions excessive > Inappropriate cavosurface angle(s) > Inappropriate treatment of fissures > Adjacent tooth requires major recontouring > Inappropriate extension requests 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal <u>including:</u> <ul style="list-style-type: none"> > Irregular outline > Outline weakens the tooth > Does not include the lesion > Contacts not broken where appropriate > Proximal extensions excessive > Inappropriate cavosurface angle(s) > Inappropriate treatment of fissures > Adjacent tooth requires major recontouring > Inappropriate extension requests 	<ul style="list-style-type: none"> • Critical errors in outline and extensions • Deviations from optimal that are irreversible and have a significant impact on treatment • Damage to adjacent tooth that requires restoration

FACTOR 3: INTERNAL FORM

5	4	3	2	1	0
<ul style="list-style-type: none"> • Optimal internal form <u>such as</u>: > Optimal pulpal and axial depth > Optimal wall relationships > Optimal axio-pulpal line angles > Optimal internal refinement > All previous restorative material removed > Optimal caries removal > Preparation is clean and free of fluids and/or debris > Appropriate liners and bases > Appropriate extension requests 	<ul style="list-style-type: none"> • Slight deviation(s) from optimal 	<ul style="list-style-type: none"> • Moderate, clinically acceptable deviation(s) from optimal 	<ul style="list-style-type: none"> • Major deviation from optimal <u>such as</u>: > Excessive or inadequate pulpal or axial depth > Inappropriate wall relationships > Inappropriate internal line angles > Rough or uneven internal features > Previous restorative material present > Inappropriate caries removal > Fluids and/or debris present > Inappropriate handling of liners and bases > Inappropriate extension requests 	<ul style="list-style-type: none"> • <u>Multiple</u>, major deviations from optimal <u>including</u>: > Excessive or inadequate pulpal or axial depth > Inappropriate wall relationships > Inappropriate internal line angles > Rough or uneven internal features > Previous restorative material present > Inappropriate caries removal > Fluids and/or debris present > Inappropriate handling of liners and bases > Inappropriate extension requests 	<ul style="list-style-type: none"> • Critical errors from optimal internal form • Noncarious pulp exposure

FACTOR 4: OPERATIVE ENVIRONMENT

5	4	3	2	1	0
<ul style="list-style-type: none"> • Soft tissue free of unnecessary damage • Proper patient comfort/pain management • Optimal isolation • Correct teeth isolated • Dam fully inverted • Clamp stable with no tissue damage • No leakage • Preparation can be accessed and visualized 	<ul style="list-style-type: none"> • Slight deviation(s) from optimal 	<ul style="list-style-type: none"> • Moderate, clinically acceptable deviation(s) from optimal 	<ul style="list-style-type: none"> • Major deviation from optimal <u>such as</u>: <ul style="list-style-type: none"> > Incorrect teeth isolated > Dam not inverted, causing leakage that may compromise the final restoration > Clamp is not stable or impinges on tissue > Preparation cannot be accessed or visualized to allow proper placement of restoration > Major tissue damage 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal <u>including</u>: <ul style="list-style-type: none"> > Incorrect teeth isolated > Dam not inverted, causing leakage that may compromise the final restoration > Clamp is not stable or impinges on tissue > Preparation cannot be accessed or visualized to allow proper placement of restoration > Major tissue damage 	<ul style="list-style-type: none"> • Critical errors from optimal in operative environment • Gross soft tissue damage • Gross lack of concern for patient comfort

FACTOR 5: ANATOMICAL FORM

5	4	3	2	1	0
<ul style="list-style-type: none"> • Optimal anatomic form <u>such as</u>: > Harmonious and consistent with adjacent tooth structure > Interproximal contour and shape are proper > Interproximal contact area and position are properly restored > Contact is closed > Height and shape of marginal ridge is appropriate 	<ul style="list-style-type: none"> • Slight deviation(s) from optimal 	<p>Moderate, clinically acceptable deviation(s) from optimal</p>	<ul style="list-style-type: none"> • Major deviation from optimal <u>such as</u>: > Inconsistent with adjacent tooth structure > Interproximal contour and shape are inappropriate > Height and shape of marginal ridge is inappropriate 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal <u>including</u>: > Inconsistent with adjacent tooth structure > Interproximal contour and shape are inappropriate > Height and shape of marginal ridge is inappropriate 	<ul style="list-style-type: none"> • Critical errors that require restoration to be redone

FACTOR 6: MARGINS

5	4	3	2	1	0
<ul style="list-style-type: none"> • Optimal margins • No deficiencies or excesses 	<ul style="list-style-type: none"> • Slight deviation(s) from optimal 	<ul style="list-style-type: none"> • Moderate, clinically acceptable deviation(s) from optimal 	<ul style="list-style-type: none"> • Major deviation from optimal <u>such as</u>: > Open margin, submarginal, and/or excess restorative material 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal 	<ul style="list-style-type: none"> • Critical errors that require restoration to be redone

FACTOR 7: FINISH AND FUNCTION

5	4	3	2	1	0
<ul style="list-style-type: none"> • Optimal finish and function <u>such as:</u> > Smooth with no pits, voids or irregularities in restoration > Occlusion is properly restored with no interferences > No damage to hard or soft tissue 	<ul style="list-style-type: none"> • Slight deviation(s) from optimal 	<p>Moderate, clinically acceptable deviation(s) from optimal</p>	<ul style="list-style-type: none"> • Major deviation from optimal <u>such as:</u> > Significant pits, voids or irregularities in the surfaces > Severe hyper-occlusion or hypo-occlusion > Moderate damage to hard or soft tissue 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal 	<ul style="list-style-type: none"> • Critical errors that require restoration to be redone • Procedure is not completed within allotted time • Unnecessary, gross damage to hard and soft tissue as related to finishing procedure

SECTION 10 – INDIRECT RESTORATION

PURPOSE

The competency examination for indirect restoration is designed to assess the candidate's independent ability to restore teeth requiring an indirect restoration to optimal form, function and esthetics with a full or partial coverage ceramic, metal or metal-ceramic indirect restoration.

MINIMUM CLINICAL EXPERIENCES

The documentation of indirect restorative clinical experiences will include a minimum of 14 restorations.

The restorations completed in the clinical experiences may be a combination of the following procedures:

- Inlays,
- Onlays,
- Crowns,
- Abutments,
- Pontics,
- Veneers,
- Cast posts,
- Overdenture copings, or,
- Dental implant restorations.

OVERVIEW

- Seven (7) scoring factors.
- One (1) indirect restoration which may be a combination of the following procedures:
 - > Ceramic restoration must be onlay or more extensive
 - > Partial gold restoration must be onlay or more extensive
 - > Metal ceramic restoration (PFM)
 - > Full gold restoration
- Requires a case presentation for which the proposed treatment is appropriate for patient's medical and dental history, is in appropriate treatment sequence, and treatment consent is obtained.

- Requires patient management; candidate must be familiar with the patient's medical and dental history.
- Medical conditions must be managed appropriately.

PATIENT PARAMETERS

- Treatment needs to be performed in the sequence described in the treatment plan.
- Tooth must be asymptomatic with no pulpal or periapical pathosis; cannot be in need of endodontic treatment.
- Tooth must be in occlusal contact with a natural tooth or a permanent restoration. Occlusion with a full or partial denture is not acceptable.
- The restoration must include at least one cusp.
- Must have an adjacent tooth to be able to restore a proximal contact; proximal surface of the tooth adjacent to the planned restoration must be either an enamel surface or a permanent restoration; temporary restorations or removable partial dentures are not acceptable adjacent surfaces.
- The candidate may not have performed any portion of the crown preparation in advance.
- Direct restorative materials which are placed to contribute to the retention and resistance form of the final restoration (buildups) may be completed ahead of time, if needed.
- Restoration must be completed on the same tooth and same patient by the same candidate.
- Validated lab or fabrication error will allow a second delivery attempt starting from a new impression or modification of the existing crown.

SCORING

Scoring points for indirect restoration is defined as follows:

- A score of 0 is unacceptable; candidate exhibits a critical error
- A score of 1 is unacceptable; multiple major deviations that are correctable
- A score of 2 is unacceptable; one major deviation that is correctable
- A score of 3 is acceptable; minimum competence
- A score of 4 is adequate; less than optimal
- A score of 5 is optimal

ELEMENTS OF THE INDIRECT RESTORATION PORTFOLIO

The indirect restoration portfolio may include, but is not limited to the following:

- a) Documentation of the candidate's competency to complete a ceramic onlay or more extensive indirect restorations. The treatment needs to be performed in the sequence in the treatment plan. The tooth must be asymptomatic with no pulpal or periapical pathosis and cannot be in need of endodontic treatment. The tooth selected for restoration, must have opposing occlusion that is stable. The tooth selected for restoration must have an adjacent tooth to be able to restore a proximal contact. The proximal surface of the tooth adjacent to the planned restoration must be either an enamel surface or a permanent restoration. Temporary restorations or removable partial dentures are not acceptable adjacent surfaces. The tooth selected must require an indirect restoration at least the size of the onlay or greater. The tooth selected cannot replace existing or temporary crowns. Buildups may be completed ahead of time, if needed. Teeth with cast post are not allowed. The restoration must be completed on the same tooth and same patient by the same candidate.
- b) Documentation of the candidate's competency to complete a partial gold restoration must be an onlay or more extensive indirect restoration. The treatment must be performed in the sequence of the treatment plan. The tooth must be asymptomatic with no pulpal or periapical pathosis; cannot be in need of endodontic treatment. The tooth selected for restoration must have opposing occlusion that is stable. The tooth selected for restoration must have an adjacent tooth to be able to restore a proximal contact. The proximal surface of the tooth adjacent to the planned restoration must be either an enamel surface or a permanent restoration. Temporary restorations or removable partial dentures are not acceptable adjacent surfaces. The tooth selected must require an indirect restoration at least the size of an onlay or greater. The tooth selected cannot replace existing or temporary crowns. Buildups may be completed ahead of time, if needed. Teeth with cast post are not allowed. The restoration must be completed on the same tooth and same patient by the same candidate.
- c) Documentation of the candidate's competency to perform a full gold restoration. The treatment must be performed in the sequence of the treatment plan. The tooth must be asymptomatic with no pulpal or periapical pathosis; cannot be in need of endodontic treatment. The tooth selected for restoration must have opposing occlusion that is stable. The tooth selected for restoration must have an adjacent tooth to be able to restore a proximal contact. The proximal surface of the tooth adjacent to the planned restoration must be either an enamel surface or a permanent restoration. Temporary restorations or removable partial dentures are not acceptable adjacent surfaces. The tooth selected must require an indirect restoration at least the size of an onlay or greater. The tooth selected cannot replace existing or temporary crowns. Buildups may be completed ahead

of time, if needed. Teeth with cast post are not allowed. The restoration must be completed on the same tooth and same patient by the same candidate.

- d) Documentation of the candidate's competency to perform a metal-ceramic restoration. The treatment must be performed in the sequence of the treatment plan. The tooth must be asymptomatic with no pulpal or periapical pathosis: cannot be in need of endodontic treatment. The tooth selected for restoration must have opposing occlusion that is stable. The tooth selected for restoration must have an adjacent tooth to be able to restore a proximal contact. The proximal surface of the tooth adjacent to the planned restorations must be either an enamel surface or a permanent restoration. Temporary restorations or removable partial dentures are not acceptable adjacent surfaces. The tooth selected must require an indirect restoration at least the size of an onlay or greater. The tooth selected cannot replace existing or temporary crowns. Buildups may be completed ahead of time, if needed. Teeth with cast post are not allowed. The restoration must be completed on the same tooth and same patient.
- e) A facial veneer is not acceptable documentation of the candidate's competency to perform indirect restorations.

INDIRECT RESTORATION SCORING CRITERIA

FACTOR 1: CASE PRESENTATION

5	4	3	2	1	0
<ul style="list-style-type: none"> • Obtains informed consent • Presents a comprehensive medical and dental review • Provides rationale for restorative procedure • Proposes initial design of restoration • Provides method for provisionalization • Demonstrates full understanding of the procedure • Sequencing of treatment follows standards of care 	<ul style="list-style-type: none"> • Slight deviations from optimal case presentation 	<ul style="list-style-type: none"> • Moderate deviations from optimal case presentation 	<ul style="list-style-type: none"> • Major deviation from optimal case presentation • Provides inappropriate justification for treatment • Sequencing of treatment does not follow standards of care 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal case presentation 	<ul style="list-style-type: none"> • Critical errors in assessing patient's medical and/or dental history • Unable to justify treatment • Proposed treatment would cause harm to patient • Proposed treatment not indicated • Misses critical factors in medical and dental review that affect treatment or patient well being

FACTOR 2: PREPARATION

5	4	3	2	1	0
<ul style="list-style-type: none"> • Meets all accepted criteria for optimal preparation: <ul style="list-style-type: none"> a) Occlusal /incisal reduction b) Axial reduction c) Finish lines d) Caries removal e) Pulpal protection f) Soft tissue management g) No damage to soft and hard tissues h) Resistance and retention i) Debridement 	<ul style="list-style-type: none"> • Slight deviations from optimal; minimal impact on treatment 	<ul style="list-style-type: none"> • Moderate, clinically acceptable deviations from optimal; minimal impact on treatment 	<ul style="list-style-type: none"> • Major deviation from optimal but correctable without significantly changing the procedure 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal preparation 	<ul style="list-style-type: none"> • Critical errors that are irreversible and have a significant impact on treatment • Critical errors that require major modifications of the proposed treatment <u>such as</u>: <ul style="list-style-type: none"> a) Onlay that must change to full crown b) Overextension requiring crown lengthening

FACTOR 3: IMPRESSION

5	4	3	2	1	0
<ul style="list-style-type: none"> • Achieves optimal, clinically acceptable impression achieved in one attempt <ul style="list-style-type: none"> a) Impression extends beyond finish lines b) Detail of preparation and adjacent teeth captured accurately c) Free of voids in critical areas d) No aspect of impression technique that would result in inaccuracy e) Interocclusal record is accurate, if needed 	<ul style="list-style-type: none"> • Achieves clinically acceptable impression in second attempt 	<ul style="list-style-type: none"> • Achieves clinically acceptable impression more than two attempts 	<ul style="list-style-type: none"> • Major deviation that require retaking impression <u>such as</u>: <ul style="list-style-type: none"> > Lack of recognition of unacceptable impression or interocclusal relationship 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal in impression <u>including</u>: <ul style="list-style-type: none"> > Lack of recognition of unacceptable impression or interocclusal relationship 	<ul style="list-style-type: none"> • failure to achieve a clinically acceptable impression after five (5) attempts • Critical errors in impression procedure cause unnecessary tissue damage that require corrective treatment procedures

FACTOR 4: PROVISIONAL

5	4	3	2	1	0
<ul style="list-style-type: none"> • Meets all accepted criteria for optimal provisional: <ul style="list-style-type: none"> a) Occlusal form and function b) Proximal contact c) Axial contours d) Marginal fit e) External surfaces smooth and polished without pits, voids, or debris f) Optimal internal adaptation g) Retention h) Esthetics 	<ul style="list-style-type: none"> • Slight deviations from optimal have minimal impact on treatment 	<ul style="list-style-type: none"> • Moderate deviations from accepted criteria have minimal impact on treatment 	<ul style="list-style-type: none"> • Major deviation from optimal that can be corrected <u>such as</u>: <ul style="list-style-type: none"> > Lack of recognition of major deviation that can be corrected 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations that have significant impact on treatment <u>including</u>: <ul style="list-style-type: none"> > Lack of recognition of major deviation that can be corrected 	<ul style="list-style-type: none"> • Critical errors that are clinically unacceptable

FACTOR 5: CANDIDATE EVALUATION OF LABORATORY WORK

5	4	3	2	1	0
<ul style="list-style-type: none"> • Verifies that restoration meets all accepted criteria • Verifies errors in restoration and proposes changes, if needed 	<ul style="list-style-type: none"> • Lack of recognition of slight deviations from accepted criteria and minimal impact on treatment 	<ul style="list-style-type: none"> • Lack of recognition of moderate deviations from accepted criteria with minimal impact on treatment 	<ul style="list-style-type: none"> • Lack of recognition of major deviation from optimal that can be corrected 	<ul style="list-style-type: none"> • Lack of recognition of <u>multiple</u> major deviations from optimal 	<ul style="list-style-type: none"> • Critical errors that require restoration to be redone

FACTOR 6: PRE-CEMENTATION

5	4	3	2	1	0
<ul style="list-style-type: none"> • Meets all accepted criteria for pre-cementation: <ol style="list-style-type: none"> a) Occlusal form and function b) Proximal contact c) Axial contours d) Marginal fit e) External surfaces smooth and polished without pits, voids, or debris f) Optimal internal adaptation g) Retention h) Esthetics i) Patient acceptance 	<ul style="list-style-type: none"> • Lack of recognition of slight deviations from accepted criteria and minimal impact on treatment 	<ul style="list-style-type: none"> • Lack of recognition of moderate deviations from accepted criteria with minimal impact on treatment 	<ul style="list-style-type: none"> • Lack of recognition of major deviation that can be corrected 	<ul style="list-style-type: none"> • Lack of recognition of <u>multiple</u> major deviations from optimal 	<ul style="list-style-type: none"> • Lack of recognition of critical errors which <u>cannot</u> be corrected

FACTOR 7: CEMENTATION AND FINISH

5	4	3	2	1	0
<ul style="list-style-type: none"> • Meets all accepted criteria for optimal cementation <ul style="list-style-type: none"> a) Occlusal form and function b) Proximal contact c) Axial contours d) Marginal fit e) External surfaces smooth and polished without pits, voids, or debris f) Optimal internal adaptation g) Retention h) Esthetics i) All excess cement removed j) No unnecessary tissue trauma k) Appropriate postoperative instructions 	<ul style="list-style-type: none"> • Slight deviations from optimal; minimal impact on treatment 	<ul style="list-style-type: none"> • Moderate deviations from accepted criteria; minimal impact on treatment 	<ul style="list-style-type: none"> • Major deviation from accepted that can be corrected 	<ul style="list-style-type: none"> • <u>Multiple</u> major deviations from optimal 	<ul style="list-style-type: none"> • Critical errors which require restoration to be redone • Procedure is not completed within allotted time • Unnecessary, gross damage to hard and soft tissue as related to finishing

SECTION 11 – REMOVABLE PROSTHODOTICS

PURPOSE

The competency examination for removable prosthodontics is designed to assess the candidate's ability to demonstrate clinical skills in all aspects of a prosthesis from diagnosis and treatment planning to delivery of the prosthetic device and post-insertion follow-up.

MINIMUM CLINICAL EXPERIENCES

The documentation of oral of removable prosthodontic clinical experiences shall include five (5) prostheses.

One of the five prostheses may be used as a Portfolio competency examination provided that it is completed in an independent manner with no faculty intervention.

A prosthesis is defined to include any of the following:

- Full denture,
- Partial denture (cast framework),
- Partial denture (acrylic base with distal extension replacing a minimum number of three posterior teeth),
- Immediate treatment denture, or,
- Overdenture retained by natural or dental implants.

OVERVIEW

- Twelve (12) scoring factors.
- One (1) of the following prosthetic treatments from start to finish on the same patient:
 - > Denture or overdenture for a single edentulous arch, or,
 - > Cast metal framework removable partial denture (RPD) for a single Kennedy Class I or Class II partially edentulous arch
- An immediate or interim denture.
- No patient sharing; cannot split patients between candidates
- Requires patient management. Candidate must be familiar with patient's medical and dental history.
- Medical conditions must be managed appropriately.
- Case complexity is not a criteria.

PATIENT PARAMETERS

Procedures may be performed on patients with supported soft tissue, implants or natural tooth retained overdentures.

SCORING

Scoring points for removable prosthodontics are defined as follows:

- A score of 1 is unacceptable with gross errors
- A score of 2 is unacceptable with major errors
- A score of 3 is minimum competence with moderate errors that do not compromise outcome
- A score of 4 is acceptable with minor errors that do not compromise outcome
- A score of 5 is optimal with no errors evident

ELEMENTS OF THE REMOVABLE PROSTHODONTICS PORTFOLIO

- a) Documentation the candidate developed a diagnosis, determined treatment options and prognosis for the patient to receive a removable prosthesis. The documentation may include, but is not limited to the following:
- Evidence the candidate obtained a patient history, (e.g. medical, dental and psychosocial).
 - Evaluation of the patient's chief complaint.
 - Radiographs and photographs of the patient.
 - Evidence the candidate performed a clinical examination, (e.g. hard/soft tissue charting, endodontic evaluation, occlusal examination, skeletal/jaw relationship, VDO, DR, MIP).
 - Evaluation of existing prosthesis and the patient's concerns.
 - Evidence the candidate obtained and mounted a diagnostic cast.
 - Evidence the candidate determined the complexity of the case based on ACP classifications.
 - Evidence the patient was presented with treatment plan options and assessment of the prognosis, (e.g. complete dentures, partial denture, overdenture, implant options, FPD).
 - Evidence the candidate analyzed the patient risks/benefits for the various treatment options.
 - Evidence the candidate exercised critical thinking and made evidence –based treatment decisions.
- b) Documentation of the candidate's competency to successfully restore edentulous spaces with removable prosthesis. The documentations may include but is not limited to the following:

- Evidence the candidate developed a diagnosis and treatment plan for the removable prosthesis.
 - Evidence the candidate obtained diagnostic casts.
 - Evidence the candidate performed diagnostic wax-up/survey framework designs.
 - Evidence the candidate performed an assessment to determine the need for pre-prosthetic surgery and made the necessary referral.
 - Evidence the candidate performed tooth modifications and/or survey crowns, when indicated.
 - Evidence the candidate obtained master impressions and casts.
 - Evidence the candidate obtained occlusal records.
 - Evidence the candidate performed a try-in and evaluated the trial dentures.
 - Evidence the candidate inserted the prosthesis and provided the patient with post-insertion care.
 - Documentation the candidate followed established standards of care in the restoration of the edentulous spaces, (e. g. informed consent, and infection control).
- c) Documentation of the candidate's competency to manage tooth loss transitions with immediate or transitional prostheses. The documentation may include, but is limited to the following:
- Evidence the candidate developed a diagnosis and treatment plan that identified teeth that could be salvaged and or teeth that needed extraction.
 - Evidence the candidate educated the patient regarding the healing process, denture experience, and future treatment need.
 - Evidence the candidate developed prosthetic phases which included surgical plans.
 - Evidence the candidate obtained casts (preliminary and final impressions).
 - Evidence the candidate obtained the occlusal records.
 - Evidence the candidate did try-ins and evaluated trial dentures.
 - Evidence the candidate competently managed and coordinated the surgical phase.
 - Evidence the candidate provided the patient post insertion care including adjustment, relines and patient counseling.
 - Documentation the candidate followed established standards of care in the restoration of the edentulous spaces, (e. g. informed consent, and infection control).
- d) Documentation of the candidate's competency to manage prosthetic problems. The documentation may include, but is not limited to the following:
- Evidence the candidate competently managed real or perceived patient problems.

- Evidence the candidate evaluated existing prosthesis.
 - Evidence the candidate performed uncomplicated repairs, relines, re-base, re-set or re-do, if needed.
 - Evidence the candidate made a determination if specialty referral was necessary.
 - Evidence the candidate obtained impressions/records/information for laboratory use.
 - Evidence the candidate competently communicated needed prosthetic procedure to laboratory technician.
 - Evidence the candidate inserted the prosthesis and provided the patient follow-up care.
 - Evidence the candidate performed in-office maintenance, (e.g. prosthesis cleaning, clasp tightening and occlusal adjustments).
- e) Documentation the candidate directed and evaluated the laboratory services for the prosthesis. The documentation may include, but is not limited to the following:
- Complete laboratory prescriptions sent to the dental technician.
 - Copies of all communications with the laboratory technicians.
 - Evaluations of the laboratory work product, (e.g. frameworks, processed dentures).

REMOVABLE PROSTHODONTICS SCORING CRITERIA

FACTOR 1: PATIENT EVALUATION AND DIAGNOSIS

5	4	3	2	1
<ul style="list-style-type: none"> Evaluation and diagnosis is comprehensive and discriminating Recognizes significant diagnostic implications of all findings 	<ul style="list-style-type: none"> Recognizes significant diagnostic implications but misses some findings that do NOT affect diagnosis 	<ul style="list-style-type: none"> Recognizes significant findings <u>but</u> there are errors in findings or judgment that do NOT compromise diagnosis 	<ul style="list-style-type: none"> Does NOT recognize significant findings or diagnostic implications Diagnosis is jeopardized 	<ul style="list-style-type: none"> <u>Gross</u> errors in evaluation or judgment <u>Gross</u> errors in diagnosis

FACTOR 2: TREATMENT PLAN AND SEQUENCING

5	4	3	2	1
<ul style="list-style-type: none"> Presents/ formulates all treatment options and understands clinical nuances of each option Presents comprehensive treatment plan based on clinical evidence, patient history and direct examination Performs risk-based analysis to present appropriate treatment options and prognosis Demonstrates critical thinking as evidenced in steps in treatment plan No errors in planning and sequencing 	<ul style="list-style-type: none"> Presents/formulates most treatment options and understands rationale of each option Treatment plan is appropriate some contributing factors NOT considered <u>Minor</u> errors that do NOT affect planning and sequencing 	<ul style="list-style-type: none"> Presents/formulates appropriate treatment options with less than ideal understanding of chief complaint, diagnosis, and prognosis <u>Moderate</u> errors that do NOT compromise planning and sequencing 	<ul style="list-style-type: none"> Does NOT address patient's chief complaint Treatment plan NOT based on diagnosis <u>Major</u> errors in evidenced based, critical thinking, risk-based, and prognostic assessment Treatment sequence inappropriate 	<ul style="list-style-type: none"> Treatment plan NOT based on diagnostic findings or prognostic information Treatment plan grossly inadequate Treatment sequence grossly inappropriate

FACTOR 3: PRELIMINARY IMPRESSIONS

5	4	3	2	1
<ul style="list-style-type: none"> Perform and recognize adequate capture of anatomy; free of distortions and voids 	<ul style="list-style-type: none"> Performs impression with <u>minor</u> errors that do NOT affect final outcome 	<ul style="list-style-type: none"> Performs impression with <u>moderate</u> errors that do NOT compromise final outcome 	<ul style="list-style-type: none"> Performs impression with <u>major</u> errors, <u>or</u> fails to recognize that final outcome is compromised 	<ul style="list-style-type: none"> Inadequate capture of anatomy or gross distortion/voids Fails to recognize that subsequent steps are impossible

FACTOR 4: RPD DESIGN (IF APPLICABLE)

5	4	3	2	1
<ul style="list-style-type: none"> Design demonstrates understanding of biomechanical and esthetic principles Casts are surveyed accurately Design is drawn with detail 	<ul style="list-style-type: none"> Design demonstrates understanding of biomechanical and esthetic principles with <u>minor</u> errors Minor errors in cast survey and design 	<ul style="list-style-type: none"> Design is functional but includes rests, clasp assembly or major connector that are NOT first choices <u>Moderate</u> errors in survey and design Moderate errors in understanding of RPD design principles 	<ul style="list-style-type: none"> Demonstrates lack of understanding of biomechanical or esthetic principles <u>Major</u> errors in cast survey and design 	<ul style="list-style-type: none"> Design is grossly inappropriate Inaccurate survey Illegible drawing

FACTOR 5: TOOTH MODIFICATION (IF APPLICABLE)

5	4	3	2	1
<ul style="list-style-type: none"> • Parallel guiding planes • Optimal size and location of rest preparations • Conservative recontouring of abutment teeth for optimal location of clasp and to optimize occlusal plane • Survey crowns as needed 	<ul style="list-style-type: none"> • <u>Minor</u> deficiencies in tooth modification; RPD fit and service unaffected 	<ul style="list-style-type: none"> • <u>Moderate</u> deficiencies in tooth modifications but no compromise in RPD fit and service 	<ul style="list-style-type: none"> • <u>Major</u> errors in tooth modifications leading to compromised RPD fit and service • Tooth modifications may require restorations 	<ul style="list-style-type: none"> • RPD abutment teeth are grossly over-prepared

FACTOR 6: BORDER MOLDING AND FINAL IMPRESSIONS

5	4	3	2	1
<ul style="list-style-type: none"> Obtain optimal vestibular extension and peripheral seal Perform and recognize adequate capture of anatomy Impression free of distortions/voids 	<ul style="list-style-type: none"> Border molding and/or impression have <u>minor</u> errors that do NOT affect final outcome 	<ul style="list-style-type: none"> Border molding and/or impression have <u>moderate</u> deviations that do NOT compromise final outcome 	<ul style="list-style-type: none"> Border molding and/or impression have <u>major</u> errors that affect final outcome 	<ul style="list-style-type: none"> Border molding and/or impression do NOT adequately capture of anatomy or gross distortion/voids so that final outcome impossible

FACTOR 7: FRAMEWORK TRY-IN (IF APPLICABLE)

5	4	3	2	1
<ul style="list-style-type: none"> Perform and recognize functional and occlusal adjustment Complete seating of framework is achieved Determine sequence for establishing denture-base support 	<ul style="list-style-type: none"> <u>Minor</u> deficiencies in ability to recognize and correct minor discrepancies in framework fit but do NOT affect RPD service 	<ul style="list-style-type: none"> <u>Moderate</u> deficiencies in ability to recognize or correct discrepancies in framework fit but no significant compromise to RPD service 	<ul style="list-style-type: none"> <u>Major</u> errors in framework fit NOT recognized Errors in judgment regarding sequence of correction 	<ul style="list-style-type: none"> <u>Gross</u> errors in framework fit NOT recognized Unable to determine sequence of correction

FACTOR 8: JAW RELATION RECORDS

5	4	3	2	1
<ul style="list-style-type: none"> • Smooth record bases with appropriate peripheral extensions/ thickness • Smoothly contoured wax rim establishes esthetic parameters • Vertical dimension is physiologically appropriate • Accurately captures centric relation • Relates opposing casts without interference 	<ul style="list-style-type: none"> • <u>Minor</u> discrepancies in jaw relation records that do NOT adversely affect prosthetic service 	<ul style="list-style-type: none"> • <u>Moderate</u> discrepancies in jaw relation records that do NOT compromise prosthetic service; records do NOT require repeating 	<ul style="list-style-type: none"> • <u>Major</u> errors in jaw relation records that adversely affect prosthetic service; records should be redone 	<ul style="list-style-type: none"> • <u>Gross</u> errors in jaw relation records with poor understanding and judgment; records should be redone

FACTOR 9: TRIAL DENTURES

5	4	3	2	1
<ul style="list-style-type: none"> • Recognizes optimal <u>esthetic</u> (midline, incisal length, tooth mold and shade, arrangement), <u>occlusal</u> (MIP=CR, VDO < VDR, bilateral posterior contact), <u>speech and contour</u> aspects of trial dentures • Deviations from the optimal are corrected or managed appropriately 	<ul style="list-style-type: none"> • <u>Minor</u> deficiencies in ability to recognize and correct discrepancies in esthetics, vertical dimension, occlusion, phonetics and contour 	<ul style="list-style-type: none"> • <u>Moderate</u> deficiencies in ability to recognize or correct discrepancies in esthetics, vertical dimension, occlusion and phonetics which do NOT compromise final outcome 	<ul style="list-style-type: none"> • <u>Major</u> errors in ability to recognize or correct discrepancies in esthetics, vertical dimension, occlusion and phonetics which adversely affect final outcome 	<ul style="list-style-type: none"> • Demonstrates inability to recognize or correct gross errors which will result in failure of final outcome

FACTOR 10: INSERTION OF REMOVABLE PROSTHESIS

5	4	3	2	1
<ul style="list-style-type: none"> • Optimize definitive prosthesis, recognizing errors and correcting if necessary, including the following: <ul style="list-style-type: none"> > Tissue fit > Prosthetic support, stability and retention > RPD extension base tissue support > Vestibular extension and bulk > Occlusion; clinical remount required > Phonetics > Contours and polish > Patient home care instructions 	<ul style="list-style-type: none"> • <u>Minor</u> discrepancies in judgment and/or performance of optimizing prosthesis fit and function; no adverse affect on prosthesis service 	<ul style="list-style-type: none"> • <u>Moderate</u> discrepancies in judgment and performance of optimizing prosthesis fit/function; no compromise on prosthesis service 	<ul style="list-style-type: none"> • <u>Major</u> errors in judgment and performance of optimizing prosthesis fit/function • Prosthesis service adversely affected; may require significant correction of prosthesis 	<ul style="list-style-type: none"> • <u>Gross</u> errors in judgment and performance results in failure of prosthesis with no possibility to correct; prosthesis must be redone

FACTOR 11: POST-INSERTION (1 WEEK)

5	4	3	2	1
<ul style="list-style-type: none"> • Perform an appropriate recall sequence to evaluate and diagnose prosthesis problem and make adjustments until patient is satisfied with fit, form and function of new prosthesis • Enroll patient in maintenance program • Demonstrate familiarity with common prosthesis complications and solutions 	<ul style="list-style-type: none"> • <u>Minor</u> discrepancies in ability to evaluate and solve prosthesis problems; no affect on patient comfort and function 	<ul style="list-style-type: none"> • <u>Moderate</u> discrepancies in ability to evaluate and solve prosthesis problems that do NOT compromise patient comfort and function 	<ul style="list-style-type: none"> • <u>Major</u> errors in ability to evaluate and solve prosthesis problems that adversely affect patient comfort and function 	<ul style="list-style-type: none"> • <u>Gross</u> errors in ability to evaluate and solve prosthesis problems • Patient confidence is compromised

FACTOR 12: LABORATORY SERVICES FOR PROSTHESIS

5	4	3	2	1
<ul style="list-style-type: none"> • Prescription clearly communicates desired laboratory work and materials • Complies with infection control protocols between clinic and laboratory environments • Accurately evaluates laboratory work products 	<ul style="list-style-type: none"> • Prescription, or management of laboratory services has <u>minor</u> errors that do NOT adversely affect prosthesis 	<ul style="list-style-type: none"> • Prescription, or management of laboratory services has <u>moderate</u> discrepancies that do NOT compromise prosthesis 	<ul style="list-style-type: none"> • Prescription, or management of laboratory services, has <u>major</u> errors that adversely affect prosthesis 	<ul style="list-style-type: none"> • Prescription, or management of laboratory services has <u>gross</u> errors that result in prosthesis failure

SECTION 12 – ENDODONTICS

PURPOSE

The competency examination for endodontics is designed to assess the candidate's independent ability to demonstrate clinical skills in all aspects of a case from diagnosis to completion of conventional nonsurgical endodontic interventions.

MINIMUM CLINICAL EXPERIENCES

- Ten (10) scoring factors.
- One (1) clinical case.
- Requires patient management; therefore, candidate must be familiar with the patient's medical and dental history.
- Medical conditions must be managed appropriately.

OVERVIEW

The documentation of endodontic clinical experiences on patients must include five (5) canals or any combination of canals in three separate teeth.

PATIENT PARAMETERS

- Any tooth to completion by the same candidate clinician on the same patient.
- Completed case is defined as a tooth with an acceptable and durable coronal seal.

SCORING

Scoring points for endodontics are defined as follows:

- A score of 0 is unacceptable; candidate exhibits a critical error
- A score of 1 is unacceptable; major deviations that are correctable
- A score of 2 is acceptable; minimum competence
- A score of 3 is adequate; less than optimal
- A score of 4 is optimal

ELEMENTS OF THE ENDODONTICS PORTFOLIO

The Endodontics portfolio may include, but is not limited to the following:

- a) Documentation the candidate applied case selection criteria for endodontic cases. The Portfolio must contain evidence the cases selected met American Association of Endodontics case criteria for minimum difficulty such that treated teeth have uncomplicated morphologies, have signs and symptoms of swelling and acute inflammation and have not had previous complete or partial endodontic therapy.
 - Candidates determine a diagnostic need for endodontic therapy.
 - Candidates performed charting and diagnostic testing.
 - Candidates took and interpreted radiographs of the patient oral condition.
 - Candidates made a pulpal diagnosis within approved parameters. Evidence the candidate considered the following in his/her determination the pulpal diagnosis was within approved parameters (within normal limits, reversible pulpitis, irreversible pulpitis, necrotic pulp).
 - Candidates make a periapical diagnosis within approved parameters. Evidence the candidate considered the following in his/her determination the periapical diagnosis was within approved parameters (within normal limits, asymptomatic apical periodontitis, symptomatic apical periodontitis, acute apical abscess, chronic apical abscess).
 - Evidence the candidate developed an endodontic treatment plan that included trauma treatment, management of emergencies and referrals when indicated.
- b) Documentation the candidate performed pretreatment preparation for endodontic treatment. Documentation may include, but is not limited to the following:
 - Evidence the candidate competently managed the patient's pain.
 - Evidence the candidate removed caries and failed restorations.
 - Evidence the candidate determined the tooth restorability.
 - Evidence the candidate achieved isolation.
- c) The candidate competently performed access opening. Documentation may include, but is not limited to the following:
 - Evidence the candidate created the indicated outline form.
 - Evidence the candidate created straight line access.
 - Evidence the candidate maintained structural integrity.
 - Evidence the candidate completed un-roofing of pulp chamber.
 - Evidence the candidate identified all canal systems.

- d) Documentation the candidate performed proper cleaning and shaping techniques. Documentation may include, but is not limited to the following:
- Evidence the candidate maintained canal integrity.
 - Evidence the candidate preserved canal shape and flow.
 - Evidence the candidate applied protocols for establishing working length.
 - Evidence the candidate managed apical control.
 - Evidence the candidate applied disinfection protocols.
- e) Documentation the candidate performed proper obturation protocols. Documentation may include, but is not limited to evidence the candidate applied obturation protocols, including selection and fitting of master cone, determination of canal condition before obturation, and verification of sealer consistency and adequacy of coating.
- f) Documentation the candidate demonstrated proper length control of obturation, including achievement of dense obturation of filling material, obturation achieved to a clinically appropriate coronal height.
- g) Documentation the candidate competently completed the endodontic case including evidence that the candidate achieved coronal seal to prevent re-contamination and the candidate created diagnostic, radiographic and narrative documentation.
- h) Documentation the candidate provided recommendations for post-endodontic treatment, including evidence that the candidate recommended final restoration alternatives and provided the patient with recommendations for outcome assessment and follow-up.

ENDODONTICS SCORING CRITERIA

FACTOR 1: PRETREATMENT CLINICAL TESTING AND RADIOGRAPHIC IMAGING

4	3	2	1	0
<ul style="list-style-type: none"> Clinical tests and radiographic imaging completed and recorded accurately Radiographic images are of diagnostic quality 	<ul style="list-style-type: none"> Clinical tests and radiographic imaging completed and recorded accurately with minor discrepancies 	<ul style="list-style-type: none"> Some clinical tests and radiographic images are lacking <u>but</u> diagnosis can be determined 	<ul style="list-style-type: none"> Some clinical tests and radiographic images are lacking <u>and</u> diagnosis is questionable 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Clinical tests and radiographic images are lacking and diagnosis CANNOT be determined Radiographic images are missing or are NOT of diagnostic quality

FACTOR 2: ENDODONTIC DIAGNOSIS

4	3	2	1	0
<ul style="list-style-type: none"> Establishes correct pulpal and periapical diagnosis with accurate interpretation of clinical tests and radiographic images 	<ul style="list-style-type: none"> Establishes correct pulpal and periapical diagnosis with accurate interpretation, <u>but</u> missing <u>one</u> clinical test and/or radiographic image 	<ul style="list-style-type: none"> Establishes correct pulpal and periapical diagnosis with adequate interpretation, <u>but</u> missing <u>multiple</u> clinical tests and radiographic images that do NOT impact diagnosis 	<ul style="list-style-type: none"> Establishes inaccurate pulpal or periapical diagnosis, <u>and</u> missing <u>multiple</u> clinical tests and radiographic images that impact diagnosis 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Demonstrates lack of understanding of endodontic diagnosis No clinical tests were done

FACTOR 3: ENDODONTIC TREATMENT PLAN

4	3	2	1	0
<ul style="list-style-type: none"> • Prognosis of treatment outcomes determined • Comprehensive evaluation of medical and dental history • Selects appropriate treatments based on clinical evidence • Understands complexities of the case such that all treatment risks identified • Informed consent obtained including alternative treatments 	<ul style="list-style-type: none"> • Prognosis of treatment outcomes determined <u>and</u> adequate evaluation of medical and dental history • Selects appropriate treatment(s) • Significant treatment risks identified • Informed consent obtained 	<ul style="list-style-type: none"> • Prognosis of treatment outcomes determined <u>and</u> minimal evaluation of <u>one</u> of the following: <ul style="list-style-type: none"> > Medical or dental history > Appropriate treatment(s) selected, > Most treatment risks identified, > Informed consent obtained 	<ul style="list-style-type: none"> • Prognosis of treatment outcomes unclear • Inadequate evaluation of medical and dental history despite appropriate treatments selected • Key treatment risks NOT identified 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Demonstrates lack of evaluation of relevant medical and dental history • Inappropriate treatment planning • No treatment risks identified • No informed consent obtained • Demonstrates inappropriate case selection • Prognosis of treatment outcomes NOT determined

FACTOR 4: ANESTHESIA AND PAIN CONTROL

4	3	2	1	0
<ul style="list-style-type: none"> • Thorough knowledge of technique and materials used • Monitors vital signs and patient response throughout anesthesia • Anesthesia administration effective 	<ul style="list-style-type: none"> • Thorough knowledge of technique • Profound anesthesia achieved • Monitors patient response throughout anesthesia 	<ul style="list-style-type: none"> • Can proceed with treatment without faculty assistance • Adequate anesthesia achieved 	<ul style="list-style-type: none"> • Elements of anesthesia or pain control absent <u>but</u> patient care NOT compromised 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Incorrect anesthetic technique • Inadequate pain control and patient care is compromised • Requires faculty assistance

FACTOR 5: CARIES REMOVAL, REMOVAL OF FAILING RESTORATIONS, EVALUATION OF RESTORABILITY, SITE ISOLATION

4	3	2	1	0
<ul style="list-style-type: none"> • Complete removal of visible caries • Removal of failing restoration • Establishes complete structural restorability • Achieves complete isolation with rubber dam 	<ul style="list-style-type: none"> • No visible caries <u>and</u> failing restorations removed • Establishes significant aspects of structural restorability <u>and</u> achieves effective isolation with rubber dam 	<ul style="list-style-type: none"> • No visible caries present • Establishes likely restorability <u>and</u> achieves adequate isolation with rubber dam 	<ul style="list-style-type: none"> • Caries removal compromised that potentially impacts procedure • Compromised coronal seal 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Gross visible caries • Failing restoration present • Nonrestorable excluding medical indications • Ineffective isolation

FACTOR 6: ACCESS OPENING

4	3	2	1	0
<ul style="list-style-type: none"> • Optimum outline and access form with no obstructions • All canals identified • Roof and pulp horns removed 	<ul style="list-style-type: none"> • Slight underextension of outline form but walls smooth <u>but</u> all canals identified <u>and</u> roof and pulp horns removed 	<ul style="list-style-type: none"> • Moderate under- or overextension of outline form, minor irregularities for wall smoothness <u>but</u> all canals identified <u>and</u> roof and pulp horns removed 	<ul style="list-style-type: none"> • Crown integrity compromised by overextension but tooth remains restorable • All canals identified <u>but</u> minor roof and pulp horns remain 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Tooth is NOT restorable after access procedure or perforation • Structural compromise • Canal(s) missed or unidentified

FACTOR 7: CANAL PREPARATION TECHNIQUE

4	3	2	1	0
<ul style="list-style-type: none"> • Optimum canal length determination and preparation within 0.5-1.0 mm of radiographic apex • Maintenance of original canal position and integrity 	<ul style="list-style-type: none"> • Adequate canal length determination and preparation within 1.5 mm short of radiographic apex • Mild deviations of original canal shape 	<ul style="list-style-type: none"> • Acceptable canal length determination and preparation within 2 mm short of working length • Moderate deviations of original canal shape 	<ul style="list-style-type: none"> • Canal length and preparation shorter than original working length • Canal length > 2 mm short or 1 mm long of radiographic apex • Severe deviations of original canal shape but treatable • Separated instrument that does NOT prevent canal preparation 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Working length determination > 2 mm short or long of radiographic apex • Sodium hypochlorite accident • Canal perforated or NOT treatable • Separated instrument preventing canal preparation

FACTOR 8: MASTER CONE FIT

4	3	2	1	0
<ul style="list-style-type: none"> • Optimum cone fit and length verified within 0.5-1.0 mm of radiographic apex • Maintenance of canal position and integrity as demonstrated in cone fit 	<ul style="list-style-type: none"> • Adequate cone fit and length verified within 1.5 mm short of radiographic apex • Mild deviations of original canal shape 	<ul style="list-style-type: none"> • Acceptable cone fit and length verified within 2 mm short radiographic apex • Moderate deviations of original canal shape • Achieves tugback before lateral obturation 	<ul style="list-style-type: none"> • Cone length determination > 2 mm short or long from radiographic apex • Cone fit > 2 mm short or > 1 mm long of radiographic apex 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Master cone too small or too large and/or cone fit >2 mm short or long of radiographic apex

FACTOR 9: OBTURATION TECHNIQUE

4	3	2	1	0
<ul style="list-style-type: none"> • Achieves dense fill within 0.5-1.0 mm short of radiographic apex • None or minor overextension of sealer • No solid core material overextended 	<ul style="list-style-type: none"> • Achieves dense fill within the apical two-thirds and less than 1.5 mm short of radiographic apex • Less than 1 mm of sealer extruded 	<ul style="list-style-type: none"> • Achieves dense fill in apical third without voids • Solid core material 1.5- 2.0 mm short or 1 mm long of radiographic apex • 1-2 mm of sealer extruded 	<ul style="list-style-type: none"> • Apical third has slight to moderate voids • Solid core material 2-3 mm short or 1-2 mm long • More than 2 mm of sealer extruded 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Solid core material greater than 3 mm short or greater than 2 mm long of radiographic apex and/or significant voids throughout fill

FACTOR 10: COMPLETION OF CASE

4	3	2	1	0
<ul style="list-style-type: none"> • Optimum coronal seal placed prior to permanent restoration • Optimum evidence of documentation; e.g., radiographs, clinical notes, assessment of outcomes • Evidence of comprehensive and inclusive post-operative instructions 	<ul style="list-style-type: none"> • Effective coronal seal placed prior to permanent restoration • Thorough evidence of documentation; e.g., radiographs, clinical notes, assessment of outcomes <u>and</u> evidence of post-operative instructions 	<ul style="list-style-type: none"> • Acceptable durable coronal seal placed • Acceptable documentation; e.g., radiographs, clinical notes, assessment of outcomes <u>and</u> evidence of post-operative instructions 	<ul style="list-style-type: none"> • Acceptable coronal seal placed with limited longevity • Evidence of incomplete documentation • Evidence of incomplete post-operative instructions 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Poor coronal seal • Prognosis likely impacted by iatrogenic treatment factors • Improper or no documentation • No evidence of post-operative instruction

SECTION 13 – PERIODONTICS

PURPOSE

The competency examination for periodontics is designed to assess the candidate's ability to demonstrate clinical skills in all aspects of a case from treatment planning to patient management.

MINIMUM CLINICAL EXPERIENCES

The documentation of periodontal clinical experiences shall include 25 cases. A periodontal experience may include, but is not limited to:

- An adult prophylaxis,
- Treatment of periodontal disease such as scaling and root planning,
- Any periodontal surgical procedure, and,
- Assisting on a periodontal surgical procedure when performed by a faculty or an advanced dental education candidate in periodontics

The combined clinical periodontal experience must include a minimum of five (5) quadrants of scaling and root planing procedures.

OVERVIEW

- Nine (9) scoring factors.
- One (1) case to be scored in three parts:
 - Part A. Review medical and dental history, radiographic findings, comprehensive periodontal data collection, evaluate periodontal etiology/risk factors, comprehensive periodontal diagnosis, treatment plan
 - Part B. Calculus detection, effectiveness of calculus removal
 - Part C. Periodontal re-evaluation
- Ideally, all three parts are to be performed on the same patient.
- In the event that the patient does not return for periodontal re-evaluation, Part C may be performed on a different patient.

PATIENT PARAMETERS

- a) Examination, diagnosis and treatment planning
 - Minimum twenty (20) natural teeth with at least 4 molars.

- At least one probing depth of 5 mm or greater must be present on at least four (4) of the teeth, excluding third molars, with at least two of these teeth with clinical attachment loss of 2 mm or greater.
 - Full mouth assessment or examination.
 - No previous periodontal treatment at this institution, and no nonsurgical or surgical treatment within past 6 months.
- b) Calculus detection and periodontal instrumentation (scaling and root planing)
- Minimum of six (6) natural teeth in one quadrant, with at least two (2) adjacent posterior teeth in contact, one of which must be a molar.
 - Third molars can be used but they must be fully erupted.
 - At least one probing depth of 5 mm or greater must be present on at least two (2) of the teeth that require scaling and root planing.
 - Minimum of six (6) surfaces of clinically demonstrable subgingival calculus must be present in one or two quadrants. Readily clinically demonstrable calculus is defined as easily explorer detectable, heavy ledges. At least four (4) surfaces of the subgingival calculus must be on posterior teeth. Each tooth is divided into four surfaces for qualifying calculus: mesial, distal, facial, and lingual.
If additional teeth are needed to obtain the required calculus and pocket depths two quadrants may be used.
- c) Re-evaluation
- Candidate must be able to demonstrate a thorough knowledge of the case.
 - Candidate must perform at least two (2) quadrants of scaling and root planing on the patient being reevaluated.
 - Candidate must perform at least two documented oral hygiene care (OHC) instructions with the patient being reevaluated 4-6 weeks after scaling and root planing is completed. The scaling and root planing should have been completed within an interval of 6 weeks or less.
 - Minimum twenty (20) natural teeth with at least four (4) molars
 - Baseline probing depth of at least 5 mm on at least four (4) of the teeth, excluding third molars.

SCORING

Scoring points for periodontics are defined as follows:

- A score of 0 is unacceptable; candidate exhibits a critical error
- A score of 1 is unacceptable; major deviations that are correctable
- A score of 2 is acceptable; minimum competence
- A score of 3 is adequate; less than optimal
- A score of 4 is optimal

ELEMENTS OF THE PERIODONTICS PORTFOLIO

- a) Documentation the candidate performed a comprehensive periodontal examination. The comprehensive periodontal examination may include, but is not limited to the following:
- (1) Evidence the candidate reviewed the patient's medical and dental history.
 - (2) Evidence the candidate evaluated the patient's radiographs.
 - (3) Evidence the candidate performed extra- and intra-oral examinations of the patient.
 - (4) Evidence the candidate performed comprehensive periodontal data collection.
 - Evidence the candidate evaluated the patient's plaque index, probing depths, bleeding on probing, suppurations, cemento-enamel junction to the gingival margin (CEJ-GM), clinical attachment level tooth mobility and furcations
 - Evidence the candidate performed an occlusal assessment
- b) Documentation the candidate diagnosed and developed a periodontal treatment plan that documents the following:
- (1) The candidate determined the periodontal diagnosis.
 - (2) The candidate formulated an initial periodontal treatment plan that demonstrated the candidate:
 - Determined to treat or refer the patient.
 - Discussed with patient the etiology, periodontal disease, benefits of treatment, consequences of no treatment, specific risk factors, and patient-specific oral hygiene instructions.
 - Determined non-surgical periodontal therapy.
 - Determined need for re-evaluation.
 - Determined recall interval.
- c) Documentation the candidate performed nonsurgical periodontal therapy that he/she:
- (1) Detected supra- and subgingival calculus
 - (2) Performed periodontal instrumentation:
 - Removed calculus
 - Removed plaque
 - Removed stains
 - (3) Demonstrated that the candidate did not inflict excessive soft tissue trauma
 - (4) Demonstrated that the candidate provided the patient with anesthesia

d) Documentation the candidate performed periodontal re-evaluation

- (1) Evidence the candidate evaluated effectiveness of oral hygiene
- (2) Evidence the candidate assessed periodontal outcomes:
 - Reviewed the medical and dental history
 - Reviewed the patient's radiographs
 - Performed comprehensive periodontal data collections (e. g. , evaluation of plaque index, probing depths, bleeding on probing, suppurations, cemento-enamel junction to the gingival margin (CEJ-GM), clinical attachment level, furcations, and tooth mobility
- (3) Evidence the candidate discussed with the patient his/her periodontal status as compared to the baseline, patient-specific oral hygiene instructions and modifications of specific risk factors
- (4) Evidence the candidate determined further periodontal needs including need for referral to a periodontist and periodontal surgery.
- (5) Evidence the candidate established a recall interval for periodontal treatment.

PERIODONTICS SCORING CRITERIA

FACTOR 1: REVIEW MEDICAL AND DENTAL HISTORY (Part A)

4	3	2	1	0
<ul style="list-style-type: none"> • Demonstrates complete knowledge and understanding of implications to dental care • Provides clear presentation of case 	<ul style="list-style-type: none"> • Demonstrates complete understanding of implications to dental care <u>but</u> presentation could be improved 	<ul style="list-style-type: none"> • Recognizes significant findings • Misses some information <u>but</u> minimal impact on patient care 	<ul style="list-style-type: none"> • Recognizes medical conditions <u>but</u> fails to place in context of dental care • Unaware of medications or required precautions for dental appointment • Lack of information compromises patient care 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Lacks current information • Endangers patient • Does NOT include vital signs • Leaves questions regarding medical or dental history unanswered • Does NOT identify need for medical consult

FACTOR 2: RADIOGRAPHIC FINDINGS (Part A)

4	3	2	1	0
<ul style="list-style-type: none"> • Identifies and interprets all radiographic findings 	<ul style="list-style-type: none"> • Identifies and interprets significant radiographic findings 	<ul style="list-style-type: none"> • Interprets radiographic findings with minor deviations that do NOT substantially alter treatment 	<ul style="list-style-type: none"> • Misses significant radiographic findings 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Grossly misinterprets radiographic findings • Fails to identify non-diagnostic radiographs • Presents with outdated radiographs

FACTOR 3: COMPREHENSIVE PERIODONTAL DATA COLLECTION (Part A - applies to one quadrant selected by examiner)

4	3	2	1	0
<ul style="list-style-type: none"> Provides accurate assessment of all parameters in quadrant 	<ul style="list-style-type: none"> Deviations of pocket depth up to 1 mm Correctly identifies all furcations Correctly identifies all tooth mobility Correctly identifies gingival recession Correctly identifies areas with no attached gingiva 	<ul style="list-style-type: none"> Not more than <u>one</u> deviation of 2 mm or more in pocket depth Correctly identifies Class II or III furcations involvement Incorrectly identifies tooth mobility by one step in no more than <u>one</u> tooth Over/underestimates gingival recession by ≤ 1 mm on any surface Recognizes concept of clinical attachment level and differentiate from probing pocket depth 	<ul style="list-style-type: none"> <u>More than one deviation</u> of 2 mm or more in pocket depth Fails to correctly identify Class II or III furcations involvement Fails to identify areas with no attached gingiva Overestimates Class 0 and 1 furcations Over/underestimates tooth mobility by two steps on any tooth Fails to correctly identify Grade 2 or 3 mobility Over/underestimates gingival recession by more than 2 mm on any surface Performs incomplete periodontal examination Fails to recognize concept of clinical attachment level and differentiate from probing pocket depth 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Performs periodontal examination which has no diagnostic value Provides inaccurate assessment of key parameters

FACTOR 4: EVALUATE PERIODONTAL ETIOLOGY/RISK FACTORS (Part A)

4	3	2	1	0
<ul style="list-style-type: none"> Identifies all systemic, local etiologic and risk factors 	<ul style="list-style-type: none"> Misses <u>one</u> risk factor 	<ul style="list-style-type: none"> Misses <u>two</u> risk factors <u>but</u> treatment is NOT substantially impacted 	<ul style="list-style-type: none"> Misses risk factors which compromise treatment planning and patient care 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Fails to identify all risk factors

FACTOR 5: COMPREHENSIVE PERIODONTAL DIAGNOSIS (Part A)

4	3	2	1	0
<ul style="list-style-type: none"> Provides accurate and complete diagnosis based on comprehensive clinical examination and findings Demonstrates comprehensive understanding of periodontal diagnosis 	<ul style="list-style-type: none"> Provides accurate and complete diagnosis based on clinical examination and findings pertinent to the case 	<ul style="list-style-type: none"> Differentiates between periodontal health, gingivitis and periodontitis Makes acceptable diagnosis with minimal deviations from ideal but treatment NOT impacted 	<ul style="list-style-type: none"> Fails to diagnose periodontitis Makes diagnosis with critical deviations from optimal Provides a diagnosis which lacks rationale 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Fails to make a diagnosis Provides diagnosis which is grossly incorrect

FACTOR 6: TREATMENT PLAN (Part A)

4	3	2	1	0
<ul style="list-style-type: none"> Provides comprehensive and clinically appropriate treatment plan including clear description of etiology, benefits of treatment, alternatives, and risk factors 	<ul style="list-style-type: none"> Provides comprehensive and clinically appropriate treatment plan including clinically appropriate alternative treatment plan (if any) Provides adequate description of risks and benefits of treatment and alternatives 	<ul style="list-style-type: none"> Provides clinically appropriate treatment plan but fails to address some factors that are unlikely to affect outcome Does NOT provide clear description of risks and benefits of treatment and alternatives 	<ul style="list-style-type: none"> Provides treatment plan which fails to address relevant factors which are likely to affect outcome Provides incomplete periodontal treatment plan that is below the standard of care and adversely affects outcome 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Provides clinically inappropriate treatment plan which could harm the patient

FACTOR 7: CALCULUS DETECTION (Part B)

4	3	2	1	0
<ul style="list-style-type: none"> Demonstrates complete detection of all subgingival calculus present in quadrant(s) 	<ul style="list-style-type: none"> Incorrectly identifies absence or presence of <u>one</u> area of clinically demonstrable subgingival calculus 	<ul style="list-style-type: none"> Incorrectly identifies absence or presence of <u>two</u> areas of clinically demonstrable subgingival calculus 	<ul style="list-style-type: none"> Misses <u>three</u> areas of clinically demonstrable subgingival calculus 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> Misses or incorrectly identifies four or more areas of clinically demonstrable subgingival calculus

FACTOR 8: EFFECTIVENESS OF CALCULUS REMOVAL (Part B)

4	3	2	1	0
<ul style="list-style-type: none"> • Demonstrates complete removal of all calculus plaque and stains from tooth surfaces • Does NOT cause any tissue trauma • Does NOT cause any patient discomfort 	<ul style="list-style-type: none"> • Demonstrates complete removal of all other deposits except for stains in pits and fissures • Minimizes patient discomfort 	<ul style="list-style-type: none"> • Misses <u>one</u> area of clinically demonstrable subgingival calculus • Demonstrates removal of all other deposits <u>but</u> some remaining minor stains on accessible surfaces • Provides sufficient pain management for treatment 	<ul style="list-style-type: none"> • Misses <u>two</u> areas of clinically demonstrable subgingival calculus • Causes major tissue trauma • Leaves moderate plaque and supragingival calculus • Inadequate pain management 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Misses three areas of clinically demonstrable subgingival calculus • Leaves heavy stain, plaque, supragingival calculus • No pain management

FACTOR 9: PERIODONTAL RE-EVALUATION (Part C)

4	3	2	1	0
<ul style="list-style-type: none"> • Identifies all clinical changes of periodontal condition and describes the biological basis of changes • Evaluates patient's oral hygiene, provides patient-specific oral hygiene instruction, <u>and</u> educates patient on the significance of plaque removal and periodontal disease treatment • Evaluates and determines all of the patient's <u>specific</u> periodontal needs with detailed rationale for further periodontal procedures 	<ul style="list-style-type: none"> • Identifies all clinical changes of periodontal condition • Evaluates and determines specific needs for periodontal care with rationale for further periodontal procedures • Accurately assesses all of patient's oral hygiene problems • Provides oral hygiene instructions that addresses all of patient's needs • Evaluates and determines all of the patient's <u>specific</u> periodontal needs <u>without</u> detailed rationale 	<ul style="list-style-type: none"> • Identifies most clinical changes of periodontal condition but fails to identify minor changes • Accurately assesses most of patient's oral hygiene problems • Provides oral hygiene instructions that only address most of the patient's needs • Evaluates and determines <u>general</u> needs for periodontal care including recall intervals and referral, if indicated 	<ul style="list-style-type: none"> • Fails to identify persistent signs and symptoms of periodontal disease • Fails to present an oral hygiene plan • Makes recommendation for further periodontal treatment that is inappropriate and demonstrates lack of understanding of patient's periodontal needs 	<p>Critical errors <u>include</u>:</p> <ul style="list-style-type: none"> • Fails to recognize any clinical change in periodontal condition • Did NOT assess patient's oral hygiene care or needs • Has NOT evaluated and/or determined patient's periodontal needs • Fails to recognize need for referral

SECTION 14 – EXAMINER TRAINING AND CALIBRATION

In order to meet the standard required for psychometrically sound examinations, training and calibration procedures must be linked back to the competencies defined by a job analysis and to the evaluation system. All the schools must calibrate their faculty to the same rating criteria. Again, faculty from six Board approved dental schools must be involved in the process to ensure those faculty apply the same standards to candidates' performance. It is very important for the Board to be aware of threats to the validity of the examination that arise from improper training and calibration. If the examiners are improperly trained and calibrated, the examiners would compromise the Portfolio Examination's ability to produce results that warrant valid conclusions about candidates' clinical competence.

APPLICABLE STANDARDS

- Standard 5.1* "Test administrators should follow carefully the standardized procedures for administration and scoring as specified by the test developer, unless the situation or a test taker's disability dictates an exception should be made." (p. 63)
- Standard 5.8* "Test scoring services should document the procedures that were followed to assure accuracy of scoring. The frequency of scoring errors should be monitored and reported to users of the service on reasonable request. Any systematic source of scoring errors should be corrected." (p. 64)
- Standard 5.9* "When test scoring involves human judgment, scoring rubrics should specify criteria for scoring. Adherence to established scoring criteria should be monitored and checked regularly. Monitoring procedures should be documented." (p. 65)

EXAMINER SELECTION CRITERIA

The Board has outlined a process for selection of dental school faculty who wish to serve as a portfolio examiner. Each portfolio examiner is required to undergo calibration training in the Board's standardized evaluation system through didactic and experiential methods:

- a) At the beginning of each school year, each school submits the names, credentials and qualifications of the dental school faculty to be appointed by the Board as Portfolio examiners. Documentation of qualifications must include but

is not limited to, evidence the dental school faculty examiner satisfies the dental school criteria and standards established by his/her school to conduct Portfolio competency examinations. The school faculty examiner must have documented experience in conducting examinations in an objective manner.

- b) In addition to the names, credentials and qualifications, the Board approved school must submit documentation the appointed dental school faculty examiners have been trained and calibrated in compliance with the Board's requirements. Changes to the list of school faculty examiners must be reported to the Board. The school must provide the Board an annual updated list of their faculty examiners.
- c) The Board reserves the right to approve or disapprove dental school faculty who wish to serve as Portfolio examiners.

STANDARDIZED TRAINING PROCESS

Examiners are required to attend standardized, Board approved training "calibration" sessions offered at their schools. Each training course will be presented by designated Portfolio examiners at their respective schools and require the prospective examiners to participate in both didactic and hands-on activities.

Didactic training component. During didactic training, designated Portfolio examiners will present an overview of the examination and its evaluation (grading) system through lecture, review of examiner training manual, slide presentations (Powerpoint), sample documentation, sample cases, etc., prior to participating in the actual rating of candidates.

Hands-on component. Training activities have multiple examples of performance that clearly relate to the specific judgments that examiners are expected to provide during the competency examinations. Hands-on training sessions includes an overview of the rating process, clear examples of rating errors, examples of how to mark the grading forms, a series of several sample cases for examiners to hone their skills, and numerous opportunities for training staff to provide feedback to individual examiners.

Monitoring calibration of examiners. Calibration of examiners will be conducted regularly to maintain common standards as an ongoing process. Examiners are provided feedback about their performance and how their scoring varies from their fellow examiners. Examiners whose error rate exceeds a prespecified percentage error will be re-calibrated. If any examiner is unable to be re-calibrated, the Board would dismiss the examiner from the Portfolio Examination process.

TYPES OF RATING ERRORS

Rating errors are systematic biases which may affect the examiner's ability to provide a fair and objective evaluation of candidates. Several common rating errors can interfere with the rating process by diminishing the accuracy, effectiveness and fairness of the ratings (Cascio, 1992).

Rating errors can be avoided by systematically applying the established grading criteria that clearly define acceptable and unacceptable performance. Basically, examiners should use their professional judgment in applying the grading criteria for each grading factor and rate the candidates' performance accordingly.

1. **FIRST IMPRESSIONS.** First impressions can have a lasting and troublesome effect on the evaluation process. During the first few minutes of the examination, the examiner may form a favorable or unfavorable impression of the candidate. The end result is that the examiner may distort or ignore various aspects of candidates' performance.
2. **HALO/HORN EFFECT.** Halo or horn effect is a broader example of the type of influence which occurs during first impressions. Halo refers to positive overgeneralization based on a positive aspect of performance. Horn refers negative overgeneralization based on a negative aspect of performance. Thus, if the candidate exhibits good or poor performance for one grading factor, the ratings for all factors are distorted.
3. **STEREOTYPING.** Stereotyping refers to unfair bias towards a candidate without being aware of the bias. There is a tendency to generalize, favorably or unfavorably, across groups and ignore individual differences. Examiners should be aware of individual differences of candidates rather than generalizations about a group of people.
4. **SIMILARITY EFFECTS.** Similarity effects are the tendency of examiners to rate candidates more favorably if because the candidates perform tasks in the same style or use the same process as they do.
5. **CONTRAST EFFECTS.** Contrast effects are the result of evaluating the candidate relative to other candidates rather than applying the established grading criteria.
6. **CENTRAL TENDENCY.** Central tendency is the inclination to "play it safe" and rate candidates in the middle even when candidate performance merits higher or lower ratings.
7. **NEGATIVE AND POSITIVE LENIENCY.** Leniency (level) error is the tendency of an examiner to rate candidates lower or higher on a consistent basis rather than base ratings on the candidate's performance.

8. **FRAME OF REFERENCE.** Frame of reference error occurs when examiners compare candidate performance to their personal standards of care.
9. **RECENCY EFFECT.** Recent information is better remembered and receives greater weight in forming a judgment than earlier presented information.

CROSS TRAINING OF EXAMINERS

Training sessions will be conducted on an ongoing basis in both northern and southern California, with the expectation that examiners participating in the Portfolio Examination process will have ample opportunities to participate in competency examinations conducted at a school other than their own. It may not be necessary to have examiners from other schools rate each and every candidate; however, periodic participation of examiners from outside schools can strengthen the credibility of the process and ensure objectivity of ratings.

SECTION 15 – AUDIT PROCESS

This Audit Process is designed to serve multiple purposes. First it will provide information for auditors who will conduct site visits on behalf of the Dental Board of California (Board). The purpose of the site visits is to determine if the participating dental schools are following the procedures established for the evaluation and calibration system set forth by the Board for the Portfolio Examination. Second, it will provide information on which participating dental schools can conduct a self-assessment of its adherence to the Board's examination procedures. Third, it will provide a protocol for collecting documentation that will serve as validity evidence for the examination.

During an audit, in-depth information is obtained about the administrative and psychometric aspects of the Portfolio Examination, much like the accreditation process. An audit team comprised of faculty from the dental schools and persons designated by the Board would verify compliance with accepted professional testing standards, e.g., Standards for Educational and Psychological Testing, as well as verifying that the portfolios have been implemented according to the goals of the portfolio process.

APPLICABLE STANDARDS

Standard 3.15 “When using a standardized testing format to collect structured behavior samples, the domain, test design, test specifications and materials should be documented as for any other test. Such documentation should include a clear definition of the behavior expected of the test takers, the nature of expected responses, and any materials or directions that are necessary to carry out the testing.” (p. 46)

ROLE OF THE BOARD

The Board has several responsibilities with regard to the audit of the examination:

- Oversight of audit process.
- Establishment of grading standards necessary for public protection.
- Developing audit protocols and criteria for assessing schools' compliance with the evaluation system and calibration process.
- Hands-on training for auditors in the evaluation system.

- Selecting auditors who can maintain the independence between themselves and the Portfolio Examination process.

ROLE OF AUDIT TEAM

The audit team is responsible for verification of the examination process and examination results, and, collection and evaluation of specific written documentation which respond to a set of standardized audit questions and summarizing the findings in a written report. A site visit can be conducted to verify portfolio documentation and clear up unresolved questions.

The audit team would be comprised of persons who can remain objective and neutral to the interests of the school being audited. The audit team should be knowledgeable of subject matter, psychometric standards, psychometrics and credentialing testing.

The audit team should be prepared to evaluate the information provided in a written report to the Board that documents the strengths and weaknesses of each school's administrative process.

DOCUMENTATION FOR VALIDITY EVIDENCE

Each candidate will have a portfolio of completed, signed rating (grade) sheets which provide evidence that clinical competency examinations in the six areas of practice have been successfully completed.

In addition to the signed rating (grade) sheets, there is content-specific documentation that must be provided. A list of acceptable documentation is presented on the following page.

It is anticipated that audit team will be presented with a representative sample of documentation from the candidate competency examinations.

Table 9 – Content-specific documentation

ORAL DIAGNOSIS AND TREATMENT PLANNING	<ul style="list-style-type: none"> • Full workup of case
DIRECT RESTORATION	<ul style="list-style-type: none"> • Restorative diagnosis and treatment plan • Preoperative radiographs, e.g., original lesion in Class II, III, IV • Postoperative radiographs including final fill
INDIRECT RESTORATION	<ul style="list-style-type: none"> • Restorative diagnosis and treatment plan • Preoperative radiographs • Postoperative radiographs including successfully cemented crown or onlay
REMOVABLE PROSTHODONTICS	<ul style="list-style-type: none"> • Removable prosthodontic diagnosis and treatment plan • Preoperative radiographs illustrating treatment condition • Preoperative and postoperative intraoral photographs of finished appliance
PERIODONTICS	<ul style="list-style-type: none"> • Periodontal diagnosis and treatment plan • Charted pocket readings • Preoperative radiographs including subgingival calculus • Postoperative radiographs • Follow-up report
ENDODONTICS	<ul style="list-style-type: none"> • Endodontic diagnosis and treatment plan • Preoperative radiographs of treatment site • Postoperative radiographs of treatment site

SCHEDULE FOR AUDITS

For the first two years, the Board will send audit teams to each of the participating dental schools and conduct an audit of Portfolio competency examinations or until the Board is satisfied that the schools are in compliance with the standardized processes of the Portfolio Examination.

In subsequent years, the Board will conduct audits of the Portfolio competency examinations every two years (biennially).

AUDIT CHECKLIST

RESOURCES	<ul style="list-style-type: none"> • Who is responsible for training Board approved Portfolio examiners? • Who is responsible for training dental school staff to assign final scaled scores and prepare final score reports and other required documentation to the Board? • What quality control procedures are in place to ensure that the final scaled scores and score reports are accurate?
NAMES AND QUALIFICATIONS OF EXAMINERS	<ul style="list-style-type: none"> • What is the process for identifying faculty to serve as Portfolio examiners? • What are the qualifications of Board approved Portfolio examiners?
TRAINING AND CALIBRATION OF EXAMINERS	<ul style="list-style-type: none"> • What procedures are used to train Portfolio examiners? • Are scoring benchmarks clearly established during training? • What procedures are used to maintain calibration of Portfolio examiners? • How are disagreements between examiners handled?
TEST SECURITY	<ul style="list-style-type: none"> • What procedures are in place to permit auditors to view patient information for the purposes of the audit? • What procedures are in place to maintain the security of the Portfolio examination materials before, during and after each competency examination? • What procedures are in place to maintain security of final scoring procedures and final scores?
QUALITY OF DOCUMENTATION	<ul style="list-style-type: none"> • Is the quality of the documentation consistent with accepted standards of care for each type of competency examination? • Are comments routinely available on the grading worksheets to justify an examiner's ratings?
PERFORMANCE STATISTICS	<ul style="list-style-type: none"> • What procedures are in place to produce reliability statistics for Portfolio examiners? • What procedures are in place to maintain pass/fail statistics?
INCIDENT REPORTS	<ul style="list-style-type: none"> • What procedures are in place to handle incidents that may arise during the implementation of competency examinations of the Portfolio Examination?
UNSUCCESSFUL CANDIDATES	<ul style="list-style-type: none"> • What procedures are in place for candidates who fail a competency examination and who wish to pursue the Portfolio Examination pathway to initial licensure?

AUDIT SITE VISIT REPORT

Following each audit site visit, the Board's audit team will prepare a formal report of its findings. The report is confidential and will be shared only with the

participating school whose Portfolio competency examinations were the focus of the report.

The intent of the audit site visit report is to determine if the participating schools are following the standardized procedures of the Portfolio Examination and provide feedback with regard to implementation of the competency examinations.

The audit site visit report may be structured to include:

- Audit objectives and scope
- Period of time included in the audit
- Audit methods
- Auditors' findings
- Auditor recommendations

SECTION 16 - REFERENCES

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APPENDIX A - CONSULTANT BACKGROUND

ROBERTA N. CHINN, PH.D

PSYCHOMETRICIAN

Dr. Roberta Chinn is a psychometrician at PSI. She has more than 23 years of experience in the measurement field. She received her Bachelor of Science degree from the University of California at Davis in psychology, her Master of Arts degree from the University of the Pacific in experimental psychology, and her Ph.D. in experimental and cognitive psychology from Louisiana State University.

Prior to joining PSI in 2011, Dr. Chinn was the Assistant Director of Psychometric Services at Comira, a general partner at HZ Assessments, a private psychometric consulting firm that she co-founded in 2001, and a senior measurement consultant at the Office of Examination Resources at the California Department of Consumer Affairs for nearly 12 years. During her tenure at Consumer Affairs, she handled sensitive aspects of examination programs for more than 30 boards and was instrumental in the development of standardized practical examinations, applied law and ethics examinations, and standardized oral examinations.

She has developed licensing and certification examinations in Arizona, California, Colorado, District of Columbia, Oregon, and Washington as well as for national credentialing organizations (e.g., Commission on Dietetic Registration of the Academy of Nutrition and Dietetics, Appraisal Qualifications Board, National Council of Architect Registration Boards). She has extensive experience in government settings and has conducted validation studies, developed licensing and certification examinations, and/or established cut scores for over 60 professions including commercial and residential appraisers, court reporters, predoctoral and postdoctoral dentists, dental auxiliaries, specialist dietitians, structural engineers, engineering geologists, environmental site assessors, fiduciaries, hydrogeologists, pest control personnel, clinical psychologists, ship pilots, pharmacists, clinical psychologists, speech-language pathologists and veterinarians. She specializes in the development of multiple-choice, performance and oral examinations and has developed innovative methods to streamline procedures for job (practice) analyses and examination development. Her research on alternative item types for competency assessment was recently published in *Evaluation in the Health Professions* and research on practice analysis was recently published in the *Journal of Enteral and Parental Nutrition*.

She has chaired and presented at the annual meetings of the Council on Licensure, Enforcement and Regulation and the National Council on Measurement in Education and has also co-authored several technical papers and journal articles. She is a member of the American Psychological Association, the American Educational Research Association, the National Council on Measurement in Education, and the Council on Licensure, Enforcement and Regulation.

NORMAN R. HERTZ, PH.D. APPLIED PSYCHOLOGIST

Dr. Hertz is an Applied Psychologist at Progeny Systems Corporation. He is a licensed psychologist with over 30 years of experience in the measurement field. He received his Bachelor of Arts degree from Baylor University in psychology, his Master of Science degree in psychology and his Ph.D. in industrial-organizational psychology from the University of Memphis.

Prior joining Progeny in 2011, he was the Director of Psychometric Services at Comira, the managing partner of HZ Assessments, a private psychometric consulting firm that he co-founded after his retirement from the California Department of Consumer Affairs in 2001, and the Chief of the Office of Examination Resources at the California Department of Consumer Affairs. He has provided psychometric expertise to national and international organizations and has developed licensing and certification examinations for several western states including Arizona, California, Colorado, District of Columbia, Oregon and Washington. He has extensive experience in private industry and government settings and has conducted validation studies, developed licensing and certification examinations, and established cut scores for more than 60 professions, ranging from the construction trades to medical specialties. He has provided litigation support for numerous examinations including legal document preparers, court reporters, and ship pilots. His service on the psychometric oversight committee for the American Institute of Certified Public Accountants was incorporated into the examination development and scoring processes used in the present day.

During his 15-year tenure at the California Department of Consumer Affairs, he handled the most sensitive aspects of examination programs for more than 30 boards including expert witness testimony for state legislative committees, state regulatory boards, and consultant-auditor for national organizations such as the National Council of State Boards of Nursing, National Council of Architect Registration American Institute of Certified Public Accountants, Boards, National Association of Boards of Pharmacy, National Board of Examiners in Optometry.

He has chaired and presented at the annual meetings of the Council on Licensure, Enforcement and Regulation and the National Council on Measurement in Education and has also co-authored several technical papers and journal articles. He is a member of the American Psychological Association, the Society for Industrial Organizational Psychology, the American Educational Research Association, the National Council on Measurement in Education, and the Council on Licensure, Enforcement and Regulation.