

*Standards and
Assessment Guide*

Dental Prosthetics

Introduction

Welcome to the Standards and Assessment Guide (SAG), a comprehensive resource designed to support excellence in assessment practices for all skills competitions hosted at the WorldSkills Competition. A key component of the SAG is the commitment to continuous improvement through ongoing review, ensuring that these guides consistently reflect the latest industry innovations and high standards of assessment in an open and transparent manner.

Purpose

The primary purpose of this guide is to provide a structured framework for the consistent and fair assessment of each skill competition. It aims to ensure that all assessments are conducted with a high degree of accuracy, reliability, validity, and reflect global industry standards. By adhering to these guidelines, assessors can maintain the integrity of the competition and uphold the high standards associated with WorldSkills.

Note: this guide is not a replacement for the Marking Scheme and should only be used as a reference when required during the assessment process. Competitors are not allowed to have a copy of this SAG in the workshop in either digital or paper form.

Scope

This document covers general assessment practices applicable to a diverse range of industry sectors including:

- Manufacturing and Engineering Technology
- Information and Communication Technology
- Construction and Building Technology
- Transportation and Logistics
- Social and Personal Services
- Creative Arts and Fashion

Each skill competition has its unique requirements and benchmarks, which are detailed within sections of this guide. The consistency of assessment across each skill is the overarching principle, ensuring a unified approach to evaluating Competitor performance to the highest standards.

Key Components

The guide is structured into several key components, each addressing critical aspects of the assessment process:

Assessment Principles and Objectives

- Emphasis on fairness, transparency, and objectivity in assessments.
- Alignment with global industry standards and best practices.

Assessment Methods and Tools

- Description of various assessment methods in Measurement and Judgement.
- Guidance on the application of appropriate assessment tools and equipment (if applicable).

Criteria and Benchmarks

- Examples of assessment criteria and aspects for each skill, outlining the expected competencies and performance standards.
- Benchmarks for different levels of proficiency i.e. Judgement award range 0, 1, 2, 3 or Yes/No criteria alongside clear measurable descriptors.

Expert assessment requirements

- Completion of the Access Programme.
- Approved Curriculum Vitae (CV).
- Reaching **100%** Expert preparedness.
- Full participation of online and in-person Mandatory Assessment Training (MAT).
- Completion of practical assessment testing at the Competition.

Quality Assurance and Improvement

- Monitoring and evaluation: Ensuring assessments are carried out correctly and produce reliable results.
- Continuous improvement: Using feedback from Experts and Skill Competition Managers to enhance future assessments.
- Periodic review: Regularly updating processes to reflect current industry and WorldSkills standards.

Implementation

For effective implementation, this guide should be used for guidance purposes only and in parallel with the Technical Description for each skill. Experts are encouraged to familiarize themselves thoroughly with both the general guidelines and the particular requirements of their respective skill areas. Collaborative efforts between the Skill Management Team, Experts, and Competitors are vital for achieving the ultimate goal of global skills development.

Conclusion

The Standards and Assessment Guide embodies the commitment of the WorldSkills movement to nurturing talent and promoting the highest standards of vocational education and training worldwide. By providing clear and comprehensive guidance, we aim to empower Experts to conduct marking and assessment practices that are not only rigorous and equitable but also inspiring and transformative for all participants.

Thank you for your dedication to upholding these standards and contributing to the success of the WorldSkills Competition. Together, we can continue to champion skills excellence and celebrate the achievements of talented individuals from around the globe.

Skill 42 – Dental Prosthetics

Measurement

Measurement is used to assess accuracy, precision, and other performance that can be measured objectively. It is used where ambiguity must be avoided.

The total marks allocated to measurement marking may vary from competition to competition depending on the Test Project.

Measurement is applied where outcomes can be:

- Objectively verified
- Reproduced by another Expert
- Assessed independently of personal judgement

Aspect	Descriptor
Data Completeness and Presence	• Presence of required datasets (e.g. upper, lower, bite) • Absence of missing critical regions (margins, occlusal surfaces) • Measurement standard: Required datasets: Present/Not present, Critical regions: Captured/Not captured • Result: Factual pass/fail • Missing required data = non-compliant
File Integrity and Alignment Accuracy	• Proper alignment of datasets • Absence of gross misregistration • Measurement standard: Alignment deviation within defined tolerance (e.g. $\leq X$ mm). Files correctly oriented relative to reference planes. • Result: Within tolerance/Outside tolerance

Aspect	Descriptor
Margin Definition and Continuity	• Presence and continuity of margins • Margin location relative to prepared surface • Measurement standard: Margins must be continuous (no gaps). Located within defined tolerance of preparation boundary. • Result: Acceptable/Not acceptable
Minimum and Maximum Material Thickness	• Prosthetic thickness at defined control points • Measurement standard: Thickness $\geq$ minimum and $\leq$ maximum limits specified by material type • Result: Within tolerance/Outside tolerance
Proximal Contact Dimensions	• Presence and size of proximal contacts • Measurement standard: Contact present within defined measurable range. No open contacts or excessive interference beyond tolerance. • Result: Pass/Fail
Occlusal Contact Presence and Distribution	• Presence of occlusal contacts in defined zones • Absence of gross interference • Measurement standard: Contact present where specified. No contacts exceeding defined interference threshold. • Result: Acceptable/Not acceptable
Fit Accuracy to Model	• Seating of the prosthetic on the model • Presence of rocking or visible gaps • Measurement standard: Full seating achieved. Gap measurements within allowable tolerance. • Result: Fits/Does not fit

Aspect	Descriptor
Dimensional Accuracy of Finished Prosthetic	• Key dimensions compared to digital design • Measurement standard: Dimensional deviation $\leq$ defined tolerance • Result: Within tolerance/Outside tolerance
Surface Integrity (Defect Presence)	• Presence of cracks, voids, delamination, or structural defects • Measurement standard: Defects present: Yes/No • Result: Acceptable/Not acceptable
Completion Within Prescribed Time	• Completion of required tasks within allocated time • Measurement standard: Completed within time: Yes/No • Result: Factual compliance only (Speed does not affect quality scoring)

Judgement

Judgement is used to assess the quality of performance about which there may be small differences of view when applying the external benchmarks.

The Resources column in the table below may include all kinds/formats of resources such as a link to a YouTube video, a website link, an illustration, a photo, a reference to a book, and so on. It needs to be as detailed as possible to show the differentiation between 0, 1, 2, 3.

Generic rules:

The assessment group comprises three Experts plus one Expert who acts as the supervisor. The supervising Expert will replace an Expert in the marking group to prevent compatriot marking.

The difference of the three Experts' scores may not exceed 1. If this is the situation the Experts must re-score until there is a maximum difference of 1. As long as the three Experts judge within 1, the result can be entered into the CIS.

The total marks allocated to judgement marking may vary from competition to competition depending on the Test Project.

WSOS section as per TD	Score	Descriptor	Resource
Work Organization, Safety, and Professional Practice How effectively the Competitor: - Organizes workflow and time across the full process - Maintains hygiene, infection control, PPE, and laboratory safety - Handles materials responsibly and sustainably - Demonstrates professional lab conduct throughout	0	- Unsafe or inconsistent use of PPE and hygiene protocols - Poor workspace organization leading to contamination risk, errors, or inefficiency - Disregard for material handling, waste management, or sustainability practices - Workflow appears improvised or chaotic Would not be acceptable in a professional dental laboratory.	WSOS 1

WSOS section as per TD	Score	Descriptor	Resource
	1	• PPE and hygiene protocols consistently followed • Workspace organized and maintained at a functional level • Materials handled appropriately with basic waste control • Workflow is logical and controlled, though not optimized Acceptable for routine production lab work.	WSOS 1
	2	• Strong hygiene discipline maintained throughout • Workspace remains clean, efficient, and well-managed • Materials and tools are handled thoughtfully and economically • Workflow is clearly planned and adjusted efficiently as needed Reflects a reliable, experienced technician.	WSOS 1
	3	• Exemplary professional conduct throughout all stages • Workspace organization actively supports accuracy, speed, and quality • Proactive hygiene and safety awareness without prompting • Workflow reflects high-end commercial lab discipline Demonstrates senior-level professional behaviour.	WSOS 1

WSOS section as per TD	Score	Descriptor	Resource
Prescription Interpretation and Case Understanding The Competitor's ability to: - Correctly interpret prescriptions, specifications, and case objectives - Identify clinical, functional, and technical constraints - Recognize potential issues in the provided data before design begins	0	- Misinterprets prescription or case objectives - Overlooks key functional, anatomical, or technical requirements - Proceeds without identifying obvious issues or limitations Would result in a remake in real-world practice.	WSOS 3, 5
	1	- Correctly interprets prescription and core requirements - Identifies basic constraints and objectives - No major misunderstandings affecting downstream work Sufficient for standard lab execution.	WSOS 3, 5
	2	- Demonstrates strong understanding of clinical intent - Identifies potential challenges or risks early - Makes informed decisions aligned with functional and technical needs Shows solid technical judgment.	WSOS 3, 5
	3	- Demonstrates deep case comprehension from the outset - Anticipates downstream implications before design begins - Decisions reflect high-end lab thinking Shows mastery of case analysis.	WSOS 3, 5

WSOS section as per TD	Score	Descriptor	Resource
Data Acquisition and Scan Integrity Quality of: - Intraoral or model scanning technique - Completeness, clarity, and accuracy of scan data - Absence of artefacts, voids, or misalignment affecting design	0	- Incomplete or inaccurate scan data - Missing critical anatomical, margin, or occlusal information - Artefacts or distortions compromise design reliability Critical downstream risk – score should not exceed 1 if unresolved.	WSOS 3, 4
	1	- Scan data is complete and usable - Required anatomical and occlusal information is captured - Minor imperfections do not compromise design Acceptable for standard CAD workflows.	WSOS 3, 4
	2	- High-quality scan with good data continuity - Clear capture of margins, anatomy, and occlusion - Scan strategy reflects technical awareness Supports efficient, accurate design work.	WSOS 3, 4
	3	- Exceptionally clean, precise, and complete scan data - Scan execution minimizes downstream correction - Reflects high-end commercial lab scanning standards Enables optimal design with minimal adjustment.	WSOS 3, 4

WSOS section as per TD	Score	Descriptor	Resource
Digital Data Management and File Preparation Assessment of: • Data alignment, registration, and cleanup • Logical file organization and naming • Preparation of datasets suitable for CAD and manufacturing	0	• Files are poorly aligned, incomplete, or incorrectly prepared • Incorrect reference selection, orientation, or data cleanup • File issues compromise design accuracy or manufacturability Would require correction before proceeding in a professional lab.	WSOS 3, 4
	1	• Files are correctly aligned and usable • Required datasets are present and appropriately prepared • Minor inefficiencies do not compromise design or manufacturing Acceptable for routine CAD workflows.	WSOS 3, 4
	2	• Files are clean, logically structured, and correctly referenced • Alignment and preparation support efficient design • Minimal corrective work required downstream Reflects competent, experienced digital workflow management.	WSOS 3, 4
	3	• File preparation is precise, intentional, and highly efficient • Data is optimized to support accuracy, speed, and quality • Reflects high-end commercial lab digital standards Demonstrates advanced digital workflow mastery.	WSOS 3, 4

WSOS section as per TD	Score	Descriptor	Resource
Prosthetic Design Accuracy and Technical Logic Evaluation of: - Anatomical correctness - Occlusal scheme and functional logic - Margins, emergence profiles, contacts, morphology - Design decisions aligned with prescription and real-world use *If any of the following are present and not corrected: - Incorrect or clinically unacceptable margins - Non-functional occlusion - Anatomy that compromises function or fit The score must not exceed 1, regardless of other design qualities.	0	- Incorrect or unacceptable margins - Non-functional anatomy or occlusal scheme - Design fails to meet prescription or functional requirements Critical errors present — would be a remake in real-world practice.	WSOS 3
	1	- Margins are correctly placed and defined - Anatomy, contacts, and occlusion are functionally acceptable - Design meets prescription requirements without major issues Acceptable for standard production.	WSOS 3
	2	- Margins, anatomy, and occlusion are well executed - Design demonstrates strong functional logic - Minor refinements may improve outcome but are not required Reflects skilled, experienced design work.	WSOS 3
	3	- Design shows exceptional anatomical accuracy and functional harmony - Margins, contacts, and occlusion are refined and intentional - Design reflects high-end commercial lab quality Demonstrates mastery of prosthetic design principles.	WSOS 3

WSOS section as per TD	Score	Descriptor	Resource
Use of CAD Software and Digital Tools How effectively the Competitor: • Uses CAD tools and features appropriately • Applies correct parameters and workflows • Demonstrates efficiency, logic, and control	0	• Incorrect or inappropriate tool usage • Over-reliance on defaults without understanding outcomes • Trial-and-error workflow leading to avoidable errors Indicates lack of digital competency.	WSOS 3, 4
	1	• Correct tools and features used to complete the task • Parameters generally appropriate for the application • Workflow is functional, though not optimized Acceptable for routine lab production.	WSOS 3, 4
	2	• Tools and parameters are selected intentionally • Workflow is efficient and logically sequenced • Minimal unnecessary rework or correction Reflects a confident, experienced CAD technician.	WSOS 3, 4
	3	• Software tools are used strategically and efficiently • Parameter control reflects deep understanding of outcomes • Workflow mirrors high-end commercial lab best practices Demonstrates digital mastery, not just software knowledge.	WSOS 3, 4

WSOS section as per TD	Score	Descriptor	Resource
Manufacturing Strategy and Process Control Assessment of: • Correct selection of manufacturing method (additive/subtractive) • Machine setup, preparation, and parameter choices • Adherence to process requirements and sequencing	0	• Incorrect manufacturing setup or sequencing • Improper machine preparation or parameter selection • Errors that compromise structural integrity or accuracy Would require re-manufacture in a professional lab.	WSOS 4
	1	• Manufacturing process correctly selected and executed • Machine setup and parameters are appropriate • Result is structurally sound and usable Acceptable for standard lab production.	WSOS 4
	2	• Manufacturing strategy shows good technical judgement • Machine setup is efficient and well controlled • Process minimizes risk of defects or distortion Reflects solid production-level expertise.	WSOS 4
	3	• Manufacturing approach is optimized for accuracy and efficiency • Machine use reflects high-end commercial lab standards • Process control minimizes variability and post-processing correction Demonstrates advanced manufacturing competence.	WSOS 4

WSOS section as per TD	Score	Descriptor	Resource
Material Handling and Processing Accuracy Evaluation of: • Correct handling of materials (resin, zirconia, etc.) • Ratios, curing, sintering, or processing compliance • Avoidance of distortion, contamination, or structural defects	0	• Incorrect material handling or processing sequence • Failure to follow material-specific requirements • Defects introduced that compromise strength, fit, or function Would require re-manufacture in a professional lab.	WSOS 4
	1	• Materials handled correctly according to specifications • Processing steps completed in correct sequence • No defects that compromise structural integrity or fit Acceptable for routine lab production.	WSOS 4
	2	• Material handling shows consistency and control • Processing steps are accurate and well managed • Minimal risk of distortion, contamination, or internal defects Reflects experienced technical handling.	WSOS 4
	3	• Material processing is precise and highly controlled • Handling minimizes variability and post-processing correction • Reflects high-end commercial lab material standards Demonstrates advanced understanding of material behaviour.	WSOS 4

WSOS section as per TD	Score	Descriptor	Resource
Post-Processing and Finishing Quality Quality of: - Cleaning, polishing, and surface refinement - Sprue/support removal - Craftsmanship and attention to detail	0	- Poor surface quality or incomplete finishing - Damage to margins, anatomy, or contacts during finishing - Excessive or uneven material removal Would be rejected or remade in real-world practice.	WSOS 4, 5
	1	- Post-processing completed cleanly and correctly - Surfaces are smooth and clinically acceptable - No damage affecting fit, margins, or function Acceptable for standard lab delivery.	WSOS 4, 5
	2	- Finishing is controlled and consistent - Surface quality is refined without over-processing - Details and anatomy are preserved Reflects skilled craftsmanship.	WSOS 4, 5
	3	- Finishing demonstrates exceptional control and restraint - Surface quality and detail reflect high-end commercial lab craftsmanship - Minimal correction required at delivery Demonstrates master-level finishing technique.	WSOS 4, 5

WSOS section as per TD	Score	Descriptor	Resource
Fit Accuracy, Contacts, and Occlusion Assessment of: - Fit to model - Proximal contacts - Occlusal accuracy and functional relationships * Poor fit or non-functional occlusion caps the score at 1.	0	- Poor or unacceptable fit - Incorrect proximal contacts (open or excessively tight) - Non-functional or unstable occlusion Critical errors present – would be rejected or remade in professional practice.	WSOS 5
	1	- Prosthetic fits correctly on the model - Proximal contacts are acceptable - Occlusion is functional and stable Acceptable for routine lab delivery.	WSOS 5
	2	- Fit is accurate with good adaptation - Contacts are well controlled and intentional - Occlusion demonstrates good functional balance Reflects experienced technical execution.	WSOS 5
	3	- Exceptional fit accuracy with refined adaptation - Contacts and occlusion are precise and harmonious - Reflects high-end commercial lab functional standards Demonstrates mastery of fit and function.	WSOS 5

WSOS section as per TD	Score	Descriptor	Resource
Aesthetic Integration and Visual Quality Evaluation of: • Morphology and symmetry • Surface texture and form • Shade and visual integration (where applicable) Benchmarked against high-end commercial dental lab quality, not artistic preference.	0	• Poor morphology or visual integration • Inconsistent form, surface texture, or symmetry • Aesthetic outcome does not meet prescription intent Would require rework or remake in practice.	WSOS 3, 4, 5
	1	• Morphology and form are clinically acceptable • Visual integration meets prescription requirements • No major aesthetic deficiencies Acceptable for standard lab production.	WSOS 3, 4, 5
	2	• Good anatomical form and visual harmony • Surface texture and transitions are refined • Aesthetic choices demonstrate technical awareness Reflects skilled aesthetic execution.	WSOS 3, 4, 5
	3	• Morphology and surface quality are highly refined • Visual integration reflects high-end commercial lab aesthetics • Appearance enhances realism without compromising function Demonstrates advanced aesthetic judgement.	WSOS 3, 4, 5

WSOS section as per TD	Score	Descriptor	Resource
Quality Control, Evaluation, and Professional Judgment How well the Competitor: - Evaluates their own work - Identifies issues and justifies adjustments - Demonstrates decision-making aligned with real-world lab practice - Completes required documentation accurately	0	- Fails to identify obvious errors or deficiencies - Accepts work that is functionally or technically unacceptable - No evidence of self-evaluation or professional judgement Would not be acceptable in a professional dental laboratory.	WSOS 5, 6
	1	- Identifies and addresses basic issues when evident - Accepts work that meets functional and technical requirements - Demonstrates basic quality control awareness Acceptable for routine lab production.	WSOS 5, 6
	2	- Proactively evaluates work at multiple stages - Identifies potential risks before final delivery - Applies informed judgement to decide when correction is needed Reflects experienced professional thinking.	WSOS 5, 6
	3	- Demonstrates consistent, critical self-evaluation throughout - Decisions reflect high-end commercial lab quality expectations - Balances efficiency, quality, and clinical relevance expertly Demonstrates senior-level professional judgement.	WSOS 5, 6