GTAA Technical Training Standards

For Vendors and Designers

V1-9

Toronto Pearson

Document Governance

These standards are the **GTAA's technical training standards**. The GTAA reserves the right to amend the content of these standards on a regular basis.

When issued, amendments are a valid replacement for any part of this Standard and effective on the date of issue.

Refer to this Document/Version Control page for the current version of the document.

Version Control

Version	Date Issued	Changes	Prepared by	Reviewed by	Approved by
1-1	11-29-2019	First Edition	Benchmark Performance	Aurelie Duhaime	Pat Neville
1-2	06-17-2020	Document control page; removal of highlights; changes to the technology options (added Rise, removed commitment to online question banks)	Benchmark Performance	Aurelie Duhaime	Aurelie Duhaime
1-3	06-23-2020	Added a bullet to Standard 7 RE: TTT	Benchmark Performance	Aurelie Duhaime	Aurelie Duhaime
1-6	09-02-2020	Approver Reference "operational and" technical personnel	Benchmark Performance	Andrew Graham, Acting Manager, Technical Training, Health and Safety	Andrew Graham, Acting Manager, Technical Training, Health and Safety
1-9	09-10-2020	File name, header (removed ADTS; added GTAA)	Benchmark Performance	Andrew Graham, Acting Manager, Technical Training, Health and Safety	Andrew Graham, Acting Manager, Technical Training, Health and Safety

TABLE OF CONTENTS

For GTAA Managers and the Sales Team (Equipment Vendors) and Learning Designers

For Learning Designers

WHAT'S IN THIS DOCUMENT

This document provides:

- **The business rationale** and motivation behind the technical training standards
- A single page **summary of the standards** for technical training programs; later pages add details to each standard including specifications (requirements), guidelines, and tools
- **Appendices** stating the required professional qualifications and providing helpful information, tools, and tips

#1 IN TECHNICAL TRAINING

The Greater Toronto Airports Authority (GTAA) is aiming to be **#1 in quality of technical training** provided to airport trades, technical, and operational personnel. Through training we engage and empower the employees who enable our growth to mega-hub status.

We count on these personnel to efficiently operate, maintain, and run GTAA equipment and systems.

Our customers, including passengers, count on us to deliver a great travel experience.

Achieving these goals means employees need to meet a high standard for operation, maintenance, and controls.

Effective training based on active learning principles addresses these needs.

Effective training directly increases competence, confidence, and consistency in what employees are taught. It offers fresh perspectives on their roles and work.

In a broader context, effective learning increases safety, efficiency, and service delivery. It safeguards operations and helps reduce productivity loss when personnel are away or change teams.

As a team, we think differently about how we design and evaluate learning experiences. **The focus is not on what training is delivered, but on the real *value*: what learning is achieved and how performance has improved.**

GTAA employees are competent in their trade.

They want improved, active training on the equipment and systems unique to GTAA.

Don't we already provide good training?

GTAA employees want training tailored to what they do on the job.

They value knowledge, hands-on work, and skill checks.

We listened to our employees: it's time to up the training game!

DOCUMENT PURPOSE AND WHO SHOULD USE IT

Document Purpose:

This document summarizes the process, standards, and required specifications for designing and delivering training for GTAA technical and operational personnel.

Equipment and system vendors to the GTAA and **internal training designers** are expected to contribute to business goals. That contribution includes relevant, high-quality training solutions and skilled employees.

The goal of high-quality training is to increase competence (including safety), confidence, and consistency in what employees are taught. Great training also offers fresh perspectives on staff roles and work and helps safeguard operations.

The training standards are written as a process; following this process supports effective learning experiences with relevant, definable outcomes.

Required specifications reflect specific criteria to meet, related to each standard.

You need to use this document if you are:

a) A proponent bidding to provide new or altered assets (equipment, software, or systems) to the GTAA ADTS and Airport Operations

b) A vendor entering into a contract or project to provide new or altered assets (equipment, software, or systems) to the GTAA ADTS and Airport Operations

c) An internal training designer for technical training

d) A GTAA leader involved in procuring new or altered assets

Others who will benefit from this document:

e) Existing suppliers of equipment, software, or systems to the GTAA ADTS and Airport Operations, to become familiar with the standards

Sales Team!

Vendor or proponent sales leaders should be familiar with this document in its entirety to ensure their bid meets the requirements. Share this document with your team; use the Appendices to help find and guide a professional learning designer.

Learning designers should read this document in its entirety, including the Appendices.

Meeting the GTAA's **technical training standards** is part of the overall Quality Assurance Program and is often a condition of project or contract acceptance. When scoping or bidding on work, ask your GTAA contact.

HOW GTAA TRAINING PARTNERS SUPPORT THE BUSINESS

The GTAA's valued training partners go beyond meeting the required standards. They engage and collaborate throughout the process.

Culture	Engagement	Operational Integration	Skills Progression
Share our vision and values. Help us develop a culture of learning that includes opportunities to share expertise with others and ongoing, everyday opportunities to learn, reflect, and receive feedback.	For all GTAA roles interacting with the system, ask about work tasks and learning needs. Engage our GTAA Subject Matter Experts throughout all steps, while respecting our time.	Consider our work environment. Engage Operational Leaders to agree on objectives, timing, opportunities, constraints, and strategy. Tell us what GTAA systems, processes, or equipment will/might change. Tell us about great practices you've encountered.	Help us assess existing and needed skill levels. If relevant, provide a progression of learning/skill development. Consider Fundamental Level and Advanced Level needs.

Consider all roles or audiences who need training or resources.

	**Operations**
	**Maintenance**
	**Controls**
	**Leaders** (Supervisors, Technical Specialists, Managers)
	**Safety Responders**

GTAA places high value on Train-the-Trainer sessions. Through these sessions, you help our technical experts get comfortable delivering your well-designed training. That way, we can keep the learning going even when you're not there.

GTAA TRAINING DECISIONS IN THE TCAT* AND BILLING CYCLE

Exploration of training needs starts when the GTAA decides to acquire or alter an asset. As part of the quote for providing or altering an asset, vendors estimate the scope of training they will provide, based on training requirements set out by GTAA.

RFP & TCAT Process ($) = potential billing	Training Design Process	GTAA Decisions RE: Training
BUSINESS CASE	Assess Needs and Objectives	What training is needed? Value vs. cost?
RFP		Clear training requirements? Evaluation criteria & weighting (for training content and methods)?
TENDERING & EVALUATION **Successful bidders:**	Design Module; Plan Evaluation	Training evaluation criteria met? Training standards reflected? Response/process give us confidence?
DESIGN & BUILD $	Develop/ Test; Iterate	Approve the learning design and application scenarios? The training work plan?
TESTING & COMMISSIONING		All training built/customized? Begin learning by observing vendors?
GTAA ACCEPTANCE $	Implement; Check Success	Accept training for use in pilot?
TURNOVER $		Training pilots implemented? Approve post-pilot finals?
SUPPORT AND MAINTENANCE $	Adjust; Close; Maintain	Vendors providing support? Refreshers & seasonal training?

***TCAT: Testing, Commissioning, Acceptance, and Turnover**

WHAT THE GTAA OFFERS TO HELP MEET THE STANDARDS

We want training developers and providers to succeed. Operational units offer the following:

a	Templates and tools to simplify the training design process and focus the work
b	A short list of external professional Instructional Designers who can provide guidance or active leadership to help raise the bar on learning outcomes and on finished quality
c	A style guide to brand the training as part of the GTAA's **Technical Training Program**
d	Interest in exploring how spaces can be set up to house physical training simulations
e	Openness to off-site training, particularly for Specialist certification
f	Collaboration of Operational teams to schedule people for the agreed training
g	Scheduling of employees by Operations to perform work that reinforces agreed training
h	"Learning Partners" on each team: Learning Partners can help guide others, given appropriate resources and training (including hands-on practice); Technical Specialists may also be Learning Partners, they can help teach others
i	A process for incorporating helpful resources into RMAX work orders
j	Pending (please ask): Technology enabling learning via question banks—as pre-module learning, to replace learning modules, or as post-training follow-up/reinforcement
k	Access to GTAA experts to help define training objectives and related work scenarios

The Broader Organization offers:

a	A knowledge management system to house tools and resources
b	A Learning Management System that houses and tracks learning activity
c	Flexibility in authoring tools that meet the technical criteria (e.g., Captivate, Storyline (preferred), Rise, Evolve Authoring)
d	Guidelines for online learning
e	Visual identity standards for GTAA branding and for the Technical Training Program
f	Photos of equipment in a GTAA context, within reason and with advance agreement

MEETING THE STANDARDS: THE PROCESS IS FAMILIAR

You know that the development and implementation of assets follow a process.

Development and implementation of training also follow a process.

The process is similar. It generally starts by defining needs and requirements.

Approval points at key gates help bake success into the process.

You know that asset design and build take time.

Training design and build also take time.

How much time?

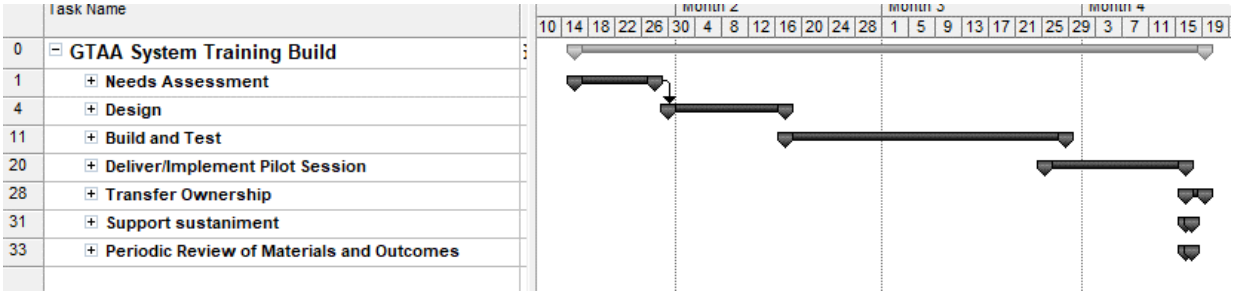
- Expect 8 to 16 weeks from the time you start focusing on design of a training module until it's ready for implementation.
- Initial training design exploration may start much earlier—as early as the tendering process.

You invest in the life cycle of your products.

Invest in training's life cycle: from requirements gathering and solution design through to implementation, sustainment, maintenance, and assessment of value gained.

You actively manage and schedule products and services.

Manage your training as a project. Keep GTAA apprised of project status, roles, issues, and needs.



Sample learning solution/training project plan, to support project definition and control

INTELLECTUAL PROPERTY RIGHTS

GTAA seeks to retain rights to use and adapt training/learning materials as needed.

Exclusivity of those rights, and ownership of training/learning materials, are negotiable.

GTAA must receive, for our unlimited use, online-ready (preferably searchable) versions of reference documents, including manuals, job aids, and trouble-shooting guides.

GTAA needs editable versions with editing rights for materials that will need maintenance or updates.

Technical Training Standards: Process and Specifications

AT A GLANCE: REQUIRED TECHNICAL TRAINING STANDARDS

The numbered standards reflect proven processes for effective, active learning experiences. Training design and implementation for ADTS and Airport Operations must meet these standards **and the specifications that follow in the Detailed Technical Training Standards**.

RFPs or bid requests may list additional requirements, including required professional qualifications for learning and development professionals.

Notes: The standards are organized by phases of work. Design/Build is often performed iteratively.
Orange text reflects items requiring GTAA approval.

Assess Needs and Objectives

1 **Define business needs, training goals, reference tools and GTAA roles for training**

2 **Define relevant, outcome-focused objectives that can be observed or measured**

Design Module; Plan Evaluation

3 **Create a learning design document that outlines resources, training and evaluation**

4 **Design for familiarity with resources, retention, decision-making, and actions**

5 **Integrate adult learning principles and engagement into design and delivery**

6 **Select the highest-value delivery methods**

7 **Plan for implementation and sustainment that consider the GTAA's environment**

Develop/Test; Iterate

8 **Build training materials that reflect best practices and support active learning**

9 **Validate with experts and test with a pilot group of the intended audience**

10 **Ensure a high-quality finished training product: writing, sounds, visuals, branding**

Implement; Check Success

11 **Deliver and/or facilitate the learning experience to meet the objectives**

12 **Provide resources for use during and after training**

13 **Evaluate participant achievement of the learning objectives**

Adjust; Close; Maintain

14 **Include GTAA ownership of all training materials, unless otherwise negotiated**

15 **Periodic support and reviews: what should be changed or replaced?**

AT A GLANCE: EFFECTIVE TRAINING

The numbered standards reflect proven processes for achieving effective training. What effective training looks like depends on what is needed to achieve the objectives.

In all cases, effective training meets clear, agreed learning objectives to demonstrably build the needed competence and confidence in a way that is suited to the work, learning and teaching environments.

Following are a few indicators that a training solution is on target to be effective.

Audience and Contextual Relevance

Training is delivered to affected roles by assessing work they perform and conditions in which they perform it, and identifying related skill, knowledge, and awareness gaps.

The learning objectives are generated based on the identified gaps and are approved by operational leaders. Leaders approve timing, constraints, overall delivery schedule and mechanisms, success measures and methods, and high-level training solution.

Access to and Proficiency with Great Reference Material

Knowledge ends up residing not with your expert or on PowerPoint slides, but rather in easily accessible reference materials. Employees receive the resources they will need on the job.

The GTAA values well-designed manuals in addition to:

- Job aids and procedural documents, including equipment-specific safety procedures
- Videos — explanatory videos and/or short how-to videos for tasks that benefit from refreshers
- Web-based training resources
- Other resources for trainers and participants, including ongoing vendor support

Participants gain comfort with resources in training: they use and solve problems with them.

Delivered with Excellence

Facilitators are on track to coordinate and deliver training professionally and with excellence.

Training Time is Used to Greatest Effect

The GTAA values at least 60% hands-on, active, applied training.

When classroom learning is needed, it is used to best effect, making use of group knowledge and collaboration. Training is aligned with adult learning principles, minimizes lecture-style teaching, and includes more application time than classroom theory.

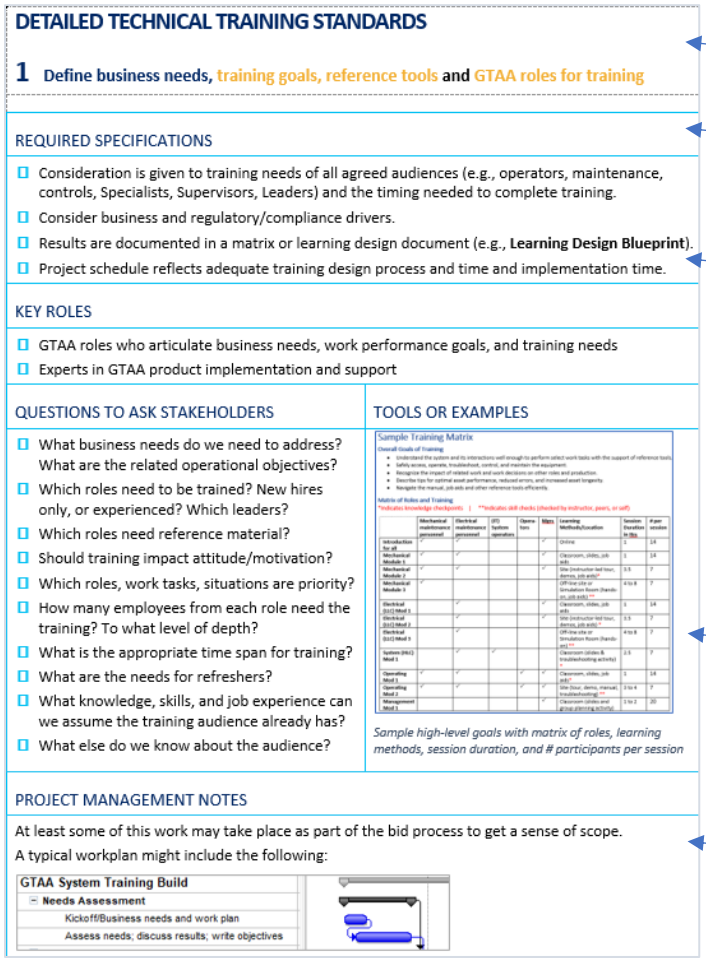
Learning Follows a Logical Progression

The training offers a progression of learning, with opportunities to assess results.

HOW TO READ THE REQUIRED SPECIFICATIONS AND GUIDELINES

The following pages contain **specifications** (requirements) related to each standard: a "Required Specifications" section appears immediately below each standard.

In addition, guidelines are provided around roles, questions to ask, tools or examples available, and project planning.



DETAILED TECHNICAL TRAINING STANDARDS

1 Define business needs, training goals, reference tools and GTAA roles for training

REQUIRED SPECIFICATIONS

- Consideration is given to training needs of all agreed audiences (e.g., operators, maintenance, controls, Specialists, Supervisors, Leaders) and the timing needed to complete training.
- Consider business and regulatory/compliance drivers.
- Results are documented in a matrix or learning design document (e.g., **Learning Design Blueprint**).
- Project schedule reflects adequate training design process and time and implementation time.

KEY ROLES

- GTAA roles who articulate business needs, work performance goals, and training needs
- Experts in GTAA product implementation and support

QUESTIONS TO ASK STAKEHOLDERS

- What business needs do we need to address? What are the related operational objectives?
- Which roles need to be trained? New hires only, or experienced? Which leaders?
- Which roles need reference material?
- Should training impact attitude/motivation?
- Which roles, work tasks, situations are priority?
- How many employees from each role need the training? To what level of depth?
- What is the appropriate time span for training?
- What are the needs for refreshers?
- What knowledge, skills, and job experience can we assume the training audience already has?
- What else do we know about the audience?

TOOLS OR EXAMPLES

Sample Training Matrix

Sample high-level goals with matrix of roles, learning methods, session duration, and # participants per session

PROJECT MANAGEMENT NOTES

At least some of this work may take place as part of the bid process to get a sense of scope.
A typical workplan might include the following:

GTAA System Training Build
Needs Assessment
Kickoff/Business needs and work plan
Assess needs; discuss results; write objectives

The numbered standard; orange items need approval

The required specifications

In addition to the roles listed, the design team's Training Project Manager should attend all stakeholder meetings.

Tools shown are available from GTAA at no charge, *for use in GTAA projects*.

Project management ideas or workplan excerpt, for illustrative purposes only

Call in the Experts.

When building learning solutions, enlist learning and development professionals. Look for professionals who aren't just trainers or talent-development coaches — those are other areas of specialty. Look for Instructional Designers: professionals who team up to *design and build* custom learning solutions for industry.

See "Appendix A" for specifications related to experts' professional qualifications.

DETAILED TECHNICAL TRAINING STANDARDS

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- ☐ What else do we know about the audience?

TOOLS OR EXAMPLES

Sample Training Matrix

Overall Goals of Training

- Understand the system and its interactions well enough to perform select work tasks with the support of reference tools
- Safely access, operate, troubleshoot, control, and maintain the equipment.
- Recognize the impact of related work and work decisions on other roles and production.
- Describe tips for optimal asset performance, reduced errors, and increased asset longevity.
- Navigate the manual, job aids and other reference tools efficiently.

Matrix of Roles and Training

*Indicates knowledge checkpoints | **Indicates skill checks (checked by instructor, peers, or self)

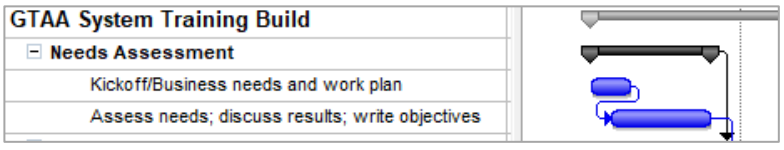
	Mechanical maintenance personnel	Electrical maintenance personnel	(IT) System operators	Opera-tors	Mgrs	Learning Methods/Location	Session Duration in Hrs	# per session
Introduction for all	✓	✓			✓	Online	1	14
Mechanical Module 1	✓	✓			✓	Classroom, slides, job aids	1	14
Mechanical Module 2	✓	✓			✓	Site (instructor-led tour, demos, job aids)*	3.5	7
Mechanical Module 3	✓					Off-line site or Simulation Room (hands-on, job aids) **	4 to 8	7
Electrical (LLC) Mod 1		✓			✓	Classroom, slides, job aids	1	14
Electrical (LLC) Mod 2		✓			✓	Site (instructor-led tour, demos, job aids) *	3.5	7
Electrical (LLC) Mod 3		✓				Off-line site or Simulation Room (hands-on) **	4 to 8	7
System (HLC) Mod 1		✓	✓			Classroom (slides & troubleshooting activity) *	2.5	7
Operating Mod 1	✓	✓		✓	✓	Classroom, slides, job aids*	1	14
Operating Mod 2	✓	✓		✓	✓	Site (tour, demo, manual, troubleshooting) **	3 to 4	7
Management Mod 1					✓	Classroom (slides and group planning activity)	1 to 2	20

Sample high-level goals precede a matrix of roles, learning methods, session duration, and # participants per session

PROJECT MANAGEMENT NOTES

At least some of this work may take place as part of the bid process to get a sense of scope.

A typical workplan might include the following:



2 Define relevant outcome-focused objectives that can be observed or measured

REQUIRED SPECIFICATIONS

- ☐ Performance goals, for each role related to the equipment/system, aligned with business needs.
- ☐ Learning objectives, aligned with the performance goals, describe what participants will achieve *during training*.
  - Use-cases created during system design/commissioning might help inform the objectives.
- ☐ Key learning objectives are observable or measurable (i.e., they state the knowledge and skills participants *demonstrate* during training—not just topics training will cover; see "Appendix B").
- ☐ Results are documented in a learning design document/blueprint (a GTAA template is available).

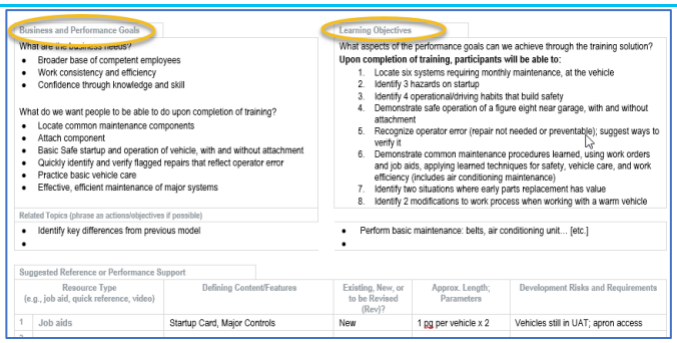
KEY ROLES

- ☐ Experts in GTAA product and training implementation and post-training support
- ☐ GTAA stakeholders for performance goals and learning objectives

QUESTIONS TO ASK STAKEHOLDERS

- ☐ What are the performance goals? (i.e., What do the identified GTAA roles need to *do on the job*, related to equipment and priority work tasks?)
- ☐ What related work challenges arise?
- ☐ What is the delta between what they know and what they need to know?
- ☐ What else do they need to learn?
- ☐ In what unique conditions should Learners practice?

TOOLS OR EXAMPLES



Two types of objectives: performance goals and learning objectives

- ☐ What are the learning objectives – the objectives we will achieve through training, that support the desired performance outcomes? Ask: What related skills and knowledge are needed?
- ☐ How can we phrase the objectives to be SMART*?
- ☐ What are the right levels of knowledge depth? Of skill proficiency?

***SMART—Specific, Measurable, Action-focused, Realistic, and Time-based**

PROJECT MANAGEMENT NOTES

Avoid over-promising. Learning objectives are commitments: what you can achieve *through the learning solution*. Phrasing should reflect what you can deliver. Negotiate this with stakeholders.

This work might require iteration. It might span Needs Assessment and Learning Solution Design. A typical workplan might include the following: project initiation, workplan, needs assessment, client discussion, objective-writing, and exploration of high-level learning solutions and durations.

3 Create a learning design document that outlines resources, training flow, and evaluation

Blueprint for success!

REQUIRED SPECIFICATIONS

"Begin with the end in mind."
Stephen R. Covey

Learning Design Document

- ☐ Reflects the standards provided in this document.
- ☐ Contains the information needed to guide the training project work.
- ☐ Includes:
  - ☐ Learning objectives, how they will be achieved, how Learners gain comfort with reference materials/job aids
  - ☐ Enough detail to create a shared vision of engaging, relevant, active learning that achieves the objectives for the identified roles
  - ☐ Prerequisites, learning methods, media, tools/resources, and unique delivery requirements
  - ☐ Description of learning progression, if needed, from fundamental to advanced
  - ☐ Activities or coaching to support transfer of what they learned to the job
- ☐ The Learning Design Document includes a plan for evaluation methods that
  - ☐ Describe checks of knowledge and skill, final assessments/tests, and, when possible, evaluation that what they learned transferred to their on-the-job work.
  - ☐ Provide evidence or clear indication that participants gained the skills and knowledge defined in the learning objectives, to agreed specifications (example: achieve the stated outcomes, to *x* level of accuracy(e.g., with 70% accuracy immediately after training and with 90% accuracy after performing the work on the job three times; OR with minor support vs. independently vs. able to teach others)).
- ☐ Reflects systems and equipment used at GTAA and/or built for the GTAA.
- ☐ Separates must-have information from nice-to-have information (or omits the latter).
- ☐ Is documented for GTAA approval (a **Learning Design Document** template is available).

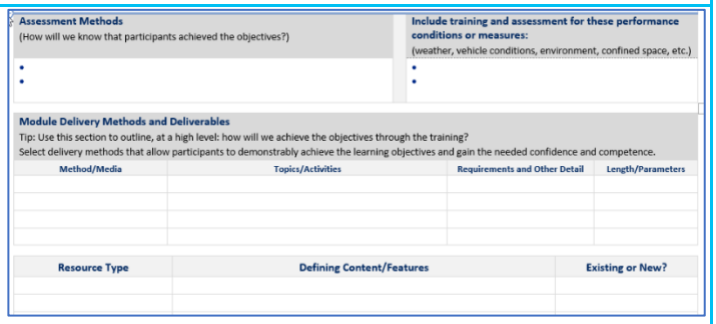
KEY ROLES

- ☐ Instructional Designer
- ☐ Trainers, if known
- ☐ Operational Leaders
- ☐ GTAA stakeholders for training needs, implementation opportunities, and constraints

QUESTIONS TO ASK STAKEHOLDERS

- ☐ What reference materials need to be developed?
- ☐ What are the design and delivery constraints? (e.g., time of day, 24/7 shifts, weather, space, media, participant numbers, coordination)
- ☐ What are Learners' preferred learning methods?
- ☐ What are the possibilities for skills application?
- ☐ When might reference materials/job aids be used to reduce the amount of instruction?
- ☐ Who will deliver the training? With what support?
- ☐ On what device will digital learning experiences take place?
- ☐ What are the practical possibilities for evaluation?

TOOLS OR EXAMPLES



Section of Learning Design Blueprint outlining course learning objectives, assessment methods, and high-level learning methods

PROJECT MANAGEMENT NOTES

Iterate: high-level design > client feedback > more detail (or prototype)

A typical workplan might include the following:

4 Design for familiarity with resources, retention, decision-making, and actions

REQUIRED SPECIFICATIONS

The **learning design document** reflects

- ☐ Participant use of reference materials during training, if those materials can be used on the job
- ☐ Techniques for supporting retention
- ☐ Interactions that support active learning and relevant decision-making
- ☐ Methods that facilitate transfer to the job of what participants learned (aim for 60% hands-on; 20 to 30% in-class, debrief, or self-study; 10 to 20% evaluation/skill and knowledge check)
- ☐ Application of skills and knowledge to take action/do a task (including scenarios or case-based troubleshooting*)

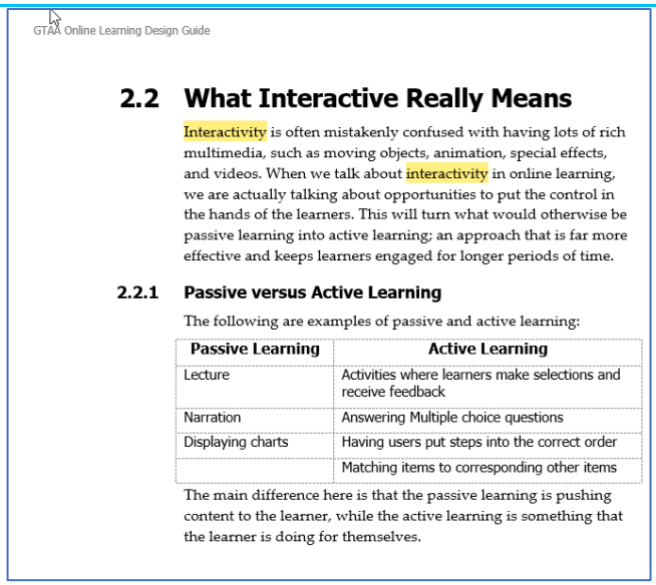
KEY ROLES

- ☐ Instructional Designer
- ☐ Trainers, if known

QUESTIONS TO ASK STAKEHOLDERS

- ☐ What are the relevant work orders, repair scenarios, or troubleshooting scenarios related to the module?
- ☐ Which can we replicate or simulate on site?
- ☐ Are there opportunities post-training for Learners to get tips or refreshers, or to deepen learning?
- ☐ What accessibility requirements should be met?

TOOLS OR EXAMPLES



GTAA Online Learning Design Guide

2.2 What Interactive Really Means

Interactivity is often mistakenly confused with having lots of rich multimedia, such as moving objects, animation, special effects, and videos. When we talk about interactivity in online learning, we are actually talking about opportunities to put the control in the hands of the learners. This will turn what would otherwise be passive learning into active learning; an approach that is far more effective and keeps learners engaged for longer periods of time.

2.2.1 Passive versus Active Learning

The following are examples of passive and active learning:

Passive Learning	Active Learning
Lecture	Activities where learners make selections and receive feedback
Narration	Answering Multiple choice questions
Displaying charts	Having users put steps into the correct order
	Matching items to corresponding other items

The main difference here is that the passive learning is pushing content to the learner, while the active learning is something that the learner is doing for themselves.

Excerpt from GTAA's Online Learning Design Guide

PROJECT MANAGEMENT NOTES

This standard is achieved during learning solution design and subsequent successful delivery.

***Often, trouble-shooting scenarios can be partially derived from User Acceptance Testing scenarios.**

5 Integrate adult learning principles and engagement into design and delivery

REQUIRED SPECIFICATIONS

The **learning design document, implementation plan, and execution** reflect adult learning principles, including the following:

- ☐ Respectful
- ☐ Clear relevance to work and work challenges
- ☐ Goal-oriented
- ☐ Learning from mistakes without embarrassment
- ☐ Active
- ☐ Draws upon Learners' experience
- ☐ Real-world practice/skills application (see "Creativity" section for guidelines)
- ☐ Opportunity for reflection and/or feedback
- ☐ Choices available to support self-direction
- ☐ Clear system for self-checking progress

KEY ROLES

- ☐ Instructional Designer
- ☐ Subject Matter Expert to ensure strong relevance

QUESTIONS TO ASK STAKEHOLDERS	TOOLS OR EXAMPLES
☐ What experience do Learners already have? ☐ What goals do they have? ☐ What motivates them? ☐ What recognition and consequences support motivation, if needed?	See "Required Specifications" above.

PROJECT MANAGEMENT NOTES

This standard is achieved during learning solution design and successful delivery.

6 Select the highest-value delivery methods

REQUIRED SPECIFICATIONS

> *"Even with a fantastic expert there's only so much we learn sitting there."*
> **– GTAA Employee**

The **learning design document** reflects delivery methods

- ☐ Approved by the GTAA, after consideration of value and effort for development and implementation.
- ☐ On-target to achieve the agreed objectives.
- ☐ Reflecting key considerations: nature and complexity of content, new training versus refresher, audience skill level versus needed skill level, retention needs, ease of access to resources, learning environment, participant engagement, group size, available resources at time of implementation, suitable and available space, risk level of the intended outcomes, skill progression path, timelines for content obsolescence.

*A **Training Day Leader Outline** (initial draft)*

- ☐ Describes the flow of training via a lesson plan or instructor's agenda to support a common vision of what the training will cover, learning methods, integration of reference material, time invested in each section, and how the instructor will achieve the goals (e.g., 1 to 2 pages per session).

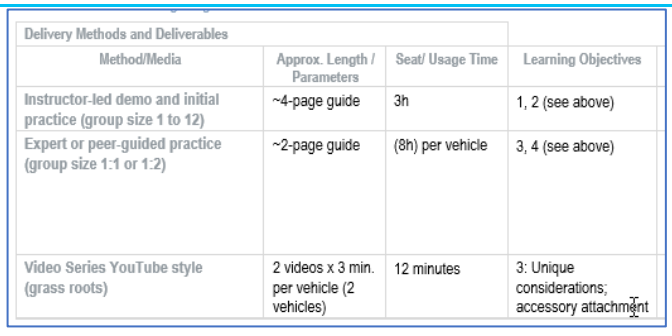
KEY ROLES

- ☐ Instructional Designer
- ☐ GTAA stakeholders for training implementation

QUESTIONS TO ASK STAKEHOLDERS

- ☐ Is it safe to do? What precautions must we take for safe training?
- ☐ Is this possible to implement?
- ☐ What is the probability of uptake?
- ☐ How quickly does this content become outdated?
- ☐ How many people participate at a time?
- ☐ What do they need to memorize?
- ☐ Can Learners get to a single location?
- ☐ How skilled do they need to be?
- ☐ What happens if we don't do *x* in the training? (risk)

TOOLS OR EXAMPLES



Delivery Methods and Deliverables			
Method/Media	Approx. Length / Parameters	Seat/ Usage Time	Learning Objectives
Instructor-led demo and initial practice (group size 1 to 12)	~4-page guide	3h	1, 2 (see above)
Expert or peer-guided practice (group size 1:1 or 1:2)	~2-page guide	(8h) per vehicle	3, 4 (see above)
Video Series YouTube style (grass roots)	2 videos x 3 min. per vehicle (2 vehicles)	12 minutes	3: Unique considerations; accessory attachment

PROJECT MANAGEMENT NOTES

This standard is achieved during learning solution design.

7 Plan for implementation and sustainment that consider the GTAA's environment

REQUIRED SPECIFICATIONS

- ☐ An **Implementation, Delivery, and Sustainment Plan** is approved by the GTAA.
- ☐ Planning includes Train-the-Trainer sessions or leader/facilitator briefings, as needed.
- ☐ Use of a Train the Trainer model requires advance approval by the affected Operations leaders. The training provider must demonstrate that the trainers have been set up for successful delivery and that an agreed, representative set of end-users/participants achieve their learning outcomes.
- ☐ Implementation, space and equipment requirements, and logistics are planned sufficiently in advance to support flawless execution.
- ☐ The plan includes approximate time span for implementation. It takes into consideration the scheduling requirements for each learning group and shift, and any off-site training for key cohorts expected to then train others.
- ☐ The learning design document outlines any sustainment activity or suggestions.

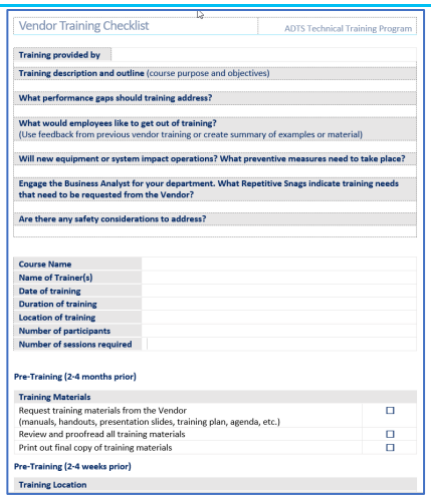
KEY ROLES

- ☐ Instructional Designer
- ☐ GTAA stakeholders for training implementation

QUESTIONS TO ASK STAKEHOLDERS

- ☐ What actions are feasible to sustain the new knowledge and skills?
- ☐ How might the reference materials be leveraged?
- ☐ How will reference materials be accessed?
- ☐ Who will craft the communications about this training and expectations related to it?
- ☐ What logistics do we need to work out?
- ☐ How do we ensure safety during implementation?
- ☐ Should we plan to brief leaders or other groups on this training or its related expectations?
- ☐ What are the implementation roles/responsibilities?

TOOLS OR EXAMPLES



Vendor Training Checklist — ADTS Technical Training Program

Training provided by

Training description and outline (course purpose and objectives)

What performance gaps should training address?

What would employees like to get out of training?
(Use feedback from previous vendor training or create summary of examples or material)

Will new equipment or system impact operations? What preventive measures need to take place?

Engage the Business Analyst for your department. What Repetitive Snags indicate training needs that need to be requested from the Vendor?

Are there any safety considerations to address?

Course Name	
Name of Trainer(s)	
Date of training	
Duration of training	
Location of training	
Number of participants	
Number of sessions required	

Pre-Training (2-4 months prior)

Training Materials	
Request training materials from the Vendor (manuals, handouts, presentation slides, training plan, agenda, etc.)	☐
Review and proofread all training materials	☐
Print out final copy of training materials	☐

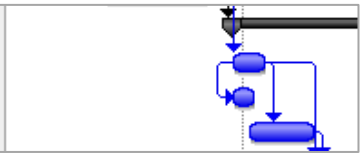
Pre-Training (2-4 weeks prior)

Training Location

PROJECT MANAGEMENT NOTES

This work is done during learning solution design and is refined during development of the solution.

Learning Solution Design
Draft learning Design Blueprint
Plan implementation and sustainment
Develop prototype



8 Build training materials that reflect best practices and support active learning

REQUIRED SPECIFICATIONS

- ☐ Early approval gained on direction and content before full build
- ☐ Early approval of draft assessment questions/activities (or a sample of them)
- ☐ Participants have post-course access to take-away(s), as applicable: workbook, job aid, infographic, technical glossary, video, checklist, etc.*
- ☐ All training materials
  - ☐ Are devoid of problematic copyrights: GTAA owns them in perpetuity (or vendor owns them, if agreed to prior to project acceptance).
  - ☐ Meet GTAA stakeholder expectations for content, depth, and objectives.
  - ☐ Reflect goal-oriented efforts to innovate or improve output.
  - ☐ Meet accessibility standards, as agreed with GTAA.
  - ☐ Are easy for Learners and facilitators to scan and use.
  - ☐ Use effective structure, sequence, and layout.
  - ☐ Use story arcs and storytelling to make points relatable and memorable.
  - ☐ Use digital space effectively; avoid a "textbook-on-screen" look.
  - ☐ Use visuals that represent GTAA equipment, setup, and environment, when possible.
  - ☐ Employ relevant methods of engagement; no distracting bells and whistles.
  - ☐ Give Learners choice to support relevance to their needs.
- ☐ Facilitator and Learning Partner guides, where applicable,
  - ☐ Are set up for easy scanning, navigation, and facilitation.
  - ☐ Provide the course purpose, objectives, intended audience, site requirements, space setup, group size, and preparation.
  - ☐ Include a high-level outline of the flow and timing (e.g., 1-2 pages per training day; see sample **Training Day Leader Outline**).
  - ☐ Include notes on *how* the content will be delivered and rationale for using those methods.
  - ☐ Provide clear instructions and logistics for activities.
  - ☐ Include suggested messages to send to leaders or for leaders to convey, leading up to, during, and after training.
- ☐ Job aids
  - ☐ Focus on a task or process (differentiated from manuals).
  - ☐ Are highly scannable and easy to interpret at a glance.
  - ☐ Can be easily accessed on the job.
- ☐ eLearning
  - ☐ Adheres to the standards set forth in the **GTAA Online Learning Design Guide**, with exceptions and additions as noted in "Appendix G."

***Employees appreciate a handout to refer to and on which they can write notes.**

KEY ROLES

- ☐ Instructional Designers and Developers
- ☐ GTAA visual identity stakeholders, as needed (use of available templates reduces need)
- ☐ ADTS Technical Performance team

QUESTIONS TO ASK STAKEHOLDERS

- ☐ Do we have the correct and accurate content?
- ☐ What content can/should we cut for this audience?
- ☐ Is this the correct branding/visual identity standard?

TOOLS OR EXAMPLES

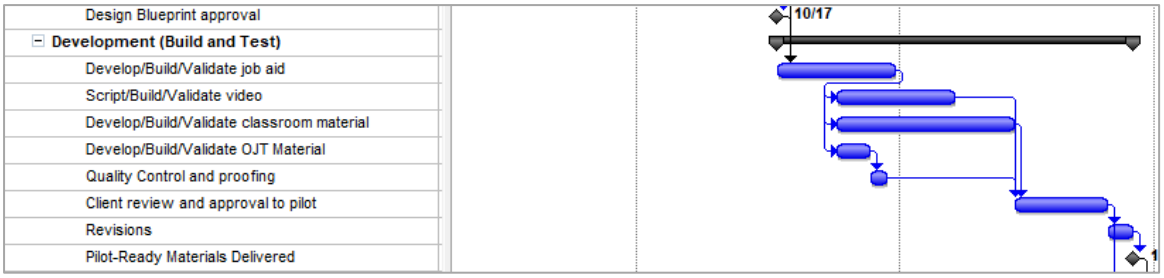
Example: Elearning menu structure shows objectives, job aid, interactive lessons, and learning scenarios. Hands-on application and check-out activities at the equipment follow the elearning.

PROJECT MANAGEMENT NOTES

Efficient: Script, storyboard, and/or prototype should be presented before full build for feedback and content approval.

Agile: Consider building one segment for pilot implementation. Learn from it for the next build.

A typical workplan might include the following:



9 Validate with experts and test with a pilot group of the intended audience

REQUIRED SPECIFICATIONS

> *"Sort out what [the groups/roles] need, train us to do it, and let us try it."*
> **– GTAA Employee**

- ☐ GTAA Subject Matter Experts and/or approvers have signed off on the content.
- ☐ User testing, if needed,
  - ☐ Is performed with members of the intended audience.
  - ☐ Validates that Learners can use/view/read/interpret the materials without additional instruction.
  - ☐ Validates that value for the audience can be reasonably anticipated.
- ☐ Online learning is delivered with enough time to be uploaded and tested on the LMS (e.g., one week; schedule agreed to in advance).
- ☐ Facilitators are comfortable with the facilitator materials.
- ☐ Learners are comfortable with course materials and their ease of use.

KEY ROLES

- ☐ Instructional Designers or Developers, and/or ADTS Technical Performance team
- ☐ Subject Matter Experts for content approval
- ☐ GTAA stakeholders to arrange testing

QUESTIONS TO ASK STAKEHOLDERS

- ☐ Who should validate (or sign off on) the content?
- ☐ Who should test the materials?
- ☐ What methods should we use for testing?
- ☐ What methods should we use to collect feedback from testers?

TOOLS OR EXAMPLES

PROJECT MANAGEMENT NOTES

This work takes place during development. Early validation can be obtained by writing drafts, scripts, storyboards, and/or developing a prototype.

Obtain Subject Matter Experts' content approval and stakeholder approval prior to the full build.

10 Ensure a high quality, finished training product: writing, sounds, visuals, branding

REQUIRED SPECIFICATIONS

- ☐ Training materials are written with clarity and ease of viewing and reading (Grade 8 to 10 reading level is accepted practice, though GTAA technical staff often have post-secondary education).
- ☐ Attention is paid to quality of the finish: proofreading, layout, graphics, sound, and print settings.
- ☐ Materials include cover pages unless they are very brief.
- ☐ Slide builds, animations, and on-screen video or elearning work as intended.
- ☐ Files are stored or printed as a logical group for easy organization and access.
- ☐ Print and production instructions are documented, as needed.
- ☐ Materials adhere to GTAA Technical Training Program branding, visual identity standards, and style guides, unless by permitted exception.

KEY ROLES

- ☐ Instructional Designers/Developers
- ☐ Quality Checkers and Proofreaders

QUESTIONS TO ASK STAKEHOLDERS

- ☐ Do I have the current brand guide?
- ☐ Do we have permission to use *x* photos?

TOOLS OR EXAMPLES

PROJECT MANAGEMENT NOTES

This work takes place during development. It begins at the early prototype or draft stage.

Although quality control can take place as each asset nears completion, doing another check when all materials are complete will help ensure consistency of terminology, formatting, etc.

11 Deliver and/or facilitate the learning experience to meet the objectives

REQUIRED SPECIFICATIONS

- ☐ Pilot-ready material based on approved design submitted 15 business days before training rollout
- ☐ Delivery reflects the agreed Implementation/Delivery Plan (adjusted with client agreement) and **Vendor Training Checklist**
- ☐ Timely delivery of Train-the-Trainer or leader briefings that build the needed confidence
- ☐ Refresher training delivered in a timely manner
- ☐ Assets provided in electronic format for integration into GTAA learning systems. Sample file types:
  - ☐ .PDF, .ppt, .docx
  - ☐ Max. file size of 2MB for materials used by Operations, unless by permitted exception
- ☐ Materials with unambiguous, manageable versioning in footers and file names
- ☐ Evidence of meeting the agreed upon learning objectives
- ☐ Reflection of original blueprint/design documents (significant changes were discussed with client)
- ☐ Timely, professional, engaging, and effective execution
- ☐ Effective use of examples and analogies
- ☐ Minimum one 15-minute break for every four hours of activity; other breaks/activity interspersed
- ☐ Evaluation and sustainment activity carried out (or initiated) per the blueprint/design plan
- ☐ Reporting complete: written attendance report, verbal and/or written report of outcomes

KEY ROLES

- ☐ Instructional Designers
- ☐ Trainers
- ☐ GTAA implementation leads: Technical Performance and Operations
- ☐ GTAA Learning Partners/Technical Specialists, if relevant
- ☐ Training Coordinators from Supplier and from the GTAA
- ☐ Participants and their leaders

QUESTIONS TO ASK STAKEHOLDERS

- ☐ When can we meet to coordinate implementation?
- ☐ Do we have the current version of the **Vendor Training Checklist**?

TOOLS OR EXAMPLES

PROJECT MANAGEMENT NOTES

A typical workplan might include the following:

12 Provide resources for use during and after training

REQUIRED SPECIFICATIONS

- ☐ Provide (i.e., for upload) the following:
  - ☐ Job aids and/or other reference materials
  - ☐ Participant handbook or workbook, if relevant
  - ☐ Electronic searchable files of all manuals and reference materials
  - ☐ Editable versions of training materials including job aids, diagnostic tools, and maintenance checklists
- ☐ File naming conventions and version control adhered to.
- ☐ Environmental impact is considered (minimize impact whenever possible).

KEY ROLES

- ☐ Instructional Designer

QUESTIONS TO ASK STAKEHOLDERS

- ☐ May we provide hard copy handouts?
- ☐ What is the best way to transfer large files to you?

TOOLS OR EXAMPLES

PROJECT MANAGEMENT NOTES

This standard is achieved during implementation including the preparation leading up to it.

13 Evaluate participant achievement of the learning objectives

REQUIRED SPECIFICATIONS

- ☐ Knowledge-based evaluations are online (when feasible) and relevant to the objectives.
- ☐ Application-based evaluations are included whenever there is value and it is feasible.
- ☐ Include decision-making opportunities and/or troubleshooting.
- ☐ Evaluations
  - ☐ Take place per the learning design document (adjustments made with GTAA approval).
  - ☐ Generally, are *in addition to* knowledge checks and application activities that take place during the learning activities.
  - ☐ Are individual, whenever there is value and it is feasible.
  - ☐ Include a score or a pass/fail threshold.
  - ☐ Allow for three attempts. Exceptions may apply.
- ☐ Attendance forms are completed and submitted.

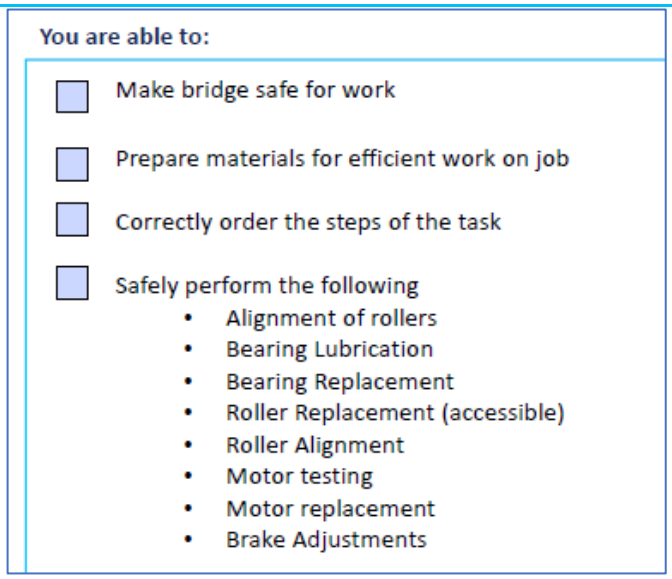
KEY ROLES

- ☐ Trainers
- ☐ Operational Leaders, Learning Partners, and/or Peers

QUESTIONS TO ASK STAKEHOLDERS

- ☐ How do these results compare to what you expected?
- ☐ What can we do as a team to improve the results?
- ☐ What tools are available for vendors, to support evaluation of training success?

TOOLS OR EXAMPLES



PROJECT MANAGEMENT NOTES

This standard is achieved during implementation and may include a post-implementation review of the results.

14 Include GTAA ownership of all training materials, unless otherwise negotiated

REQUIRED SPECIFICATIONS

- Provide editable documents to GTAA with statement of ownership and unlimited rights for use, unless otherwise negotiated prior to project acceptance.

KEY ROLES

- Instructional Designers/Developers

QUESTIONS TO ASK STAKEHOLDERS

- N/A

TOOLS OR EXAMPLES

TERMS

GTAA owns the rights to all deliverables Benchmark creates for GTAA, including all custom illustrations.

Deliverables created by a photographer or videographer may be subject to different ownership; normal practise is for usage rights to be granted in perpetuity. These usage rights would be limited to non-commercial and internal use.

PROJECT MANAGEMENT NOTES

A typical workplan might include the following:

15 Support and reviews: what should be changed or replaced?

REQUIRED SPECIFICATIONS

- ☐ On-the-job training support after product delivery, as agreed with GTAA
- ☐ Refresher training and ongoing training as agreed with GTAA
- ☐ Maintenance and updates through the life of the contract unless GTAA has ownership and there is contractual agreement that GTAA will maintain and update materials
- ☐ Minimum yearly client meeting to discuss feedback and maintenance

KEY ROLES

- ☐ Technical Performance
- ☐ Operational Leaders and Trainers
- ☐ Optional, recommended: sampling of participants for more direct or greater depth of feedback

QUESTIONS TO ASK STAKEHOLDERS

- ☐ What are the successes?
- ☐ What are the challenges?
- ☐ What is the work going forward?
- ☐ Has the refresher training occurred?
- ☐ Is it time to make some improvements?
- ☐ Is it time to do major innovations to the training?
- ☐ May we meet with a few participants to hear more?

TOOLS OR EXAMPLES

PSB 4500 PSB 5500

Technical specifications	PSB 4500	PSB 5500
Total length in working position	18.2 m	21.1 m
Total width in working position	6.4 m	7.5 m
Total width in transport position, without plow	2.99 m	2.5 m
Wheel base	10.9 m	10.5 m + 1.4 m
Height	3.6 m	3.7 m
Weight, without plow	23 t	31 t
Turning radius:		
- from outer plow end	13.6 m	16.3 m
- from outer front wheel	11.1 m	10.9 m
- from inner plow end	6.4 m	7.6 m
- from inner front wheel	8.6 m	9.0 m
Plow total width (37°)	6.75 m	7.5 m
Plow total width (0°)	7.6 m	9.0 m
Plow working width (37°)	5.6 m	6.7 m
Plow angle left and right	37	37
Broom core lenght	5.7 m	6.72 m
Broom working width (std 35)	4.6 m	5.5 m
Broom maximum diameter	960 mm	960, 1150, 1170 mm
Swing angle left and right (std 35°)	30°- 40°	30°- 40°
Caster wheels, automatic adjustment	2 pairs	4 pairs or 2 single
Air flow	10 cu m/s	11 cu m/s
Air speed at nozzle	400 km /h	400 km/h
Recommended max. working speed	40 - 60 km/h	40 - 60 km/h
Drive engine – US Tier 3 / EU Stage IIIa	Caterpillar C11	Caterpillar C15
	287 kW	354 kW
Aggregate engine – US Tier 3 / EU Stage IIIa	Caterpillar C11	Caterpillar C15
	313 kW	354 kW
Voltage	24 V	24 V
Transmission, Allison 4000 RDS automatic	6 forward + 1 reverse	6 forward + 1reverse

PROJECT MANAGEMENT NOTES

A typical workplan might include the following:

Applying Creativity

CREATIVITY

The GTAA values creativity where it builds relevance and engages employees in active learning. Use this section to generate ideas for your learning solution.

The design stage is a great opportunity to inject creativity. At the learning design blueprint stage, GTAA reviews the proposed learning solution including learning methodologies.

Design for great use of training time

60%	40%
Hands-On, Active, Applied	**Other Modalities**

Avoid lecture-style teaching

Lecture-style teaching makes it difficult to achieve outcome-focused objectives. Classroom settings are often too static to make learning stick.

When classroom learning is needed, use it to best effect. Make use of the group's knowledge and collaboration. Align with adult learning principles. Less slides = more application!

Effective training is often a blend

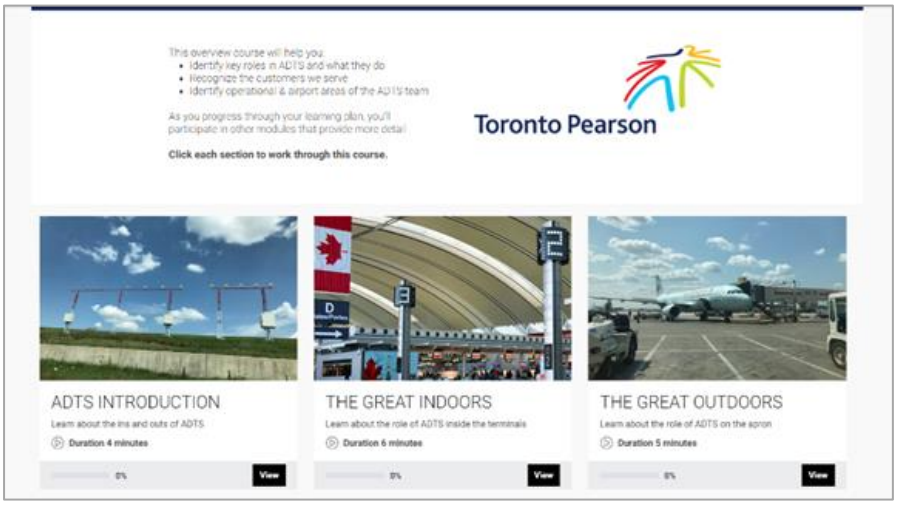
Alternatives modalities to lecture-style training include, but are not restricted to:

On-the-job learning (shadowing or hands-on)	Interactive images	Reference materials
Online learning (should include decision-making)	Self-study	Peer-based learning
Demonstrations (by Instructor and/or Learners)	Scenarios or cases for problem-solving	Competitive activity
Brief, targeted videos (1 to 3-minute)	Simulations (physical or via technology)	Augmented or virtual reality

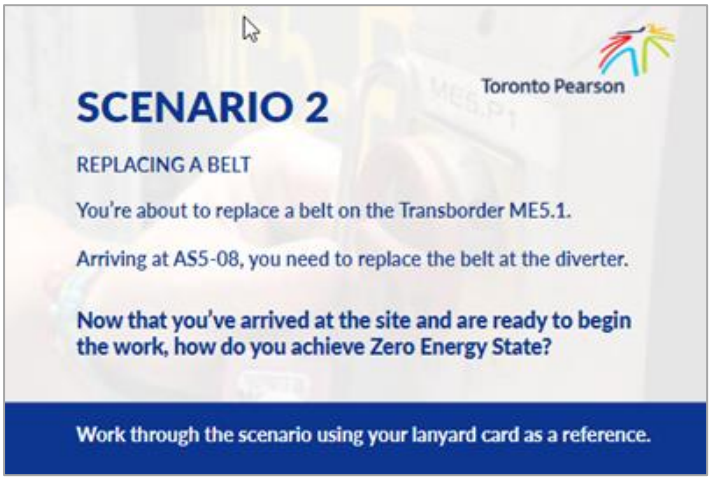
Examples of other modes of learning:

A great way for GTAA experts to begin learning about a new system, its interactions, and terminology is by observing a vendor during testing/commissioning or equipment preparation.

Other examples include online learning, and table-top or on-the-job problem-solving scenarios.



Learning website to supplement live tour and activities



Scenario used during hands-on training, in small groups

> *"While a variety of interactive options can help facilitate learning, it is the interaction and guidance from other human beings that makes for a memorable learning experience."*
>
> **– 2019 Voice of the Learner, GPStrategies**

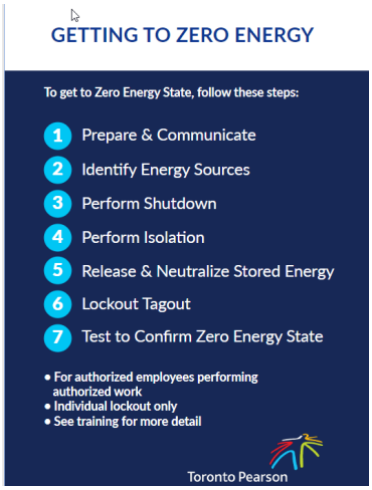
Manuals

The GTAA highly values manuals that contain the following content in digital, searchable form. They serve as useful reference material and may help during identification of training needs.

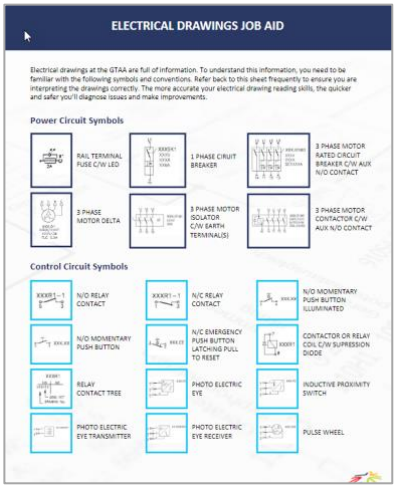
1. Theory of operations (what it does)
2. Mechanical transformations (how it does it)
3. Controls build list (the brains behind it)
4. List of troubleshooting details
5. List of features or considerations new to the equipment or model

Reference Materials Go Beyond Manuals — Try Job Aids and More

- Great reference materials are useful *after* the training (on the job).
- In addition to manuals, options include maintenance guides, procedures, job aids, system drawings, component shop drawings, diagnostic tools, short videos (including 3D), and augmented reality at site.
- Consider providing notebook computers loaded with manuals, job aids, or other reference materials for participants to use during hands-on training. This builds familiarity with reference tools and comfort finding information quickly.



Job aid for use during and after training



Job Aid for use during and after training

Video of start-up procedure

Grass roots how-to video

Lesson Plans Can be Simple and Engaging

Great course designers get creative in trying to make hands-on training work.
The effort goes into the up-front work and supporting implementation. The day-of lesson plans/facilitator outlines themselves can be quite simple.

15 mins	**(95)**	**BREAK**	
40 mins	P/A	Hands on Demo of Maintenance on the basic engine components	Maintenance checklists
Objective: Demonstrate the knowledge and ability to diagnose, troubleshoot and execute repair for emission controls on Engine			
40 mins	C/K	Introduction to DELTA of engine Major components Include explanation of relation to other systems	Trainer knowledge, OEM
30 mins	P/A	Start Hands on practice of diagnose, troubleshoot for emission controls	Maintenance checklist Diagnostic Tool
30 mins	**(205)**	**LUNCH**	
60 mins	P/A	Continue Hands on practice of diagnose, troubleshoot and repairs for emission controls	Diagnostic tool
30 mins	C/K	Review of Transmission components and maintenance	Bus Trainer knowledge, OEM

Agenda

Course Duration: 2 hours

Duration	Activity
5 min	Welcome/Introductions/Ground Rules
10 min	Review: What is Zero Energy State (ZES)?
30 min	Activity: Practice Scenarios
5 min	Activity Debrief
1 hour	Activity: Scenarios on the Floor
5 min	Activity Debrief

TRAINING DAY: LEADER'S OUTLINE [SAMPLE] | ADTS Technical Training Program

Day 1		
Minutes	**Description (Important: include ways to actively engage participants)**	**Resources (Participant Resources in bold)**
5-10 min	Introduce course and yourself Housekeeping, emergency exits, etc. Participant introductions, if needed	At vehicle in shop **Course Agenda**
10 min	Deliver course motivator (scenario, story, changing business needs, etc.) Review course agenda and high-level objectives	
5 min	Introduce purpose of walkaround activity	
20 min	Walkaround inspection of one vehicle, pointing out key components and access Invite participants to lead parts of the walkaround Ask questions to check understanding and deepen learning	Vehicle
30 min	Review basic engine components and maintenance • Include explanation of relation to CAN system • Note the new location of the wiper fluids Invite participants to contribute to the explanations	**OEM Manual**
25 min	Demonstrate the new maintenance task (10 min) • Ask participants to refer to a checklist to follow the demo. Invite participants to share their experience and tips; highlight great practices	**Procedure/ Checklist**
20 min	BREAK (at least 20 minutes for each half-day of training)	
40 min	Bridge to activity; introduce activity purpose Give instructions for a) Activity: hands-on participant performance of maintenance tasks(s) b) peer roles during the activity: one participant performs task, one coaches, one observes c) what to focus on during the peer debrief	At vehicle **Manual**

Appendices

APPENDIX A: REQUIRED EXPERT QUALIFICATIONS

Trainers

Training Instructors must have:

- Minimum two years' experience within the past five years facilitating training
- Testimonials from satisfied clients
- Experience facilitating groups through learning experiences (not just presenting)

Training Instructors should carry a designation, such as:

- Certified Training and Development Professional (CTDP)
- Langevin or FKA or I4PL (Institute for Performance & Learning) Instructor Certification
- Equivalent certification

Instructional Designers

Instructional Designers *design* learning experiences. They get to know Learners, define learning objectives, gather relevant scenarios and content, outline (design blueprint) the best solution for the parameters, and then write/storyboard the learning solution. They excel at structuring relevant content and at planning efficient, active learning and needed retention.

Instructional Designers are generally not experts in the subject at hand. Rather, they work with their customers' Subject Matter Experts and stakeholders.

Instructional Designers must have:

- Min. 7 years' experience within the last 10 years designing training in various media
- Experience designing in industrial/technical environments like the GTAA's
- Samples of high-quality work
- Statements from satisfied clients or verifiable data demonstrating successful results (e.g., improved learning outcomes, more efficient performance, faster readiness, etc.)
- An active professional designation, such as:
    - Certified Training and Development Professional (CTDP)
    - Certified Professional in Learning and Performance (CPLP)
    - A diploma or continuing education certificate in instructional design for adults

Note:

1. Instructional Designers who design for academic or classroom environments may lack business skills and real-world experience for successful implementation at GTAA.
2. Instructional Designers might form a team with learning *Developers* or technicians who build the designed solution with the appropriate finished quality.

   Developers on the team must have three years' experience within the past five years, and a successful track record working with the named Instructional Designers.

APPENDIX B: DESIGNING GREAT INSTRUCTION

Scale it. Flex it. Make it agile.

Assess needs and define objectives, define the scope of training.

- Who is this training for? What do they already know?
- What work tasks do they do, or do they need to do, on this equipment or system?
- How well do they currently do the work? What are their obstacles/challenges?
- What portions of the gaps or challenges can be addressed through training?
- What is the environment for performance? The context for training?

Design the modules; plan implementation, timing, and evaluation.

A. Determine the goals and key content: work backwards from the performance goals (the end goals for work performance) to what they need to learn and do in the training to achieve that performance (the learning objectives).
   - **Performance goals**: What do they need to be able to do in *x* and *y* situations, and with what level of skill? What are some typical work scenarios that describe those situations and the needed action?
   - **Learning objectives**: To get through those scenarios well, what decisions do they make? What must they know to make those decisions and take appropriate action?
   - **Key content** (detail): Phrase as active objectives when possible.
   - **Timing;** How many participants per session? Which roles? Durations?

B. Determine the learning methods and activities: How can participants try the needed decision-making and actions in typical work scenarios?
   - What active learning methods will deliver long-term learning and achieve the end goals?
   - Can participants get hands-on practice? What reference material will they need?
   - What is realistic in terms of implementation and logistics?

C. Select evaluation methods: How will training success be recognized? Tracked?

Develop and Test the learning materials, in full or in batches; iterate.

- Organize and develop content for effective learning and retention.
- Pilot, check learning success, and evaluate results.
- Iterate as needed.

Implement or support implementation; check success.

Evaluate at intervals; determine future needs to maintain, adjust, and deepen learning.

APPENDIX C: WRITING LEARNING OBJECTIVES WITH CLEAR OUTCOMES

Start and finish with the goals in mind

Writing Outcome-Focused Learning Objectives

GTAA recognizes the challenge in switching mindset from training that addresses *topics* to training in which people learn to *do* their work, gaining (only) the skills and knowledge required for excellent work performance.

In general, a learning objective should include:

1. An action or verb
2. Any unique conditions under which the action is to be performed (including tools available, timing, and weather or other environments)
3. A standard that must be met (e.g., meeting three criteria, without error, with or without assistance). A standard of "accurately" or "realistically" or "as taught" is often understood so does not need to be stated.

Learning objectives support more than just knowledge acquisition. Well-considered objectives may also support decision-making, build confidence performing work tasks or skills, or build ability to support business goals.

In the table below, the first column lists content phrased as *topics*. The second column shows how those topics can be rewritten as observable or measurable *objectives*. The objectives reflect needed knowledge and achievable outcomes.

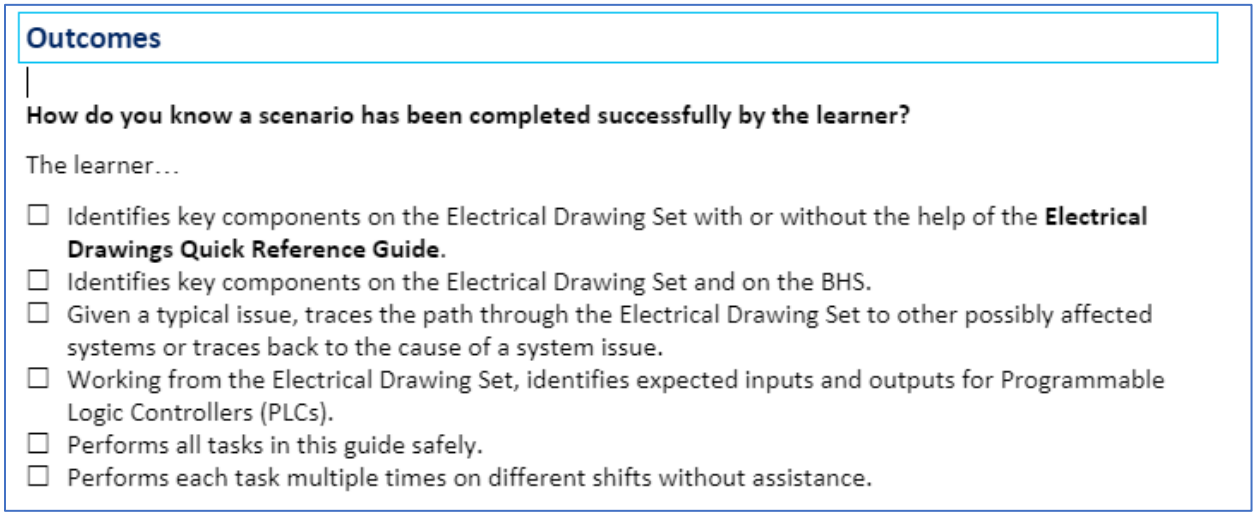
Which objectives go beyond knowledge acquisition?

Which column tells you the most about a Learner's readiness to perform skills or work tasks?

Under the Topic Heading…	Try this Wording:
Vehicle walk-through **Major system and component overviews** **What's new**	Identify three differences between the new and previous model. Describe at least one impact of new features on any of operation/maintenance/controls/integration. Identify three major systems and their components. Access and locate this component in darkened conditions. Describe three ways damage to *x* impacts *y*. Present/state rationale for following *x* procedure over *y* procedure.

Under the Topic Heading…	Try this Wording:
	Demonstrate ability to identify safety hazards while performing task. Given the equipment manual, demonstrate the documented process for maintenance of this component, explaining at least three risks you are watching for along the way.
Safe operation	List [or sequence] the steps for safe start-up. Given a documented procedure, demonstrate safe system start. With no written aids and in 30 seconds or less, demonstrate safe emergency stoppage. Starting from a cold engine (one week in freezing conditions), attach and test the broom without making the common operator error.
Common operator errors	Operate the equipment for *x* task according to proper procedure. Operate the equipment without common errors in *x* circumstances.
Safety and warnings	Approach the equipment and open the motor casing in a manner safe to you and those around you. Given this work order, list three potential work hazards. [Sequence *or* Describe *or*] Perform a procedure that will mitigate risk of stored hazardous energy for this work.
Common maintenance **and** **Specialty component maintenance**	Given a component worn early, identify two preventable reasons for the quick wear and tear. Identify three actions that will slow wear and tear. Identify three common failures and describe how they can be prevented. Given the equipment manual, demonstrate the documented process for component maintenance. Identify at least two things to watch for in the process that, if spotted now, may lead to work efficiencies. Describe to a team member three differences in maintaining *x.*
Repair	List three observable or measurable conditions indicating a component is failing/needs repair. Given a job aid, repair air conditioning unit's seal in *x* minutes.
Diagnosis and troubleshooting of common failures	Given a set of symptoms diagnose three potential causes and suggest remedial actions for the most probable cause. Follow diagnosing procedures and cross reference the results with troubleshooting situations documented in the equipment manual.

Under the Topic Heading…	Try this Wording:
Disaster recovery (as needed)	Outline the steps required to bypass automatic controls and run the equipment manually. Given an error that requires substantial intervention, safely and within *x* minutes switch the system to a bypass or manual mode to enable reduced functionality.



Outcomes

How do you know a scenario has been completed successfully by the learner?

The learner…

- ☐ Identifies key components on the Electrical Drawing Set with or without the help of the **Electrical Drawings Quick Reference Guide**.
- ☐ Identifies key components on the Electrical Drawing Set and on the BHS.
- ☐ Given a typical issue, traces the path through the Electrical Drawing Set to other possibly affected systems or traces back to the cause of a system issue.
- ☐ Working from the Electrical Drawing Set, identifies expected inputs and outputs for Programmable Logic Controllers (PLCs).
- ☐ Performs all tasks in this guide safely.
- ☐ Performs each task multiple times on different shifts without assistance.

Example of outcome-focused learning objectives that guide excellence in training design, implementation, and evaluation

APPENDIX D: EVALUATING GREAT INSTRUCTION

"Done" is not enough

You would not deliver a piece of equipment without making sure it does what the client expects. Mind you, you wouldn't wait until delivery to *define* what the client expects.

The same applies to evaluating learning solutions.

- Plan early to clarify expected outcomes.
- Plan ways to check that the Learners and the client are *experiencing* the outcomes.
- Build the assessment tools. GTAA has some you can use or adapt.

To make it easier to identify how the training can be improved, break down the evaluation.

- **Participation**: Did the intended audience attend? Did we hold their attention?
- **Environment**: Was the environment conducive to learning?
- **Knowledge**: Did the Learners gain the knowledge we expected?
- **Skill**: Can Learners do what we expected, at least in the training environment?
- **Application**: Can Learners transfer what they learned to the job (for example, as demonstrated through observation checklists or operational data)?

Use the evaluation to think forward.

- What should we do to improve the training solution, to better achieve the outcomes?

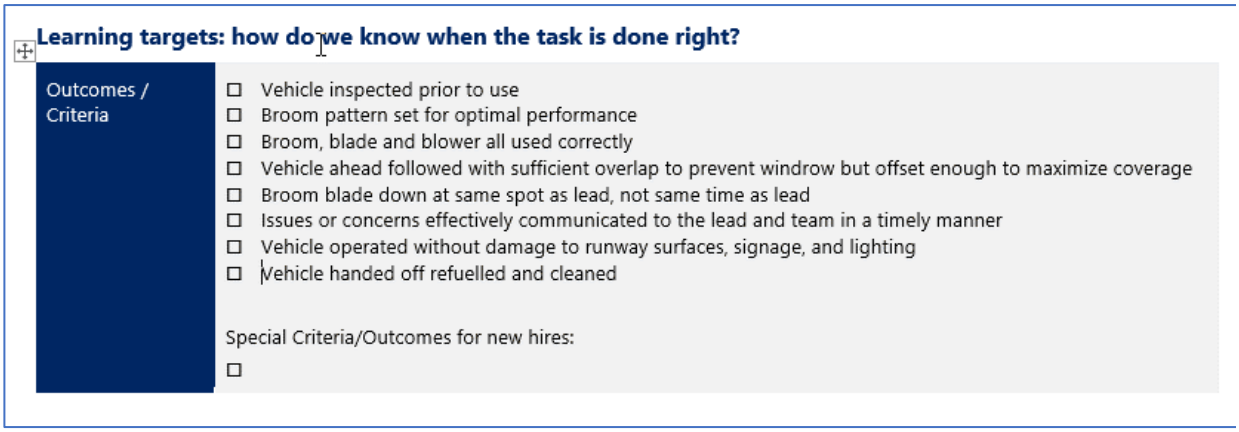
Learning Objectives Correlate to Evaluation

When objectives are written well, figuring out how to evaluate success is easy.

Knowledge Objective	Evaluation Options
Given this work order, list three potential work hazards.	Verbally or in writing, the Learner declares three hazards for a given work order, either in the training setting or on the job.
List (or sequence) the steps for safe start-up without use of the job aid.	Online, the Learner drags the steps into a correct sequence. The Learner lists the steps as a peer checks them using a job aid.

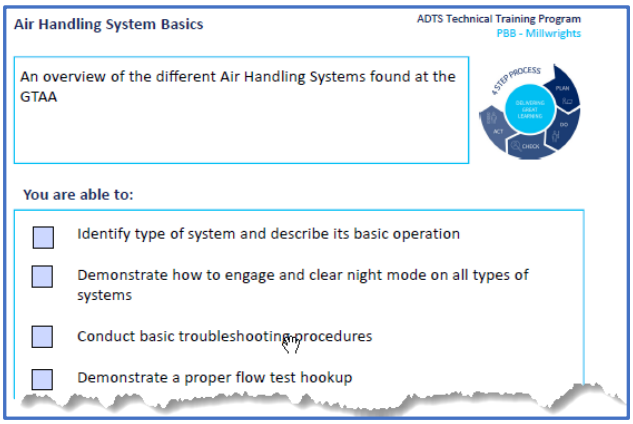
Decision-Making Objective	Evaluation Options
With the casing open, determine whether to replace parts.	Given a motor with its casing open/openable, the Learner explains what they see that is subject to wear and tear. They also state whether they would replace the parts, and why or why not.
Work Task/Performance Objective	**Evaluation Options**
Given the equipment manual, demonstrate the documented process for component maintenance.	Peer or supervisor has an observation checklist (shared in advance with the Learner); Learner performs the task; results are recorded on the checklist and later entered onto an online version (replica). (The online version communicates results to the LMS.)
Business/Operational Objective	**Evaluation Options**
Gain work efficiencies by early spotting and addressing of wear and tear (that meets defined or understood criteria).	At the equipment, while performing routine maintenance, the Learner spots early wear and tear and makes a criterion-based decision to replace it. Operations data of that equipment shows increased uptime, correlated to an increase in parts ordering.

Examples of Evaluation Tools



Learning targets: how do we know when the task is done right?

Outcomes / Criteria	
	☐ Vehicle inspected prior to use ☐ Broom pattern set for optimal performance ☐ Broom, blade and blower all used correctly ☐ Vehicle ahead followed with sufficient overlap to prevent windrow but offset enough to maximize coverage ☐ Broom blade down at same spot as lead, not same time as lead ☐ Issues or concerns effectively communicated to the lead and team in a timely manner ☐ Vehicle operated without damage to runway surfaces, signage, and lighting ☐ Vehicle handed off refuelled and cleaned Special Criteria/Outcomes for new hires: ☐



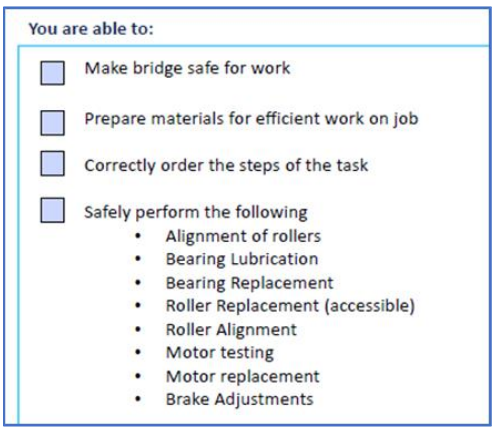
Air Handling System Basics

ADTS Technical Training Program
PBB - Millwrights

An overview of the different Air Handling Systems found at the GTAA

You are able to:

- ☐ Identify type of system and describe its basic operation
- ☐ Demonstrate how to engage and clear night mode on all types of systems
- ☐ Conduct basic troubleshooting procedures
- ☐ Demonstrate a proper flow test hookup



You are able to:

- ☐ Make bridge safe for work
- ☐ Prepare materials for efficient work on job
- ☐ Correctly order the steps of the task
- ☐ Safely perform the following
  - Alignment of rollers
  - Bearing Lubrication
  - Bearing Replacement
  - Roller Replacement (accessible)
  - Roller Alignment
  - Motor testing
  - Motor replacement
  - Brake Adjustments

Demographic Information – to help us make sense of the feedback

Years at Toronto Pearson?		Years with ADTS?		Years in current role?	

Part I – complete this at the start of the session

1. How often do you mentor others to help them learn GTAA systems, equipment, and work methods? (circle one)

Never	Rarely	Sometimes	Often

2. How often do you try out new techniques for mentoring others? (circle one)

Never	Rarely	Sometimes	Often

3. Rate your current confidence when mentoring others (5 is highest = very confident)

1 - Low	2	3	4	5 - High

Part II – complete the at the end of the session

1. How relevant was today's session to your day to day work? (5 is highest = very relevant)

1 - Low	2	3	4	5 - High

2. How likely are you to try the techniques learned today? (5 is highest = very likely)

1 - Low	2	3	4	5 - High

3. Rate your new confidence level in mentoring others (5 is highest = very confident)

1 - Low	2	3	4	5 - High

APPENDIX E: A SIMPLE LESSON OUTLINE

An early design document contains more than an outline. However, the lesson outline portion—the portion that describes the flow of training— should look clear, simple, and achievable.

A typical outline that addresses outcome-focused objectives might occupy one page per day of learning, and include the following training components:

Module Outline

During Training

1. Motivation/stories of why this training is needed
2. Introductions and overview
3. Knowledge, as needed (for new learning that is not explained nor adequately addressed in reference materials available on the job)
4. Demonstration and application, using the "Plan Do Check Act" model
    a. **Plan:** Plan the activity logistics and key objectives.
    b. **Do:** demonstration by Instructor or Learner; check understanding throughout
    c. **Check**: apply skills and knowledge to the practice/application scenario; use the reference tools; perform self-evaluation; request feedback from peers or Instructor
    d. **Act**: Determine next steps (e.g., repeat the activity, in smaller chunks)
5. Debrief/Reflect and learn
6. Evaluation by Trainer or Specialist (Learners each demonstrate they achieved the objectives)

Post-Training Activity

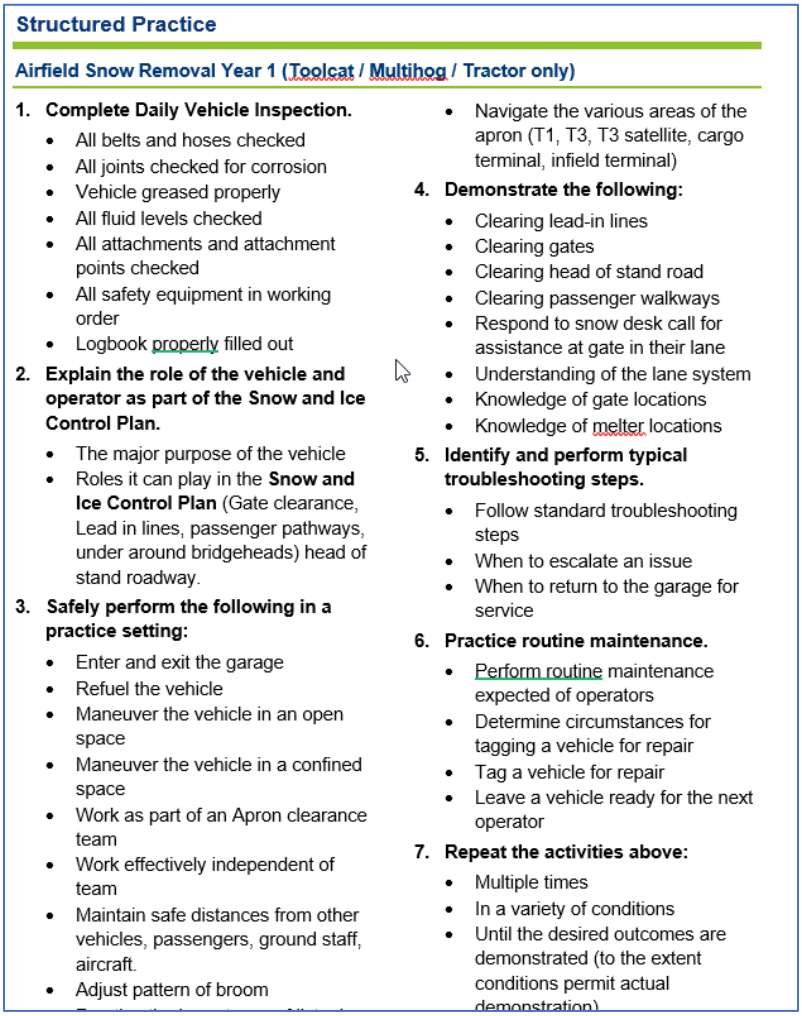
- Observation checklist or other process for checking transfer of the knowledge to the job environment
- Follow-up questions for evaluation of learning (after several days, weeks, and months)
- Sustainment: questions, videos, blogs, coaching, checks, manuals, job aids, etc.

APPENDIX F: LESS TIME IN CLASS?

During the analysis stage of learning design, it might be determined that little or no time is needed for in-class or online training. Perhaps the learning can be done on the job or in a simulated environment. Key to success is great reference material.

Great reference material—organized by work steps or by how an employee encounters the problem— can be text, visual, micro-videos, or a blend.

When might reference material be enough? Consider skipping formal training altogether or going straight to hands-on training when no other explanation is required, and the reference material is stored for easy access and/or searchability by all affected roles.



Structured Practice

Airfield Snow Removal Year 1 (Toolcat / Multihog / Tractor only)

1. **Complete Daily Vehicle Inspection.**
   - All belts and hoses checked
   - All joints checked for corrosion
   - Vehicle greased properly
   - All fluid levels checked
   - All attachments and attachment points checked
   - All safety equipment in working order
   - Logbook properly filled out
2. **Explain the role of the vehicle and operator as part of the Snow and Ice Control Plan.**
   - The major purpose of the vehicle
   - Roles it can play in the **Snow and Ice Control Plan** (Gate clearance, Lead in lines, passenger pathways, under around bridgeheads) head of stand roadway.
3. **Safely perform the following in a practice setting:**
   - Enter and exit the garage
   - Refuel the vehicle
   - Maneuver the vehicle in an open space
   - Maneuver the vehicle in a confined space
   - Work as part of an Apron clearance team
   - Work effectively independent of team
   - Maintain safe distances from other vehicles, passengers, ground staff, aircraft.
   - Adjust pattern of broom
   - Navigate the various areas of the apron (T1, T3, T3 satellite, cargo terminal, infield terminal)
4. **Demonstrate the following:**
   - Clearing lead-in lines
   - Clearing gates
   - Clearing head of stand road
   - Clearing passenger walkways
   - Respond to snow desk call for assistance at gate in their lane
   - Understanding of the lane system
   - Knowledge of gate locations
   - Knowledge of melter locations
5. **Identify and perform typical troubleshooting steps.**
   - Follow standard troubleshooting steps
   - When to escalate an issue
   - When to return to the garage for service
6. **Practice routine maintenance.**
   - Perform routine maintenance expected of operators
   - Determine circumstances for tagging a vehicle for repair
   - Tag a vehicle for repair
   - Leave a vehicle ready for the next operator
7. **Repeat the activities above:**
   - Multiple times
   - In a variety of conditions
   - Until the desired outcomes are demonstrated (to the extent conditions permit actual demonstration)

OJT In Action

Hands-on training can be led by an experienced Instructor or peer, with demonstration, explanation, guidance, and performance checks.

Participants perform work or solve scenarios using the reference material as their guide.

The Instructor or Learning Partner helps:

- Coordinate the event.
- Facilitate the learning process.
- Keep it organized.
- Keep everyone engaged throughout.

Learning Partners also give opportunities for repetition and/or added depth of the work. They confirm that a Learner can do the related tasks with confidence.

APPENDIX G: TECHNOLOGY STANDARDS AND OPPORTUNITIES

The GTAA wants to help you produce quality online learning that is highly relevant to the work our employees perform.

Although online webinars are certainly an option when the group or Instructor cannot meet in person, for many applications, online learning will refer to elearning, available on demand.

eLearning is a great option when:

- You need learning that is accessible 24/7 and has complete flexibility for scheduling.
- Self-pacing is important.
- You wish to immerse Learners in scenarios or in an environment but it's too risky, logistically challenging, or cost-prohibitive to do so with real equipment.
- The content is very necessary.
- Learners are motivated.
- The content is reasonably stable; it should have a shelf-life of at least two years with only minor updates.
- Cost efficiencies can be gained.
- Greater consistency of content has value.

Always ask about technology constraints.

At time of publication of this document, the GTAA has successfully deployed:

- Short animated and live videos (1 to 3 minutes)
- Online learning authored in Captivate, Storyline, Rise, and Evolve Authoring (Appitierre)

The GTAA is currently exploring:

- Augmented reality
- Learning via quick questions from a question bank sent over time to target groups
- A searchable library of videos, job aids, and tips for users to access quickly on the job

APPENDIX H: GTAA DESIGN GUIDES

The GTAA publishes documents for reference by training designers and developers. All these documents include standards to reference when planning and designing training.

The design guides are:

GTAA Technical Training Standards (this document)

GTAA Online Learning Design Guide (please inquire about updated content)

LMS Standards

ADTS Technical Training Program Brand Guide

Corporate Style Guide