

**YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

**A STUDY ON THE EFFECTIVENESS OF AVIATION
TECHNICAL TRAINING PROGRAMS IN ENHANCING HUMAN
RESOURCE CAPACITY IN MYANMAR
(CASE STUDY: TECHNICAL TRAINING SCHOOL,
MEIKHTILA)**

**YE HTUT KHAUNG
MPA II – 77 (22nd BATCH)**

JUNE, 2025

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IN MYANMAR
(CASE STUDY: TECHNICAL TRAINING SCHOOL, MEIKHTILA)**

A thesis submitted as a partial fulfilment of the requirements for the Degree of Master
of Public Administration

Supervised by

Dr Thet Mon Soe
Lecturer
Department of Applied Economics
Yangon University of Economics

Submitted by

Ye Htut Khaung
Roll No. 77
MPA (22nd Batch)
(2023-2025)

JUNE, 2025

YANGON UNIVERSITY OF ECONOMICS
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This is to certify that this thesis entitled “**A STUDY ON THE EFFECTIVENESS OF AVIATION TECHNICAL TRAINING PROGRAMS IN ENHANCING HUMAN RESOURCE CAPACITY IN MYANMAR (CASE STUDY: TECHNICAL TRAINING SCHOOL, MEIKHTILA)**” submitted as a partial fulfilment towards the requirements for the Degree of Master of Public Administration has been accepted by the Board of Examiners.

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(Examiner)

Lecturer

Department of Applied Economics

Yangon University of Economic

.....

Dr. Thet Mon Soe

(Supervisor)

Lecturer

Department of Applied Economics

Yangon University of Economics

JUNE, 2025

ABSTRACT

This study examines the effectiveness of aviation technical training programs in enhancing human resource capacity within Myanmar's aviation sector, with a focus on training provided by the Myanmar Air Force Technical Training School. Using a descriptive research design, data were collected from 237 trainees and professionals working at the Aircraft Production and Maintenance Headquarter in Meikhtila. The study employed both quantitative and qualitative methods, guided by the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model, to assess the relevance, quality, and outcomes of training programs. Findings reveal that the training programs are generally well-designed, with curriculum content aligned to international standards such as ICAO and EASA, and delivered by experienced instructors. While respondents reported improved job performance, technical skills, and career advancement, the study also identified key areas for improvement, such as limited hands-on practice and outdated equipment. The study concludes with strategic recommendations aimed at strengthening the effectiveness and sustainability of aviation technical training in Myanmar, including greater investment in technology, international collaboration, and curriculum modernization. These findings contribute to policy and institutional reforms that support long-term capacity building in Myanmar's aviation sector.

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LIST OF ABBREVIATIONS

ADDIE	Analysis, Design, Development, Implementation, and Evaluation
CATI	Civil Aviation Training Institute
CBTF	Competency-Based Training Frameworks
DCA	Department of Civil Aviation
EASA	European Union Aviation Safety Agency
ELT	Experiential Learning Theory
FAA	Federal Aviation Authorization
HRD	Human Resource Development
ICAO	International Civil Aviation Organization
ISD	Instructional System Design
MCC	Maintenance Control Center
MEAD	Maintenance Error Decision Aid
MOE	Maintenance Organization Exposition
MNA	Myanmar National Airlines
MRO	Maintenance, Repair, and Overhaul
OJT	On-the-Job Training
SME	Subject Matter Experts
SMS	Safety Management System
TNA	Training Needs Assessment
TOT	Training of Trainers
TTO	Technical Training Organization
TTS	Technical Training School
TVET	Technical and Vocational Education and Training

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

The national development, economic growth, and strategic security of a country hinge on the aviation sector. In Myanmar, a country trying to catch up with the rest of the world and modernize its aviation system, aligning with international standards, embarking on the ambitious journey towards modernity, the development of a capable aviation workforce has become a critical priority. That urgency is underlined by the fast growth of both military and civil aviation in Myanmar and the mounting demand that both sectors place on an underutilized, albeit technically competent, workforce. Despite the lack of empirical evidence on the effectiveness of the aviation technical training that is currently offered, the 2015-2016 Myanmar Military Civil Aviation Program spans no fewer than 13 different subject areas and training modules.

As ensuring operational safety, maintenance reliability, and technological readiness is fundamental, programs that train aircraft maintenance engineers, avionics technicians, airframe specialists, and ground support staff in Myanmar must comprehensively meet global aviation standards. Moreover, these programs must be tailored to the specific needs, infrastructure, and goals of human resource development in Myanmar. Absent a clear understanding or methodology for evaluating how well these programs perform in practice, Myanmar comprehensively risks underutilizing training investments and falling behind the global aviation sector's sudden competitive surge.

The significance of this study lies in it addressing a crucial void within both the existing literature and current policymaking. This study evaluates whether the present aviation technical training programs in Myanmar are meaningfully contributing to the enhancement of the country's human resource capacity. The study explores the key dimensions of the aforementioned programs such as curriculum relevance, instructor

qualifications, practical training exposure, industry collaboration and post-training job performance. The study also considers whether such programs meaningfully contribute to enhance Myanmar's human resource capacity in the field of aviation and to provide meaningful curricula development in alignment with international standards. This study is particularly focused on the assessment of the first key dimension.

Moreover, enhancing human capital through effective training is essential not only for civil aviation but also for the modernization and self-reliance of the Myanmar Air Force and other national aviation institutions. With increasing emphasis on advanced aircraft systems, digital avionics, and preventive maintenance strategies, the effectiveness of training programs directly influences aviation safety, defense readiness, and national technological progress. By systematically evaluating the strengths and limitations of current training efforts, this study aims to provide evidence-based recommendations for policymakers, training institutions, and stakeholders in the aviation sector. The findings will contribute to more strategic human resource planning, improved training standards, and better alignment of aviation education with national development goals.

1.2 Objective of the Study

The primary objective of this study is to examine the effectiveness of aviation technical training programs in strengthening human resource capacity within Myanmar's aviation sector at Aircraft Production and Maintenance Headquarter, Meikhtila.

1.3 Method of Study

The method of the study is descriptive method based on both primary data and secondary data. Primary data will be collected through structured questionnaires distributed to 237 graduates from Technical Training School working at Aircraft Production and Maintenance Headquarter, Meikhtila. The qualitative analysis of the research is done by conducting face to face interviews with instructors, Ground Crew Chiefs and Engineering Officers from Myanmar Air Force to gain deeper insights into the challenges, strengths, and contextual relevance of the training programs. The survey period is from 25th June, 2025 to 30th June, 2025.

1.4 Scope and Limitations of Study

This study focuses on studying the effectiveness of aviation technical training programs in enhancing human resource capacity within Myanmar's aviation sector at Aircraft Production and Maintenance Headquarter, Meikhtila. The scope includes selected aviation training institutions that provide technical training for aircraft maintenance, avionics, airframe, and related support services. The research primarily covers the perspectives of trainees, recent graduates, instructors, and institutional administrators, as well as insights from industry stakeholders and policymakers. It evaluates elements such as curriculum relevance, instructional quality, availability of practical training, and alignment with labor market demands and international aviation standards.

1.5 Organization of Study

This study organized into five chapters. The first chapter presents the introduction, including rationale of the study, objectives of the study, method of study, scope and limitations of the study and organization of the study. Chapter II includes meaning and purposes of technical training, models and theories of training and development, capacity building in aviation industry, human resource development (HRD), evaluating the effectiveness of aviation technical training and reviews in previous studies. Chapter III describes role of technical training in the aviation industry, population and sampling and aviation technical training in Myanmar. Chapter IV consists of the survey profile of respondents, primary data collected through the questionnaire is analyzed. Finally, Chapter V includes summary of major findings and conclusions in this study, recommendations and suggestions future research.

CHAPTER II

LITERATURE REVIEW

2.1 Meaning and Purposes of Technical Training

The main backbone of every organization is human resource. Human capital shall be developed through a sequence of effective training. Objectives of an effective training is based on needs and problems of the workspace itself. Then the a well programmed plan should be made and implemented. The achieved results of a previous training are analyzed and used as input for the next program. According Riva'i (2015: 207). Job training is one of the company's strategies to develop employee career. Job training in addition to improving the competence of employees, and if done with good planning will improve employee performance and performance. According Kaswan (2013: 2) Job training is part of the human resource management function and must be in line with the vision and mission of the company. Training may also include changing attitudes so that employees can do their work more effectively.

As organizations strive to remain competitive in an increasingly dynamic environment, training plays a crucial role in equipping employees with the skills, knowledge, and attitudes necessary to meet job demands and adapt to changing technologies, policies, and strategies. It is essential not only for employee performance but also for career development, workplace safety, and overall institutional success. Training can be defined as a systematic process through which individuals acquire knowledge, develop skills, and improve behaviors necessary for performing a specific job or function effectively (Noe, R. A, 2020). It involves structured learning experiences and activities designed to meet current or future job requirements. In essence, training bridges the gap between the job's requirements and the individual's existing capabilities. According to Armstrong (2020), training is "the use of systematic and planned instruction activities to promote learning." The emphasis here is on structured, purpose-driven instruction rather than informal learning. Training may include technical instruction, behavioral coaching, soft skills enhancement, and safety education, depending on the needs of the job and the organization.

The main objective of training is to boost the performance and productivity of employees by upgrading their knowledge and technical or interpersonal competencies. By an effective training, organizations can achieve greater efficiency, consistency, and quality in output. Moreover, training serves various other functions.

Skill Development: The process of developing the knowledge, practical abilities, and job-related competencies of individuals to improve their performance and productivity in the workplace. It plays a crucial role in equipping employees with the specific skills they need to perform their tasks effectively and meet the demands of their roles. Training programs designed for skill development focus on both theoretical knowledge and hands-on practice, allowing trainees to apply what they learn in real-world scenarios. This function helps bridge the gap between existing competencies and industry requirements, enabling employees to familiarize to new technologies, procedures, and work environments. Moreover, skill development encourages trainees with confidence, motivation, and career advancement opportunities. It also supports organizational goals by building a capable and efficient workforce. Employees gain or refine specific competencies needed for their roles, such as operating machinery and using software.

Workplace Adaptation: Training helps new employees integrate smoothly into the organizational culture and systems through orientation and onboarding programs. It includes the process of preparing employees—especially new hires or individuals shifting roles—to effectively integrate into the work environment, understand organizational culture, and perform their duties with confidence and competence. It involves equipping trainees not only with the technical skills required for the job but also with the soft skills, behavioral norms, and workplace protocols that enhance smooth integration. This aspect of training helps employees adjust to new systems, tools, coworkers, and management styles, thereby reducing the time it takes for them to become fully productive. Adaptation training may include orientation programs, mentorship, job shadowing, and simulations that mirror real workplace conditions. workplace adaptation ensures that staff not only know what to do, but also how, when, and why to do it within the specific organizational context.

Performance Improvement: For existing employees, training addresses performance gaps, enabling them to meet or exceed performance expectations. Training fulfills the goal of enhancing an individual's ability to perform their job more effectively, efficiently, and accurately through structured learning and development

activities. This function of training focuses on identifying gaps between current and desired performance levels and providing the necessary knowledge, skills, and attitudes to close those gaps. Training for performance improvement often includes hands-on practice, real-life simulations, feedback mechanisms, and targeted instruction tailored to job-specific tasks. By addressing weaknesses, reinforcing best practices, and introducing new techniques or technologies, such training helps employees become more productive, make fewer errors, and achieve higher quality outcomes in their roles. In technical fields such as aviation, healthcare, or engineering, performance-focused training is essential to maintain safety, compliance, and operational excellence.

Change Management: In times of organizational change, such as restructuring or the adoption of new technologies, training prepares the workforce to adapt effectively. Change often brings uncertainty, resistance, or fear among employees, and training helps to reduce these barriers by building confidence and competence. The structured approach used to help employees adapt to organizational changes such as new technologies, systems, processes, or structural reforms. Training plays a critical role in ensuring that individuals understand the reasons for change, accept it, and are equipped with the necessary skills and knowledge to operate effectively in the new environment. It includes not only technical instruction on new tools or workflows but also guidance on new expectations, communication strategies, and emotional resilience. For example, when an organization introduces a new digital platform or shifts to a more automated system, training ensures that staff can transition smoothly without significant disruption to productivity.

Compliance and Safety: In sectors like healthcare, aviation, and manufacturing, training ensures compliance with legal standards and promotes occupational health and safety. This function of training is especially important in high-risk industries such as aviation, manufacturing, healthcare, and construction, where mistakes can lead to severe consequences, including injury, loss of life, or legal penalties. Training for compliance ensures that employees understand and adhere to national regulations, international standards, and internal policies, while safety training equips them with the knowledge to recognize hazards, follow safety protocols, and respond appropriately to emergencies. These programs often include topics such as occupational health and safety, environmental regulations, data protection laws, and ethical conduct. For example, aviation personnel must undergo rigorous training on airworthiness standards, safety inspections, and emergency procedures to comply with civil aviation authority

requirements. Compliance and safety training not only protect individuals and the organization but also build public trust and contribute to long-term operational success.

2.2 Role of Technical Training in The Aviation Industry

The aviation industry is a highly complex and safety-critical sector that relies heavily on the precision, expertise, and reliability of its workforce. Among the various human resources that contribute to aviation safety and efficiency, technical personnel—such as aircraft engineers, maintenance specialists, avionics specialists, and ground handling crews play an essential role. To assure operational excellence and compliance with international safety standards, technical training stands as a foundational pillar within the aviation sector. Technical training in aviation refers to structured education and hands-on instruction designed to develop the specialized skills and knowledge required for the maintenance, inspection, and operation of aircraft systems. It not only supports the development of human capital but also safeguards lives, equipment, and the reputation of airlines and aviation authorities.

Aviation is governed by stringent international regulations set by bodies such as the International Civil Aviation Organization (ICAO), the European Union Aviation Safety Agency (EASA), and national aviation authorities. These organizations emphasize the need for standardized training to ensure that technical personnel are competent and compliant with international safety regulations. ICAO's Manual on the Approval of Training Organizations (Doc 9841) outlines detailed procedures and criteria for accrediting training institutions, emphasizing competence-based approaches and standardized curricula (ICAO, 2019). Compliance with such frameworks ensures that aviation technical personnel are not only certified but also competent to perform tasks according to globally accepted safety benchmarks. Basic aviation technical training programs typically include modules on aircraft systems, maintenance procedures, avionics, safety management, and ground handling operations.

One of the core functions of technical training is skill development. It involves equipping trainees with both theoretical knowledge and practical competencies necessary for troubleshooting, repairing, and maintaining modern aircraft. With technological advancements in avionics, navigation systems, and composite materials, the skill requirements of aviation technicians are continuously evolving. Training must, therefore, be dynamic and forward-looking, integrating simulation technologies, digital diagnostics, and up-to-date maintenance manuals. According to ICAO (2019), a well-

trained aviation workforce reduces operational risks, enhances compliance with international norms, and improves overall industry performance. As the aviation sector continues to adopt newer technologies, training programs must evolve to remain relevant and effective. Technical training institutions often collaborate with manufacturers such as Boeing and Airbus to provide type-specific training, ensuring that personnel can manage the intricacies of particular aircraft models.

Performance improvement is one of the key factors of effective technical training. Well-trained technicians reduce time consumption for maintenance, prevent unnecessary aircraft downtime, and contribute to operational efficiency. Studies have shown that organizations with strong training programs experience fewer technical delays and maintenance-related incidents (Ochieng et al., 2019). In this regard, training is not merely a regulatory requirement but also a strategic investment that enhances productivity and customer satisfaction.

Technical training also plays a vital role in ensuring safety and regulatory compliance. Given that human error is a leading cause of aviation accidents, technical staff must be trained to follow standard operating procedures, identify early signs of mechanical failure, and execute maintenance tasks with precision and accountability. Recurrent training and refresher courses are often mandated to keep personnel up to date with the latest safety protocols and engineering practices. For example, maintenance, repair, and overhaul (MRO) professionals are required to undergo regular assessments to retain their licenses under EASA Part-66 or FAA regulations.

In addition, change management and workplace adaptation are facilitated through technical training. As the industry embraces innovations such as electric propulsion, unmanned aerial systems (UAS), and artificial intelligence in predictive maintenance, training enables technicians to adapt to new tools, platforms, and working environments. Without effective training mechanisms, the aviation industry risks facing skill mismatches and reduced operational integrity in the face of technological disruption.

In the context of developing countries, such as Myanmar, the role of technical training is even more critical. Limited resources and infrastructure mean that human capital must be maximized through well-structured, context-appropriate training programs. International partnerships, scholarships, and foreign training placements can contribute to capacity building in national aviation sectors. Furthermore, the integration of aviation technical training into public administration and educational policy

frameworks could ensure that workforce development aligns with national aviation goals.

Technical training serves as a backbone of the aviation industry by ensuring that personnel are competent, efficient, and compliant with international standards. It enhances operational safety, supports technological advancement, and promotes sustainable workforce development. As aviation continues to evolve, the importance of adaptive, high-quality technical training will only increase. Governments, training institutions, and industry stakeholders must, therefore, collaborate to invest in training infrastructure, curriculum modernization, and trainer development to safeguard the future of aviation.

2.3 Models and Theories of Training and Development

Training and development are key components of human resource development that aim to improve the knowledge, skills, and competencies of labor force to enhance performance and achieve organizational goals. A variety of models and theories have been developed to guide the design, implementation, and evaluation of training programs. These frameworks help ensure that training is systematic, needs-based, and aligned with both individual and organizational needs. By understanding the core models and theories, training professionals can design more effective programs that lead to sustainable learning and performance outcomes.

One of the most widely recognized frameworks in the field is Kirkpatrick's Four-Level Model of training evaluation. Developed by Donald Kirkpatrick in 1959, the model outlines four levels for assessing the effectiveness of training: (1) Reaction – how participants respond to the training; (2) Learning – the extent to which they gain knowledge and skills; (3) Behavior – changes in job performance; and (4) Results – the impact on organizational outcomes (Kirkpatrick & Kirkpatrick, 2006). This model emphasizes the need to move beyond learner satisfaction to assess actual behavioral change and organizational benefit. It has been extensively used across industries for post-training evaluation.

Another significant model is the ADDIE Model, which stands for Analysis, Design, Development, Implementation, and Evaluation. It is a systematic instructional design framework used to create effective training programs. During the analysis phase, training needs are identified; in the design and development phases, training content and materials are created; implementation involves delivering the training; and

evaluation assesses effectiveness. The ADDIE model is praised for its structured approach and iterative nature, allowing for continuous improvement based on feedback and assessment (Molenda, 2003).

Kolb's Experiential Learning Theory (ELT) adds a cognitive and psychological dimension to training by proposing that learning is a cyclical process involving four stages: Concrete Experience, Reflective Observation, Abstract Conceptualization, and Active Experimentation (Kolb, 1984). This theory supports hands-on learning, which is particularly relevant in technical and vocational training. According to Kolb, individuals learn best when they are actively involved in the learning process, rather than passively receiving information. This has implications for training design, suggesting that simulations, role-playing, and on-the-job learning can be more effective than traditional lectures.

In addition, Bandura's Social Learning Theory highlights the importance of observational learning, imitation, and modeling in training and development. Bandura (1977) argued that people learn not only through direct experience but also by observing others. This theory has led to the use of mentoring, coaching, and video-based demonstrations in training programs. It also emphasizes the role of motivation, reinforcement, and self-efficacy in learning, suggesting that trainees are more likely to engage with and apply new knowledge if they believe in their own ability to succeed.

From a behavioral perspective, Skinner's Operant Conditioning Theory has also influenced training methods, particularly in shaping behavior through reinforcement. Positive reinforcement—such as rewards and recognition—can strengthen desired behaviors, while negative reinforcement or punishment can reduce undesirable actions (Skinner, 1953). This theory underpins many performance-based training systems where learners are rewarded for demonstrating competence or achieving specific milestones.

Another valuable framework is the Training Needs Assessment (TNA) model, which identifies gaps between current and desired performance levels. TNA typically involves three levels of analysis: organizational, task, and individual. It ensures that training programs are aligned with strategic goals, relevant to job tasks, and personalized to learner needs (Goldstein & Ford, 2002). Without a thorough needs assessment, training risks being irrelevant or ineffective. In recent years, the 70-20-10 Model for Learning and Development has gained popularity, especially in leadership and workplace learning contexts. This model suggests that 70% of learning comes from

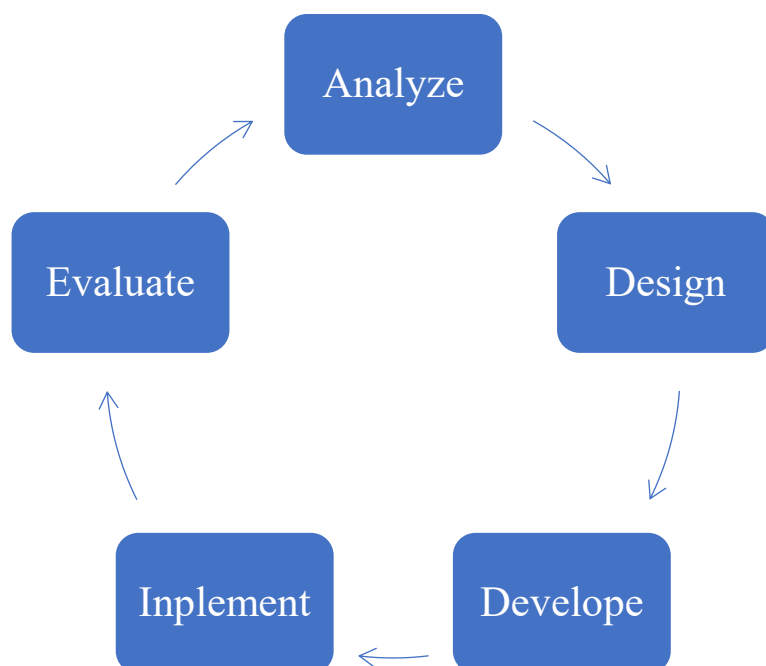
on-the-job experiences, 20% from interactions with others (coaching, mentoring), and 10% from formal education (Lombardo & Eichinger, 1996). The model challenges traditional classroom-based training by emphasizing experiential and social learning as dominant forms of development in the workplace.

The theories and models of training and development provide essential guidance for designing effective learning interventions. Whether through structured models like ADDIE and Kirkpatrick or learning theories such as those of Kolb and Bandura, these frameworks help ensure that training is relevant, engaging, and impactful. As workplace environments evolve with technology and changing skill demands, a strong understanding of these models allows trainers to adapt and innovate, ensuring that training remains a strategic tool for individual and organizational growth.

2.3.1 The ADDIE Model

Instructional system design (ISD) was developed by the United States military as an efficient and effective way to train military personnel (Rothwell and Kanzas, 1992). The main objective of ISD is to enhance human performance. ISD emphasizes the importance of evaluating the effectiveness of instruction and making adjustments based on the evaluation results. Among the various models of ISD, ADDIE model stands as one of the most widely used and enduring frameworks of ISD.

Figure (2.1) ADDIE Model



Source: Molenda (2003)

In 1970s, the Center for Educational Technology at Florida State University for the U.S. military, developed the ADDIE model which provides a systematic, step-by-step process to ensure that training and educational programs are effective, efficient, and goal-oriented (Molenda, 2003). The ADDIE stands for the five phases, Analysis, Design, Development, Implementation, and Evaluation, which together form a comprehensive approach to creating learning experiences that are aligned with learner needs and organizational goals.

The Analysis phase aims to identify the training needs and to understand the learning environment. It answers key questions such as:

- (a) What is the performance gap?
- (b) Who is the target audience?
- (c) What are the learning objectives?
- (d) What constraints (e.g., time, budget, resources) exist?

This phase is a foundation for the entire training program. A proper training needs assessment is often conducted during this stage to ensure relevance and alignment with organizational goals.

The Design phase promote creating a detailed plan or blueprint for the training program. This includes writing learning objectives, designing content structure, choosing delivery methods (e.g., face-to-face, online, blended), developing assessment and evaluation strategies. This stage emphasizes alignment between objectives, instructional strategies, and learning outcomes to ensure coherence and effectiveness.

In the phase of Development, the training materials and resources that will be delivered to the trainees are created based on the design phase. This phase involves preparing manuals, guides, videos, and presentations, creating e-learning modules and interactive simulations and producing assessment tools and feedback forms. Prototypes or pilot versions are often tested at this stage to allow for revisions before full implementation.

The Implementation phase involves the delivery of the training program to the intended trainees. Implementation activities include, scheduling training sessions, training instructors or facilitators, distributing materials, managing logistics and technical support. effective communication, trainer readiness, and learner engagement are key factors of a successful implementation.

The Evaluation phase indicates the effectiveness of the whole training phases. It involves formative evaluation (during development and delivery) and summative

evaluation (after training completion). Kirkpatrick's Four-Level Evaluation Model is often used to measure reactions, learning, behavior, and results. This phase helps identify improvements for future training programs.

The ADDIE model is flexible and scalable, making it applicable in various industries, including aviation, healthcare, education, and corporate training. One of its main strengths lies in its iterative and systematic approach, allowing for continuous improvement of training programs. In aviation, where human performance is critical to safety, ADDIE ensures that training is aligned with both technical requirements and human factors considerations (Salas et al., 2010). Moreover, the model supports evidence-based decision-making in instructional design by requiring data collection and analysis at every phase. This helps in justifying training investments and demonstrating measurable improvements in learner performance. The ADDIE model provides a robust and structured framework for designing effective instructional programs. By progressing through its five phases—Analysis, Design, Development, Implementation, and Evaluation—organizations can ensure that their training initiatives are both learner-centered and results-driven. Its continued relevance in modern instructional design is a testament to its practical utility, adaptability, and its critical role in quality assurance in training across sectors, especially in technically complex fields like aviation.

2.3.2 Training Process

According to Gordon (1992), training process is a sequence of organized and systematic activity that shall results in higher levels of skill, knowledge, and competency need to carry out work efficiently. Some may mistake that training should be carried out only for new recruitments of labor forces. In fact, a process of ongoing training for employees who currently working in the organization shall be carried out to enhance adaptability to rapidly changing work environments such as new technology and new types of equipment. The most important fact is the organization has to consider who needs to be trained, who need to be developed and what kind of performance does the organization need. These decisions are considered by the top-level management such as head of HR department, training authorities and head of the organizations.

According to ADDIE model, a systematic, five-step process for developing effective training programs and learning materials should be carried out during training. These five phases include Analyze Training requirements, Design Training Goals,

Develop Training Methods, Implement Training Programs and Evaluate Training Programs.

Analyze Training requirements

The Analysis phase is the foundation of the ADDIE model. It involves identifying the learning problem, defining instructional goals, analyzing the learner characteristics, and understanding the learning environment. Instructional designers conduct needs assessments, gap analyses, and task analyses during this phase to determine what learners need to know and be able to do (Branch, 2009). In aviation training, for example, analysis might involve assessing knowledge gaps in aircraft maintenance procedures or emergency response actions.

Design Training Goals

The Design phase involves adapting the findings from the analysis stage into a detailed instructional plan. This includes determining the learning objectives, selecting instructional strategies, designing content flow, and creating assessment tools. At this stage, the learning outcomes are aligned with Bloom's Taxonomy, ensuring that training content addresses cognitive, affective, and psychomotor domains appropriately (Anderson & Krathwohl, 2001). Effective design ensures that the training is not only relevant but also engaging and accessible.

Develop Training Methods

In this phase, instructional materials are created based on the design plan. These may include lesson plans, multimedia presentations, handouts, simulators, and e-learning modules. Instructional designers may collaborate with subject matter experts (SMEs), graphic designers, and software developers to produce high-quality learning resources. For aviation, this may involve developing maintenance manuals, virtual aircraft simulators, or safety drills to ensure learners can apply their knowledge in real-world scenarios.

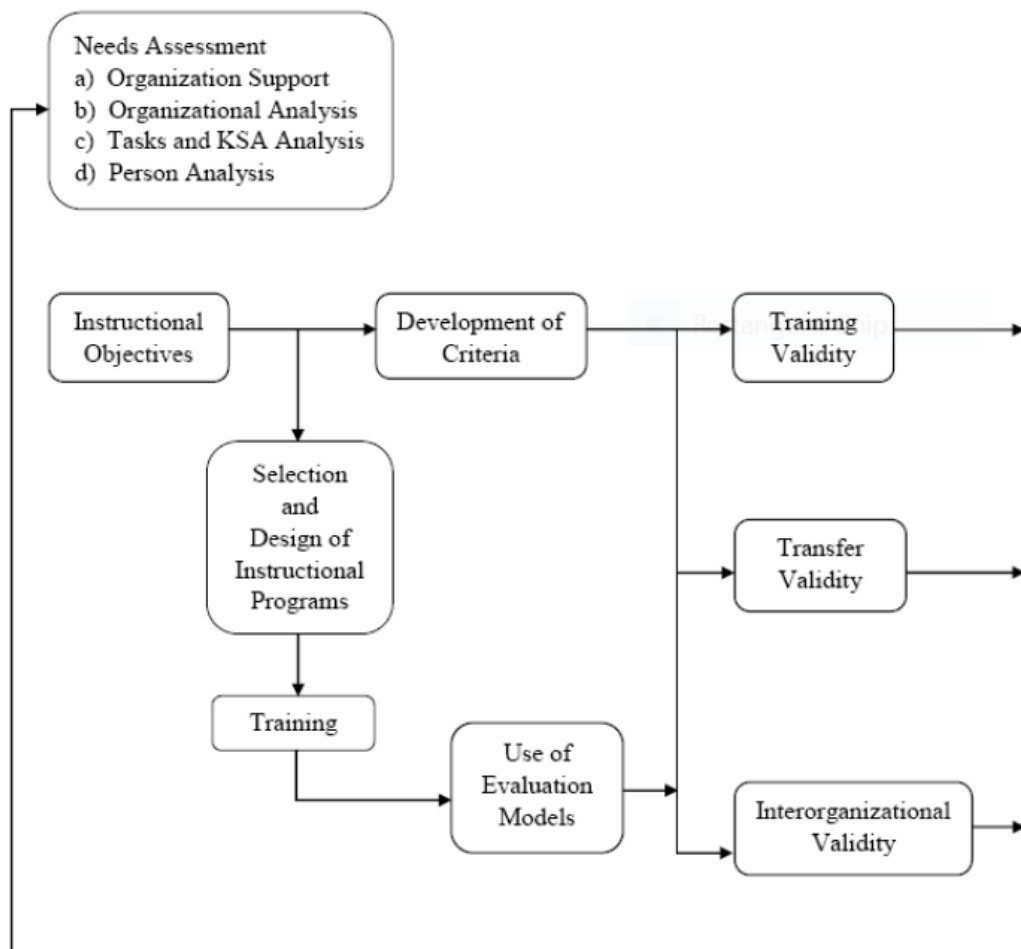
Implement Training Program

The Implementation phase includes delivering the instructional program to the target trainees. This may take place in a classroom, online, or in a blended environment. Facilitators are trained to deliver the content effectively, and the logistics of scheduling, materials distribution, and learner support are managed (Clark, 2015). In aviation, implementation often includes hands-on training, simulator sessions, and real-time evaluations under regulatory oversight to ensure alignment with ICAO or FAA standards.

Evaluate Training Programs

The final phase, Evaluation, occurs both formatively and summative. Formative evaluation occurs throughout the ADDIE process to improve content and delivery methods, while summative evaluation assesses the effectiveness of the entire instructional program. Decision- making around various components of the training guided by results of the evaluation. Training should be evaluated several times during the process to determine the milestones of the training. Many training programs fall short of their expectations simply because the administrator failed to evaluate its progress until it was too late. Common tools include tests, surveys, observation checklists, and performance assessments (Kirkpatrick & Kirkpatrick, 2006). In high-stakes industries like aviation, evaluation is crucial to verify that training meets safety, compliance, and performance standards. Training process (Hayden, 1980, as cited in Divate, 2016) is described the below figure.

Figure (2.2) Training Process



Source: Hayden (1980)

2.4 Capacity Building in Aviation Industry

The concept of Capacity Building refers to the process of developing and strengthening the skills, abilities, resources, and processes that organizations, institutions, or individuals need to survive, adapt, and thrive in a changing environment. It is especially vital in areas such as public administration, health, education, agriculture, and aviation. Capacity building in the aviation industry refers to the process of developing and enhancing the capabilities of individuals, institutions, and systems to ensure the safe, secure, and efficient functioning of aviation operations. It encompasses a broad range of efforts including human resource development, infrastructure modernization, regulatory strengthening, and institutional governance. In both developing and developed nations, building long-term aviation capacity is essential for maintaining international standards and supporting broader socio-economic development. After the narrow extreme, training was the only definition of capacity growth. The word was used to describe any change that affected administrative organization or had an institutional component after the wide extreme (Campo & Sundaram, 2000). The four key elements or dimensions of capacity building are as follows:

(a) Human Resource Development

This element focuses on enhancing the skills, knowledge, attitudes, and competencies of individuals. It includes, education and training (formal and informal), professional development and upskilling, leadership and management training and technical and vocational education and training (TVET). For example, in the aviation sector, human resource development would include training aviation engineers, air traffic controllers, and maintenance technicians to meet international safety and technical standards.

(b) Institutional and Organizational Development

This involves improving the structures, systems, and internal processes of organizations to make them more effective and accountable. Establishing clear organizational structures, strengthening governance and leadership, improving strategic planning, HR systems, and decision-making processes, enhancing coordination and communication mechanisms are the main components of organizational development. In public institutions, this might involve reforming civil service systems, digitizing services, or improving interdepartmental collaboration.

(c) Legal and Regulatory Framework

Capacity building requires a supportive policy, legal, and regulatory environment that enables institutions and individuals to perform effectively. This involves developing and enforcing relevant laws and policies, strengthening institutions for regulation, oversight, and enforcement, ensuring transparency, accountability, and anti-corruption measures and harmonizing national policies with international standards. For example, in aviation, a robust regulatory framework aligned with ICAO standards ensures compliance and operational safety.

(d) Financial and Material Resources

Organizations and individuals need adequate financial resources, infrastructure, and tools to perform effectively. This element includes budgetary allocation and sustainable financing, investment in infrastructure (e.g., training centers, ICT tools), access to modern equipment and learning materials, and efficient procurement and resource management systems. Without financial and material support, training programs, reform strategies, and organizational improvements cannot be sustained.

2.5 Human Resource Development (HRD)

Human Resource Development (HRD) is a strategic and systematic process aimed at enhancing the knowledge, skills, capabilities, and overall performance of individuals and groups within an organization or society. It is a critical element of capacity building and sustainable development, especially in sectors that demand high-level expertise, innovation, and adaptability, such as public administration, healthcare, education, and aviation. HRD goes beyond traditional training to include a wide array of learning, career development, leadership growth, and organizational support mechanisms. Swanson and Holton (2001) define HRD as “a process of developing and unleashing human expertise through organization development and personnel training and development for the purpose of improving performance.” HRD involves planned and continuous learning efforts that aim to improve both individual competencies and organizational capabilities. In national development, HRD plays a pivotal role in building skilled labor, reducing poverty, and supporting sectoral transformation. For instance, in aviation, HRD is essential for training competent pilots, engineers, air traffic controllers, and regulatory personnel to meet ICAO standards

Human Resource Development in aviation refers to the systematic planning and implementation of education, training, and career development activities for professionals in various aviation-related fields—such as aircraft maintenance, air traffic control, aviation safety management, airport operations, and regulatory oversight. It goes beyond technical instruction, incorporating leadership development, continuous learning, and organizational support mechanisms to ensure personnel can adapt to technological advances and regulatory changes. According to ICAO (2019), “training and competency-based learning are integral to maintaining and improving the safety and efficiency of the global aviation system.” HRD in aviation involves training that is aligned with both national aviation needs and international aviation frameworks, such as ICAO’s Next Generation of Aviation Professionals (NGAP) initiative. Components of Human Resource Development are as follows:

- (a) Training and development which includes on-the-job training, technical skills training, workshops, and seminars aimed at performance improvement.
- (b) Education that broader learning initiatives such as degree programs, certifications, and continuing education.
- (c) Performance management with ongoing feedback, evaluations, and goal-setting to align individual and organizational performance.
- (d) Organizational learning, which is an institutional process that capture and transfer knowledge, promote innovation, and support collective problem-solving.
- (e) Talent and leadership development programs that identify high-potential employees and prepare them for leadership roles.

2.6 Evaluating the Effectiveness of Aviation Technical Training

The conceptual framework for evaluating the effectiveness of aviation technical training programs in enhancing human resource capacity in Myanmar is structured around the interrelationship between key variables: training inputs, training processes, trainee outcomes, and organizational impact. At the core of this framework is the premise that well-designed and well-implemented aviation training programs—characterized by relevant curricula, qualified instructors, adequate training facilities, and alignment with international aviation standards—serve as critical inputs that directly influence the quality and effectiveness of the training process. This process

includes pedagogical methods, hands-on practical exercises, assessment mechanisms, and feedback systems that shape the learning experience of trainees.

This study conceptualizes aviation training effectiveness through four components:

- (a) Inputs: Resources and foundational elements that support the training program (curriculum, curriculum, trainer qualifications, equipment).
- (b) Process: The actual delivery of training, including teaching methods and practical exercises.
- (c) Outputs: Immediate results of training, such as skills gained and certifications awarded.
- (d) Outcomes: Long-term impacts, such as employment, job performance, and organizational productivity.

The framework also emphasizes trainee outcomes as immediate indicators of effectiveness, such as improvements in technical skills, knowledge acquisition, safety awareness, and job readiness. These outcomes are expected to translate into long-term benefits at the organizational level, including enhanced performance, increased compliance with maintenance and safety protocols, reduced operational errors, and improved aircraft serviceability. Furthermore, the framework recognizes the importance of external factors—such as policy support, funding availability, institutional commitment, and partnerships with international aviation bodies—that can either enable or constrain the overall effectiveness of training efforts.

By connecting training inputs and processes to both individual and organizational outcomes, the framework provides a structured approach to assess how aviation technical training contributes to the broader goal of strengthening human resource capacity in Myanmar's aviation sector. It also allows for the identification of gaps and areas for improvement to ensure that training programs remain relevant, responsive, and impactful in addressing the evolving demands of the aviation industry.

2.7 Reviews in Previous Studies

Salas, et al (2012) studied “The Science of Training and Development in Organizations.” This study used a literature review method to synthesize empirical evidence on training design, delivery, and evaluation in organizational settings. It emphasized evidence-based training practices such as needs assessment, goal setting, and feedback mechanisms. The review concluded that well-structured training

programs significantly improve learning transfer and employee performance when training is strategically aligned with organizational objectives.

Noe, R.A (2020) conducted a study on “Employee Training and Development (8th ed.)” The research methodology involved a synthesis of theoretical models and empirical studies. Although no specific sample size was used, the textbook presents numerous case examples and research findings. It discussed models such as ADDIE and the importance of training needs assessment, learner engagement, and performance outcomes. The work concluded that effective training is grounded in strategic alignment, learner-centered design, and evaluation mechanisms that measure transfer and ROI.

Another study conducted by Ololube (2015) was “Educational Management, Planning and Supervision: Models for Effective Implementation.” The study employed conceptual and theoretical analysis with references to real-world educational settings. Though it did not involve a specific sample size, the paper explored different models for planning and implementing educational supervision. It concluded that integrating strategic planning and leadership models into training management leads to improved organizational and learner performance.

Research by Halim and Zakaria (2018) on “Effectiveness of Technical Training in Southeast Asia.” was based on a quantitative survey method and involved a sample size of 120 participants from technical training programs in Malaysia. The study found that competency-based training significantly enhanced participants' technical skills and work performance. It also revealed that training effectiveness was heavily influenced by instructor quality, hands-on practice, and relevance of training content.

Another study conducted by Cheng and Ho (2019) was “HRD Strategies in Aviation.” The study used a qualitative case study approach, collecting data through interviews with HR professionals from eight aviation organizations across the Asia-Pacific region. It concluded that strategic HR development—through continuous professional training, skill certification, and performance appraisal—plays a critical role in improving employee retention and aviation safety standards.

Another study conducted by Salas, et al (1998) conducted “It Is Not How Much You Have but How You Use It: Toward a Rational Use of Simulation to Support Aviation Training.” This research adopted a literature review and conceptual analysis method. It proposed that simulation’s effectiveness in aviation training depends more on instructional design than on the technological sophistication of simulators. The

authors suggested aligning simulation tools with training goals and competency requirements to maximize learning outcomes.

Another study conducted by Taylor and Chan (2019) was “Effectiveness of Simulation Training in Aviation.” The research used an experimental method involving 60 aviation trainees who participated in simulation-based emergency response training. Pre- and post-assessment results showed significant improvement in decision-making, teamwork, and situational awareness. The study concluded that simulation training was more effective than traditional lecture methods in enhancing real-time cognitive and operational skills in aviation contexts.

Numerous studies also have assessed the effectiveness of technical training in aviation. Ololube (2015) found that structured training in Nigeria significantly improved employee performance and maintenance quality. Halim and Zakaria (2018), in a comparative study across Southeast Asia, concluded that institutions following EASA and ICAO standards showed higher rates of licensing and job placement among graduates. Salas et al. (2010) also noted that simulation-based training enhances decision-making under pressure, which is vital in aviation environments. Additionally, competency-based training frameworks, as advocated by ICAO, improve knowledge retention and practical skills application (ICAO, 2019). According to ICAO (2019), well-structured basic training enables countries to reduce dependence on foreign technical expertise and develop sustainable aviation systems. Cheng and Ho (2019), studying Taiwan’s aviation workforce development, found that comprehensive HRD strategies improved staffing levels, productivity, and national self-sufficiency. The reviewed literature confirms that basic aviation technical training programs are effective tools for enhancing human resource capacity. They contribute to skill development, ensure compliance with international standards, and support national self-reliance. However, training effectiveness is often limited by outdated infrastructure, lack of certified instructors, curriculum misalignment, and weak institutional linkages. For countries like Myanmar, a strategic HRD framework that integrates training with broader aviation policy goals is essential for sustainable sectoral development.

CHAPTER III

OVERVIEW OF AVIATION TECHNICAL TRAINING IN MYANMAR

3.1 Aviation Technical Training in Myanmar

Technical training plays a vital role in ensuring operational efficiency, safety, and compliance within the aviation industry. In the context of Myanmar, where the aviation sector is undergoing modernization and restructuring, the importance of developing a competent and skilled technical workforce cannot be overstated. Technical training in aviation encompasses various domains, including aircraft maintenance, avionics, airframe and powerplant systems, and ground support services. The aviation industry in Myanmar has increasingly recognized the need to invest in structured and standardized technical training programs aligned with international civil aviation standards.

The technical training landscape in Myanmar's aviation sector is managed by both civilian and military institutions. The Civil Aviation Training Institute (CATI), operated under the DCA, provides foundational courses in air traffic services, communication, navigation, and surveillance (CNS), as well as regulatory training. However, technical training for maintenance and engineering personnel remains limited in terms of advanced capabilities, infrastructure, and international certification. In the defense sector, the Myanmar Air Force Technical Training School plays a central role in preparing technicians for aircraft maintenance and logistics. While these institutions provide the basic framework for training, challenges remain in terms of curriculum modernization, instructional capacity, and access to advanced simulation equipment.

Myanmar's aviation technical training sector can benefit greatly from regional integration, technology transfer, and public-private collaboration. Future development should focus on curriculum reform by updating the training modules to include Human Factors, Safety Management Systems (SMS), Continuing Airworthiness Management, and

Maintenance Error Decision Aid (MEDA) systems. Moreover, should focus on training of trainers (ToT) by investing in the continuous professional development of instructors through overseas scholarships, joint training programs with ICAO or EASA institutions, and internship placements with MRO (Maintenance, Repair, and Overhaul) organizations. Modern training facilities also play a vital role in development. Establishing partnerships with international aircraft manufacturers and airlines to develop simulation labs and aircraft mockups for practical training. Promoting interest on certification and regulation also improves development. Strengthening the oversight role of the DCA to implement a Technical Training Organization (TTO) certification process, in line with ICAO's guidance.

Technical training in Myanmar's aviation industry is at a pivotal point. With increasing demand for regional air connectivity, safety compliance, and modernization of fleets, it is essential to enhance the quality, scope, and international recognition of aviation technical training programs. By addressing structural limitations and fostering global partnerships, Myanmar can strengthen its aviation human resource capacity and support the long-term development of a safe and efficient aviation sector.

3.2 Profile of Aviation Technical Training School

In 1941, since Burma Volunteer Air Force was founded, youth from Myanmar are trained by instructors from Railway Mechanical Department to operate Aircraft maintenance operations. Aviation Technical Training School (TTS) was founded in 1950 at Yangon as a part of Myanmar Air Force. It moved to Ground Training Base (current: Ground Training Base Command) in 1958. It involves in training personnel in technical aspects of aviation. The motto of TTS is "The pillar of knowledge cannot be shaken". TTS is composed of Airframe Department, Engine Department, Electric and Instrument Department, Armament Department and General Technical Department. TTS plays a crucial role in Myanmar Air Force by enhancing operational safety, supporting technological advancement, and promoting sustainable workforce development. The main Objectives of TTS are as follows:

- (a) To train and produce skilled and qualified technical officers and military personnel who are capable of systematically handling, utilizing, inspecting, repairing, and maintaining aircraft/helicopters, aircraft/helicopter support equipment, and aerial weapons and munitions used by Myanmar Air Force.

- (b) To provide instruction and training for technical officers and personnel in technical management disciplines related to the operation, maintenance, and servicing of aircraft/helicopters, enabling them to carry out tasks systematically and proficiently.
- (c) To teach and train in order to build a strong foundation that allows continued learning and adaptation to the evolving and advancing technologies in the field of aviation and aerospace engineering.
- (d) To continuously conduct enhancement and refresher training courses aimed at improving the qualifications of technical officers and personnel, so they can competently fulfill their duties and responsibilities in aviation-related technical roles at their respective assigned positions and ranks.

Technical Training School (TTS) is responsible for training and developing the aviation human resources and for providing other services related with aviation industry. As it is important to enhance the aviation human resources and the qualified aviation personnel, TTS plays a vital role in the advancement of aviation industry.

It aims to provide the highest quality of training and to share knowledge and experiences of the aviation for the advancement of Myanmar Air Force and Civil Aviation. TTS has continued developing curriculums in order to upgrade the training standard, to enhance the capabilities of the aviation personnel to fulfill the increasing demand of the aviation industry.

TTS provides 79 programs under the guidance of Myanmar Air Force. Among this, 5 programs are delivered for engineering officers, 36 grade (1) advanced technical programs are provided for Air Force personals, 17 grade (3) advanced technical programs are provided for Air Force personals and 8 Basic Technical Training programs are provided for newly recruited Air Force personals.

3.3 Aviation Technical Training Programs in Aviation Technical Training School

Technical Training School (TTS) is operating under the Myanmar Air Force and its equivalent civil aviation technical schools overseen by the Department of Civil Aviation (DCA). TTS provides the establishment and implementation of Basic Aviation Technical Training Programs designed to equip trainees with the foundational knowledge and skills required for aircraft maintenance, ground operations, and system management. The Aviation Technical Training School has provided the following courses in 2020, 2021, 2022, 2023, 2024 and 2025.

Table (3.1) The Courses Provided by TTS in 2020, 2021, 2022, 2023, 2024 and 2025

No	Course Year	No. of the Course	No. of the Trainees
1	2020	23	169
2	2021	17	157
3	2022	17	171
4	2023	21	175
5	2024	21	181
6	2025	21	168

Source: Technical Training School (Ground Training Base Command, 2025)

Since it was founded, TTS has graduated 1150 Engineering Officers, 16874 Technicians, 288 Civilian personnel, 204 female Air Force personnel and 438 trainees from other sectors (such as DCA and Air KBZ).

3.4 Training Program Components

A comprehensive training program must clearly define the qualification standards for every job role and responsibility within the organization's operations. At a minimum, the program should include the following elements:

(a) Qualification and Training Types

Initial and Ongoing Qualification of the program must outline how employees are initially qualified and how their qualifications are maintained, including the frequency of required training. Initial training for new personnel to gain required competencies. Recurrent training sessions to maintain and update skills. Re-qualification training as needed, when qualifications lapse or after extended absence. Update training when procedures, equipment, or regulations were changed. Specialized training mandated by equipment manufacturers, system providers, customer airlines, or regulatory bodies.

(b) Training Methods

The program should detail the instructional techniques and delivery formats used, such as classroom instruction, e-learning, simulations, or on-the-job training.

(c) Testing and Evaluation

There must be clear processes for assessing and verifying the effectiveness of training, including testing knowledge and evaluating skills.

(d) Documentation and Records Management

Procedures for maintaining accurate records of all training activities and employee qualifications should be specified.

(e) Instructor and Evaluator Qualifications

The program should define the required qualifications and competencies for trainers and evaluators to ensure high-quality instruction and assessment.

(f) Training Modules

The curriculum should be organized into well-defined modules, each targeting specific skills or knowledge areas.

Moreover, the training program must be reviewed at least annually, or more often if necessary, to confirm the content and structure continue to meet current operational needs and all training materials and plans are current and comply with both customer airline and regulatory requirements.

3.5 Training Methods in TTS

Technical Training School aims to provide a skilled workforce capable of maintaining safety, reliability, and efficiency in aviation operations. Training programs follow international standards, such as those set by the International Civil Aviation Organization (ICAO) and national aviation authorities, and typically employ a blend of traditional and modern instructional methods. The main methods are as follows:

Classroom-Based Instruction (Theoretical Training)

This is the foundational method where trainees learn aviation principles, aircraft systems, aviation legislation, human factors, and safety management systems. Delivered through lectures, textbooks, computer-based materials, and written assessments, it lays the groundwork for hands-on skills.

Modular Training

This type of training is carried out for trainees in specialized field such as airframes, engines and avionics (e.g., EASA Part-66 Modules 1–17). It supports flexible learning and progressive certification. This is usually delivered after two weeks of training program.

Practical Workshop Training

Practical training in labs or workshops using aircraft components, engines, avionics systems, and maintenance tools. It includes activities such as disassembly/reassembly, troubleshooting, and basic repair of aircraft components.

Simulator-Based Training

A type of training using simulation tools to replicate aircraft systems and maintenance scenarios. This simulation methods enhance safety and reduce costs while providing practical experience in fault diagnostics, emergency procedures, and troubleshooting.

Task-Oriented Training (TOT)

Task-Oriented Training focuses on specific tasks or systems such as hydraulic line replacement, engine checks, or avionics system calibration. It is targeted, short-term, and competence-based training.

On-the-Job Training (OJT)

OJT allows trainees to apply knowledge in real-world maintenance environments under the supervision of licensed aircraft engineers. It is structured and documented, typically required for certification. The main purpose of this training is to build confidence and dexterity in real maintenance tasks. ICAO Doc 9868 outlines OJT requirements for maintenance personnel.

3.6 Definition of Job Role and Functional Tasks

All personnel who conduct Air Craft Maintenance operations shall have full initial and recurrent training modules successfully completed and current as per their functional tasks.

Each department is responsible for defining the job roles and associated functional tasks according to the department's needs, for example "an engine ground run" task may be performed by different job functions e.g Engineering Officer, Push-back Driver, or other.

Training modules shall be based on providing competencies in functional tasks which can then be grouped to match certain job roles as determined by the company to meet its scope of operations.

Since the responsibilities assigned to the various job roles (e.g Engineering Officer) may differ from one organization to the next, or even within the same organization but at different locations, the functional tasks that employees are assigned to perform will determine which training modules they are required to complete.

3.7 Major Maintenance Providers in Myanmar

The provision of aircraft maintenance services in Myanmar is primarily undertaken by a combination of national carriers, military maintenance units, and emerging private operators. These organizations differ in scope, capacity, and compliance with international maintenance standards.

Aircraft Production and Maintenance Headquarter (Myanmar Air Force)

The Aircraft Production and Maintenance Headquarter of Myanmar Air Force, operating under the Ministry of Defence, maintains a comprehensive engineering and maintenance division responsible for the upkeep of both fixed-wing and rotary-wing military aircraft. The APMHQ is equipped with the capability to perform heavy maintenance, structural repairs, and system overhauls. Particulars to be included in the aircraft maintenance manual are described in Appendix(A).

Myanmar Airways International (MAI) Engineering Division

Myanmar Airways International (MAI), the country's leading international airline, operates a dedicated engineering division that provides both line and base maintenance services. MAI's engineering operations are certified under the European Union Aviation Safety Agency (EASA) Part 145 regulations, indicating a level of compliance with international standards for maintenance organizations. The division primarily supports Airbus A319 and A320 aircraft and is equipped with a Maintenance Control Center (MCC) to oversee real-time operational support, troubleshoot aircraft discrepancies, and coordinate scheduled maintenance tasks.

Air KBZ Engineering Unit

Air KBZ, a major domestic carrier in Myanmar, maintains an in-house engineering unit that specializes in the maintenance of ATR 72 turboprop aircraft. The organization provides routine line maintenance at major domestic airports and conducts limited base maintenance activities. Although its scope is narrower than that of MAI, Air KBZ maintains a collaborative relationship with MAI's engineering division to access specialized support and ensure compliance with regulatory standards.

Private Maintenance, Repair, and Overhaul (MRO) Operators

In addition to state and airline-based maintenance entities, a small but growing number of private MRO operators offer maintenance services for general aviation (GA) aircraft. These organizations typically support smaller aircraft such as Cessna, Piper, and Beechcraft models, as well as helicopters used for tourism, medical transport, and agricultural operations. However, the scale of these private operations remains limited,

and most lack certification under internationally recognized maintenance standards such as EASA Part 145 or FAA Part 145.

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey Profile

The survey area is Aircraft Production and Maintenance Headquarter of Myanmar Airforce at Meikhtila Region. Since most of the graduated Officers, Air Force personals and Technicians are working at AMPHQ and the most important servicing and maintenances are delivered there. Aircraft Production and Maintenance Headquarter is responsible for Aircraft Third Line Servicing and Overhaul Servicing. Therefore, a high quantity of skilled workforce is required in APMHQ than other Airforce Base Commands and Air Bases. APMHQ is located in Meikhtila about 10 miles from south of City Center.

4.2 Survey Design

In this study descriptive method was used to determine whether there is awareness about Aviation Technical Training. A convenience sampling method was used to select the respondents. The survey questions were well-prepared questions formulated from collected and combined from article of Akhila Kunche et al.: “Analysis and Evaluation of Training Effectiveness,” Human Resource Management Research: (2011; 1(1): 1-7 DOI: 10.5923/ j.hrmmr. 20110101.01), Issue 1, January 2011” and Manual on the approval of training organizations (Doc 9841). ICAO published by International Civil Aviation Organization. (2019). The number of respondents who were asked to answer survey questions was 200 respondents who are the employees of Production and Maintenance departments of Aircraft Production and Maintenance Headquarter. After collecting data from 237 respondents from APMHQ through sample survey, descriptive analysis has been used to analyze data.

4.2.1 Sample Size Determination

In this survey, the population is known and smaller. So, the sample size was calculated using the following “Cochran’s Sample Size Formula”.

$$n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}}$$

Where;

n_0 is sample size,

N is the population size, and

n is the new, adjusted sample size.

The Cochran formula allows to calculate an ideal sample size given a desired level of precision, desired confidence level, and the estimated proportion of the attribute present in the population. Cochran's formula is considered especially appropriate in situations with large populations. A sample of any given size provides more information about a smaller population than a larger one, so there's a 'correction' through which the number given by Cochran's formula can be reduced if the whole population is relatively small.

The Cochran's Formula is

$$n_0 = \frac{z^2 pq}{e^2}$$

Since, there're total of 615 employees, $N = 615$

$$n_0 = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384.16 \approx 385$$

Applied to previous Formula;

$$n = \frac{385}{1 + \frac{(385 - 1)}{615}} = 237.0120125814102 \approx 237$$

where

e (the desired level of precision) = 5% = 0.05

p (the maximum possible proportion) = 50% = 0.5

q is $1-p = 1-0.5 = 0.5$

The z -value = 1.96 for 5% significance

So, the required sample for this study is at least 237 employees. It can be concluded that the sample size needs to collect 237 employees.

4.2.2 Reliability Analysis of the Variables

Reliability is the measurement of the consistency and stability of each factor of the variable Best (1977). Cronbach's Alpha value is essential for measuring reliability test. The Cronbach's Alpha value should be at least 0.7 and the alpha value is equal or more than 0.7 is acceptable. In conducting research analysis procedures, Cronbach's

Alpha value is essential to evaluate the internal consistency of each factor of the variables which can tell how much reliable between the factors. If Cronbach's alpha value is 0.7 and above is considered acceptable and more than 0.7 and the value close to 1 is preferable for reliability and the negative value are not useless for the research.

Table (4.1) Reliability Analysis of the Variables

No	Variables	Type of Scale	No of item	Cronbach's Alpha (α)
1	Design Phase	5 points Likert	5	0.926
2	Development Phase	5 points Likert	5	0.912
3	Implementation Phase	5 points Likert	7	0.928
4	Evaluation Phase	5 points Likert	5	0.914

Source: Survey data (2025)

4.3 Survey Results

To achieve the aim and objectives of this study, a survey study was carried out at the Aircraft Production and Maintenance Headquarter. The analysis of survey data collected from 237 participants who completed the Basic Aviation Technical Training Program are presented in this chapter. The results are analyzed according to the ADDIE model framework: Design, Development, Implementation, and Evaluation. The analysis includes both qualitative (open-ended) responses, and quantitative (Likert scale) with statistical emphasis on mean and standard deviation values. The analyzed data of the survey questionnaire is presented in tables in frequencies and percentages and the results of the interviews with relevant persons are reviewed and the results obtained are listed.

4.3.1 Demographic Profile of Respondents

In this study, survey information on the basic characteristics of the respondents is essential for the interpretation of the findings presented in this chapter. The specific characteristics of these respondents are presented in the presentations and discussions that follow.

Table (4.2) Demographic Profile of Respondents in APMHQ

Sr. No	Particular	Number	Percentage
1	Gender		
	Male	201	84.81
	Female	36	15.19
	Total	237	100
2	Age		
	20 – 29	61	25.74
	30 - 39	97	40.9
	40 - 49	53	22.36
	50 and Above	26	11
	Total	237	100
3	Current Rank		
	Corporal	97	40.92
	Sergeant	79	33.33
	Warrant Officer	29	12.24
	Officer	32	13.51
	Total	237	100
4	Working Experience		
	Under 5 years	21	8.86
	5–10 years	146	61.60
	10–15 years	49	20.68
	15 years and above	21	8.86
	Total	237	100

Sr. No	Particular	Number	Percentage
	Education		
	High School	101	162.28
5	A.G.T.I	89	45.5
	Bachelor Degree	22	19
	Master Degree	25	7.5
	Total	237	100

Source: Survey data (2025)

The demographic characteristics of 237 respondents are presented in Table (4.1). Out of the total, 201 respondents (84.81%) were male, and 36 respondents (15.19%) were female. This indicates a clear gender disparity in the ground handling sector, suggesting that the physical nature of the job roles might attract more males than females.

Regarding age distribution, the majority of respondents (97 individuals) fell within the 30–39 age group. This was followed by 61 respondents aged 20–29, and 53 respondents aged 40–49. The least represented group was respondents aged 50 and above, with 26 individuals. This suggests that the ground handling workforce is predominantly composed of individuals in their prime working age.

Pertaining to the rank held by the respondents, the majority (97 individuals) were Corporals, followed by 79 Sergeants. There were 32 respondents with the rank of Officer, and 29 were Warrant Officers. This suggests that a large proportion of the ground handling workforce comprises junior to mid-level personnel, which aligns with the operational nature of the work.

In terms of work experience, the largest group of respondents (146 individuals, or 61.60%) had between 5 and 10 years of experience in the industry. This was followed by 49 respondents (20.68%) with 10–15 years of experience. Respondents with 15 or more years of experience and those with less than 5 years of experience were equally represented, each group consisting of 21 individuals (8.86%). This indicates that the industry employs a mix of mid-career professionals and seasoned experts.

When it comes to educational qualifications, the largest number of respondents (101) held a high school diploma. This was followed closely by 89 respondents who had completed A.G.T.I (Associate of Government Technical Institute). Additionally, 25 respondents held a Master’s Degree, while 22 had attained a Bachelor’s Degree.

This implies that ground handling roles attract a wide range of educational backgrounds, with a substantial representation of technically trained personnel.

4.3.2 Analyzing Training requirements

This section presents the findings from the qualitative responses of personnel who participated in Technical Training programs provided in Ground Training Base Command (GTBC). The responses were analyzed across five key themes: strengths of the training, challenges faced, external opportunities, external threats, and strategic suggestions.

(a) Strengths of the Training Program

A recurring strength identified by the respondents was the practical orientation of the training sessions. Many noted that the sessions were closely aligned with real-world operations, enhancing relevance and applicability. Respondents appreciated the expertise and clarity of the instructors, describing them as “very experienced and explanatory,” which contributed to effective knowledge transfer. These insights suggest that the instructional quality and practical alignment are key strengths of the current training framework.

(b) Challenges Faced During Training

Despite the strengths, participants encountered several challenges. One of the most frequently cited issues was the limited time allocated for hands-on practice, which many felt was insufficient to fully grasp critical operational procedures. Other challenges included outdated or malfunctioning training equipment and environmental factors such as power outages, which disrupted concentration and continuity. These factors highlight infrastructural and logistical limitations that hinder optimal learning outcomes.

(c) External Opportunities

Respondents expressed optimism regarding several external opportunities that could elevate training standards. Notably, collaboration with international organizations such as ICAO (International Civil Aviation Organization) was seen as a pathway to curriculum improvement and global standard alignment. Furthermore, the adoption of modern simulation tools, including augmented reality (AR) and virtual reality (VR), was mentioned as a potential enhancement to experiential learning, offering immersive and interactive training experiences.

(d) External Threats

Several external threats were identified that could undermine the effectiveness and sustainability of the training programs. Budget constraints were frequently mentioned as a significant barrier to curriculum updates, equipment acquisition, and staff development. In addition, political instability was seen as a disruptive factor, particularly in securing consistent international collaboration and technological upgrades. Some respondents also noted the emergence of regional competitors with more advanced technologies, posing a challenge to maintaining competitive standards.

(e) Strategic Suggestions

To address both internal and external challenges, respondents offered several strategic suggestions. A dominant theme was the need to form partnerships with international aviation training bodies to ensure continuous improvement and standardization. Leveraging the strong base of experienced instructors to offer specialized, modular training programs was another proposed strategy. These initiatives, if implemented effectively, could enhance the quality, relevance, and global competitiveness of ground handling training.

4.3.3 Training Goals

The information about designing training goals is described in the following table.

Table (4.3) Training Goals

No.	Description	Mean	Standard Deviation
1	Training content is relevant to real-world aviation maintenance	4.03	0.94
2	Modules provided comprehensive knowledge of aviation systems	4.07	0.94
3	Theory and practical sessions were well-balanced	3.99	0.92
4	Curriculum aligned with ICAO or EASA standards	4.06	0.90
5	Received sufficient technical knowledge in my specialty area	3.99	0.93
	Overall Mean	4.028	

Source: Survey data (2025)

Table (4.2) shows about the information of design training goals of Aviation Technical Training programs. The training content was perceived as highly relevant by respondents, with 34.60% agreeing and 37.55% strongly agreeing. Only 0.42% expressed strong disagreement. This item recorded a mean score of 4.03 with a standard deviation of 0.94, reflecting a high level of agreement and relatively consistent responses.

A substantial majority of respondents (37.97% agreed, 38.40% strongly agreed) indicated that the modules provided comprehensive knowledge of aviation systems. The item achieved the highest mean score (4.07) among the five, with a standard deviation of 0.94, indicating solid consensus on the depth and breadth of instructional content.

With 37.13% agreeing and 34.18% strongly agreeing, respondents generally felt that theory and practical sessions were well balanced. The item's mean score of 3.99 and standard deviation of 0.92 suggest general approval with some variation in individual experiences.

This item showed one of the strongest positive responses, with 32.07% agreeing and 39.24% strongly agreeing that the curriculum aligns with international standards such as those set by ICAO or EASA. Importantly, no respondents strongly disagreed. The mean score of 4.06 and a low standard deviation of 0.90 reflect both strong agreement and consistency in perception.

A balanced 35.44% of respondents agreed and an equal percentage strongly agreed that they received sufficient technical knowledge in their respective specialty areas. With a mean score of 3.99 and standard deviation of 0.93, responses indicate overall satisfaction, though slightly more dispersed than other items.

Overall, the results affirm the perceived effectiveness of the Aviation Technical Training program. All five training dimensions received high mean scores (ranging from 3.99 to 4.07), indicating strong agreement across the cohort. The relatively low standard deviations reflect consistency in participant feedback. These findings suggest that the training is well-structured, comprehensive, and internationally aligned, although minor improvements in the integration of practical components may further enhance the learning experience.

4.3.4 Training Facilities and Methods

The information about developing training facilities and methods is described in the following table.

Table (4.4) Training Facilities and Methods

No.	Description	Mean	Standard Deviation
1	Training materials were updated and relevant	3.93	0.90
2	Simulators or aircraft mockups were available	4.00	0.93
3	Work surfaces and equipment were adequate	3.95	0.89
4	Use of technology was clear and effective	3.95	0.92
5	Good interaction between trainers and trainees	3.98	0.93
	Overall Mean	3.96	

Source: Survey data (2025)

Respondents generally agreed that the training materials were current and relevant to their learning needs. 39.66% agreed and 29.96% strongly agreed with this statement, while only 0.84% strongly disagreed. The mean score was 3.93 with a standard deviation of 0.90, suggesting broad consensus with slight variation in individual responses.

Access to simulators or aircraft mockups was positively received by trainees. A total of 70.88% of respondents either agreed (35.02%) or strongly agreed (35.86%) that such tools were available during training. The mean score of 4.00 and standard deviation of 0.93 indicate favorable perceptions, though not entirely uniform across the sample.

Adequate work surfaces and training equipment were affirmed by 38.40% of respondents who agreed and 31.22% who strongly agreed. A mean score of 3.95 and standard deviation of 0.89 reflect strong approval with relatively consistent feedback.

On the integration and effectiveness of training technologies, responses showed 40.93% agreement and 31.22% strong agreement. While 7.17% of respondents expressed some disagreement, the overall mean score was 3.95, with a standard deviation of 0.92, indicating good use of technology in instructional delivery with some room for enhancement.

Interaction quality between trainers and trainees was highly rated. 40.93% of participants agreed, and 32.91% strongly agreed that trainer-trainee engagement was

effective. The item yielded a mean score of 3.98 and standard deviation of 0.93, demonstrating a high degree of satisfaction in this area.

The results highlight generally positive perceptions of the Aviation Technical Training environment and the tools used to support instruction. Mean scores for all items ranged between 3.93 and 4.00, reflecting favorable feedback on material relevance, equipment adequacy, technology use, and interpersonal engagement. These findings reinforce the notion that a well-equipped and interactive training environment contributes significantly to trainee satisfaction and instructional effectiveness.

4.3.5 Teaching and Learning Facilities

The information about teaching and learning Facilities is described in the following table.

Table (4.5) Teaching and Learning Facilities

No.	Description	Mean	Standard Deviation
1	Instructors were experienced and knowledgeable	3.90	0.89
2	Teaching methods were clear and effective	3.96	0.86
3	Practical sessions used appropriate equipment	3.91	0.90
4	Time given for hands-on practice was sufficient	2.68	0.87
5	Training facilities were adequate and safe	3.98	0.89
6	There were no distractions during training	3.92	0.87
7	Learning environment was supportive and conducive	3.94	0.92
	Overall Mean	3.76	

Source: Survey data (2025)

Participants expressed a strong consensus regarding instructor expertise. While 40.93% agreed and 28.27% strongly agreed, notably, no respondents strongly disagreed. The mean score of 3.90 and standard deviation of 0.89 indicate a high degree of confidence in the instructors' qualifications and subject mastery.

Teaching methods were rated favorably, with 37.55% of respondents agreeing and 31.22% strongly agreeing on their clarity and effectiveness. With no respondents selecting "strongly disagree" and a mean score of 3.96 (standard deviation 0.86), the data show that instructional delivery was both comprehensible and impactful.

Most respondents (39.24% agreed, 29.11% strongly agreed) felt that the equipment used during practical sessions was suitable for their learning objectives. This item had a mean of 3.91 and a standard deviation of 0.90, suggesting general satisfaction with the hands-on training tools provided.

A total of 45.57% of respondents disagree that they were given enough time for practical work. And 31.65% of respondents selecting “Neutral” and 17.3% are agreed with this statement. A mean score of 3.92 and standard deviation of 0.87, responses indicate most of the trainees felt they need more time for hands-on experience

The adequacy and safety of training facilities received favorable responses, with 34.60% agreeing and 33.76% strongly agreeing. Only 0.42% strongly disagreed. The mean score of 3.98 and standard deviation of 0.89 point to a well-maintained and safe training infrastructure.

A combined 69.62% of respondents agreed or strongly agreed that training sessions were free from distractions, while only a small fraction (0.42%) strongly disagreed. The mean score was 3.92, with a standard deviation of 0.87, indicating a focused and well-managed learning environment.

The learning environment was widely regarded as supportive, with 37.55% agreeing and 31.65% strongly agreeing. A mean of 3.94 and standard deviation of 0.92 suggest that the general atmosphere during training was encouraging and learner-centered.

Findings from this section affirm the high quality of instructional personnel and the conduciveness of the learning environment in Aviation Technical Training. The mean scores ranged from 3.90 to 3.98, showing consistent positive feedback across all areas. The results emphasize the importance of skilled trainers, effective teaching methods, appropriate equipment, and a distraction-free, supportive environment as key drivers of successful technical training.

4.3.6 Perception on Training Programs

In the final section of the survey, participants were asked to assess the impact of the Aviation Technical Training program on their professional skills, confidence, job performance, and career prospects. Using a 5-point Likert scale, the responses reveal important insights into the perceived effectiveness and value of the training. The information about Perception on Training Programs is described in the following table.

Table (4.6) Perception on Training Programs

No.	Description	Mean	Standard Deviation
1	I feel confident applying my skills in the field	3.91	0.94
2	My knowledge of aviation safety improved	3.89	0.93
3	The training helped improve my job performance	4.00	0.88
4	The program enhanced my career opportunities	3.99	0.87
5	I would recommend this program as essential	3.97	0.86
	Overall Mean	3.95	

Source: Survey data (2025)

Trainees generally reported strong confidence in applying their technical skills in a real-world context. While 34.60% agreed and 32.07% strongly agreed, only 8.02% selected a lower confidence level (Scale 2), and none strongly disagreed. The mean score was 3.91 with a standard deviation of 0.94, indicating overall positive feedback with some variability.

Responses showed that the training effectively improved aviation safety knowledge. 36.71% of participants agreed and 29.96% strongly agreed, while only 0.84% strongly disagreed. The mean score was 3.89, with a standard deviation of 0.93, suggesting the training contributed meaningfully to safety awareness and understanding.

A notable 73.42% of respondents either agreed (41.35%) or strongly agreed (32.07%) that the training improved their job performance. This item received a mean score of 4.00, one of the highest in the survey, with a standard deviation of 0.88, reflecting a strong and consistent perception of training effectiveness.

Participants largely felt that the training positively influenced their career growth. 42.19% agreed and 31.22% strongly agreed that the program enhanced their professional opportunities. The mean score was 3.99, with a standard deviation of 0.87, highlighting the perceived long-term value of the training experience.

When asked whether they would recommend the training as essential, 39.24% of participants agreed and 30.80% strongly agreed. None strongly disagreed. This item

recorded a mean score of 3.97 and a standard deviation of 0.86, emphasizing that the program is viewed as both effective and recommendable among trainees.

The responses in this section underscore the strong perceived outcomes of the Aviation Technical Training program. With mean scores ranging from 3.89 to 4.00, participants expressed high levels of confidence, improved job performance, increased safety awareness, and enhanced career potential. The consistently low standard deviations further support the reliability of these positive evaluations. Overall, these results indicate that the program not only met its training objectives but also left a lasting positive impact on trainees' professional development.

CHAPTER V

CONCLUSION

This chapter provides the conclusion and recommendations drawn from the findings to explain the current condition of Aviation Technical Training School, Ground Training Base Command, Meikhtila.

5.1 Findings

The study assessed the effectiveness of Aviation Technical Training Programs implemented by the Myanmar Air Force Technical Training School, particularly at the Aircraft Production and Maintenance Headquarter in Meikhtila. The evaluation was conducted using the ADDIE model—Analysis, Design, Development, Implementation, and Evaluation—and drew on both quantitative and qualitative data from 237 respondents.

The findings indicated strong agreement that the training curriculum is relevant to real-world aviation maintenance operations. A majority of respondents agreed that course modules offered comprehensive knowledge of aviation systems and were aligned with international standards such as ICAO and EASA. The results of the conducted survey reflect a consistent and high level of perceived content quality.

Respondents reported positively on the availability and relevance of updated training materials, simulators, and aircraft mockups. Training environments were described as interactive, and the interaction between trainers and trainees was particularly appreciated. The mean scores in this area (ranging from 3.93 to 4.00) support the conclusion that the development phase of training was well-executed, though some disparities existed in equipment conditions and technological upgrades.

Trainees viewed the instructors as knowledgeable and experienced. Teaching methods were generally considered effective and easy to follow, and the training facilities were rated safe and conducive. However, a recurring challenge was the limited time allocated for hands-on practice. Despite this, satisfaction with practical sessions and the physical learning environment remained high.

The evaluation phase demonstrated the program's strong impact on trainee performance and professional growth. Respondents expressed confidence in applying their skills on the job, noted improvements in aviation safety awareness, and reported career enhancement post-training. The highest scoring item was related to job performance improvement, confirming the overall utility and effectiveness of the program.

According to the qualitative analysis using SOWT method, the main strengths of the training programs lay on classroom and practical alignment, existence of experienced instructors and comprehensive content. But some weaknesses such as limited practical time and inconsistent technological infrastructure are needed to be fixed. By collaborations with ICAO and AR/VR adoption provide trainees to have more job opportunities. Potential threats such as budget limitations and political instability limit training programs to compete with other training institutions in Southeast Asia.

5.2 Suggestions

Drawing upon the study's outcomes, several important recommendations can be made to improve the effectiveness and long-term viability of the Aviation Technical Training Programs offered by the Myanmar Air Force Technical Training School.

One major concern raised by participants was the limited duration allocated for hands-on practice. To resolve this, the training schedule should be revised to include longer and more frequent practical sessions. This enhancement would help bridge the gap between classroom theory and practical application, thereby improving trainees' operational readiness.

Although training materials and facilities were generally viewed positively, some issues were noted—particularly outdated or faulty equipment and occasional interruptions caused by power failures. To overcome these challenges, it is suggested that the institution allocate resources toward upgrading training infrastructure. This could involve modernizing simulators, conducting regular equipment maintenance, and installing reliable backup power systems to ensure uninterrupted training sessions.

To maintain curriculum relevance and competitiveness at an international level, the school should also focus on forming strategic alliances with global aviation bodies like the International Civil Aviation Organization (ICAO) and the European Union Aviation Safety Agency (EASA). Such collaborations can help update training

frameworks, facilitate knowledge sharing, and open opportunities for instructor certification and exchange programs.

To further enrich the learning environment, it is advisable to integrate modern instructional tools, such as Augmented Reality (AR) and Virtual Reality (VR). These technologies can significantly enhance trainees' engagement and skill development by replicating realistic aviation scenarios in a safe and immersive way. Although instructors were rated highly in terms of expertise and teaching effectiveness, it is crucial to ensure they receive ongoing professional development. Both local and international training-of-trainer programs should be considered to keep instructional staff aligned with evolving industry practices and standards.

Given the diversity in trainees' educational backgrounds, customized teaching approaches should be implemented. Designing modular or level-based content can help address varying degrees of prior knowledge and experience, allowing participants to progress effectively and achieve competence in their specific areas.

Lastly, as the program demonstrated a strong positive influence on job performance and career growth, it is important to establish mechanisms for continuous assessment after training. Implementing structured post-training evaluations, such as workplace performance reviews or follow-up surveys, can offer insights for refining course content and delivery.

In conclusion, by enhancing practical training time, upgrading instructional infrastructure, embracing emerging technologies, fostering global partnerships, and customizing instruction to learner needs, the Aviation Technical Training School can significantly boost the quality and relevance of its programs. These actions will help develop a skilled, confident, and future-ready aviation workforce in Myanmar.

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APPENDIX (A)

PARTICULARS TO BE INCLUDED IN THE AIRCRAFT MAINTENANCE MANUAL (Servicing Requirements and Tech Organization by MAF)

1. Organization's Administration and Approval
 - (a) Legal name, address, and SR Approval reference number.
 - (b) Scope of approval as per SR Volume 1.
 - (c) Organizational structure including names and duties of the Accountable Manager and nominated post holders.
 - (d) Maintenance Organization Exposition (MOE) reference and linkage with the manual.
 - (e) Relationship with the Competent Authority (Myanmar Air Force).

2. Scope of Maintenance Activities
 - (a) Description of line and base maintenance capabilities.
 - (b) Aircraft types, engines, and components the organization is approved to maintain.
 - (c) Description of contracted/subcontracted maintenance arrangements (SR Vol.1).
 - (d) Facilities and work environment provisions (SR. Vol.1).
 - (e) Limitations and exclusions of scope.

3. Maintenance Procedures
 - (a) Maintenance planning, scheduling, and check intervals.
 - (b) Use and control of manufacturer's maintenance data and AMM (Standard Operation Procedure, MAF).
 - (c) Performance of maintenance tasks in accordance with approved data (SR).
 - (d) Control of critical maintenance tasks.
 - (e) Rectification and control of deferred defects using MEL/CDL.
 - (f) Control and issuance of work orders/job cards.
 - (g) Procedures for release to service (SR Form 1 and requirements under Vol. 1).

4. Safety Management System
 - (a) Safety policy and commitment of top management.
 - (b) Hazard identification and risk management process.
 - (c) Safety roles and responsibilities of all maintenance staff.
 - (d) Safety occurrence reporting procedures (mandatory and voluntary).
 - (e) Internal investigation and feedback systems.
 - (f) Safety training, awareness, and promotion activities.
 - (g) Safety performance indicators and monitoring.
 - (h) Emergency response plan (ERP) specific to maintenance operations.

5. Quality System and Compliance Monitoring
 - (a) Description of the internal audit and compliance monitoring system.
 - (b) Audit schedule covering all functions and facilities.
 - (c) Procedures for audit findings, root cause analysis, corrective and preventive actions.
 - (d) Reporting lines of Quality Officer/Compliance Monitoring Officer.
 - (e) Management Review procedures and continuous improvement mechanisms.

6. Human Factors, Training, and Personnel Competency
 - (a) Initial and recurrent training for technical and certifying staff.
 - (b) Competence assessment framework and records.
 - (c) Authorization procedures for issuing company approvals (Certifying Staff and Support Staff).
 - (d) Fatigue risk management, shift handovers, and stress awareness.

7. Maintenance Control and Aircraft Release
 - (a) Control of scheduled and unscheduled maintenance.
 - (b) Independent inspection and duplicate inspection procedures.
 - (c) Control of life-limited parts and airworthiness directives.
 - (d) Return to service documentation and logbook entries.

8. Tooling, Equipment, and Calibration
 - (a) Control, inspection, and calibration of tools and test equipment.
 - (b) Identification and traceability of calibrated items.

- (c) Management of specialized tooling and GSE.
- (d) Storage and issuance procedures.

9. Stores and Material Handling

- (a) Acceptance, inspection, and storage of parts and materials.
- (b) Traceability and documentation.
- (c) Shelf-life control and quarantine of unserviceable items.
- (d) Control of consumables and expendables.

10. Aircraft Weight and Balance Control

- (a) Recording and controlling weight and balance changes due to maintenance.
- (b) Updating weight and balance reports and data in aircraft records.

11. Technical Records and Documentation

- (a) Maintenance records retention periods and archiving systems.
- (b) Control and correction of errors in records.
- (c) Format and protection of electronic records.
- (d) Access control and confidentiality.

(12) Emergency and Incident Response Procedures

- (a) Procedures for managing maintenance-related emergencies.
- (b) Communication protocols with operators and authorities.
- (c) Reporting and investigation of maintenance incidents or occurrences.
- (d) Coordination with the ERP of the operator, where applicable.

APPENDIX (B)

Definitions and Terminology

(a) Initial Training

Formal training provided to operational personnel before being assigned to new duties, functions, positions, and/or aircraft equipment. Initial training shall include evaluation or testing by written or practical means.

(b) Recurrent Training

Ongoing training provided to operational personnel at a frequency by requirements of, as applicable, the State, and operator and/or service provider. Recurrent training shall include evaluation or testing by written or practical means.

(c) Re-qualification Training

Repeat training for performing certain duties and functions in which the operational personnel has previously been trained. This is typically initiated following a series of events or an evaluation that addresses a lack of comprehension of the task to be performed, a prolonged absence from doing the specific tasks or functions, or a prolonged absence from the working environment.

(d) Update training

Training provided to ensure personnel remain competent and are made aware of any changes to duties, areas of responsibility, or updates to equipment, infrastructure, systems, procedures, or combination of the above.

Such changes shall be communicated to relevant personnel via regular communication channels. Additional information and updated training shall be delivered as necessary.

(e) Instructor/Trainer

An instructor is a person who imparts knowledge or teaches practical skills through demonstration, direction, tutoring, training, and practical exercises. Instructors may utilize testing, checking, assessment, or evaluation of activities as a means for determining proficiency or competency.

(f) Evaluator/ On-the-Job-Trainer

A person, who teaches practical skills through the demonstration on-the-job and assesses, examines, or judges the on-job performance of the student. This role is usually performed by operational employees.

(g) Testing and Evaluation

The process by which an instructor or evaluator determines how well a student's performance fulfills the course competencies. The process may include a demonstration of knowledge, proficiency, and/or competency as appropriate. Evaluation can be done in a written test or practical form.

(h) Personnel Competence

The company shall have established Training Programs to ensure that all operational personnel can acquire the necessary skills and remain competent to perform their duties.

SURVEY QUESTIONNAIRE

A STUDY ON THE EFFECTIVENESS OF AVIATION TECHNICAL TRAINING PROGRAMS IN ENHANCING HUMAN RESOURCE CAPACITY IN MYANMAR

Dear Respondent,

Thank you for taking the time to participate in this research study. The purpose of this study is to examine the effectiveness of aviation technical training programs in enhancing human resource capacity in Myanmar. Your input is very important and will contribute to a better understanding of the topic. All information you provide will be kept strictly confidential and used only for research purposes.

Survey Questionnaire

Questionnaire for Ground Handling Employees of Airlines

Instructions

1. Please respond to all questions and kindly note that all responses are valued.
2. For questions where there are no options, you are to answer in your own words.

Section A: Demographic Information and Experiences

1. Gender: Male Female
2. Age: 20–29 30–39 40–49 50 and above
3. Your current rank: Corporal Sergeant Warrant Officer Officer
4. Working Experience: Under 5 years 5-10 years 10 to 15 years 15 years and above
5. Education level: High School A.G.T.I Bachelor Degree Master Degree

Section B: Analyzing Training Requirements

Answer all questions please.

1. What were the strengths of the training program?
2. What challenges or limitations did you face during the training?
3. What external opportunities (e.g., access to modern training technology, regional demand for skilled technicians) can be leveraged to improve the program?
4. What external threats (e.g., changing global safety regulations, competition from regional training centers, political or economic instability) may negatively impact the program's sustainability or relevance?

5. How can the identified strengths be used to overcome weaknesses and mitigate threats while capitalizing on available opportunities in the aviation training landscape?

Please indicate your level of agreement with each of the following:

Section C: Training Goals

Sr. No.	Please read each statement and indicate the extent to which you agree or disagree. Tick your responses.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
1	Training content is relevant to real-world aviation maintenance					
2	Modules provided comprehensive knowledge of aviation systems					
3	Theory and practical sessions were well-balanced					
4	Curriculum aligned with ICAO or EASA standards					
5	Received sufficient technical knowledge in my specialty area					

Please indicate your level of agreement with each of the following:

Section D: Training Facilities and Methods

Sr. No.	Please read each statement and indicate the extent to which you agree or disagree. Tick your responses.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
1	Training materials were updated and relevant					
2	Simulators or aircraft mockups were available					
3	Work surfaces and equipment were adequate					
4	Use of technology was clear and effective					
5	Good interaction between trainers and trainees					

Please indicate your level of agreement with each of the following:

Section E: Teaching and Learning Facilities

Sr. No.	Please read each statement and indicate the extent to which you agree or disagree. Tick your responses.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
1	Instructors were experienced and knowledgeable					
2	Teaching methods were clear and effective					
3	Practical sessions used appropriate equipment					
4	Time given for hands-on practice was sufficient					
5	Training facilities were adequate and safe					
6	There were no distractions during training					
7	Learning environment was supportive and conducive					

Please indicate your level of agreement with each of the following:

Section F: Perception on Training Program

Sr. No.	Please read each statement and indicate the extent to which you agree or disagree. Tick your responses.	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
1	I feel confident applying my skills in the field					
2	My knowledge of aviation safety improved					
3	The training helped improve my job performance					
4	The program enhanced my career opportunities					
5	I would recommend this program as essential					