



Intermediate Biomedical Equipment Servicing Level-III

Based on may, 2011 Version 2 OS and Dec, 2021 Version 1 Curriculum



Module Title: Keep Up With Technological Developments

LG Code: EEL BES3 M05 0221 LO (1-3) LG (19-22)

TTLM Code: EEL BES3 TTLM 0521 v1

February 2021
Bishoftu, Ethiopia



Table of Contents

page.....	ii
LO #1-Identify the gap	4
Information Sheet 1- Tracking national and international Developments in biomedical technology field.....	5
Self-Check -1	9
Information Sheet 2- Identifying Institutional expectations in terms of competences	10
Self-Check -2.....	13
Information Sheet 3. Completing technological developments and company expectations	14
Self-Check 3	17
LO #2- Look for self development opportunities and modalities	18
Information Sheet 1 Gather Information on self development opportunities	20
Self-Check 1	29
Information Sheet 2 Contact program providers	30
Self-Check 2	31
Information Sheet 3. Evaluating providers cost accessibility and modality	32
Self-Check .3	33
Information Sheet 4. Informing management the need and opportunities of self development.....	34
Self-Check 4	36
Information Sheet 5. Ensuring and Organizing Support/ sponsorship for self development.....	37
Self-Check 5	40
LO #3. Involve in self development.....	41
Information Sheet 1. Making necessary preparations for self development involvement	43
Self-Check 1	48
Information Sheet-2. Identifying professional organizations	49
Self-Check 2	56
Information Sheet 3. Attending actively departmental meetings and seminars	57
Self-Check 3	62
Information Sheet 4. Reading professional journals, regulation updates, service operation manuals and technical bulletins	63



L #19	LO #1-Identify the gap
Instruction sheet	
<p>This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:</p> <ul style="list-style-type: none"> • Tracking national and international Developments in biomedical technology field • Identifying Institutional expectations in terms of competences • Completing technological developments and company expectations <p>This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:</p> <ul style="list-style-type: none"> • Track national and international Developments in biomedical technology field • Identify Institutional expectations in terms of competences • Complete technological developments and company expectations 	
Learning Instructions:	
<ol style="list-style-type: none"> 1. Read the specific objectives of this Learning Guide. 2. Follow the instructions described below. 3. Read the information written in the “Information Sheets” . Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them. 4. Accomplish the “Self-checks” which are placed following all information sheets. 5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks). 6. If you earned a satisfactory evaluation proceed to “Operation sheets 7. Perform “the Learning activity performance test” which is placed following “Operation sheets” , 8. If your performance is satisfactory proceed to the next learning guide, 9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets” . 	



Information Sheet 1- Tracking national and international Developments in biomedical technology field

1.1 Tracking national and international Developments in biomedical technology field

Healthcare is undergoing significant change as technology advances and population attitudes and regulatory requirements evolve. As this is happening, new developments in workplace technologies provide opportunities for teams in healthcare to work together, access and manipulate information, communicate with patients, family members and other staff, and collaborate with interdisciplinary teams in ways that could only be imagined a few years ago.

1.1 Keeping up with constantly evolving medical technologies

The beginning of the 20th century brought the introduction of highly sophisticated, precise medical instruments that provided previously unknown levels of detail about patients. Today, those instruments - including the thermometer, the stethoscope, and the X-ray machine - are commonplace. But at the time of their introduction, these technological wonders changed the face of medicine. Over the next 100 years, medicine continued to evolve, with the unveiling of increasingly sophisticated methods of gathering data. The changes required an ever-expanding body of knowledge among medical professionals, which led to specialization. In the 1930s, about 25 percent of doctors were specialists, notes Health Guide Info. By 1980, about 80 percent of doctors worked in a specialized field. In the modern medical environment, technological evolution occurs at a dizzying pace. New technologies seem to appear on a daily basis, and students and patients alike wonder how they can keep up. The first step is understanding the primary categories in which the medical field is evolving.

POPULATION SCIENCE

In recent years, new technology has enabled the detailed study of populations for improved treatment of epidemics. The Huffington Post observes that easy access to vast amounts of patient data now allows medical professionals to analyze life spans, death rates, illness frequency and other vital metrics.

Page 5 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



ELECTRONIC MEDICAL RECORDS

Billing and coding are part of the behind-the-scenes engine that powers the medical industry, and they've made tremendous strides in recent years. Tasks have largely shifted from paper-based to digital formats, largely due to the advent of electronic medical records. Digitization of records also has revolutionized care by allowing providers to see a patient's history with the click of a mouse.

REMOTE PATIENT MONITORING

Demand has skyrocketed for remote care options, and the technology in this area is improving rapidly. Science Daily reports that current advances include systems that allow monitoring of patient vital signs at home, including sensors that can be concealed and, thus, have the least possible impact on the person being monitored.

1.2 WHAT DOES THE FUTURE HOLD?

Researchers expect even more profound technological changes affecting the medical field in the coming years. Medical nanotechnology is expected to lead to significant improvements in diagnostic techniques and in the development of "smart" drugs, the Nanotech Project reports. Biomedical engineering offers opportunities in tissue and organ replacement, according to the Johns Hopkins School of Medicine. And robotics, already making waves in the medical world, will continue to advance. The National Institutes of Health describes robotic surgery, a technique that's already allowing surgeons to use smaller incisions and to better see areas to be treated.

1.3 Medical Equipment Technology

Improving quality of life is one of the main benefits of integrating new innovations into medicine. Medical technologies like minimally-invasive surgeries, better monitoring systems, and more comfortable scanning equipment are allowing patients to spend less time in recovery and more time enjoying a healthy life.

The integration of medical equipment technology and telehealth has also created robotic surgeries, where in some cases, physicians do not even need to be in the operating room with a patient when the surgery is performed. Instead, surgeons can operate out of

Page 6 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



their “home base”, and patients can have the procedure done in a hospital or clinic close their own hometown, eliminating the hassles and stress of health-related travel. With other robotic surgeries, the surgeon is still in the room, operating the robotic devices, but the technology allows for a minimally-invasive procedure that leaves patients with less scarring and significantly less recovery time.

1.4 KEEPING UP WITH A RAPIDLY CHANGING ENVIRONMENT

In a world that has quickly become digitally connected, advancing technologies allow medical professionals to constantly streamline systems and processes. For patients and students, keeping up can present challenges. Advanced knowledge is readily available through reputable publications like Science magazine or through online searches of the latest academic and governmental research. When it comes to personal treatment, the wisest course of action for patients is to follow the advice of knowledgeable medical professionals. Students seeking to stay informed about the latest technological advancements can consult their professors and other experts affiliated with medical academic programs.

1.5 The potential of technology to help close the skills gap

Numerous innovations in the education technology space are beginning to show potential in improving education and helping address skills gaps. To help lower the cost and improve the quality of education, education technology is being used to:

Find creative solutions to fundamental challenges in many countries, such as a lack of well-trained technician and broadly accessible technology infrastructure

Make education available to a broader audience at a much lower cost or provide higher quality instruction at the same price

Enable easier scaling up of promising models within local markets and the transfer of best practices across markets in ways that can be sustained over the long term

Gain insight into how and what students learn in real time by taking advantage of the greater variety, volume and velocity of data

Page 7 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Increase technician productivity, freeing up valuable time from tasks such as testing, which can be used for differentiated teaching of competencies and character qualities

Page 8 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021

**Self-Check -1****Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Fill the blank space

1. What is main the benefits of integrating new innovations into Medical technologies?
(5%)

Answer the following question!

Note: Satisfactory rating - 3 and 5 points Unsatisfactory - below 3 and 5points

You can ask you teacher for the copy of the correct answers.

Score = _____
Rating: _____

Answer Sheet

Name: _____

Date: _____



Information Sheet 2- Identifying Institutional expectations in terms of competences

2.1 Identifying Institutional expectations in terms of competences

2.1.1 Competency Biomedical Equipment Technology (BMET)

An interdisciplinary field encompassing healthcare technology management, including the maintenance and support, planning and acquisition, installation and training, modification and design of medical equipment and systems according to standards and guidelines.

Objectives

- The ability to understand the design, purpose, and performance of medical equipment.
- The ability to apply this understanding to the needs of healthcare technology management, such as maintenance, repair, and user assistance for medical equipment.

A Biomedical Equipment Technician, also referred to as a Biomedical Engineering Technician/ Technologist (BMET) or Biomedical Equipment/Engineering Specialist (BES or BMES), is typically an electro-mechanical technician who ensures that medical equipment is well maintained, properly configured, and safely functional. In hospital or clinical environments BMETs often work with Clinical Engineers, although as in most technical fields there is a professional and legal distinction between engineers and engineering technicians.

2.1.2 The competence Profession Biomedical Equipment Technician (BMET)

Employment

2.1.2.1 General Responsibilities

BMETs install, inspect, maintain, repair, calibrate, modify, and design biomedical equipment and support systems to adhere to medical standards and guidelines. BMETs

Page 10 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



are involved in the total management of healthcare technology—from repairs and scheduled maintenance to capital asset planning, project management, budgeting and personnel management, designing interfaces and integrating medical systems, training end-users to utilize medical technology, and evaluating new devices for acquisition. BMETs educate and advise staff and other agencies on theory of operation, physiological principles, safe clinical application of biomedical equipment, and maintaining the facility's patient care and medical staff equipment. BMETs cover a vast array of different fields and devices. However, in many cases there is a separation of responsibilities, whereby other (more specific) specialists focus on certain kinds of medical instruments—e.g., an Imaging Repair Specialist works on medical imaging equipment.

2.1.2.2 Regulatory Responsibilities

Biomedical Equipment Technicians (BMETs) must comply with safety regulations, and most biomedical systems must have documentation to show that they were managed, tested, delivered, and used according to a planned, approved process that increases the quality and safety of diagnostics and therapeutic equipment and reduces the risk of harm to patients and staff

2.1.2.1 Job Tasks and Qualifications

In the development of this Guide, job descriptions were obtained from BMET employers, including hospitals, independent service organizations (ISO), and medical equipment manufacturers—the major categories of employers of entry-level BMETs. The following job task activities and qualifications were most common throughout the descriptions.

Most Common Job Task Activities

- Troubleshoot and repair general/low-risk clinical equipment
- Calibrate equipment
- Order parts per policies and procedures
- Perform scheduled maintenance and safety testing
- Assure inspections performed in accordance with requirements and standards
- Use specialized test equipment and tools

Page 11 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Document actions and results
- Know/comply with departmental policies and procedures
- Participate in performance and quality improvement activities
- Perform in a manner consistent with mission
- Perform incoming inspections and setup
- Assist with projects such as installation, relocation of equipment

Most Common Job Qualifications

- Education
- Experience
- Knowledge of electrical/electronics
- Competent and professional with oral and written communications
- Safety
- Teamwork
- Customer service

**Self-Check -2****Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Fill the blank space

1. What are General Responsibilities biomedical technician (BMETs) ! (7%)

_____, _____
_____, _____

2. List down most common job Task Activities of BMETs? at least 6! (6%)

_____, _____
_____, _____

3. List down Most Common Job Qualifications of BMETs? at least 7.! (7%)

_____, _____
_____, _____
_____, _____

. Answer the following question!

Note: Satisfactory rating 11 and 20 points Unsatisfactory- below 11 and 20 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____

Short Answer Question



Information Sheet 3. Completing technological developments and company expectations

3. Completing technological developments and company expectations

3.1. ways technology in the workplace has improved the modern work environment

Efficiency and Increased Productivity

The modern workplace has experienced a complete shift in how we spend our time. Time management has been optimized, and the efforts put into every-day tasks have been lightened. Employee productivity and efforts have been improved, allowing them to place more emphasis on more important things such as precision and creativity. The level of expectation of clients and co-workers has also changed as a result of technology in the workplace, keeping everyone connected on a constant basis. Results are expected much faster than ever before based on this evolution of technology in the workplace.

2. Increased Collaboration

Technology in the workplace has given us a level of communication never seen before. We can literally connect to any one of our employees, leaders and co-workers any time, anywhere. With this dramatic increase in collaboration comes a heightened level of flexibility in communication, allowing co-workers to facilitate continued partnership no matter where each individual may be. Team work is much more engaged, and boosted to a whole new level.

3. Improved Cost Management

Page 14 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



The bottom line of any business is to achieve profitability. With the advent of technology in the workplace comes an encouraged productivity in finance. Businesses are much more fiscally healthy as a result of innovative technological equipment and software entering the office scene. As employees are encouraged to optimize their time thanks to such technology, a lot less time is wasted, and a lot more time is used to hone in on the profitable tasks at hand. A productive workplace is a profitable one, which is just one of the important ways that technology has changed our workplace environment for the better.

4. Heightened Level of Security

The security of company information can be severely compromised without the implementation of proper channels of technology and software. Just as savvy hackers are using technology to try to gain access to a businesses' sensitive information, so should a company implement innovative technology as a safe haven against such breaches of security. Technology in the workplace helps to make sure that information is accessible only to the right people, and makes it nearly impossible for pertinent company information to be leaked.

5. A Better Employee Experience

While technology in the workplace is just one factor that contributes to an employee's overall experience, it's a significant one. Technology shapes an organization's culture and influences how employees interact with the physical workspace. And employees today expect the technology they use in the workplace to be just as advanced and intuitive as the apps they use on their smartphone. That's why forward-thinking organizations are investing in employee experience solutions that include mobile apps, kiosks and even internet of things (IoT) sensors.

Keep Up With Technology, & Implement Tools to Help Streamline its Uses

Compromising your company's level of profitability, security and productivity is something your business simply cannot afford. With the implementation of technological elements and office management software, such components of your business can be

Page 15 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



much more adequately protected and streamlined. By implementing effective technological equipment and tools, as well as technological office solutions such as I Office's workplace management software, businesses can ensure optimal workplace productivity and profitability.

There's no denying the incredible impact that technology in the workplace has had on the traditional office. It's up to business leaders to keep up with this ever-evolving trend in the most efficient means possible.

Page 16 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Self-Check 3	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

List down Consequence are expected much faster than ever before based on this evolution of technology in the workplace.

. Answer the following question!

Note: Satisfactory rating - 2 and 4 points Unsatisfactory - below 2 and 4 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____
Rating: _____



LG #20	LO #2- Look for self development opportunities and modalities
Instruction sheet	
<p>This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:</p> <ul style="list-style-type: none">• Gathering Information on self development opportunities• contacting program providers• Evaluating providers cost accessibility and modality• Informing management the need and opportunities of self development• Ensuring and Organizing Support/ sponsorship for self development <p>This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:</p> <ul style="list-style-type: none">• Gather Information on self development opportunities• contact program providers• Evaluate providers cost accessibility and modality• Inform management the need and opportunities of self development• Ensure and Organize Support/ sponsorship for self development	
Learning Instructions:	



1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets” . Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets” .



Information Sheet 1 Gather Information on self development opportunities

1. Gather Information on self development opportunities

1.1 Personal development

consists of activities that develop a person's capabilities and potential, build human capital, facilitate employability, and enhance quality of life and the realization of dreams and aspirations. Personal development may take place over the course of an individual's entire lifespan. It is not limited to self-help, but can involve formal and informal activities for developing others in roles such as those of teacher, guide, counselor, manager, coach, or mentor. When personal development takes place in the context of institutions, it refers to the methods, programs, tools, techniques, and assessment systems offered to support positive adult development at the individual level in organizations

Among other things, personal development may include the following activities:

- Improving self-awareness
- Improving self-knowledge
- Improving skills and/or learning new ones
- Building or renewing identity/self-esteem
- Developing strengths or talents
- Improving a career
- Identifying or improving potential
- Building employability or (alternatively) human capital
- Enhancing lifestyle and/or the quality of life and time-management
- Improving health
- Improving wealth or social status
- Fulfilling aspirations
- Initiating a life enterprise
- Defining and executing personal development plans (PDPs)
- Improving social relations or emotional intelligence



- Spiritual identity development and recognition

self-awareness is the experience of one's own personality or individuality. While consciousness is being aware of one's environment and body and lifestyle, self-awareness is the recognition of that awareness. Self-awareness is how an individual consciously knows and understands their own character, feelings, motives, and desires. There are two broad categories of self-awareness: internal self-awareness and external self-awareness.

Personal Development Process

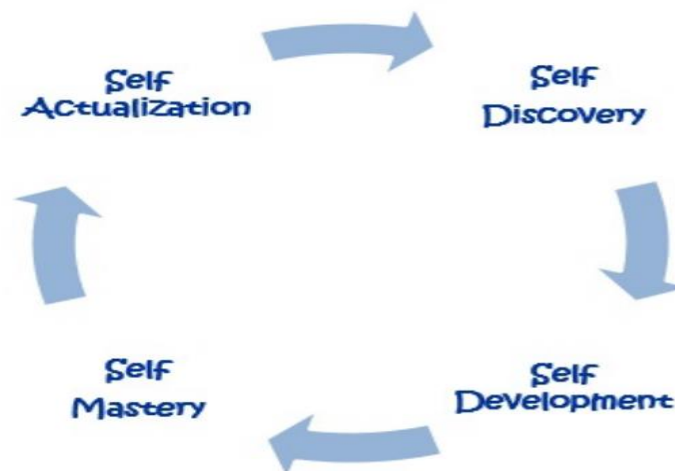


Figure 1.1 personal development process

Self-Discovery

Self-discovery is the first step in personal development. Self-Discovery is the process of gaining a deep understanding of your own self, character, needs, values, and purpose in life. It is the exploration of your inner self in an attempt to discover who you are, your potential, your purpose in life, and what core principles are guiding you to take different paths along the way. The key components to self-discovery are self-reflection and self-awareness. Self discovery can also include exploration of personal interests as well as hopes and dreams for the future. Self-discovery leads to self-knowledge which will enable you to guide yourself towards situations and experiences in which you will thrive.

The self-discovery process includes:

Page 21 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



- Self-Reflection
- Self-Awareness
- Interest Awareness
- Hopes & Dreams

Self-Reflection

The first step in the self-discovery process is self-reflection. You must make the time to stop and really think about who you are. If you want to achieve self-awareness, you need to take the time to step outside of your experiences and actions and reflect on them. A person can have numerous experiences in life, but still lack self-awareness. Quiet meditation and reflection will allow you to refocus your mind and concentrate on your inner self, and allow you to examine the way you “see” yourself.

Since we are all different in the way we think, feel, act, learn, and perceive the world, you must take the time to reflect in order to gain a better insight into yourself. Self Reflection allows you to explore your individual personality, natural preferences, values, beliefs, preferred styles and tendencies in order to become self-aware. You can also reflect on your personal interests and your dreams.





Figure 2.2. process of self-reflection

Self-Awareness

Self-reflection leads right into self-awareness. Through reflection of your preferences, values, beliefs, and tendencies, you become aware of who you are. Self-Awareness can be defined as “having an insightful understanding of your personality, values, tendencies, and beliefs.” The key areas for self-awareness include your personality traits, values, emotions, habits, and the psychological needs that motivate your behaviors. Some people group personal interests and aspirations into self-awareness. We, however, break them into three groups; self-awareness, interest awareness, and hope & dreams. We believe that if they are categorized and viewed as three separate elements, they can be addressed separately and with different techniques. For many of us, the core of who we are does not change significantly over time. Our belief, values, principles, and tendencies (what we focus on for self-awareness) tend to remain fairly constant over our lifetime. If they do change, they usually only change slightly and slowly over time. In contrast, interests and aspirations can change quite frequently over time (i.e. what you are interested in today, you may not be interested in a few weeks).

Self-awareness is about knowing and understanding the core of who you are:

- your beliefs and principles
- your own emotions
- what motivates you
- your thinking patterns
- your tendencies to react to certain situations
- what you want out of life

Interest Awareness

Unlike many of the elements of self-awareness, where you explore traits and tendencies that remain mostly constant throughout your life, your interests often change as you grow and experience life. It is important to identify what interests you because by knowing what you enjoy you can do more of those activities.

Hopes and Dreams

Page 23 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



As your interests are in the here and the now, your hopes and dreams are for your future. Your hopes and dreams are wishes or aspiration for your future. They are thoughts and mental images of your futures that conger up positive emotions. These too have a tendency to change over the years. What you hope for when you were 5 years old may be very different from what you hope for at 15 years old and 30 years old.

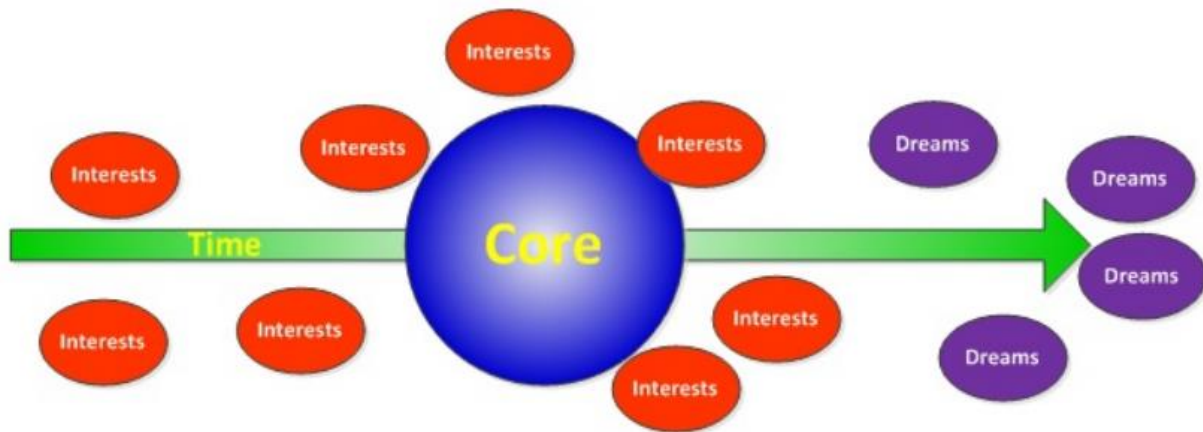


Figure 1.3. tendency change interests/hope to dreams

Self-Development

Self-Development is a process of consciously improving yourself in various aspects of your life. It is the conscious pursuit of personal growth by improving personal skills, competencies, talents, and knowledge in order to seek self-fulfillment and proactively reach your fullest potential. Self-development enables you to assess your skills and talents, to set goals, and then take action to help you to achieve those goals and to maximize your potential.

Self-Development has several elements including;

- Self-Knowledge
- Self-Assessment
- Action Steps (Skill Enhancement & Personal Growth)

Self-knowledge

Page 24 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



Self-knowledge is the bridge between self-discovery and self-development. Self knowledge identifies what you know about yourself. It is the information you accumulate during self-discovery. It is with self-knowledge you are able to understand your principles, values, and your purpose and are able to apply it to your life. With self-knowledge you can understand your strengths to build upon, as well as identify areas where you would like to make improvements.

As we noted above, you do not typically change your personality, your values, or your needs based on what you learn about ourselves. However, an understanding of your personality and characteristics can help guide you towards situations and experiences in which you will thrive. Self-knowledge can also help you avoid those circumstances in which you will experience stress.

In addition to self-discovery, we can also gain self-knowledge through self-assessment. It is through self-assessment that we learn where strengths lie as well as determine which areas we can improve upon.

Self-Assessment

Self-assessment is the process of gathering information about your own aptitude, skills, competencies, and talents and critically reviewing the quality of your performance and abilities. Self-Assessment is different from self-awareness and self-discovery in that awareness and discovery is simply a recognition of something or knowing something exists. Assessment, on the other hand, is determining or measuring an amount, value, importance, extent, or rate of something.

You can fairly easily assess your skills and abilities. Although more challenging, you can also assess and measure your attitudes, beliefs and judgments you have about yourself. Those assessments may include your self-image, self-esteem, self-efficacy, and self confidence.

Self-assessment gives you the information needed to create an effective development plan. A development plan involves the making of goals or benchmarks that help define the path that you intend to follow. By knowing what specific skills you need to develop or work on, you are able to focus your attention on those skills and making yourself more proficient at them. You force yourself to focus on the acquisition of knowledge and to

Page 25 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



organize your resources, thus allowing you to become more organized and effective. As you become more effective, you can improve both your abilities and ultimately your performance.

Action Steps – Skill Enhancement

The main component of self-development is the actual development of skills and personal growth. You should continuously look for ways to develop your skills, abilities, and competencies to enhance your performance. Through effective skill enhancement, you become more capable, competent, and confident in yourself and your abilities, and are better able to reach your goals. You should also focus on developing your personal effectiveness. Personal Effectiveness focuses on personal skills such as time management, organization, problem solving, and decision making. Developing your Personal Effectiveness helps enhance your overall ability to perform various tasks and activities in your daily life.

Developments of these skills allow you to become more capable, competent, and confident and ultimately help you reach your goals. Personal growth (growing as a person) is also an important part of the action steps. Personal growth can be perceived as becoming a better person by modifying personal attitudes, traits, and characteristics (e.g. becoming more patient, becoming more understanding, or developing a more positive attitude). Personal growth would also include building self-esteem, self-image, and self-confidence.

Continuous self-development will lead to self-mastery

Self-Mastery

Self-mastery is the ability to recognize, understand, control, and make the most out of your physical, mental, emotional, and spiritual self. It is gained through awareness, understanding, and control over your thoughts, emotions, and actions. Essentially, self mastery gives you control over the one thing you can control in any given situation: yourself.

Self-mastery over your own thoughts, emotions, words, and actions can change and transform your life and yourself. When negative thoughts arise, emotions can become

Page 26 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



unsettled and your resulting actions can have negative consequences. With self-mastery, you can reign in your thoughts and emotions, and begin to control your actions. Self mastery will help you control your emotional impulses and allow you to make decisions based on rational thinking instead of heightened emotions.

Self-Actualization

Self-Actualization is seeking personal growth through peak experiences in order to realize your fullest potential and reach self-fulfillment. Self-actualization is often thought of or viewed as a destination or a process, but it is really a state of being. It is when you can say, "I am being all that I am, and all that I was meant to be." Self-actualization is the ultimate goal of personal development.

Personal development can also include developing other people's skills and personality. This may take place through roles such as those of a teacher or mentor, either through a personal competency (such as the alleged skill of certain managers in developing the potential of employees) or through a professional service (such as providing training, assessment or coaching).

Beyond improving oneself and developing others, "personal development" labels a field of practice and research:

- As a field of practice, personal development includes personal-development methods, learning programs, assessment systems, tools, and techniques.
- As a field of research, personal-development topics appear in psychology journals, education research, management journals and books, and human-development economics.

Any sort of development-whether economic, political, biological, organizational or personal-requires a framework if one wishes to know whether a change has actually occurred.

In the case of personal development, an individual often functions as the primary judge of improvement or of regression, but validation of objective improvement requires assessment using standard criteria.



Personal-development frameworks may include:

- Goals or benchmarks that define the end-points
- Strategies or plans for reaching goals
- Measurement and assessment of progress, levels or stages that define milestones along a development path
- A feedback system to provide information on changes

file:///C:/Users/mam/AppData/Local/Temp/destinysodyssey.com-
Personal%20Development%20Process.pdf

Page 28 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021

**Self-Check 1****Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

I. Choose the best answer (each 2 point)

1. Which one is/ are more efficient for butter making

- A. interests and aspiration
- B. Developing strengths or
- C. Improving self-knowledge
- D. Identifying or improving potential

2. Self-Development has several elements not including

- A. Self-Knowledge
- B. Self-Assessment
- C. Self-Awareness
- D. Action Steps

3. _____ is a process of consciously improving yourself in various aspects of your life.

- A. Self-Reflection
- B. Self-Discovery
- C. Strategies or plans for reaching goals
- D. Self-Development

Part II Fill the black space

1. List down the Personal Development Process (4%)

. Answer the following question!

Note: Satisfactory rating 5 and 10 points Unsatisfactory below 6 and 10 points

You can ask you teacher for the copy of the correct answers.

Score = _____

Rating: _____

Answer Sheet

Name: _____

Date: _____



Information Sheet 2 Contact program providers

2.1 Contact program providers

Personal development consultants, sometimes referred to as life coaches, provide counseling services to clients in order to improve their clients' quality of life. The day-to-day responsibilities of a personal development consultant might differ drastically depending on his or her clientele. For example if a personal development consultant is employed with a rehabilitation facility, they would work with clients to establish a plan for returning to normal life after a trauma, addiction, or injury. Another personal development professional might be self-employed and work with women to create healthy lifestyle plans.

Overall, personal development consultants are responsible for communicating effectively with clients while encouraging them to meet their goals. These professionals must be organized and able to maintain client records in a professional and confidential manner.

Page 30 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021

**Self-Check 2****Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

I. Part I: Say true or false

1. Overall, personal development consultants are responsible for communicating effectively with clients while encouraging them to meet their goals.
2. The day-to-day responsibilities of a personal development consultant might differ drastically depending on his or her clientele.

. Answer the following question!

Note: Satisfactory rating 9 and 17 points Unsatisfactory below 9 and 17 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date _____

Score = _____

Rating: _____



Information Sheet 3. Evaluating providers cost accessibility and modality

3. Evaluating providers cost accessibility and modality

3.1. Assess the responses

The evaluation panel must determine the best supplier or provider based on the information provided in the responses.

You must:

- treat suppliers fairly, impartially and equitably at all times
- Follow the approach and methodology set out in the procurement plan and reflected in the request for Proposals.
- If you need to change any aspect of the process or methodology, you are obliged to notify all potential suppliers and give them sufficient time to respond to the change
- take into account capability, capacity and public value, including any broader outcomes
- check suppliers' conflict of interest declarations and re-check conflict of interest declarations for the panel now that the suppliers are known
- not base your decision on hearsay, anecdotes, personal views of panel members, or information that's not directly relevant to the RFX
- keep a full record of how each response was assessed against the criteria and demonstrate that each received due and fair consideration
- justify any suppliers you reject based on the criteria, and record your decision in writing
- treat responses as commercially confidential information – the evaluation panel should not discuss any element of the evaluation process with anyone not on the panel.



Self-Check .3	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List down the response of provider based on the information provided; (5%)

. Answer the following question!

Note: Satisfactory rating 3 and 5 points Unsatisfactory below 3 and 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____



Information Sheet 4. Informing management the need and opportunities of self development

4. Informing management the need and opportunities of self development

4.1. Identify your development needs

Identifying your development needs can be challenging. Often, we find ourselves looking at what training courses are available and deciding which of those would be most helpful. In fact, it is better to try and identify what the development need is and then to work out ways of meeting that need, which may or may not be a training course.

Development and Performance Review (DPR) is a great opportunity to discuss your development needs with your line manager. You may be able to discuss the changing requirements of your role, as well as your personal development aspirations (for example, career development). It is important that you have considered your development needs before your Development and Performance Review (DPR) meeting as this will enable you to make the most of your discussion. The 'Identifying Your Development Needs' form, combined with the steps below, can be a useful tool in this process.

There are 3 stages to identifying your needs.

1. Identify what skills, knowledge and behaviours are 'required' for you to do your job well.

Every role in the University has a job description and a person specification. Your job description will list the things that you are expected to do, and the person specification will identify the skills, experience, knowledge and behaviours that you need to do that job well.

Page 34 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



You may find it helpful to talk to your line manager or Head of Department if you feel you want to clarify any of the requirements set out in the person specification. Your Development and Performance Review (DPR) meeting will be one place to have this discussion, but you can raise the issue of development at any meeting with your manager.

At this stage, it's also worth thinking about the skills, knowledge and behaviours that you may need to develop in the future in your current job. You may know, for example, that your role will be changing or that you will be working on different projects or that you are interested in a career change. What new or different skills, knowledge and behaviours will you need?

Make a list of current and future skills, knowledge and behaviours that you need

2. Look at the skills, knowledge and behaviours you actually have now.

Look at the list you have produced. Now ask yourself how effectively you match against each one. You could consider talking this through with a friend or colleague, or with your manager .

It's important to ask yourself some rigorous questions at this stage and answer honestly! Are there areas of your work, for example, where developing more confidence would make a real difference to your success in your job? Are there knowledge, skills and behaviours that you only need on occasion that would benefit from some development? Can you identify areas where you feel confident and believe you perform well that could be an even greater strength for you with some development?.

3. Compare 'actual' with 'required' to identify the gaps. These are your development needs.

Try and be as specific as possible about what you need to do differently. This will really help you when you are deciding how to best address your development needs. It will also help you review and measure your success.

Page 35 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



For example, “I need to learn how to use Outlook to sort, prioritize and store my emails,” will be much more helpful than “I need to be more organized,” when it comes to deciding what development you need. It will also help you check how the Outlook training you undertook actually made a difference in your ability to be organized.

Self-Check 4	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part I Fill the black space

1. .List the 3 stages to identifying your needs (5%)

. Answer the following question!

Note: Satisfactory rating 3 and 5 points Unsatisfactory below 3 and 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____
Rating: _____



Information Sheet 5. Ensuring and Organizing Support/ sponsorship for self development

5. Ensuring and Organizing Support/ sponsorship for self development

5.1. Sponsors

This person is someone that, if you care about your progression within your current organization, should also be within the same company as you.

A sponsor, is someone who, without you in the room, will be willing to put you forward, fight in your corner and recommend you for opportunities.

So how do you get a sponsor?

Step one, is absolutely being great at your job. You can't ask, expect or even deserve to be recommended or advocated for if you aren't developing, improving and delivering on your current role.

Assuming that is in place, second you need to tell people what you want. Share with anyone and everyone who will listen what your ambitions are, what you want to achieve and where you see yourself in the future. If they know where you want to go, and have seen that you are capable, there is no reason that they won't bring up your name when there are opportunities to.

Moving forward, it is important to thank, recognize and encourage those who have the influence above you for when they sponsor you forward. There is a lot of nuance here, in terms of how to manage this without sounding desperate, or ambitious at all costs, but thoughtful, considered and tactful requests can help find you someone who will advocate for you.

Page 37 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



5.1.1 Reasons to Sponsor Training and Development Programs

When you sponsor training and development programs, it can be one of the most effective and successful ways of marketing your business. You can reach a targeted, professional group of potential customers.

Sponsoring a development course can also deliver high-quality leads, high-value clients, and one of the best returns you're likely to achieve for any marketing investment.

You Get A High-Quality Audience

The people who sign up for and attend our training and development programs share certain qualities and these qualities make them valuable targets for your marketing.

They are self-motivated and hungry for information and education. They are ambitious, outward-looking and hard-working. In short, they are exactly the type of customers that you want to find – and which you've probably already spent a lot of time and effort seeking out.

Sponsoring Training And Development Empowers

The information, coaching, and advice that attendees receive as part of their development program is something that they will value very highly.

Although the sessions are free to the end user, they have made the effort to seek out this information, sign up and attend their sessions. By associating your brand and message with the valuable education that these programs provide, you can benefit from the strong, positive connotations that are already in the minds of a receptive audience.

You Get A Self-Selected Group

Training and development programs are tailored for specific groups, such as entrepreneurs, young people or women.

Attendees will naturally sign up to the course that's most relevant to them. By sponsoring a particular program, you can choose the specific demographic that you

Page 38 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



want to target. Because you know you've already got the attention of your target group, you can spend more effort on your message. Here's a study from our SME program which highlights the kind of details that could be gathered.

You Deliver A Relevant Message

If you sponsor several development programs – each of which is specific to a different target audience – this can present you with a fantastic and unusual marketing opportunity. Rather than creating one generic message to cater for a wide audience, you can instead tailor and fine-tune lots of different marketing messages to speak to specific demographics.

Is there something you want to say to your female audience? Have you got a specific message for younger customers? Sponsorship of Potential.com development programs provides an unparalleled way of delivering multiple, highly targeted marketing campaigns directly to the audiences you want to reach.

You Create The Right Environment

Attendees of our live and online training and development programs are primed to receive information, education, and advice. After all, that's exactly why they are there. There are few other marketing opportunities that can guarantee an attentive, receptive audience who are genuinely hungry for new information and ideas.

In most forms of marketing, too much money and effort are spent on trying to grab the attention of target groups. Many marketing messages don't succeed because they fail to attract attention, or when they do, the audience doesn't feel that they're being spoken to personally.

Sponsoring training and development is the ideal solution to this common marketing problem. It delivers a specific and attentive audience so you can generate more relevant leads, more sales, and more success for your business.

Page 39 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



<https://www.potential.com/articles/5-reasons-sponsor-training-development-programs/>

Self-Check 5	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part I Fill the black space

1. List down Reasons for Sponsor Training and Development Programs(5%)

. Answer the following question!

Note: Satisfactory rating 3 and 5 points Unsatisfactory below 3 and 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____



LG #21	LO #3. Involve in self development
Instruction sheet	
<p>This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:</p> <ul style="list-style-type: none">• Making necessary preparations for self development involvement• Identifying professional organizations• Attending actively departmental meetings and seminars• Reading professional journals, regulation updates, service operation manuals and technical bulletins• Attending manufacturers' schools and in-service training• Pursuing additional formal/further education February <p>This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:</p> <ul style="list-style-type: none">• Make necessary preparations for self development involvement• Identify professional organizations• Attend actively departmental meetings and seminars• Read professional journals, regulation updates, service operation manuals and technical bulletins• Attend manufacturers' schools and in-service training• Pursues additional formal/further education	
Learning Instructions:	



1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets” . Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets” .



Information Sheet 1. Making necessary preparations for self development involvement

3.1 Making necessary preparations for self development involvement

Personal Development Planning

Employers are increasingly aware of the importance of investing in their staff and often have structures and processes in place to provide opportunities for the training and development of their employees. Nonetheless, managers also need to take personal responsibility for renewing and updating their skills and knowledge throughout their working lives. Personal development is a continuous lifelong process of nurturing, shaping and improving skills and knowledge to ensure maximum effectiveness and ongoing employability. Personal development does not necessarily imply upward movement; rather, it is about enabling individuals to improve their performance and reach their full potential at each stage of their career. Adopting a constructive approach to personal development planning (PDP) will help individuals to:

consider where they are now, where they want to go and how they can get there

revitalize technical skills that date very quickly

buildup transferable skills (such as self-awareness, ability to learn, adaptability to change, empathy and good time management)

monitor and evaluate achievements.

The process of PDP provides a schedule to work to and can lay the basis for:

- continuous learning
- a sense of achievement
- ensuring employ ability and survival in an age where very few jobs can be guaranteed to stay the same
- making the most of opportunities which may arise.



Personal development planning is the process of:

establishing aims and objectives(or goals)-what you want to achieve or where you want to go, in the short, medium or long-term in your career

assessing current realities

identifying needs for skills, knowledge or competence

selecting appropriate development activities to meet those perceived needs.

Scheduling and timing are important but should not be too regimented.

Action checklist

PDP is usually understood as a cyclical process, where improvement comes from moving around the loop. The following chart outlines the process:

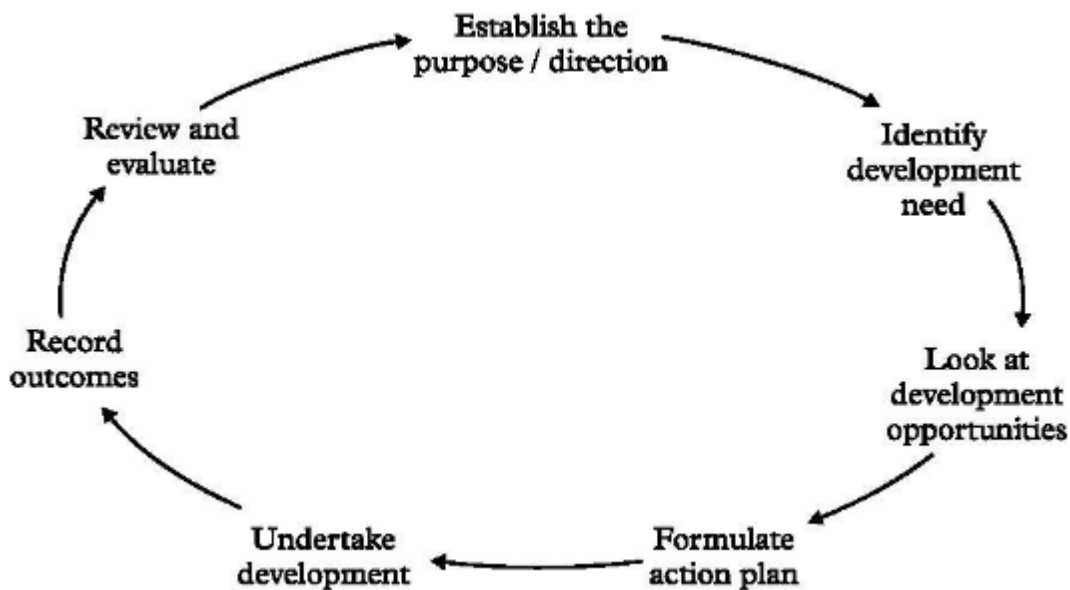


Figure 1.1 The Personal Development Planning Cycle

Establish your purpose or direction

The purpose of any development activity needs to be identified. You may do this, either, by yourself or with the help of your manager, mentor, career coach, colleagues, or friends. This involves:

Page 44 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



gaining an awareness of your current standing and future potential within your chosen field or sector

gaining a measure of what you are good at and interested in (because these things will motivate you)

taking account of the organizational (and sectoral) realities you encounter

linking your plans to organizational (and sectoral) needs as much as possible.

Think about:

your own value system, involving private life and family, work and money, constraints and obstacles to mobility, now and in the future

the characteristics of the kind of work that fits with your value system.

Identify development needs

The identification of development needs may emerge from intended or actual new tasks or responsibilities, from discussions with your manager or others, or from dissatisfaction with current routines. Some people know what they are good at, others may be less sure. Various instruments such as self-assessment tests, benchmarking exercises and personal diagnostics are available to help you assess your skills in a structured way. Your development needs will depend largely upon your career goals. If you intend to remain in similar employment, you may need development to re-motivate or re-orient yourself, or to improve your current performance and effectiveness. Alternatively, development may be required to prepare you for promotion, your next job, a new career or self-employment

Identify learning opportunities

As a result of one, or several, of the assessment processes above, draw up a list of the skills or knowledge you need to acquire, update or improve. Compare this list with your current skills and knowledge base and identify the gaps.

Consider:

Page 45 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



your learning style -some learn best by trying out new things, whilst others prefer to sit back and observe; some prefer to experiment, others to carry out research. The Learning Styles Questionnaire, devised by Peter Honey and Alan Mumford will help identify preferred learning styles (See Additional Resources below.)

your development: in addition to your own organization, consider government and private advisory agencies, literature and open learning, multi-media or online packages, professional institutes, your peer groups, networks and colleagues and family and friends

the range of learning options available -these can be broadly differentiated into three categories: Education takes place over a sustained but finite period of time, usually leads to a qualification and may open up the way into a new career direction. Training is carried out at a specific time and place and is usually vocationally relevant and limited to specific measurable aims and objectives. Development encompasses a wide range of activities with learning potential that are either work-based (such as work shadowing, job rotation, secondment, attachment, mentoring, delegation, counseling or coaching) or personal (such as private reading, authorship, presenting papers, peer group contacts, networking, or community involvement).

There will be occasions when unplanned development opportunities arise, such as, a last minute vacancy on a course or a place at an event, which will require you to take account of your priorities when considering whether to follow up on that opportunity.

Formulate an action plan

For each of the skills and knowledge gaps you identify, set yourself development objectives. These need to be SMART: Specific, Measurable, Achievable, Realistic and Timely. There must be an element of challenge in them so that they stretch you as an individual and carry you on to new ground. But they must also be attainable and viable within a realistic time-frame, otherwise time will overtake you.

Undertake the development

Page 46 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Put your plan into action-what you do and how you do it should be your choice. In addition to training courses, options include work shadowing, secondment, job rotation, project work, networking and community involvement.

Record the outcomes

Keeping records serves to remind you -and others, such as potential employers -what you have done. Most importantly your records will help you to focus on what you have got out of your development activity. Record the date, the development need identified, the chosen method of development, the date(s) when development was undertaken, the outcomes, and any further action needed.

Evaluate and review

Evaluation is the key stage in the self-development cycle. There are two issues you should reflect upon: whether the development activity you have undertaken was appropriate and worthwhile; and whether and how your skills or working behaviour have improved as a result. Evaluating development activities also involves asking the following questions:

- What am I able to do better as a result?
- Has this experience thrown up further development needs?
- How well did this development method work?
- Could I have gained more from this activity?
- Would I follow this approach again?

Evaluation will also provide a key lead for the next stage of the continuing cycle. Goals change, tasks vary and new needs will emerge. It is important to revise your own plan accordingly.



Self-Check 1	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

I. Choose the best answer (each 2 point)

1. The process of personal development plan provides a schedule to work to and can lay the basis for:-

continuous learning C. making the most of opportunities which may arise

A sense of achievement D. All

Which of the following is Personal Development Planning Cycle

Development activity C. Identify development needs

continuous learning D. All

. Answer the following question!

Note: Satisfactory rating 2 and 4 points Unsatisfactory below 2 and 4 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____
Rating: _____



Information Sheet-2. Identifying professional organizations

2.1 Identifying professional organizations

What Is a Professional Organization?

A professional organization, sometimes referred to as a professional association or professional body, exists to advance a particular profession, support the interests of people working in that profession and serve the public good. It facilitates innovation, communication and connection. A professional organization typically requires member dues, has an elected leadership body and includes a range of subcommittees or functional areas. Professional organizations can be both national or international, and often have close ties to colleges and universities with degree programs in that field.

2.1. Types of professional organizations

There are four types of professional organizations. Some of these organizations offer the same benefits. Learning about each one can help you decide which organization could be right for you:

- Member-benefit professional associations
- Designation-granting associations
- Certifying bodies
- Professional regulatory bodies

Member-benefit professional associations

These organizations focus primarily on benefiting their individual members through access to physical resources, like journals and conferences. They also offer resources like peer support, networking and resume building.

Designation-granting associations

Page 49 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



Designation-granting associations are organizations that offer a certification for members to show their dedication to the field. Designation-granting organizations usually issue a certification after a candidate completes professional learning hours, demonstrates their knowledge of work products, passes an exam or completes a combination of these items. Members who earn these certifications usually need to renew them every few years by earning continuing education hours.

Certifying bodies

Certifying bodies are organizations that issue credentials to their members once they meet set requirements. Unlike designation-granting associations, the main purpose of certifying bodies is to issue and track certifications. Applicants may need to have some education or professional experience as a prerequisite. Many certification organizations also require applicants to pass an exam and renew the credential based on guidelines.

Professional regulatory bodies

Professional regulatory bodies develop and maintain expectations of the industry. They follow state and federal guidelines in order to best serve the public. These bodies often establish and uphold licensing and certification requirements for specific occupations. This type of professional organization can exclude members if they don't follow the established guidelines.

How to select a professional organization

Knowing how to select the right professional organization for you is an important part of accessing the great benefits that professional organizations offer. Here we outline four steps you can follow to select a professional organization:

1. Determine your career goals
2. Research your company and the larger industry
3. Consider any necessary requirements
4. Compare organization benefits

1. Determine your career goals

Page 50 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Outlining your career goals is a good first step in the process of selecting a professional organization because it will help you narrow your focus. Make a list of your career goals, including salary, title and short- and long-term goals. You can then approach the search process with the objective of finding an organization that offers the specific resources, professional development or other services necessary to help you meet your goals.

2. Research your company and the larger industry

Learning if your company prefers membership in one organization over another is helpful as you begin your search. Knowing this could impact your likelihood for promotion or other leadership roles within the organization. You can research this through your organization's website or by asking your peers and supervisors.

Researching an industry standard or the preference or other potential companies is also valuable. It can help you understand how your company's preference fits within the larger context, which might impact your choice, depending on how long you plan to stay with your current organization.

3. Consider any necessary requirements

Researching any financial, education, credential or experience requirements for organization membership can be very valuable, especially on a practical level. Organizations can vary significantly in cost, as well as education requirements, which impacts your time and money. This information should be easy to find on the organization's website.

4. Compare organization benefits

You should be able to narrow down the list of professional organizations based on the research and work you performed. Once you have a shortlist, you can compare the organizations in terms of the benefits they offer. Consider which organization's benefits will be most helpful in meeting your career goals. For example, if your career goal is to become a manager, and later a senior executive, choose the organization that offers the most growth and development opportunities for aspiring leaders.

Page 51 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Benefits of a professional organization

A professional organization offers tremendous benefits to individual professionals including:

- Professional growth and development
- Access to resources and events
- Resume building
- Networking and job searching
- Peer support

Professional growth and development

Professional organizations offer growth and development opportunities in the form of conferences or workshops, online learning resources, recurring newsletters with relevant industry updates or comprehensive websites that establish and share the best practices for the profession. Many organizations offer annual conferences at various locations across the country. Attendees can deepen their knowledge, develop their skills and earn continuing education units necessary to maintain their license or certification. Members may also present at conferences, which helps them develop leadership and communication skills.

Access to resources and events

Separate from a public-facing website or literary publication, professional organizations often have an internal catalog of resources offered exclusively to members. These resources could include member articles, research findings, innovative techniques or commentary on the profession as a whole. Priority registration for events, access to specific workshop sessions within an event and discounted registration fees are three additional access benefits of joining a professional organization.

Resume building

Page 52 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Listing membership in a professional organization can enhance your resume by reflecting your commitment to growth and desire to align with industry standards. It can also serve as a point of connection with a potential employer who is also an organization member. Noting any responsibilities or active roles you held within the organization will even further strengthen your resume by developing your leadership skills and demonstrating your ambition.

Networking and job searching

Professional organizations offer valuable networking opportunities through events, message boards and organization subcommittees. They also present opportunities to find mentors or learn from experienced professionals in the field. This broadens your network when you're searching for a job. Some employers also list job openings exclusively with their respective professional organization before posting to the general public.

Peer support

Professional organizations offer great opportunities for peer collaboration and support. Organization websites often have message boards where members seek consultation or feedback from peers on unique job circumstances or challenges. This is especially valuable for individuals working as the only employee who has a specific role at the company. A school principal, for example, may seek leadership advice on how to develop their teaching staff from fellow school administrators in their professional organization.

Aside from the benefits to individual members, professional organizations benefit the profession by establishing and promoting industry standards, which supports a higher quality of performance. Professional organizations also bring more attention to the profession and provide a structure for developing and promoting new developments within the field.

Professional organizations benefit society because they create and maintain standards for members who perform services for the public. Professional organizations typically

Page 53 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



perform and offer charitable work, such as scholarship funds, charity events, financial contributions to social causes and sponsoring individuals for events.

Some Example of Professional Organizations

Networking with one's fellow scientists and engineers is extremely important for personal and professional development. Professional societies sponsor conferences, publish journals, and serve as reviewers or editors. They set professional and educational standards and provide job and career services for their members.

American Institute for Medical and Biological Engineering :-“non-profit organization headquartered in Washington, D.C., representing 50,000 individuals and the top 2% of medical and biological engineers.”

American Society of Biomechanics :-Biomechanists working in different disciplines and fields of application such as biological sciences, exercise and sports science, ergonomics and human factors, health sciences, engineering and applied science.

American Society for Engineering Education, Biomedical Engineering Division (ASEE BME) :-“This group provides a vital forum for those interested in biomedical engineering education through workshops, paper sessions, and panel discussions of current topics in the area.”

American Society of Mechanical Engineers, Bioengineering Division :-“focused on the application of mechanical engineering knowledge, skills and principles from conception to the design, development, analysis and operation of biomechanical systems.”

Association for the Advancement of Medical Instrumentation :-Non-profit organization focusing on the development, management, and use of safe and effective healthcare technology.

Biomedical Engineering Society (BMES) :-Lead professional society for biomedical engineering and bioengineering.

Page 54 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



European Society for Biomaterials (ESB) :-Member of the International Union of Societies for Biomaterials Sciences and Engineering.

European Society of Biomechanics (ESB) :-“To encourage, foster, promote and develop research, progress and information concerning the science of Biomechanics”

IEEE Engineering in Medicine and Biology Society (EMBS) :-World’s largest international society for biomedical engineers

Institute of Biological Engineering (IBE) :-Biological Engineering professional society

Institute of Physics and Engineering in Medicine (IPEM) :-Professional organization focused on making sure patients are correctly diagnosed, safely treated, and improving existing medical treatments.

<https://www.indeed.com/career-advice/career-development/what-is-a-professional-organization>

Page 55 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Self-Check 2	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List down four types of professional organizations. (4%)

_____ , _____

2. Four steps you can follow to select a professional organization: (4%)

3. What are Benefits of a professional organization(5%)

. Answer the following question!

Note: Satisfactory rating 7 and 13 points Unsatisfactory below 7 and 13 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____
Rating: _____



Information Sheet 3. Attending actively departmental meetings and seminars

3. Attending actively departmental meetings and seminars

3.1. Purposes of a meeting

A department should conduct meetings at which faculty exchange ideas for the well-being of the department.

The department leads them to function in large measure through meetings, and one of the most important responsibilities of a head is to chair departmental meetings and make them as productive as possible.

Meetings are helpful when they provide an opportunity for people to share information, make announcements, or engage in departmental decision-making – but they can be detrimental if instead they are used to create obstacles for others, display status or power, or support work-avoidance by substituting endless discussion for action. The following table briefly summarises some of the challenges and advantages of the fact that academic decision-making is so heavily reliant on discussion and meetings.

Table 3.1 shows challenges and advantages of the fact that academic decision-making

Challenge	Advantage
Making decisions through a committee is usually much slower than having the decision made by an individual.	Committees have more information available than can any individual member. Department members who participate in making decisions are more likely to carry out them out and, because they have already heard all the discussion, they are also less likely to require supervision during implementation.
The old adage says that a camel is a horse designed by a committee.	Sometimes a committee can discover that the camel they design for the task may be far superior to the horse the university hierarchy originally had in mind!
Without proper management, meetings	The tendency for some departments to



can become circular, time wasting and irrelevant discussion forums that may not arrive at sensible conclusions.

discuss a matter endlessly is as true today as it was over 100 years ago – but the major problems with committee effectiveness are not so much the topics they consider but the processes they follow – and this is something that, as a head, you can influence.

The meeting as an opportunity

An effective head of department understands that committees are central to implementing core academic principles of staff authority, shared governance, and collegiality. What may be less obvious is that chairing a meeting provides an unusual opportunity for the head to exercise influence. Not just anyone can call a meeting, and the ability to do so reminds others of the head's managerial authority.

Chairing a meeting gives the head access to other unobtrusive levers of power:

- To determine when, where, and under what conditions a meeting is held
- To decide who shall attend
- To prepare the agenda and determine how agenda items are to be worded
- To structure where on the agenda an item will be placed
- To determine the order in which various participants are recognised to speak
- To initiate action
- To keep and distribute minutes
- To focus the discussion
- To call people out of order
- To decide when the meeting should be terminated.

Unless the head is seen as fulfilling the above responsibilities in an arbitrary or capricious manner, chairing a meeting is an expected part of the managerial role and therefore unlikely to upset department members.

Before the meeting

The head...

- Sent a reminder to members of time and place
- Distributed written agenda and attachments in advance
- Provided important background information in advance



- Separated information items, not requiring discussion, from action items.

During the meeting

The head...

- Started meeting on time
- Asked for approval of minutes and provided opportunity for questions
- Stated the purpose of the meeting
- Set deadlines for when reports were due
- Ended meeting promptly so others could plan their activities
- Gave members the chance to participate
- Gave members opportunities to lead
- Kept discussion on track to maintain focus.

At the end of the meeting

The head...

- Reviewed who was to do what and when
- Asked department to submit future agenda items
- Reminded members of next meeting and its purpose
- Promised to distribute minutes so that past discussions don't have to be repeated
- Promised to use email to circulate incoming materials that don't require discussion.

Heads who follow the good management practices demonstrated in the second meeting increase the likelihood that a meeting will make efficient use of members' time, focus attention on a specific purpose, minimize distractions, and develop members' organizational skills. Ignoring these practices is likely to lead to incoherent discussions that veer off-target and accomplish little.

The importance of timeliness

You may also have noticed one additional major difference in the two meetings. In the first, some participants arrived late, while others left before the meeting was over.



The problem of full participation is not merely a matter of being efficient, but also one of being effective. Members who arrive late or leave early miss parts of the discussion and therefore cannot have a comprehensive view of what has been covered. So, to be effective, a committee chair should:

- Poll members beforehand and select a meeting time acceptable to everyone
- Remind members of the importance of timeliness
- Demonstrate this point by always being punctual.

3.2.1. Why Personal Development Seminars Are Important

Personal development is a lifelong process. It is a way for people to assess their skills and qualities, consider their aims in life and set goals in order to realize and maximize their potential.

There are various opportunities in front of you every day where you can work on yourself improvement. If you do not find those opportunities, there are personal development seminars which is a great way of self-education and improvement. These seminars are very important for your development that you just cannot get from reading books. There are many people who have a bad attitude towards these seminars. This is so because many people have the same reaction when it comes to attending one of these seminars. Nobody wants to sit down and listen to someone else talking. But these personal developments events are very different from what the normal people are just assuming. These seminars are organized to give you the right information and the tools so that you can succeed within the shortest time possible. There are various benefits when it comes to attending personal development seminars.

- Get Exclusive Information:
- You Can Meet Like-minded People:
- Your Own Personal Development
- You Can Build Good Habits
- Managing the Time Effectively

Get Exclusive Information:

All the motivational speakers you are going to meet in the seminars have one secret which is that they are saving all the best tips for the live events. When you are attending

Page 60 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



these events, you will not only be getting the new set of tips that you can use, but you will also get the opportunity to experience the highly educational time with the speaker. They are going to spend some time taking the questions of the audience, and they will interact with the audience. They are going to adapt to the seminar according to the audience present in the event.

You Can Meet Like-minded People:

When you attend these events, you will have a chance to meet the people who are just like you and think like you. These people also wish to improve themselves and grow further. It might be the case that you are looking for a new friend for the coffee, a new companion for visiting these events. You might also go to establishing a business opportunity. These personal development seminars are the perfect place where you can easily meet new people.

Your Own Personal Development:

It might also be possible that you are traveling on the road of personal development from a very long time, or just starting for the first time. These live seminars are designed to motivate you, leave you reaching for more. These personal development seminars will make you eager to achieve your personal goals. The environment of these seminars is very energetic where you are going to get some of the best tips. These tips will help you get back on the track and will make you grow and succeed in life.

You Can Build Good Habits:

When you have attended a good personal development seminar, then you are going to feel fully driven and full of energy. You will be willing to take the new challenges and resolutions even though it is not new year's eve yet. There is no perfect occasion to start something some and take more steps towards your growth. Start forming the goals in everyday life is one of the best habits which is going to help you achieve more and more goals. It doesn't matter how big or small your goals are, what, matters is that you do not stop and keep moving.

Managing the Time Effectively:

Time is one of the most important assets that we have. If we have to invest our time in one of the something which not a wastage, then you must be investing your time in personal development seminars. With this, you will not only be investing your time in the

Page 61 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



best way possible, but you will also be creating new goals with it. You will learn to get organized to achieve these goals and ambitions.

https://epigeum.com/downloads/ulm_accessible/uk/02_leadership/html/course_files/lm_2_30.html

Self-Check 3	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List down Chairing a meeting gives the head access to other unobtrusive levers of (5%)

_____ , _____ , _____

_____ , _____ , _____
_____ , _____ , _____

2. Mention various benefits when it comes to attending personal development seminars (5%)

(5%).

_____ , _____

. Answer the following question!

Note: Satisfactory rating 6 and 10 points Unsatisfactory below 6 and 10 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____
Rating: _____



Information Sheet 4. Reading professional journals, regulation updates, service operation manuals and technical bulletins

4.1 Reading professional journals

A professional journal is a scholarly journal addressed to a particular professional audience such as doctors, lawyers, teachers, engineers, or accountants and published by a professional organization. They may contain research articles, reports, and practical articles applicable to the profession

4.1.1. Reasons Why You Should Start a Reading Journal

1. Your reading personal assistant.

In every reading journal, there should be a section of sample pages dedicated to only the titles of the books you have read. Feel free to note down the author, publisher or any other detail you deem necessary. Taking note of the date on which you first opened the book until you last closed is also a practical way to ensure you don't run into the classic problem of starting five books at once and finishing none! Think of it as a library index that you're free to consult whenever you can't remember the name of a book or when you read it – you'll even be able to keep track of your reading achievements throughout the year.

2. Improves critical thinking.

Just imagine if you'd written down every thought you'd had about a book, every fleeting remark as you read or any continuous thoughts. Not only would you become a master book reviewer capable of weaving their musings and experiences of a book together, you'd have reference and gain deep insight from. Reading through your notes will illuminate any character or storyline arcs, showcasing how they are unfurled gradually unfurled throughout the story and shedding light on any plot devices used to bring these changes about. Your ability to analyze and comprehend the writing process of an author and the techniques they used will increase tenfold – perhaps even helping you to improve as a writer.

Page 63 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



3. Never forget wisdom and knowledge gained.

Part of what makes reading so enjoyable is the valuable experiences it imparts onto us. It's why we so often tend to fall in love with a book. When a book becomes part of your heart, you don't want to forget it, and to the chagrin of most avid readers – this is exactly what happens. It's impossible to confide all of that valuable information to memory. It is possible, however, to keep records of what you've learned, of profound quotes that stood out to you, of relatable character experiences. This can all be done by using a reading journal to jot these reflections and quotes into. You'll never feel like you've forgotten a book that once seemed so important to you, you'll just have to check your journal.

4. You live alongside it.

Most devoted readers look to books when traversing turbulent times in their lives, finding comfort and companionship within their pages. As you look back on your reading journal you may be able to pinpoint certain points in your life due to what was written down – what you thought to be important at the time. You keep track of how you obtained the book, from what friend or what shop, thus showing where you were at that point in your life. The reading journal will allow you to see your life through books, showing just how intertwined a reader's life can become with their books.

5. Improve your future reading.

Keeping track of your musings on a book can allow you to see what aspects of a book you found to be lacking, or what parts titillated you. By using these remarks as guideposts, you will be able to read summaries of books and know exactly whether they will be to your liking or not. There will be no humming and hawing if you know your reading style by heart. You'll also find it easier to enhance your reading experience by diving into genres specific to that which you enjoy most and branching out into others as you grow. Maybe you also find it hard to converse about a book you've just read. We've all been there, we want to scream about a book from the rooftops, about how beautiful and soul-touching it is, but nothing comes out. We meet a block. We simply can't seem

Page 64 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



to remember where to begin. Looking over your reading journal will help you to share your musing on a book concisely and intelligently. In return, you will receive feedback, other's opinions and you will certainly run into some reading suggestions – acting as a helping hand on your reading journey.

6. Looking back over your reading achievements.

Reading is known for being a rewarding and enjoyable hobby, but it's also no easy feat. Being able to view the big picture of your progress can work as an effective incentive to continue reading – not to mention a reason to be proud of yourself. You'll even be able to write down exactly what books you hope to read and set goals for yourself.

7. Education.

If you're trying to gain knowledge in a certain field, study for a Ph.D. or simply just want a better grade in a class, all of the reading can definitely add up. The important facts and tidbits can get lost in the haze of words from book to book and you completely lose sight of what's important. Keeping an educational reading journal can be just as beneficial as any other reading journal – allowing you to easily keep track of who said what, and what they mean by what they said. Referencing and fact-checking will be a thing of the past – you'll have it all inside your compact and portable reading journal.

Keeping a reading journal may seem outdated, but some of the most prominent leaders and trailblazers in the world kept journals as a way to collect and formulate their thoughts properly. A reading journal can be kept both on paper and electronically so there are many ways to try it. Give yourself the luxury of an optimized reading experience by starting a reading journal today.

4.2. Regulation Updates

4.2.1 Regulatory Update or How to Stay Up to Date with Regulatory Requirements

Medical device manufacturers are required to carry out a regular “regulatory update.” Because as strange as it sounds, regulatory requirements oblige manufacturers to continuously monitor and evaluate changes to regulatory requirements and take any necessary measures.

Page 65 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Keeping track of thousands of regulatory requirements is a challenge. Manufacturers should have a clear understanding of the typical mistakes that they should avoid at all costs in order to, firstly, have certainty during audits and, secondly, to save themselves unnecessary time and effort on their “regulatory update.”

Regulations that a regulatory update must observe

The regulatory map is as complex as it is extensive:

- National laws, e.g., MPG (German Medical Devices Act), MPDG (Medical Devices Implementation Act), Swiss Therapeutic Products Act (Heilmittelgesetz), US Food, Drug, and Cosmetic Act
- National ordinances, e.g., German Safety Plan for Medical Devices (MPSV), German Medical Device Operating Ordinance (MPBetreibV)
- Other national publications, e.g., the German National Working Group (NAKI)
- EU regulations, e.g., MDR and IVDR
- EU directives, e.g., MDD, IVDD and AIMDD
- EU guidance, e.g., the MDCG documents
- Hundreds of national and international standards, e.g., ISO 13485 and ISO 14971
- Common specifications
- Well over 600 FDA guidance documents, e.g., on cyber security and vigilance
- Implementation guidelines, e.g., on IT security and on machine learning
- Publications from organizations such as the IMDRF and NBMED

2. Regulatory requirements for regulatory requirement research

a) EU regulations (MDR, IVDR)

Manufacturers must know and take into consideration current standards and common specifications

The EU regulations require medical devices to meet the general safety and performance requirements of [Annex I](#) (MDR Article 5(2)). These general safety and performance

Page 66 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



requirements must comply with the “generally acknowledged state of the art” (MDR, Annex I, paragraphs 1 and 4).

When demonstrating conformity, manufacturers must specify the [harmonized standards, common specifications](#) or “other solutions” applied (MDR, Annex II, Section 4(c)).

Conclusion: medical device manufacturers must actively track standards and common specifications (CS) to make sure that they know the state of the art and can demonstrate that their devices meet it.

N.B! As the harmonization of standards has come to a standstill, notified bodies generally expect manufacturers to follow the most recent versions of standards.

Manufacturers must describe in their QM systems how they are tracking the legal requirements

The MDR and IVDR have significantly increased the requirements for QM systems. As a result, the MDR requires:

Those procedures and techniques shall specifically cover:-

the strategy for regulatory compliance, including processes for identification of relevant legal requirements, qualification, classification, handling of equivalence, choice of and compliance with conformity assessment procedures

b) ISO 13485

Regulatory update as an explicitly required activity within the QM system

ISO 13485 also explicitly addresses the topic. It states:

“Top management shall ensure that customer requirements and applicable regulatory requirements are determined and met.” DIN EN ISO 13485:2016, Section 5.2

Section 5.6 (“Management review”) makes clear how important this monitoring is for the standard. This management review must assess the “applicable new or revised regulatory requirements” as an input.

Page 67 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



The output of this management review must define the “changes needed to respond to applicable new or revised regulatory requirements.”

Other device-specific regulatory requirements

In addition, ISO 13485 requires manufacturers to determine the stakeholder requirements for each device. This means, firstly, customer requirements. And secondly, regulatory requirements:

“The organization shall determine: [...] applicable regulatory requirements related to the product;”

ISO 13485 Section 7.2.1

But identifying these requirements is not enough:

“The organization shall review the requirements related to product. This review [...] shall ensure that [...] [the] applicable regulatory requirements are met; [and] the organization has the ability to meet the defined requirements.” ISO 13485 Section 7.2.3

c) ISO 20416 (“Medical devices – Post-market surveillance for manufacturers”)

ISO 20416 considers the “regulatory update” part of the [post-market surveillance](#). The standard explicitly states:

“Medical device organizations should monitor applicable regulatory requirements for any change to evaluate upcoming gaps, and plan for continued compliance. Standards, guidances and best practices are typically not mandatory requirements (see regulatory requirements) but describe the state of the art.

Changes in regulatory requirements, standards, guidances and best practices can suggest a change in the state of the art, impacting design and development inputs and potentially requiring design and development changes” ISO 20416 (Draft)

3. Hurdles and challenges

Page 68 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



It is common sense that manufacturers must know and comply with the regulatory requirements. But the challenges they face to do so are complex:

- **Actually finding the applicable regulatory requirements**

The first hurdle that manufacturers have to overcome is identifying the relevant regulatory requirements. The more countries a device is to be sold, the longer this list of regulations.

- **Cost of monitoring and evaluation**

Once a manufacturer has found all the applicable regulations, they will be overwhelmed by the sheer volume – it's not unusual for a manufacturer to be faced with several hundred applicable regulations.

Each document means additional time and costs for:

- ✓ Monitoring
- ✓ Reading and understanding
- ✓ Recognizing differences
- ✓ Working out the necessary consequences, which can go as far as device modifications or even a “recall”

- **Heterogeneity of the sources of information**

But how do you stay up to date? Every source, e.g., ISO, uses different media report changes: newsletters, RSS feeds, Twitter messages, for example. Unfortunately, this information is often missing completely, meaning that manufacturers are forced to actively search for changes.

- **Requirements only available in the national language**

But even if you find out that there are new regulations, the problem isn't necessary solved. A lot of countries and regulatory authorities, e.g., the Chinese NMPA don't publish some of their regulations in English or German, or only do so with a delay.

- **Comprehensibility**

Just because a regulation is available in German or English doesn't guarantee that you will be able to understand the requirements it establishes. Article 120(3)



of the MDR is an ignominious example of a regulation that's very difficult to understand.

- **Costs**

Costs are another hurdle – especially for start-ups. For example, organizations such as DIN, ISO or IEC often charge several hundred euros – per standard. A total of several thousand euros each year is not unusual.

4. Typical mistakes made during the regulatory update

The Johner Institute frequently sees the following mistakes that can lead to unpleasant surprises during audits or authorization processes being made:

1. **The manufacturer has not identified all the requirements.** In particular, national specifications and guidelines, which are not mandatory but are still required, are often missed out. Sometimes it is even that case that not all the regulatory requirements regarding the identification of regulatory requirements have been identified. Sometimes the company is aware of the regulations but each department keeps its own lists, and there is not a consolidated version of these lists available during the audit and management review.
2. **The changes are identified too late or too infrequently.** It is embarrassing to realize during an audit that a manufacturer doesn't even know about an amendment to a guideline published six months ago.
3. **In most cases the reason for this is that there is no process and the responsibilities are not clearly defined.** The regulatory affairs manager has relied on the regional office, the device manager on regulatory affairs.
4. **But simply knowing the changes is not enough.** Often an appropriate analysis of what the changes are and an assessment of what they mean is not carried out. Such an assessment usually requires risk management, but it is often not included.
5. **Incomplete management review:** Management only checks whether new regulations have been searched for. It does not evaluate the quality of this monitoring nor the quality of the measures resulting from new or amended regulations.

Page 70 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



5. Regulatory update best practices

Define the process

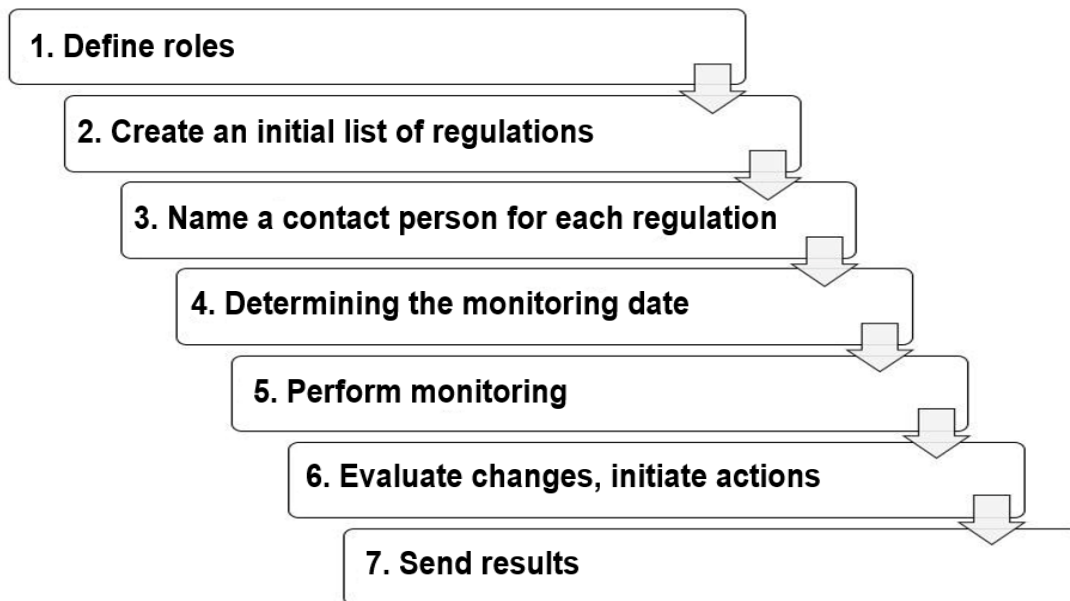


Fig. 1: Overview of the regulatory update process

Regardless of whether a process or procedure is required for the regulatory update, it is always better to have one. A corresponding standard operating procedure might include the following steps:

Figure 4.1 Overview of the regulatory update

Step 1: Defining the responsible roles

Determine the roles that are responsible for creating the initial list of regulatory requirements and its continuous monitoring. Typical roles include device manager, developer, regulatory affairs and quality managers, the legal department and regional office.

Step 2: Creating an initial list of regulatory requirements

Now assign (for each device) specific people to the roles. These people will **create** and **monitor** device-specific and company-specific lists of applicable regulations. Normally, several lists are created and then consolidated.



Step 3: Naming a contact person for each regulation

Next, for each regulation, designate the person who will **review** changes to the regulation and act as the responsible contact person. The designated person should also document the version status in the aforementioned list.

Step 4: Determining the monitoring date

It is now necessary to define when the regulations will be checked – either for each regulation individually or for all the regulations together.

- This monitoring can be done in cycles, for example one month before the management review. An annual cycle is often not sufficient.
- The monitoring can also be linked to life cycle phases (e.g., at the start and end of development or during design reviews).
- Lastly, the monitoring can be event-based. For example, the move from the MDD to the MDR means that all the associated guidelines will have to be identified and evaluated again.

Step 5: Performing the monitoring

The selected roles or persons monitor the identified regulations in accordance with these specifications at the specified frequency and document whether there have been any changes.

Step 6: Evaluating changes and initiating possible actions

If there are any changes, the roles from step 5 inform the contact partner and request:

- An analysis of these changes
- An evaluation of the relevance of the change (use template for this and involve the risk manager if necessary)
- The initiation of the necessary actions (branching off into other processes)
- That all this is documented

Step 7: Sending the results

In each case, i.e., regardless of whether changes were identified or not, the results must be used as an input for other processes and be sent for use in these processes. This

Page 72 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



particularly includes processes such as the management review and post-market surveillance.

The “branching off into other processes” mentioned in step six can refer to, for example, the:

- Development process
- Maintenance process
- Problem solving process
- Processes for corrective and preventive actions
- Vigilance process

4.3. Service Operation Manuals and Technical Bulletins

4.3.1 Operations manual

The **operations manual** is the documentation by which an organisation provides guidance for members and employees to perform their functions correctly and reasonably efficiently.

It documents the approved standard procedures for performing operations safely to produce goods and provide services.

Compliance with the operations manual will generally be considered as activity approved by the persons legally responsible for the organisation.

The operations manual is intended to remind employees of how to do their job. The manual is either a book or folder of printed documents containing the standard operating procedures, a description of the organisational hierarchy, contact details for key personnel and emergency procedures. It does not substitute for training, but should be sufficient to allow a trained and competent person to adapt to the organisation's specific procedures.

The operations manual helps the members of the organisation to reliably and efficiently carry out their tasks with consistent results. A good manual will reduce human error and inform everyone precisely what they need to do, who they are responsible to and who

Page 73 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



they are responsible for. It is a knowledge base for the organisation, and should be available for reference whenever needed. The operations manual is a document that should be periodically reviewed and updated whenever appropriate to ensure that it remains current.

4.4. Technical Bulletin(TB)

A Technical Bulletin(TB) will be used to explain any new Special Provision, Details,or Inspection issue as it relates to new or unique processes. The audience for the TB may include Designers, Inspectors,Residents, Materials and Tests personnel,PEFs, FHWA and bidders preparing their bid. The Technical Bulletin, Special Provisions and Details will be issued simultaneously with the letting to assure the bidders have the most up to date information by which to bid.

4.4.1 Medical Devices Regulation (MDR) Implementation – Consequences for

EIGA has prepared this Technical Bulletin to raise their concerns about the implementation of the new Medical Devices Regulation (MDR) and consequences for all parties involved including Notified Bodies, Medical Device Industry and users.

Medical Device manufacturers are strongly recommended to check the progress of their current Notified Body in becoming notified under MDR and be prepared to identify an alternative Notified Body in the event of a delay in becoming notified under the new regulation.

Notified Bodies and Impact on Medical Device Industry

This Technical Bulletin has been prepared by EIGA Members and is their interpretation and opinion of potential consequences resulting from the notification for, and implementation of the Medical Device Regulation (EU) 2017/745 (MDR) .

Starting on November 26, 2017, conformity assessment organisations seeking notification status as Notified Bodies for the MDR and/or in vitro diagnostic medical devices regulation were allowed to send their applications to the responsible national competent authority. At the time of publication of this Technical Bulletin, there are just two Notified Bodies accredited under MDR .



EIGA members are concerned about the negative consequences resulting from delays and lack of capacity at notified bodies. Specific concerns are:

- availability of auditors;
- lack of experienced auditors; and
- inefficiencies, that could lead to increased costs.

The above could lead to delays in placing medical devices on the market and a reduction of availability of medical devices. Current

Current status

At the time of the publication of this technical bulletin, a limited number of Notified Bodies applied for accreditation under the MDR. Among them, less Notified Bodies are able to fulfil the requirements for qualification. This is in mainly related to the following aspects:

- Additional auditors are needed to cover all groups of medical devices within the scope of activities for which the Notified Bodies seek notification, because of “descoping” of the auditors (descoping means losing audit/review scopes compared to the Directive 93/42/EEC [2]), but the time needed to develop a lead auditor starting from new and unexperienced personnel is long;
- Many more duties than those required by the Directive 93/42/EEC (MDD) [2] have to be carried out by Notified Bodies, such as the assessment of additional reports [3], or the obligations related to the use of the EUDAMED database under MDR;
- Due to new requirements of the MDR, many software products will need certification by a Notified Body; this will result in the need for software experts/auditors of which there are a limited number available.

Moreover, the time required for the notification process is longer than expected.

As a result, at the time of publication of this Technical Bulletin only two Notified Bodies have been notified under the MDR [1], one of them being located in the UK. It

Page 75 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



must be noted that depending on the type of Brexit, certificates issued by a non-EU Notified Bodies could no longer be valid.

Additionally, even in the case Notified Bodies will provide the required resources and capacity to cover all industry sectors, the current lack of documents needed for the application of the MDR [1] by all the operators involved, for example, implementing acts or guidance documents, could lead to different interpretations on the provisions of the regulation, such as on classification of the devices.

Consequences for Medical Device Industry

Based on the above situation of Notified Bodies, the consequences for medical device manufacturers are potentially:

- longer times for the certification process, than in the past;•increasing number of formal findings during the audits, due to potential uncertainty in the interpretation of the requirements and to new and unexperienced auditors;
- need to change the Notified Body, in the case it no longer covers the required scope(s) of the certification, along with the difficulties to identify a new Notified Body; and
- increase of costs, due to the limited capacity of the Notified Bodies and the additional tasks they have to carry out. Medical Device manufacturers are strongly recommended to check the progress of their current Notified Body in becoming notified under MDR [1] and be prepared to identify an alternative Notified Body in the event of a delay in becoming notified under the new regulations.

The availability of resources such as qualified auditors, especially due to the descopeing could also have a major impact. In certain fields of the Medical Device industry where resources with certain auditing and review scopes are scarce. For example, with medical device gases, the availability of experienced auditors and technical reviewers could lead to further resource shortages at Notified Bodies. These factors could lead to unacceptable delays.



European Industrial Gases Association (EIGA) interpretation of codes for medical device gases and medical gas pipeline systems

The Commission Implementing Regulation (EU) 2017/2185 [4] sets out the list of codes and corresponding types of devices for the purpose of specifying the scope of the designation as notified bodies in the field of medical devices under Regulation (EU) 2017/745 [1].

Table 4.1 The following table shows the possible applicable codes to medical device gases and medical gas pipeline systems (MGPS), based on the interpretation of EIGA members.

TB 31/19 – Page 3/3

CODE	DESCRIPTION	MGPS	Liquid CO ₂	Gaseous CO ₂	Liquid N ₂	Liquid N ₂ O	Ophthalmic gases	Argon
MDA 0303	Active non-implantable devices utilising hyperthermia / hypothermia		●		●	●		
MDA 0314	Active non-implantable devices for processing and preservation of human cells, tissues or organs				●			
MDA 0316	Medical gas supply systems and parts thereof	●						
MDN 1104	Non-active soft tissue and other implants						●	
MDN 1206	Non-active non-implantable ophthalmologic devices						●	
MDN 1213	Non-active non-implantable devices composed of substances to be introduced into the human body via a body orifice or the dermal route			●				
MDN 1214	General non-active non-implantable devices used in health care and other non-active non-implantable devices						●	●
MDT 2001	Devices which require metal processing	●						
MDT 2011	Devices which require packaging, including labelling		●	●	●	●	●	●
MDT 2012	Devices which require installation, refurbishment	●						



Self-Check 4	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. Reasons Why You Should Start a Reading Journal. **(4%)**

2. List down steps of Regulatory update best practices (6%)

.

. Answer the following question!

Note: Satisfactory rating 6 and 10 points Unsatisfactory below 6 and 10 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____



Information Sheet 5. Attending manufacturers' schools and in-service training

5. Attending manufacturers' schools and in-service training

5.1. Manufacturing Training

Many manufacturers are facing a severe gap between the talent they need and what is actually available on the labour market. It is expected that this talent gap will only increase in the near future.

Industry Challenges

The main training problem in the manufacturing industry is that most employers are looking for multi-skilled employees who can perform a range of tasks, while many manufacturing workers are unskilled or have only been trained to perform a single job function.

One possible solution to this problem is the adoption of a training and development strategy that teaches unskilled employees the skills they need to help propel the organization forward while at the same time allowing employees to move their career forward. This should help boost the manufacturer's productivity, decrease employee turnover and possibly solve the talent gap. However, in-house training comes with a number of challenges.

High Cost

Depending on the skills that are needed, manufacturing industry training can be very expensive. It can take a long time and the extensive involvement of trainers and supervisors to teach employees the necessary skills and processes for a manufacturing job.

Page 79 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



To keep training costs down it is a good idea to provide at least part of your employee training as an elearning course. eLearning note only provides a more cost-effective alternative to classroom training due to reduced travel and trainer costs, it also much more flexible, enabling study out of working hours and regular updates to course content based on new systems, industry guidelines or legislation.

Of course, some skills are very difficult to teach through an online course, which is why blended learning (elearning combined with on-the-job coaching and instructor-led training) is often the way to go for manufacturing training.

Employee Turnover

High staff turnover can be very costly, especially when a lot of time and money has been invested in employee training. Therefore, it is important that the best performing workers are identified, rewarded for their performance and provided the necessary support and CPD (continuing professional development) to move their career forward. This will help increase the retention rate of key employees.

It is also important that specific process knowledge is never retained by just one employee. Knowledge transfer from an employee to the organization as a whole (in the form of training course development or social learning) needs to occur often in order to avoid a brain drain resulting from employee turnover.

When setting up an employee training strategy for your manufacturing organization, you should team up with a training expert that has a proven track record in the manufacturing sector.

5.2. In-service program

An **in-service program** is a professional training or staff development effort, where professionals are trained and discuss their work with others in their peer group.

It is a key component of continuing medical education for physicians, pharmacists, and other medical professionals. It is also common among public servants including educators and public safety officials. .

Page 80 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



In-service programs also refers to educators, where they discuss methods and cases and work loads.

Self-Check 5	Written Test
---------------------	--------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. What is in-service program (5%)

_____ , _____ , _____

_____ , _____ , _____
_____ , _____ , _____

. Answer the following question!

Note: Satisfactory rating 3 and 5 points Unsatisfactory below 3 and 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____



Information Sheet 6. Pursuing additional formal/further education

6.1 Pursuing additional formal/further education

Five Reasons Why Education Helps to Advance Your Career at Any Level

Education is an influential step in staying competitive and enhancing your skills. Whether you're starting out in your career or returning to continue to build upon your years of experience, pursuing educational training helps you keep moving forward.

Here, we share five reasons why pursuing education can advance your career at any level.

1) GAIN KNOWLEDGE

This reason may be a given. When you pursue an undergraduate or graduate , you're equipped with practical skills and knowledge that you can apply to your workplace. For example, in a business administration degree program, you'll learn best practices in accounting to understand the financial aspects of your work. In a management program, you'll learn leadership principles and how to deal with conflict.

This knowledge can be both factual and practical. This means that the information you learn is not just interesting to know but will be of great use in your current role and to where you hope to go.

And just because you've reached a high-level management position doesn't mean you should stop learning. Undergraduate and graduate degrees can help build upon your experience and broaden your skill set.

2) ENHANCE YOUR SOFT SKILLS

Page 82 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



When you return to school, you learn far more than just different management styles or how to create an influential presentation. You also learn more subtle, but equally important, skills.

These so-called “soft skills” include strong abilities in areas like communication, teamwork, critical thinking and problem-solving. Each of these talents can add value to your organization, wherever you are. And, such skills can give you the experience to be prepared and equipped to take that next step toward achieving your goals.

3) DEMONSTRATE A STRONG WORK ETHIC

Pursuing education in addition to your normal work routine will most likely not make your schedule easier. It takes work and determination to achieve a degree. But doing so will demonstrate a strong work ethic to your team and your supervisors.

Education is always something that supervisors and business executives like to see. When their employees have the drive and initiative to expand their knowledge, it is a good sign that they will be able to benefit the company further.

Demonstrating a strong work ethic and a commitment to your goals gives management hope that you can continue to be successful in your work environment. And, if you’re already in management, a committed and dedicated attitude sets an example for your co-workers and your direct reports.

4) BOOST YOUR CONFIDENCE FOR SUCCESS

When you earn a degree, you accomplish a big step. You gain knowledge, skills and experience to help you both in your career and in life in general. On top of that, by gaining additional skills in communication and problem solving and achieving your goals, you can also increase your confidence.

And studies have shown that greater confidence leads to greater career advancement.

According to a study from the University of Melbourne cited in an article from Science Daily, there’s a strong correlation between confidence and success. In the study,

Page 83 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



participants ranked their confidence at various education levels, and findings showed that those who reported higher confidence levels earlier on earned better wages and were promoted quicker.

5) GROW YOUR SOCIAL NETWORK

In a classroom setting, you have the opportunity to interact and meet with fellow students who may come from a variety of professional backgrounds.

In being exposed to a broader professional network through continuing your education, you can get to know people who may be in similar situations as you or have been in the spot you're in and have continued to advance their career.

Grow your career through education

To grow your physical strength, you need to train and work at exercising and lifting weights. To grow in your career, you've got to put in the work to deepen your knowledge, gain skills and develop a network that will help you take that next step toward where you want to be.

Whether you're a seasoned manager or new entry-level employee, a degree from Cornerstone University can help you take that step. Check out our degree programs to discover the path that can equip you to achieve your goals.

<https://www.cornerstone.edu/blog-post/five-reasons-why-education-helps-to-advance-your-career-at-any-level/>

Page 84 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Self-Check 6	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. Mention five Reasons Why Education Helps to Advance Your Career at Any Level (5%)

. Answer the following question!

Note: Satisfactory rating 3 and 5 points Unsatisfactory below 3 and 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____



LG #23	LO #4- Transfer technological development knowledge and skill to others
Instruction sheet	
<p>This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:</p> <ul style="list-style-type: none"> • Reviewing documents obtained (from self development programs) • Developing transfer material in form of manuals, handouts, presentation, • Organizing Knowledge transfer program based on available resource and time • Communicating workers and management to transfer knowledge program • Conducting knowledge transfer accordance with the plan • Analyzing feedback on knowledge transfer reported and documented <p>This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:</p> <ul style="list-style-type: none"> • Review documents obtained (from self development programs) • Develop transfer material in form of manuals, handouts, presentation, • Organize Knowledge transfer program based on available resource and time • Communicate workers and management to transfer knowledge program • Conduct knowledge transfer accordance with the plan • Analyze feedback on knowledge transfer reported and documented 	
Learning Instructions:	



1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets” . Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them
4. Accomplish the “Self-checks” which are placed following all information sheets.
5. Ask from your trainer the key to correction (key answers) or you can request your trainer to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to “Operation sheets
7. Perform “the Learning activity performance test” which is placed following “Operation sheets” ,
8. If your performance is satisfactory proceed to the next learning guide,
9. If your performance is unsatisfactory, see your trainer for further instructions or go back to “Operation sheets” .

Information Sheet 1. Reviewing documents obtained (from self development programs)

1. Reviewing progress on a personal development plan

1.1. Stages involved in using a personal development plan

After you you have produced a personal development plan, you will you will need to review the progress at regular intervals to make sure you are on target to meet your personal development goals. You could use the following stages to make sure that you get the best out of a personal development plan.

- Self-evaluate your development needs
- Get a template or online tool to record the personal development plan
- Record initial developmental needs in PDP template



- Meet with manager to discuss your initial thoughts
- Agree what developmental needs are best suited to you progressing within the company
- Add developmental activities such as training courses etc. that will help you develop professionally
- Set first review date
- Update the plans with notes on progress in your own time
- Carry out a review with your line manager
- Agree and set new targets and update and agree on plan
- Set next review date and go back through the stages again to make sure that you get the most out of your PDP

Have a look at our article on how to produce a personal development plan for more help on what you can do to get the best out of training and developmental opportunities within the workplace.

Reviewing progress on a personal development plan

As part of following a personal development plan you will need to include regular review stages to properly review progress on a personal development plan. This can be a formal meeting with a line manager or an informal discussion but one thing that needs to be done when reviewing progress on a personal development plan is to continually identify areas for improvement so that the plan can be updated to get the most out of it. With regular reviews and identifying areas for improvement you can see how you have progressed and explore different areas that will help you progress within your current role or gain promotion to a more senior role. Using a personal development plan and having regular reviews may also help you look at how you can move into different roles with new skill sets within the business. Making the review progress a regular part of your job will help boost your CV and give the opportunity to get as many new qualifications on their to increase the chances of further employment opportunities in the future.

Identifying areas for improvement as part of personal development plan review

Reviewing progress on a personal development plan will automatically help you identify different directions that you can go within your current role. Specifically looking at how

Page 88 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



you have progressed against set targets will enable you to see what you are really good at and sometimes more importantly enable you to see what needs most improvement. Focusing on key communication skills needed within your job role and identify how you can improve on these can really help you progress in your job. You can also look at technical skills that you need to develop and you can work with others to see what training opportunities are available so that you can update your personal development plan with a solid focus on how to improve. Other areas that you can identify to be improve as part of a personal development plan review are general skills needed for your job role. Setting new targets and looking at additional training opportunities will help you get the best out of your personal development within the workplace.

Self-Check 1	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List down stages of personal development plan. (5%)

. Answer the following question!

Page 89 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Note: Satisfactory rating 3 and 5 points Unsatisfactory below 3 and 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____

Information Sheet 2. Developing transfer material in form of manuals, handouts, presentation

2.1 Developing transfer material in form of manuals, handouts, presentation

What is a training manual?

A training manual is an method of ensuring that anyone carrying out a certain task or using a new product is doing so in a way that best fits the required processes and ethos of your business.

There is no point in constantly reinventing the wheel – a good training manual promotes efficiency, providing each individual with straightforward instructions and a definitive guide which should answer most, if not all, of their pertinent questions.



Having this kind of document readily available increases the confidence of staff, especially newcomers, who can be sure they are carrying out their work in the correct manner.

This increases productivity by cutting out time wasted on finding out answers from other employees, and instead ensuring all the information is displayed clearly at their fingertips, with the ability to refer to it whenever it is needed.

To encourage continued use, a good employee training manual must be easy to understand and simple to work through, which means it should be laid out in a logical manner and split into clearly defined sections for future reference. As an inspiration for simplicity, think about an airplane safety card, which is designed to be understood in seconds, regardless of which language the reader speaks.

Read on to find out how to create an employee training manual that fulfils all your organisation's needs.

Step 1 – Define your objectives

The first step taken towards creating a training manual that works is to define your objectives.

What should the user have learned to do by following this guide?

This means deciding exactly what you want them to achieve, no more and no less.

Putting too much into one training manual can overload the user, making the task seem more daunting than it is and defeating the object of creating an efficient, accessible set of instructions. Not putting enough information in can leave the trainee with questions that are not answered by the manual and forcing them to once again go elsewhere for support.

- Some common objectives when creating a training manual include:
- Acclimatising new employees with workplace processes
- Providing health and safety information to reduce accidents at work

Page 91 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Giving current employees new skills for when processes are updated and the ability to adapt to new ways of working
- Fulfilling extra training requirements identified during performance reviews
- Increasing employee productivity with more efficient or standardised ways of working
- Providing the extra training needed for staff to advance through promotions
- Outlining the manual's objectives will allow you to create a coherent flow of instructions for the user.

Step 2 – Identify your audience

The next step in creating your manual is to identify and understand your audience and their particular needs.

This will enable you to present the information in the best way possible for them. Whether you are a current employee of the organisation yourself or an external trainer, your manual must take into account the organisation's culture and demographics in order to achieve the stated objectives.

Think about the trainees as a group and as individuals, their position in the organisation, their prior knowledge base and the industry in which you are training. This will increase the effectiveness of your manual, by embedding new, relevant knowledge, reducing low uptake and making the whole project much more worthwhile and more likely to be a success.

Step 3 – Select your training tools

Now you have established what you want the learner to know, and who those learners are, you can choose the right tools for the job by selecting how you will present your training materials.

We've come a long way from traditional, hard-copy training manuals, which have often proven unwieldy and unappealing to new users. If you're issuing training manuals in

Page 92 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Microsoft Word or PDF, expect a frosty reception, poorer learning outcomes, and less engagement.

Self-Check 2	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. What is a training manual? (2%)

2. List step how to create an employee training manual that fulfils all your organization's needs? (5%).



. Answer the following question!

Note: Satisfactory rating 4 and 7 points Unsatisfactory below 4 and 7 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____

Information Sheet 3. Organizing Knowledge transfer program based on available resource and time

3. Organizing Knowledge transfer program based on available resource and time

3.1. Knowledge transfer

Knowledge transfer refers to sharing or disseminating of knowledge and providing inputs to problem solving. In organizational theory, knowledge transfer is the practical problem of transferring knowledge from one part of the organization to another. Like knowledge management, knowledge transfer seeks to organize, create, capture or distribute

Page 94 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



knowledge and ensure its availability for future users. It is considered to be more than just a communication problem. If it were merely that, then a memorandum, an e-mail or a meeting would accomplish the knowledge transfer. Knowledge transfer is more complex because:

- knowledge resides in organizational members, tools, tasks, and their subnetworks and
- much knowledge in organizations is tacit or hard to articulate.

The subject has been taken up under the title of knowledge management since the 1990s. The term has also been applied to the transfer of knowledge being transferred at the international level.

In business, knowledge transfer now has become a common topic in mergers and acquisitions. It focuses on transferring technological platform, market experience, managerial expertise, advance corporate culture, and other intellectual capital that can improve the companies' competence. Since technical skills and knowledge are very important assets for firms' competence in the global competition, unsuccessful knowledge transfer will have a negative impact to the corporations and leads to the expensive and time-consuming M&A not creating values to the firms.

Knowledge transfer mechanisms

Two kinds of knowledge transfer mechanisms have been noticed in practice: Personalization and Codification. Personalization refers to the one-to-one transfer of [knowledge] between two entities in person. A very good example of this is the act of teaching a person how to ride a bicycle. On the other hand, codification refers to the act of converting knowledge into knowledge artifacts such as documents, images and videos that are consumed by the knowledge recipients asynchronously.

Personalized knowledge transfer results in better assimilation of knowledge by the recipient when knowledge tacitness is higher and/or when information content in a knowledge object is high. On the other hand, codification is driven by the need to transfer knowledge to large number of people and results in better knowledge reuse.

Page 95 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Entropy of the knowledge objects can provide a measure of their information content or tacitness.

What it is & How to Use it Effectively Knowledge transfer

Knowledge Transfer is a method of sharing information, abilities, and ideas across different areas in your business. Encourage innovation and boost efficiency with this guide.

Knowledge transfer systems aid you in streamlining your knowledge which ensures that everyone on your team has the information they need to keep your business running smoothly.

What is Knowledge Transfer?

“Knowledge Transfer” is a practical method for transitioning knowledge from one part of your business to another.

It is both a theory and a practice – which means that it can be applied to your company culture and to your business systems.

It is more than just communication, though. It involves the circulation of information, ideas, tasks, processes, tools, documents, and so much more.

What Knowledge Transfer is NOT

Knowledge transfer is not the same as “training”. Neither is it simply the circulation of information (facts and data).

While it does include these things, knowledge transfer has more to do with identifying and harnessing your team members’ adaptable skills and abilities to apply information.

It’s also difficult to transfer personal, experiential knowledge from one person to another. So, knowledge transfer does its best to combine both the practical with the personal in order to shift team behavior and grow their skills.

Why Knowledge Transfer Matters for Your Business Problem Solving

Page 96 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Have you ever come up with a great idea, just to struggle to figure out how to put it down on paper?

When it comes to innovation and problem solving, it can be hard to convert abstract concepts into an actual game plan. Beyond that, you need to figure out a way to apply that idea to the task at hand.

Sharing knowledge is tricky because it involves quantifying and qualifying knowledge that exists in the mind. A knowledge transfer system helps you translate that knowledge into words, visuals, and processes that can then be shared with your team.

A Perfectly Imperfect Approach to Problem Solving

Knowledge transfer matters for your business because it improves innovation, collaboration, and understanding in your business. Rather than relying on facts and data to share information across departments, you're better able to paint a holistic picture of complicated concepts.

Since we are talking about knowledge – something rather intangible – this is a perfectly imperfect process. You can't get your team to read your mind... but you can get close.

Uses of Knowledge Transfer

Knowledge transfer can help your business in the following ways:

- Accelerate the accumulation and dissemination of knowledge across your organization
- Provide easy and rapid knowledge access to your team
- Eliminate time and space constraints in communications
- Stimulate associates to experience the value of sharing knowledge in providing custom-tailored service to customers
- Respect the dignity of each individual by cultivating an environment that enhances his or her professional development and recognizes each person as a valued member of a service-oriented team

The application of knowledge transfer to your business rings in many other benefits as well, including: improved company culture, improved quality of service, faster business processes, increased efficiency, and better use of business technology and resources.

Page 97 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



How to Do Knowledge Transfer Effectively

how does one *actually* transfer knowledge? Since knowledge exists in the mind, the best way to transfer knowledge within an organization is to start with considering how knowledge is transferred from one person to another.

There are multiple approaches one can take here: writing, telling, or showing. The method you use depends both on how you communicate and how the other person receives information.

Therefore, when transferring knowledge across multiple areas/personnel, you'll want to employ a variety of approaches and tools.

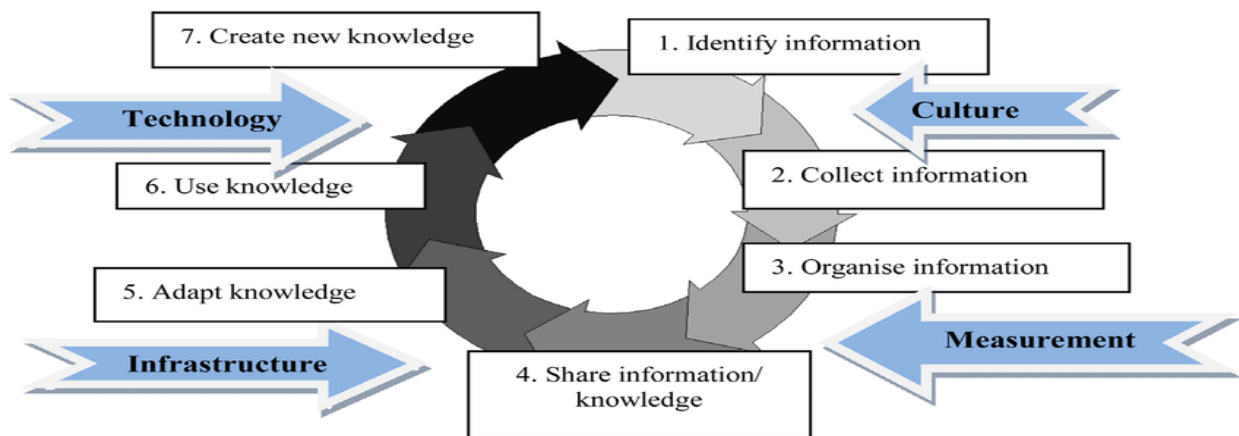


Figure 3.1 effective knowledge transfer strategy combines technology, culture, measurement, and infrastructure

An effective knowledge transfer strategy combines technology, culture, measurement, and infrastructure in order to share knowledge across multiple areas in your organization.

By employing multiple methods and technologies, you'll be better able to communicate knowledge to different types of people with different skill sets.

Below we have broken the knowledge transfer process into 5 steps, including the applicable tools for each.

Step 1: Identify & Collect Knowledge

The process all starts with the cultivation of knowledge. This takes place in the **culture** of your company.

This often looks like:

- Brainstorming ideas

Page 98 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1 February 2021
----------------	---	---	-----------------------------



- Learning new skills
- Inviting in experts or consultants
- Seeking solutions to problems
- Designing new projects

These result in the “intangible” knowledge that you will next want to collect, document, and share with your team.

To create a strong culture of knowledge generation in your company, you can:

- Bring up company problems and seek solutions
- Document those solutions
- Seek input from team members and outsiders
- Encourage collaboration and teamwork
- Mentor and coach staff
- Train and develop staff

Your goal is to create a factory of ideas and an environment that encourages innovation – where everyone has the opportunity to share their ideas, input, and expertise.

Step 2: Capture & Store Knowledge

When it comes to documenting and sharing knowledge, a lot of businesses believe they have this on lock.

But proper knowledge capture and knowledge management is more than just having a file cabinet or Google Drive folders. You must have an **infrastructure** that makes sense for your business and makes access to that knowledge fast and simple.

Having a knowledge base in place will help you manage both tacit knowledge as well as explicit knowledge that’s being generated in your company.

This system may include:

- Reports
- Visuals and videos
- Document libraries

Page 99 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Knowledge portals
- CRM systems
- A dedicated team

With the right knowledge management tools, you make this information readily accessible to anyone on your team that needs it. That means less delay in information changing hands, better organization, and a huge increase in efficiency.

Step 3: Transfer & Share Knowledge

Now that you have the knowledge and have a system for collection, it's time to circulate that information to other people and/or departments in your organization.

This knowledge transition process is made more efficient and affordable if you use the right technology.

The main components of this include:

- A clearly outlined process document for how knowledge is to be shared in your company.
- A document management system (like Google Drive) that organizes the knowledge and potentially automates knowledge sharing.
- Communication facilities (like Slack) that facilitate collaboration and communication.
- A dedicated person or persons to circulate the knowledge to the appropriate department(s).
- A follow-up process to confirm that the information was delivered to the right people in the right way at the right time.

Step 4: Apply Knowledge & Measure Results

The next step is to apply this knowledge and measure the results.

You can use Knowledge Management tools to assess success across multiple key performance indicators (KPIs).

Page 100 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



For example, if the knowledge shared was regarding a solution to an important business problem – say, improving follow-up to leads dropping off at one stage of the sales cycle – you will want the appropriate team (in this case, Sales), to apply the solution and the report on the results.

Step 5: Create New Knowledge

Assume you discover that a new idea, technology, or solution is paying off. You can then apply this to other areas within your company. If the results are coming up short, on the other hand, this presents a new opportunity to innovate.

Having a knowledge transfer system ensures that your business is never stagnant when it comes to new ideas and problem-solving.

If you want your business to grow, you'll want to cultivate an environment that encourages the constant pursuit of knowledge.

https://en.wikipedia.org/wiki/Knowledge_transfer

Self-Check 3	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List having a knowledge base help you manage both tacit knowledge as well as explicit knowledge that's being generated in your company? (5%)

2. Knowledge transfer can help your business in the following ways (5%).

Page 137	101 of	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
				February 2021



. Answer the following question!

Note: Satisfactory rating 5 and 10 points Unsatisfactory below 5 and 10 points

You can ask your teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____

Information Sheet 4. Communicating workers and management to transfer knowledge program

4.1 Communicating workers and management to transfer knowledge program

What is Knowledge Management?

Knowledge management is the conscious process of defining, structuring, retaining and sharing the knowledge and experience of employees within an organization.

The main goal of knowledge management is to improve an organization's efficiency and save knowledge within the company. Often it is referring to training and learning in an

Page 102 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



organization or of its customers. It consists of a cycle of creating, sharing, structuring and auditing knowledge, in order to maximize the effectiveness of an organization's collective knowledge.

The three (3) main areas of knowledge management

1. Accumulating knowledge
2. Storing knowledge
3. Sharing knowledge

The goal is to enable organizational learning and create a learning culture, where the sharing of knowledge is encouraged and those who seek to learn to better themselves find it easy to do so.

When thinking about knowledge management, it is helpful to consider the types of knowledge and how possible it is to share that knowledge within an organization.

Tacit knowledge and explicit knowledge are the two main types of knowledge covered within the definition of knowledge management.

- Tacit knowledge is more intuitive, less easy to package and share with others. Examples of tacit knowledge are innovative thinking and understanding body language.
- Explicit knowledge is information that is easily codified and taught, such as how to change the toner in a printer and mathematical equations.

Successful knowledge management will improve an organization in several ways. It will ensure that the specialized knowledge of employees does not leave with them, or go unutilized by other employees who would benefit from that knowledge.

It allows for better situational awareness, as well as opening doors for learning about best practices, lessons learned, and overall organizational improvement.

Why is knowledge management important?

Page 103 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Knowledge management is important because it boosts the efficiency of an organization's decision-making ability.

In making sure that all employees have access to the overall expertise held within the organization, a smarter workforce is built who are more able to make quick, informed decisions that benefit the company.

Innovation is easier to foster within the organization, customers benefit from increased access to best practices and employee turnover is reduced.

The importance of knowledge management is growing every year. As the marketplace becomes ever more competitive, one of the best ways to stay ahead of the curve is to build your organization in an intelligent, flexible manner. You want to be able to spot issues from a distance and respond quickly to new information and innovations.

Companies begin the knowledge management process for many different reasons.

1. A merger or acquisition could spur the need for codifying knowledge and encouraging teams to share their expertise.
2. The imminent retirement of key employees could demonstrate the need to capture their knowledge.
3. An upcoming recruitment drive shows the wisdom in using knowledge management to assist in the training of new employees.

Benefits of knowledge management

1. More efficient workplace
2. Faster, better decision making
3. Increased collaboration
4. Building organizational knowledge
5. Employee onboarding and training process is optimized
6. Increased employee happiness and retention, due to the valuing of knowledge, training, and innovation

Page 104 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Knowledge management is an important tool in any company that wants to increase their bottom line and market share.

Knowledge management examples and best practices

Depending on what the company needs, their knowledge management will look different.

Below we have listed the most common types of knowledge management examples:

1. Tutoring & training, communities of practice, Q&A, and expertise location

These examples all involve the transfer of knowledge directly from the knowledge holder.

This could be through in-person tutoring, company-wide training sessions, online chats and group discussions - or a mix of those options and others.

For expertise location to be an effective aspect of a knowledge management system, there must be a searchable matrix built that allows for documentation of competencies.

Pros:

- Questions can be immediately answered
- Clarifications can be made if the material is not understood
- Brainstorming sessions can be facilitated, taking advantage of the combined power of the group's experience and knowledge
- In-person learning tends to be remembered more clearly

Cons:

- Can be time-consuming and take away from the tasks the knowledge holder is trying to complete
- A system of expertise location can be time-consuming to build and maintain
- Can be difficult to document and save for future use

Page 105 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- You can lose the knowledge if the knowledge holder will leave the company

2. Documentations, guides, guidelines, FAQ and tutorials

These written communications are great for storing and transferring knowledge.

With text-based knowledge management, a system to store, categorize and navigate subjects is necessary.

In many cases, metadata is a great help for this.

Pros:

- Can be archived and stored easily
- Easy to share online
- Can easily combine multiple people's expertise into one packet
- Fast navigation to solutions when organized well

Cons:

- Requires more time to create
- Must be organized properly or the knowledge will not be findable
- Knowledge must be kept up-to-date

3. Forums, intranets and collaboration environments

These online resources spark conversation and bring many knowledge holders into the same place.

Threads, subforums and groups can be divided by topic, level of expertise or any number of other classifications.

Pros:

- Collaboration drives innovation
- Many experts can be brought together into one place, no matter their location globally
- Facilitating contact with remote teams helps teamwork and knowledge transfer

Cons:

Page 106 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Can be a chaotic, noisy environment
- Knowledge is not actively being vetted as it is added to discussions
- Searching through many messages and threads for relevant answers is time-consuming
- Messages and threads might not be archived

4. Learning and development environments

Creating an environment where learning is considered an asset will drive employees to continuously educate themselves.

Incentivizing them to take advantage of your knowledge management systems will result in upskilled employees who are ready to take on leadership roles in your organization.

For this to happen, there must be structured and accessible learning and development technology in place that employees can use.

Pros:

- Motivated employees can develop themselves at will
- Training pathways can be set out
- The structure allows for easier discovery of subjects

Cons:

- Requires a lot of effort to build and maintain
- Content must be created and continually updated

5. Case studies

These in-depth studies into particular subjects serve as complete guides to a subject.

Looking at the actions taken, the results of those actions and the lessons learned can be extremely valuable and allows for lessons learned to be fully documented and archived.

Page 107 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Pros:

- Allow for full documentation and archiving of lessons learned
- Easily shareable
- Efficient for communicating complex information

Cons:

- Take a lot of time and skill to create
- Can be too specialized to apply the knowledge broadly

6. Webinars

These online seminars can be very helpful in widely disseminating ideas throughout teams, branches or the entire company.

Pros:

- Can be recorded and reused
- Easy for all interested employees to attend

Cons:

- Take time and effort to plan, write and deliver
- Requires organization

Knowledge management process

In organizing the knowledge management for an organization, there is a four-step knowledge management process that can be followed.

1. Discovery

How will knowledge inside the organization be discovered?

Page 108 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



In every organization, there are multiple sources of knowledge. In this step of the process, the sources of knowledge are identified, as well as where critical knowledge is kept, what can be learned from this knowledge and if there are areas in which knowledge can be lost during the process.

The discovery process is helped by a solid understanding of the knowledge flow of the organization.

2. Capture

How will new and existing knowledge be stored?

Every organization contains a vast amount of knowledge, and it must be stored and organized in a deliberate manner. By creating a system that is mapped and categorized, knowledge is more easily accessed and the organizational structure is increased.

This can include scanning documents, using metadata and indexing.

3. Process

How best can this knowledge be synthesized and incorporated?

This step involves a deep analysis of the knowledge gathered in the previous two steps.

The organization must organize and assess the knowledge to see how best it can be folded into the structure of the organization. This step is when an organization should be establishing and promoting a cultural shift toward knowledge sharing and developing employees to be innovators.

4. Share and benefit

How best can individuals within the organization access this knowledge?

The point of knowledge management is to enable easy access to knowledge within the organization.

Page 109 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Building a system that works is the first step, but individuals need to understand how to use that system.

Implementing training programs can help increase the understanding of knowledge management systems.

Once the system is being used, the company benefits from increased efficiency, better decision making, and more innovative employees.

Knowledge management framework

- **People** - Knowledge management must be prioritized within the company, and an ethos of sharing knowledge must be built into the DNA of the company and incentivized.
- **Process** - There needs to be a clear system for all steps of knowledge management, while also leaving room for innovation.
- **Technology** - Technology supports knowledge management, allowing knowledge to be searched for, found, and accessed within knowledge management systems. Technology also allows people to communicate better.
- **Governance** - The organization's governance must prioritize and reward knowledge sharing. Without this step, instituting knowledge management systems will be a battle.

Organizations that take full advantage of knowledge management are better able to react quickly to changing market conditions, offer better services to their customers and increase their innovation and efficiency.

Self-Check 4	Written Test
---------------------	---------------------

Page 110 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. Mention three main areas of knowledge management (5%)

_____ , _____ , _____
_____ , _____ , _____
_____ , _____ , _____

1. List down benefits of knowledge management (5%).

_____ , _____
_____ , _____
_____ , _____

. Answer the following question!

Note: Satisfactory rating 6 and 10 points Unsatisfactory below 6 and 10 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____



Page 111 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Information Sheet 5. Conducting knowledge transfer accordance with the plan

5. Conducting knowledge transfer accordance with the plan

5.1. Conducting the Knowledge Transfer

Conducting knowledge transfer is an important part of the Six Sigma project and must be done carefully. Some advice about how to navigate this part of the project has been mentioned below:

Key Points to take into Account while Conducting Knowledge Transfer:

Chronology: The knowledge transfer process must be iterative and must be chronological. This simply means that instead of training everyone at one go, the first step should be to train the senior and middle level management. Once this has been done, the executives and the supervisors must be trained and the upper management must be involved in the exercise. When the upper management train the lower rungs, they refresh their training. This is important because the lower rungs will first reach their immediate management if something in the process goes wrong. Hence the upper management must have a fair idea regarding how the new process works.

Buy-In: Before the knowledge transfer process is initiated the Six Sigma project team must create a buy in for the solution. This is because many times, workers feel that the improved methods are designed to eliminate their jobs. However, in reality they have been designed to assist the workers in their jobs. This must be communicated to them and it must be ensured that the workers agree to this. Or else there is a chance of a hostile reaction and the entire Six Sigma project might fail because of deliberately improper execution.

Budget: Before the training begins, the Six Sigma project team must give the process owner a budget required for training. This budget must include the resources required. Typically the trainings must be held on a rotation basis, so that the normal working of the organization is not disrupted.

Page 112 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Knowledge Transfer Regarding

The contents of the knowledge transfer cannot be generalized. They will vary depending on the process that was executed. However some of the major components of the training are as follows:

Technology: Workers must be made to feel comfortable with the new technology that will be used. Many times workers will not ask doubts. It is the responsibility of the training team to see that the technological innovation is well understood and correctly implemented.

Best Practices: Workers must be informed about the new Standard Operating Procedures that have been put into place. Workers may get confused between the old ways that they followed as well as the new ways that have been put into place. Contrasts must be highlighted to ensure easy recollection.

Reporting: Changes in the process entails a change in the reporting structure. It must be made sure that workers correctly understand who they are reporting to and who is responsible for the process.

Page 113 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021

**Self-Check 5****Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. .List down the major components of knowledge transfer regarding are : (5%)

. Answer the following question!

Note: Satisfactory rating 6 and 10 points Unsatisfactory below 6 and 10 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____



Information Sheet 6. Analyzing feedback on knowledge transfer reported and documented

6.1 Analyzing feedback on knowledge transfer reported and documented

Feedback is used to describe the helpful information or criticism about prior action or behavior from an individual, communicated to another individual (or a group) who can use that information to adjust and improve current and future actions and behaviors.

The definition has acquired a more specific meaning in education, specifically medical education. Over the last few decades, feedback in medical training has obtained special importance and attention due to its growing importance in education. It was our better understanding of how we learn that helped us to realize the importance of feedback in the educational process.

Feedback is central to medical education in promoting learning and ensuring the meeting of standards. Our knowledge about medical education is expanding in various directions. But, what do we need to know more about feedback in medical education? What are the challenges? Is our use and application of medical knowledge as vast as our knowledge? Has the knowledge about medical education extended to all the users' (teachers) level? Are we achieving better educational outcomes from knowing more about feedback? These questions and others will be addressed in this review of feedback.

Components of Feedback

For appropriate feedback to be delivered, it has to have a basis in an accurate evaluation, the result of which the learner receives in a positive self-directed environment. Then the feedback provider should discuss and guide what would be the next step or the next level to achieve. This process is aided by the facilitation of how to get there.

Page 115 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



A summary of the components includes:

1. Observation of performance - Thorough and detailed observation is the basis for accurate evaluation and feedback. Feedback providers have to observe with critical eyes the learners' performance to formulate their assessment. The crucial observation is an educational skill that needs development and continuous improvement.
2. Evaluation of performance - Learners' level of performance has to be accurately evaluated to provide valuable feedback. Based on the accurate assessment, feedback providers can guide and facilitate learners to move to the next level of performance.
3. Guidance to the next level of performance- Guiding the learners to improve performance to the next level is an essential component of feedback. The guidance includes describing the next level of performance with some detailed description and relating it to the current level. It also includes discussing the importance and relevance of the next level to the goal of education as part of adult education.
4. Facilitation of performance improvement - After discussing the next level of learning, feedback providers should facilitate this journey, including educational resources, learning activities, and or timeline for the learning level.

Types of Feedback

There are many styles of feedback and proposals of application. There are also many studies to support the benefit of these styles. For interested educators by practice, this is a helpful resource to refer to when needed. But for the average educator, this is overwhelming. What style is good or better, and to what situation or need? How to apply these styles and on whom? What differentiates feedback and evaluation? These are all questions heard from many colleagues.

Classification of feedback types may follow various purposes. Feedback can classify into different types depending on the purpose, content, process, and mode of delivery.

Page 116 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



No classification has universal acceptance. In this activity, all the possible variations will be included and briefly reviewed. It is useful to be familiar with the various types.

Classification according to:

1- Process and settings of feedback

- Formal feedback. It is a planned, structured, and scheduled feedback. It is usually conducted at mid-rotation or mid-course to assist learners in optimizing their learning in the remaining part of the rotation. It can occur at other times, e.g., end of the educational activity, after a significant educational event, or after observation of a substantial learning deficiency. Most of the recommendations, elements, and requirements of feedback focus on this type.
- Informal feedback. It is a short, immediate, and focused feedback. It usually takes place during or immediately after the educational activities. It facilitates and enhances the learning experience while it is taking place. It mixes easily with traditional teaching or training. The difference between feedback and instruction in these situations is that feedback should focus more on principles, concepts, and patterns than particular facts or events. Also, feedback should guide and facilitate the progress of the learning process.

2- Purpose of feedback:

- Constructive feedback. It is task-focused feedback that aims at building and improving the learning experience. Ideally, all feedback should be constructive.
- Inspiring feedback. This feedback aims at motivating learners to enhance motives and optimize the self-confidence and achievement potentials. Inspiring feedback has proven to be a powerful tool in education. Inspiring is one of the most influential and most essential elements of leadership.

Page 117 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Corrective feedback. It is short, frequent, and task-focused feedback aimed at correcting frequent or significant mistakes or below normal performance

3 - Breadth of feedback:

- Formative feedback. It is a short ongoing type of feedback that is given frequently during learning to facilitate and improve the learning experience while it is happening. It follows the same principle of formative assessment in terms of the details and content.
- Summative feedback. It follows similar details and content of the summative assessment, in addition to the guidance and facilitation of feedback. It usually takes place at the end of the educational event or major step. It focuses on overall performance, concepts, and patterns. It is structured and planned.

4 - Delivery of feedback:

- Sandwich feedback. The term derives from the fact that one layer (usually the weak points of feedback) becomes sandwiched between two layers of strength points or encouragement. It is a common style of providing feedback. It is a natural and traditional way of providing insight to make it acceptable and well perceived. There have been significant discussions, reviews, and criticism in the literature on this style. It is not an ideal or highly valuable style. But it is a simple and convenient way for many feedback providers. Educators should not be discouraged from using sandwich feedback if this is what they know the most. But they should be encouraged to expand and improve their feedback styles.
- Pendelton feedback. This style of feedback came from Pendleton and his group and described in their book "The Consultation: An Approach to Learning and Teaching. Oxford University Press, Oxford". It is of high educational value, comprehensive yet straightforward, dialogue-based, learner-centered discussion, and easy to reproduce. Medical educators claim that it is more likely to motivate adults to learn. The central concept of this style is that the discussion starts with and focuses on the learner's input. Then the feedback provider will share the educator's view. It starts with the positive or

Page 118 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



strength points then shift to the weaknesses or points of improvement. So the educator will start the feedback by asking the learner about own perception of what went well. Then, it is the educator's turn to provide insight. A discussion of improvement points occurs in the same way. Then an action plan for improvement is made.

Feedback, Coaching, and Mentoring

Can one compare feedback and providing coaching at the same time? Coaching has its basis on close observation of performance and evaluating the performance level, strengths, and weakness. Coaches work with the trainees to improve their performance by guiding them to the next level, which is done by eliminating their shortcomings and strengthening their strengths. The trainee and lead run the process and are facilitated by the coach. Mentorship is often used in medical education and is similar to coaching yet with some differences. Mentorship usually focuses on the long term objectives, ultimate learning outcomes, and opening learners' broader horizons. While coaching tends to focus more on current time performance and how to improve it.

Feedback and Evaluation

There has been frequent confusion between feedback and evaluation among people participating in education; this is not unexpected. There are many educational activities, courses, workshops, or conferences where this question is asked and discussed. Evaluation is a well-known concept, tool, and process conducted routinely in the field of education. When feedback is inadequate, it is mainly composed of assessment. Hence the confusion of the difference between the two. Evaluation is the core and backbone of feedback. Without performing a proper evaluation, no other parts of meaningful feedback are deliverable. When the evaluation process and result are discussed with the learner in a dialogue style, with advice and guidance on improving the performance and facilitation of this move, it becomes feedback.

When should you use document review for evaluation?

Page 119 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- To gather background information. Reviewing existing documents helps you understand the history, philosophy, and operation of the program you are evaluating and the organization in which it operates.
- To determine if implementation of the program reflects program plans. The review of program documents may reveal a difference between formal statements of program purpose and the actual program implementation. It is important to determine if such a difference exists and to clarify the program intent before moving forward with the evaluation.
- When you need information to help you develop other data collection tools for evaluation. Reviewing existing documents to better understand the program and organization you are evaluating will help you formulate questions for interviews, questionnaires, or focus groups or develop an observation guide.
- When you need data to answer what and how many evaluation questions. Reviewing program documents is useful for answering basic evaluation questions related to the number and type of participants, number and type of program personnel, and program costs.

How do you plan and conduct document reviews?

- Assess existing documents. Find out what types of documents exist and determine which ones you think will answer your evaluation questions.
- Secure access to the documents you have identified through your assessment. Certain documents may require the permission of others before being released for review and analysis. You may need to work with legal experts in your agency to understand what limitations you may face and how they can help you access documents you will need for your evaluation.
- Ensure confidentiality. Confidentiality is always an important consideration when collecting data for evaluation. If you need to review documents that involve confidential data about individuals, develop a system that ensures confidentiality of individual-level data. Developing these processes and guidelines may also help you in securing access to sensitive or confidential documents.

Page 137 of 120	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Compile the documents relevant to your evaluation. Once you have secured access to the documents you need to answer your evaluation questions, compile the documents. It is important that you limit your review to only those documents that answer your evaluation questions.
- Understand how and why the documents were produced. You will need to talk to the people who know something about the documents you are compiling to better understand the context for which they were developed. This is critical to gathering usable information for your evaluation.
- Determine the accuracy of the documents. Determining the accuracy of the documents may involve comparing the documents that contain similar information, checking the documents against other data you have collected, and speaking with people who were involved in the development of the documents.
- Summarize the information from documents reviewed. Create a data collection form to summarize data gleaned from your document reviews. You may want to include on the form the type of document you are reviewing; a way to reference each document; and information that answers each applicable evaluation question. You will use the form to help you compile and analyze your evaluation findings.

What are the advantages of document review?

- Relatively inexpensive
- Good source of background information• Unobtrusive
- Provides a behind-the-scenes look at a program that may not be directly observable
- May bring up issues not noted by other means

What are the disadvantages of document review?

- Information may be inapplicable, disorganized, unavailable, or out of date
- Could be biased because of selective survival of information
- Information may be incomplete or inaccurate

Page 121 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Can be time consuming to collect, review, and analyze many documents

Measure and evaluate knowledge transfer plan

What does a successful knowledge transfer plan look like? Because each organization's goals are unique, there's no universal benchmark that indicates success. One organization might be completing a knowledge transfer because a majority of their workforce will be retiring in the next five years. Another might be starting an internship program and looking to build a comprehensive on boarding packet for new interns.

While there's no magic formula for measuring the success of your knowledge transfer plan, you can start by returning to the original goals you set for the program. Did you meet the goals you set out to achieve? Evaluating and measuring the knowledge transfer process against your goals will quickly illuminate any gaps and allow for a shift in the plan moving forward. Remember that reviewing the effectiveness of knowledge transfer practices is a continuous endeavor, and you'll revise and evolve it as your organization grows over time.

Whether you're looking to build an up-to-date knowledge repository or shorten ramp-up time for new hires, a strong knowledge transfer strategy is your secret to success. It requires time and preparation to get it right, but the resulting strategy will give everyone in your organization access to a wealth of knowledge for years to come.

Page 122 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Self-Check 6	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List down Types of Feedback (5%)

. Answer the following question!

Note: Satisfactory rating 3 and 5 points Unsatisfactory below 3 and 5 points

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Name: _____

Date: _____

Score = _____

Rating: _____



References

<https://johner-institute.com/articles/regulatory-affairs/and-more/regulatory-update/>

<https://meetmaestro.com/insights/how-to-effectively-complete-a-knowledge-transfer-plan/>

<https://www.learninglight.com/manufacturing-training-elearning/>

https://en.wikipedia.org/wiki/In-service_program

<https://www.cdc.gov/healthyyouth/evaluation/pdf/brief18.pdf>

Page 124 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



ACKNOWLEDGEMENT

We wish to extend thanks and appreciation to the many representatives of TVET instructors and respective industry experts who donated their time and expertise to the development of this curriculum.

We would like also to express our appreciation to the TVET instructors and respective industry experts of Regional TVET Bureaus, TVET College/ Institutes, Bishoftu Bin international Hotel and Federal Technical and Vocational Education and Training Agency (FTV) who made the development of this curriculum with required standards and quality possible.

This TTLM developed on February 2021 at Bishoftu Bin international Hotel.

Page 125 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Page 126 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



The trainers who developed the TTLM

No	Name	Qual.	Educational background	Region	E-mail
1	Lisenwoke Milkias	A	Msc Electrical power	SNNP	llisenwokemilkias@yahoo.com
2	Aano Assefa	A	Msc Electrical power	SNNP	assefahule@gmail.com
3	Engida Tefera	A	Msc Electronic Communication Engineering	Dire Dawa	Tefera.engida@gmail.com



Answer Key for self-check

Module Title: Keep Up With Technological Developments

LO #1-Identify the gap

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Self-Check 1	Written Test
---------------------	---------------------

Part II fill the blank space

1. What is main the benefits of integrating new innovations into Medical technologies?

- Medical technologies like minimally-invasive surgeries, better monitoring systems, and more comfortable scanning equipment are allowing patients to spend less time in recovery and more time enjoying a healthy life..

Self-Check 2	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Fill the blank space

1. What are General Responsibilities biomedical technician (BMETs) (7%)

- Install
- Inspect
- Maintain
- Repair
- Calibrate
- Modify and design biomedical equipment and
- Support systems to adhere to medical standards and guidelines

2. List down most common job Task Activities of BMETs? at least 6.(6%)

- Order parts per policies and procedures
- Perform scheduled maintenance and safety testing

Page 128 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Assure inspections performed in accordance with requirements and standards
- Use specialized test equipment and tools
- Document actions and results

3. List down Most Common Job Qualifications of BMETs? at least (7%).

- Education
- Experience
- Knowledge of electrical/electronics
- Competent and professional with oral and written communications
- Safety
- Teamwork
- Customer service

Self-Check 3	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

LO #2-Look for self development opportunities and modalities

Self-Check -1	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

I. Choose the best answer (each 2 point)

1. A
2. C
3. D

Part I fill the blank space

Page 129 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



1. List down the Personal Development Process (4%)

- Self-Discovery
- Self-Development
- Self-Mastery
- Self-Actualization

Self-Check 2	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part I say True or False

- 1.True
- 2.True

Self-Check 3	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part I fill the blank space

1.List down the response of provider based on the information provided:-

- treat suppliers fairly, impartially and equitably at all times
- Follow the approach and methodology set out in the procurement plan and reflected in the request for Proposals.
- If you need to change any aspect of the process or methodology, you are obliged to notify all potential suppliers and give them sufficient time to respond to the change
- take into account capability, capacity and public value, including any broader outcomes
- check suppliers' conflict of interest declarations and re-check conflict of interest declarations for the panel now that the suppliers are known



Self-Check 4	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Fill the blank space

1. List the 3 stages to identifying your needs

- Identify what skills, knowledge and behaviours are 'required' for you to do your job well.
- Look at the skills, knowledge and behaviours you actually have now.
- Compare 'actual' with 'required' to identify the gaps. These are your development needs.

Self-Check 5	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

I. Choose the best answer (each 2 point)

1. List down Reasons for Sponsor Training and Development Programs

- You Get A High-Quality Audience
- You Get A Self-Selected Group
- Sponsoring Training And Development Empowers
- You Deliver A Relevant Message

LO #3-Involve in self development

Self-Check 1	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

I. Choose the best answer (each 2 point)

Page 131 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



1. D

2. C

Self-Check 2	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List down four types of professional organizations. (4%)

- Member-benefit professional associations
- Designation-granting associations
- Certifying bodies
- Professional regulatory bodies

2. Four steps you can follow to select a professional organization: (4%)

1. Determine your career goals
2. Research your company and the larger industry
3. Consider any necessary requirements
4. Compare organization benefits

3. What are Benefits of a professional organization(5%)

- Professional growth and development
- Access to resources and events
- Resume building
- Networking and job searching
- Peer support

Self-Check 3	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

Page 132 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



1. List down Chairing a meeting gives the head access to other unobtrusive levers of power. (5%)

- To determine when, where, and under what conditions a meeting is held
- To decide who shall attend
- To prepare the agenda and determine how agenda items are to be worded
- To structure where on the agenda an item will be placed
- To determine the order in which various participants are recognized to speak
- To initiate action

2. Mention various benefits when it comes to attending personal development seminars (5%)

- Get Exclusive Information:
- You Can Meet Like-minded People:
- Your Own Personal Development
- You Can Build Good Habits
- Managing the Time Effectively

Self-Check 4	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. Reasons Why You Should Start a Reading Journal. (4%)

- Improves critical thinking
- Never forget wisdom and knowledge gained
- Your reading personal assistant
- You live alongside it
- Improve your future reading

2. List down steps of Regulatory update best practices (6%)

- Defining the responsible roles
- Creating an initial list of regulatory requirements
- Naming a contact person for each regulation

Page 133 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



- Determining the monitoring date
- Performing the monitoring
- Evaluating changes and initiating possible actions

Self-Check 5	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. What is in-service program (5%)

- An **in-service program** is a professional training or staff development effort, where professionals are trained and discuss their work with others in their peer group

Self-Check 6	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. Mention five Reasons Why Education Helps to Advance Your Career at Any Level

- Gain Knowledge
- Enhance Your Soft Skills
- Demonstrate A Strong Work Ethic
- Boost Your Confidence For Success
- Grow Your Social Network

LO #4-Transfer technological development knowledge and skill to others

Page 134 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021



Self-Check 1	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

- 1. List down stages of personal development plan.**
- Self-evaluate your development needs
 - Get a template or online tool to record the personal development plan
 - Record initial developmental needs in PDP template
 - Meet with manager to discuss your initial thoughts
 - Set first review date Update the plans with notes on progress in your own time

Self-Check 2	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

- 1. What is a training manual?**
- A training manual is a method of ensuring that anyone carrying out a certain task or using a new product is doing so in a way that best fits the required processes and ethos of your business.
- 2. List step how to create an employee training manual that fulfils all your organization's needs?**
- Step 1 – Define your objectives
 - Step 2 – Identify your audience
 - Step 3 – Select your training tools



Self-Check 3	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List having a knowledge base help you manage both tacit knowledge as well as explicit knowledge that's being generated in your company

- Reports
- Visuals and videos
- Document libraries
- Knowledge portals
- CRM systems
- A dedicated team

2. Knowledge transfer can help your business in the following ways

- Accelerate the accumulation and dissemination of knowledge across your organization
- Provide easy and rapid knowledge access to your team
- Eliminate time and space constraints in communications
- Stimulate associates to experience the value of sharing knowledge in providing custom-tailored service to customers

Self-Check 4	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part I Fill the black space

1. Mention three main areas of knowledge management

- Accumulating knowledge
- Storing knowledge
- Sharing knowledge



2. List down benefits of knowledge management

- Provide easy and rapid knowledge access to your team
- Eliminate time and space constraints in communications
- Stimulate associates to experience the value of sharing knowledge in providing custom-tailored service to customers

Self-Check 5	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part I Fill the black space

1. List down the major components of knowledge transfer regarding are :

- Budget:
- Reporting
- Best Practices

Self-Check 6	Written Test
---------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

Part II Fill the black space

1. List down Types of Feedback

- Process and settings of feedback
- Purpose of feedback:
- Breadth of feedback:
- Delivery of feedback

Page 137 of 137	Federal TVET Agency Author/Copyright	TVET program title-Intermediate Biomedical Equipment Servicing Level-III	Version -1
			February 2021