



Skills for Employment Investment Program (SEIP)

COMPETENCY-BASED LEARNING MATERIAL (FACULTY GUIDE) FOR WEAVING TECHNOLOGY (*TEXTILE SECTOR*)

**Finance Division, Ministry of Finance
Government of the People's Republic of Bangladesh**

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Copyright

The Competency-based Learning Material (Faculty Guide) for Weaving Technology is a document, aligned to its applicable competency standard, for providing training consistent with the requirements of industry in order for individuals who graduated through the established standard via competency-based assessment to be suitably qualified for a relevant job.

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Approval Sheet

Identification and validation of modules and content for this occupation were made by experts within this sector. A series of consultations were held to accurately capture industry and employer needs and expectations and develop the learning material that would help to enhance the employability of the youth trained. This process started on 30 August 2018 and concluded with a validation workshop with a sectoral working group on 18 October 2018.

Experts Involved

Industry and subject-matter experts who provided their valuable inputs to develop this competency-based learning material [August 2018 - October 2018]:

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Validation Workshop

Competency-based learning material validation workshop participants [held on 18 October 2018]:

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Committee Workshop

The National competency-based learning material for National Skills Certificate in Weaving Technology, NTVQF Level [INSERT LEVEL] qualification is a document developed by the Skill for Employment Investment Programme (SEIP), Finance Division, Ministry of Finance. This competency-based learning material has been developed by an industry expert group under guidance of SEIP. The competency-based learning material was approved by the SCDC [BTEB to insert date] at NTVQF Cell, BTEB.

Respectable members of the SCDC:

Weaving Technology - Level [INSERT LEVEL]		

How to Use this Competency-based Learning Material

Welcome to the competency-based learning material for Weaving Technology to use in textile work. These modules contain training materials and activities for learners to complete in order to become competent and qualified as a skilled worker.

There are six (6) modules that make up this course which comprises the skills, knowledge and attitudes required to become a skilled worker including:

1. Identify basics of weaving technology
2. Carry out preparation for weaving operation
3. Perform shedding operation
4. Perform picking operation
5. Perform beating operation
6. Identify weaving accessories and fabric faults

As a trainer, you are required to guide the learners through a series of activities in order to complete each learning outcome of the module. These activities may be completed as part of structured classroom activities or they may be required to work at their own pace.

These activities will require the learners to complete associated learning and practice activities in order to gain knowledge and skills they need to achieve the learning outcomes. Refer to **Learning Activity Page of each module** to know the sequence of learning tasks and the appropriate resources to use for each task.

This page will serve as the road map towards the achievement of competence. If you read the **Information Sheets**, these will give you an understanding of the work, and why things are done the way they are. Once the learners have finished reading the Information Sheets, they are required to complete the questions in the **Self-Check Sheets**.

The self-check process follows the Information Sheets in the learning guide. Completing self-checks will help the learners know how they are progressing. To know how they fared with self-checks, they can review the **Answer Key**.

The learners are required to complete all activities as directed in the **Job Sheet**. This is where they will apply their newly acquired knowledge while developing new skills. When working, high emphasis should be laid on safety requirements. The learners should be encouraged to raise relevant queries or ask the facilitator for assistance as required.

When the learners have completed all the tasks required in the learning guide, an assessment event will be scheduled to evaluate if they have achieved competency of the specified learning outcomes and are ready for the next task.

Introduction to Teaching Adult Learners

Since you will be dealing with adult learners, it is important to understand the basic principles of adult learning and methodologies. Adults learn best through associations, experiences and application. A few facts to consider while teaching adult learners:

Discussion: Adult learning is best managed through mutual dialogue and discussion. Discussion needs to be encouraged and used in the classroom to maximise learning.

Associations: Adults have experiences which can be related to any learning objectives to create associations which enhance conceptual comprehension. Associations can be used to create user interest and gain attention. Adults learn new attitudes or skills best in relation to previous life experiences.



This strategy also ensures knowledge retention.

Create an environment conducive to learning and sharing: Make people feel comfortable talking to you and each other. They should feel at ease asking questions, sharing views even if they are not very sure of the efficacy of their suggestions or views.

Physical surroundings: Temperature, light, space and furniture should be optimal. There should be no distractions.

Inculcate respect: Encourage learners' contributions and experiences. People are more encouraged to learn and share when their experiences are acknowledged - new information builds easily on past knowledge and experience.

Reward and recognition: Acknowledging the efforts of people, even small attempts, can reap great benefits. Learners like to receive praise and positive encouragement, which motivates them to deliver their best.

Learners also like to be reassured that they are correctly recalling or using information they have absorbed in the classroom.

Structured teaching: Learners study faster when information or skills are presented in a structured way:

- Concepts to be taught in small, bite sized portions for easy assimilation
- Put forth the easiest ideas or skills first and then gradually build on them
- Bring in the important ideas first
- Reinforce key ideas at regular intervals
- Reinforce high order concepts at regular intervals

Move learner from generic to specific flow of information: Introduce the generic concepts first and then move to specific more complex information to ease understanding and comprehension.

Application of concepts/ideas taught: Help students put into practice the concepts taught in the class through exercises and work-based projects. Application ensures knowledge retention and skill building.

Relevance building: Build up relevance of the concepts being taught in class by relating them to day-to-day life and workplace experiences.

Learners should know to use and apply what they have learned in the classroom as they learn faster when they recognise that what they are learning will be useful in the future.

Sharing: Encourage learners to learn from each other and solve problems collectively. This makes learning easier and improves team spirit and the interpersonal skills of the learners.

Participation: Involve learners in the class - adults favour to be *active participants* in learning rather than passive receivers of knowledge. People learn faster when they actively process information, solve problems and practice skills.

Motivate: Inspire the class so that teaching does not become a one-way process of knowledge download. Learners will learn faster when they feel an inner urge to learn and be an active participant in the class.

Create a learning environment in which the learners feel free and able to shed their inhibitions and develop receptivity towards new ideas and concepts.

Students will have different motivation levels - some will be more eager to learn than others as each learner is different from the other and therefore need to be treated differently.

And remember - adapt your communication style to suit the needs of the audience.

Communicate effectively: Communicate in a manner that is understood by the class. The language and sentence structuring should be clear and succinct.

Technical concepts should be explained in a manner that de-mystifies the concept - make things simple and easy to understand.

Avoid using *too much* technical jargon - if it is part of the curriculum, ensure the class is first made familiar with the words or jargon used.

Assessments: Conduct skill and knowledge checks regularly:














- Reinforce high order concepts at regular intervals.
- Conduct formative and summative assessments.
- Strengthen areas which appear to be weak.

Regular feedback:

- Provide regular feedback to learners
- Help them identify their strengths and areas of improvement
- Feedback should always be constructive
- Timely and specific feedback is easier to accept and act on



List of Icons

Icon Name	Icon
Module content	
Learning outcomes	
Performance criteria	
Contents	
Assessment criteria	
Resources required	
Information sheet	
Self-check Quiz	
Answer key	
Activity	
Video reference	
Learner job sheet	
Assessment plan	
Review of competency	

Module 1: Identify basics of weaving technology

Module Descriptor:	This module covers the skills, knowledge and attitudes to identify the basics of weaving technology. It specifically includes defining weaving technology, identifying tools and equipment, and classifying raw materials.	
Nominal Duration:	40 hours	
Learning Outcomes:	1.1.	Define weaving technology
	1.2.	Identify tools and equipment
	1.3.	Classify raw materials
Performance Criteria:	1.1.	Weaving technology is accurately defined and illustrated.
	1.2.	Different types of weaves and materials are identified, compared and constructed.
	1.3.	Role and responsibilities of weaving loom operator are identified and explained.
	1.4.	Weaving floor layout is described.
	1.5.	Appropriate tools and equipment are identified as per job requirement.
	1.6.	Looms and other machinery are identified and labeled according to classification.
	1.7.	Raw materials required to perform weaving is identified and selected.
	1.8.	Different types of yarns are identified, classified and distinguished by key characteristics.
	1.9.	Different types of sizing materials for warp yarns are identified.



Learning Outcome 1.1 - Define Weaving Technology

Contents:	<ul style="list-style-type: none"> ▪ Definition and illustration of weaving technology ▪ Different types of weaves and materials ▪ Weaves: plain, twill, satin ▪ Materials: yarn and fabric 		
Resources Required:	<ul style="list-style-type: none"> ▪ Materials: warp and weft yarn, fabric 		
Learning Activities:	Activity	Resource	Student Guide Page
	1.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 1.1.1 ▪ Self-Check 1.1.1 ▪ Answer Key 1.1.1 <p> https://en.wikipedia.org/wiki/Weaving http://web.itu.edu.tr/~berkalpo/Weaving_Lecture/Weaving_Chapter1a_06S.pdf </p>	8 8 20
	1.1.2	<ul style="list-style-type: none"> ▪ Information Sheet 1.1.2 ▪ Self-Check Quiz 1.1.2 ▪ Answer Key 1.1.2 <p> https://www.fibre2fashion.com/industry-article/3343/different-types-of-weaves </p>	9 10 20
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Weaving technology is defined and illustrated ▪ Different types of weaves and materials are identified, compared and contrasted ▪ Role and responsibilities of weaving loom operators are identified and explained 		



Learning Outcome 1.2 - Identify Tools and Equipment

Contents:	<ul style="list-style-type: none"> ▪ List of tools and equipment required for weaving ▪ Classification of looms ▪ Tools and equipment 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Pocket tape, adjustable wrench, files (flat, round, half-round), hacksaw, hammer, pliers, screwdriver, trolley 		
Learning Activities:	Activity	Resource	Student Guide Page
	1.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 1.2.1 ▪ Self-Check Quiz 1.2.1 ▪ Answer Key 1.2.1 http://textilelearner.blogspot.com/2013/03/maintenance-tools-equipments-and-their.html	11 13 20
	1.2.2	<ul style="list-style-type: none"> ▪ Information Sheet 1.2.2 ▪ Self-Check Quiz 1.2.2 ▪ Answer Key 1.2.2 http://fashion2apparel.blogspot.com/2017/07/classification-loom.html	13 15 20
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Necessary tools and equipment are checked for their usability ▪ Looms are classified and identified 		



Learning Outcome 1.3 - Classify Raw Materials

Contents:	<ul style="list-style-type: none"> ▪ Raw materials required for weaving ▪ Types of yarns ▪ Types of sizing materials 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Materials: yarns and sizing materials 		
Learning Activities:	Activity	Resource	Student Guide Page
	1.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 1.3.1 ▪ Self-Check Quiz 1.3.1 ▪ Job Sheet 1 ▪ Answer Key 1.3.1 	16 17 18 20
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Raw materials required for weaving is identified and selected ▪ Types of yarns are classified and identified ▪ Types of sizing materials for warp are identified 		

Module 2: Carry out preparation for weaving operation

Module Descriptor:	This module covers the knowledge, skills and attitudes to carry out preparation for weaving operation which includes performing winding, warping and sizing tasks.	
Nominal Duration:	48 hours	
Learning Outcomes:	2.1.	Perform winding task
	2.2.	Perform warping task
	2.3.	Performing sizing task
Performance Criteria:	2.1.	Materials, tools and equipment is identified and selected according to job requirement.
	2.2.	Yarn from ring bobbins are correctly wound to form package
	2.3.	Lubricant is checked, and levels maintained as per manufacturer's guidelines.
	2.4.	Required number of yarns from a creel of single-end package is transferred to a beam.
	2.5.	Size material is prepared and applied on to the warp sheet
	2.6.	Hairiness and flexibility of yarn is checked and maintained.
	2.7.	Yarn tension is checked and adjusted as required.



Learning Outcome 2.1 - Perform Winding Task

Contents:	<ul style="list-style-type: none"> ▪ List of materials required for winding ▪ Tools and equipment required for the task of winding ▪ Winding of yarn from ring bobbins to package 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): hand gloves, dust mask, ear plug and working clothes ▪ Tools and equipment: winding machine, pocket tape, wire, stripper, adjustable wrench, hammer, pliers and screwdrivers ▪ Materials: cone, ring bobbin 		
Learning Activities:	Activity	Resource	Student Guide Page
	2.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 2.1.1 ▪ Self-Check Quiz 2.1.1 ▪ Answer Key 2.1.1 	22 24 35
	2.1.2	<ul style="list-style-type: none"> ▪ Information Sheet 2.1.2 ▪ Self-Check Quiz 2.1.2 ▪ Answer Key 2.1.2 <p>https://www.skyeweavers.co.uk/story/cone-winding</p>	25 26 35
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Materials, tools and equipment are identified and selected according to job requirement ▪ Yarn from ring bobbins are correctly wound to form package 		



Learning Outcome 2.2 - Perform Warping Task

Contents:	<ul style="list-style-type: none"> • Lubrication system • Feeding of cone in the creel • Transfer of yarn from creel to a beam 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, ear plug and working clothes ▪ Tools and equipment: warping machine, pocket tape, wire stripper, adjustable wrench, hammer, pliers and screwdrivers ▪ Materials: cone, lubricant 		
Learning Activities:	Activity	Resource	Student Guide Page
	2.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 2.2.1 ▪ Self-Check Quiz 2.2.1 ▪ Answer Key 2.2.1 https://www.youtube.com/watch?v=V5e1YKkZFhc	27 29 35
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Lubricant is checked and maintained in accordance with job requirements ▪ Cone is fed or placed in the creel ▪ Required number of yarns is transferred from creel to beam 		



Learning Outcome 2.3 - Perform Sizing Task

Contents:	<ul style="list-style-type: none"> ▪ Preparation of size materials ▪ Application of size materials on the warp sheet ▪ Hairiness and flexibility of yarn ▪ Yarn tension 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): hand gloves, dust mask, safety shoes, goggles, working clothes ▪ Tools and equipment: Sizing machine, pocket tape, wire stripper, adjustable wrench, hammer, pliers and screwdrivers ▪ Materials: Warp yarns in the warpers beam, sizing materials 		
Learning Activities:	Activity	Resource	Student Guide Page
	2.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 2.3.1 ▪ Self-Check Quiz 2.3.1 ▪ Answer Key 2.3.1 	30 31 35
	2.3.2	<ul style="list-style-type: none"> ▪ Information Sheet 2.3.2 ▪ Self-Check Quiz 2.3.2 ▪ Job Sheet 2 ▪ Answer Key 2.3.2 https://www.youtube.com/watch?v=QZkikKfH28l	31 32 33 35
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Sizing materials are prepared and applied on the warp sheet according to requirements ▪ Hairiness and flexibility of yarns are checked ▪ Yarn tension is checked and adjusted as required 		

Module 3: Perform shedding operation

Module Descriptor:	This module covers the knowledge, skills and attitudes to perform shedding operation which includes identifying dobby shedding, preparing for shedding and performing tappet and jacquard shedding.	
Nominal Duration:	48 hours	
Learning Outcomes:	3.1.	Identify dobby shedding
	3.2.	Prepare for shedding
	3.3.	Perform tappet shedding
	3.4.	Perform jacquard shedding
Performance Criteria:	3.1.	Shedding mechanism is identified and explained.
	3.2.	Main parts of shedding mechanism are correctly identified.
	3.3.	Types of dobby shedding are identified and described.
	3.4.	Work instructions are received and confirmed with supervisor.
	3.5.	Appropriate personal protective equipment is identified and selected.
	3.6.	Hand tools and equipment is selected as per job requirement.
	3.7.	Selected hand tools and equipment are used properly and safely.
	3.8.	Tappet shedding is performed as per standard operating procedure.
	3.9.	Shedding device is monitored and maintained during operation.
	3.10.	Report is prepared and submitted upon completion of shedding operation as per standard operating procedure.
	3.11.	Selected hand tools and equipment are used properly and safely.
	3.12.	Jacquard shedding is performed as per standard operating procedure.
	3.13.	Shedding device is monitored and maintained during operation.
	3.14.	Report is prepared and submitted upon completion of shedding operation as per standard operating procedure.



Learning Outcome 3.1 - Identify Dobby Shedding

Contents:	<ul style="list-style-type: none"> ▪ Types of shedding mechanism ▪ Main parts of shedding mechanism ▪ Types of dobbie shedding ▪ Design produced by dobbie device 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron ▪ Tools and equipment: loom with dobbie shedding mechanism, sample cutter, yarn tension meter, tape tensioner, industrial weight scales ▪ Materials: weavers beam with warp yarn 		
Learning Activities:	Activity	Resource	Student Guide Page
	3.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 3.1.1 ▪ Self-Check Quiz 3.1.1 ▪ Answer Key 3.1.1 https://www.youtube.com/watch?v=ijPP9wW2aP8	<p>38</p> <p>39</p> <p>51</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Shedding mechanism is identified and selected ▪ Main parts of shedding mechanism are identified ▪ Types of dobbie shedding are identified and described ▪ Designs produced by dobbie devices are identified 		



Learning Outcome 3.2 - Prepare for Shedding

Contents:	<ul style="list-style-type: none"> ▪ Names and uses of personal protective equipment (PPE) ▪ List of main tools and equipment required for shedding 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron, ear plug ▪ Tools and equipment: weaving machine, sample cutter, yarn tension meter, tape tensioner, industrial weight scales ▪ Materials: warp beam 		
Learning Activities:	Activity	Resource	Student Guide Page
	3.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 3.2.1 ▪ Self-Check Quiz 3.2.1 ▪ Answer Key 3.2.1 https://www.w3.org/TR/html401/interact/forms.html	<p>40</p> <p>42</p> <p>51</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Personal protective equipment is identified and selected ▪ Tools and equipment are selected as per job requirement 		



Learning Outcome 3.3 - Perform Tappet Shedding

Contents:	<ul style="list-style-type: none"> ▪ Uses of hand tools and equipment ▪ Types of tappet shedding 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron, ear plug ▪ Tools and equipment: tappet loom, sample cutter, yarn tension meter, industrial weight scale ▪ Materials: yarns 		
Learning Activities:	Activity	Resource	Student Guide Page
	3.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 3.3.1 ▪ Self-Check Quiz 3.3.1 ▪ Answer Key 3.3.1 https://www.youtube.com/watch?v=W5BRDDhR0dl	43 45 51
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Hand tools and equipment are used properly ▪ Tappet shedding is performed as per standard operating procedure 		



Learning Outcome 3.4 - Perform Jacquard Shedding

Contents:	<ul style="list-style-type: none"> ▪ Uses of hand tools and equipment ▪ Types of jacquard shedding 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron, ear plug ▪ Tools and equipment: jacquard loom, sample cutter, yarn tension meter, industrial weight scale ▪ Materials: yarns 		
Learning Activities:	Activity	Resource	Student Guide Page
	3.4.1	<ul style="list-style-type: none"> ▪ Information Sheet 3.4.1 ▪ Self-Check Quiz 3.4.1 ▪ Job Sheet 3 ▪ Answer Key 3.4.1 https://www.youtube.com/watch?v=W5BRDDhR0dl	46 48 49 51
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Hand tools and equipment are used properly ▪ Jacquard shedding is performed as per standard operating procedure 		

Module 4: Perform picking operation

Module Descriptor:	This module covers the knowledge, skills and attitudes to perform picking operation which includes identifying picking process, preparing for picking, performing conventional picking, air jet picking, rapier, projectile and water jet picking.	
Nominal Duration:	40 hours	
Learning Outcomes:	4.1.	Identify picking process
	4.2.	Prepare for picking
	4.3.	Perform conventional picking
	4.4.	Perform jet air picking
	4.5.	Perform rapier, projectile and water jet picking
Performance Criteria:	4.1.	Picking process is accurately defined.
	4.2.	Different techniques for picking are identified and described.
	4.3.	Work instructions are received and confirmed with supervisor.
	4.4.	Appropriate personal protective equipment (PPE) is identified and selected.
	4.5.	Hand tools and equipment is selected as per job requirement.
	4.6.	Selected hand tools and equipment are used properly and safely.
	4.7.	Conventional picking is carried out as per standard operating procedure.
	4.8.	Conventional picking machine/device is monitored and maintained during operation.
	4.9.	Selected hand tools and equipment are used properly and safely.
	4.10.	Air jet picking with yarn is carried out as per standard operating procedure to ensure quality.
	4.11.	Air jet picking machine/device is monitored and maintained during operation.
	4.12.	Selected hand tools and equipment are used properly and safely.
	4.13.	Rapier, projectile and water jet picking is carried out as per standard operating procedure.
	4.14.	Rapier, projectile and water jet picking machine/device is monitored and maintained during operation.



Learning Outcome 4.1 - Identify Picking Process

Contents:	<ul style="list-style-type: none"> ▪ Definition of picking and picking process ▪ Different techniques for picking 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): safety cloth, hand gloves, dust mask ▪ Tools and equipment: weaving machine, sample cutter, yarn tension meter, industrial weight scale ▪ Materials: yarns 		
Learning Activities:	Activity	Resource	Student Guide Page
	4.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 4.1.1 ▪ Self-Check Quiz 4.1.1 ▪ Answer Key 4.1.1 	54 56 68
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Picking and picking process is defined ▪ Different techniques of picking are identified and described ▪ Different picking system is carried out as per standard operating procedure 		



Learning Outcome 4.2 - Prepare for Picking

Contents:	<ul style="list-style-type: none"> ▪ Names and uses of personal protective equipment (PPE) ▪ List of main tools and equipment required for picking 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron, ear plug ▪ Tools and equipment: weaving machine, sample cutter, yarn tension meter, tape tensioner, industrial weight scales ▪ Materials: warp beam 		
Learning Activities:	Activity	Resource	Student Guide Page
	3.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 3.2.1 ▪ Self-Check Quiz 3.2.1 ▪ Answer Key 3.2.1 https://www.w3.org/TR/html401/interact/forms.html	<p>40</p> <p>42</p> <p>68</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Personal protective equipment is identified and selected ▪ Tools and equipment are selected as per job requirement 		

Note: Same as for Learning Outcome 3.2 Prepare for Shedding



Learning Outcome 4.3 - Perform Conventional Picking

Contents:	<ul style="list-style-type: none"> ▪ Uses of hand tools and equipment ▪ Types of conventional picking: <ul style="list-style-type: none"> ○ shuttle ○ over picking system ○ under picking system 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron ▪ Tools and equipment: shuttle loom, sample cutter, yarn tension meter, industrial weight scale ▪ Materials: warp and weft yarn 		
Learning Activities:	Activity	Resource	Student Guide Page
	4.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 4.3.1 ▪ Self-Check Quiz 4.3.1 ▪ Answer Key 4.3.1 https://www.youtube.com/watch?v=auEd6gDgJvM	58 60 68
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Hand tools and equipment are used properly ▪ Conventional picking is carried out as per standard operating procedure ▪ Picking device is maintained 		



Learning Outcome 4.4 - Perform Air Jet Picking

Contents:	<ul style="list-style-type: none"> ▪ Uses of hand tools and equipment ▪ Air jet picking system 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, mask, apron ▪ Tools and equipment: air jet weaving machine, sample cutter, yarn tension meter, industrial weight scale ▪ Materials: warp and weft yarns 		
Learning Activities:	Activity	Resource	Student Guide Page
	4.4.1	<ul style="list-style-type: none"> ▪ Information Sheet 4.4.1 ▪ Self-Check Quiz 4.4.1 ▪ Answer Key 4.4.1 https://www.youtube.com/watch?v=6p61-IGZo8c	<p>61</p> <p>63</p> <p>68</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Hand tools and equipment are used properly and safely ▪ Air jet picking is carried out as per standard operating procedure ▪ Air jet picking device is maintained 		



Learning Outcome 4.5 - Perform Rapier, Projectile and Water Jet Picking

Contents:	<ul style="list-style-type: none"> ▪ Use of hand tools and equipment ▪ Picking system: <ul style="list-style-type: none"> ○ Rapier ○ Projectile ○ Water jet 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron and ear plug ▪ Tools and equipment: hand tools, picking system ▪ Materials: yarn 		
Learning Activities:	Activity	Resource	Student Guide Page
	4.4.1	<ul style="list-style-type: none"> ▪ Information Sheet 4.4.1 ▪ Job Sheet 4 ▪ Self-Check Quiz 4.4.1 ▪ Answer Key 4.4.1 	64 66 67 69
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Hand tools and equipment are used properly and safely ▪ Picking is carried out as per standard operating procedure ▪ Picking device is maintained 		

Module 5: Perform beating operation

Module Descriptor:	This module covers the skills, knowledge and attitudes to perform beating operation, which includes the tasks of analysing different beating mechanisms, preparing for beating operation, performing cam and crank beat up, performing beating system with conventional loom and performing beating system with modern loom.	
Nominal Duration:	48 hours	
Learning Outcomes:	5.1.	Analyse different beating mechanisms
	5.2.	Prepare for beating operation
	5.3.	Perform cam and crank beat-up
	5.4.	Perform beating with conventional loom
	5.5.	Perform beating system with modern loom
Performance Criteria:	5.1.	Different beating motions are identified, compared and distinguished.
	5.2.	Primary, secondary and tertiary mechanisms are identified and accurately defined.
	5.3.	Use of different motions in different types of looms are examined.
	5.4.	Work instructions are received and confirmed with supervisor.
	5.5.	Appropriate personal protective equipment (PPE) is identified and selected.
	5.6.	Hand tools and equipment is selected as per job requirement.
	5.7.	Selected hand tools and equipment are used properly and safely.
	5.8.	Cam and crank beat up is carried out as per standard operating procedure.
	5.9.	Mechanism is monitored and maintained during operation to ensure quality production.
	5.10.	Selected hand tools and equipment are used properly and safely.
	5.11.	Beating system using conventional loom is carried out as per standard operating procedure.
	5.12.	Mechanism is monitored and maintained during operation to ensure quality production.
	5.13.	Selected hand tools and equipment are used properly and safely.
	5.14.	Beating system using modern loom is carried out as per standard operating procedure.
	5.15.	Mechanism is monitored and maintained during operation to ensure quality production.



Learning Outcome 5.1 - Analyse Different Beating Mechanisms

Contents:	<ul style="list-style-type: none"> ▪ Types of beating system ▪ Motions of loom: <ul style="list-style-type: none"> ○ primary ○ secondary ○ tertiary ▪ Mechanism of motions: <ul style="list-style-type: none"> ○ shedding ○ picking ○ beating ○ take up ○ let off ○ warp stop ○ warp protector ○ weft replenishment ▪ Types of loom: <ul style="list-style-type: none"> ○ air jet ○ rapier ○ water jet 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron and ear plug ▪ Tools and equipment: weaving machine, sample cutter, yarn tension meter, industrial weight scale ▪ Materials: warp and weft yarns 		
Learning Activities:	Activity	Resource	Student Guide Page
	5.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 5.1.1 ▪ Self-Check Quiz 5.1.1 ▪ Answer Key 5.1.1 	72 73 83
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Beating system is identified ▪ Motions of loom ate identified ▪ Motion mechanisms are identified and defined ▪ Types of loom are identified ▪ Motions of looms are used 		



Learning Outcome 5.2 - Prepare for Beating Operation

Contents:	<ul style="list-style-type: none"> ▪ Names and uses of personal protective equipment (PPE) ▪ List of main tools and equipment required for beating 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, dust mask, apron, ear plug ▪ Tools and equipment: weaving machine, sample cutter, yarn tension meter, tape tensioner, industrial weight scales ▪ Materials: warp beam 		
Learning Activities:	Activity	Resource	Student Guide Page
	3.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 3.2.1 ▪ Self-Check Quiz 3.2.1 ▪ Answer Key 3.2.1 https://www.w3.org/TR/html401/interact/forms.html	40 42 68
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Personal protective equipment is identified and selected ▪ Tools and equipment are selected as per job requirement 		

Note: Same as for Learning Outcome 3.2 Prepare for Shedding



Learning Outcome 5.3 - Perform Cam and Crank Beat-Up

Contents:	<ul style="list-style-type: none"> ▪ Uses of hand tools and equipment ▪ Cam and crank beat up system ▪ Maintenance of beat up system 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): hand gloves, dust mask, apron and ear plug ▪ Tools and equipment: weaving machine, sample cutter, yarn tension meter, tape tensioner, industrial weight scale ▪ Materials: warp and weft yarns 		
Learning Activities:	Activity	Resource	Student Guide Page
	5.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 5.3.1 ▪ Self-Check Quiz 5.3.1 ▪ Answer Key 5.3.1 	<p style="text-align: center;">75</p> <p style="text-align: center;">76</p> <p style="text-align: center;">83</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Tools and equipment are properly used ▪ Cam and crank beating system are carried out as per standard operating system ▪ Beating system is maintained to ensure quality production 		



Learning Outcome 5.4 - Perform Beating System with Conventional Loom

Contents:	<ul style="list-style-type: none"> ▪ Uses of hand tools and equipment ▪ Beating system of conventional loom ▪ Maintenance of beating system 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): hand gloves, dust mask, apron and ear plug ▪ Tools and equipment: weaving machine, sample cutter, yarn tension meter, tape tensioner, industrial weight scale ▪ Materials: warp and weft yarns 		
Learning Activities:	Activity	Resource	Student Guide Page
	5.4.1	<ul style="list-style-type: none"> ▪ Information Sheet 5.4.1 ▪ Job Sheet 5 ▪ Self-Check Quiz 5.4.1 ▪ Answer Key 5.4.1 <p>https://www.cottonworks.com/topics/sourcing-manufacturing/weaving/the-art-of-weaving-basic-functions-of-the-weaving-loom/</p>	<p>78</p> <p>79</p> <p>80</p> <p>83</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Tools and equipment are properly used ▪ Beating system using conventional loom is carried out as per standard operating procedure ▪ Beating mechanism is maintained to ensure quality production 		



Learning Outcome 5.5 - Perform Beating System with Modern Loom

Contents:	<ul style="list-style-type: none"> ▪ Uses of hand tools and equipment ▪ Beating system of modern loom ▪ Maintenance of beating system 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): hand gloves, dust mask, apron and ear plug ▪ Tools and equipment: weaving machine, sample cutter, yarn tension meter, tape tensioner, industrial weight scale ▪ Materials: warp and weft yarns 		
Learning Activities:	Activity	Resource	Student Guide Page
	5.5.1	<ul style="list-style-type: none"> ▪ Information Sheet 5.5.1 	81
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Tools and equipment are properly used ▪ Beating system using modern loom is carried out as per standard operating procedure ▪ Beating mechanism is maintained to ensure quality production 		

Module 6: Identify weaving accessories and fabric faults

Module Descriptor:	This module covers the skills, knowledge and attitudes to identify weaving accessories and fabric faults, which includes the tasks of identifying weaving accessories, identifying fabric faults and testing the quality of the fabric.	
Nominal Duration:	32 hours	
Learning Outcomes:	6.1.	Identify weaving accessories
	6.2.	Identify fabric faults
	6.3.	Test the quality of the fabric
Performance Criteria:	6.1.	Weaving accessories are identified and selected as per job requirement.
	6.2.	Selected weaving accessories are implemented.
	6.3.	Fabric faults are identified and categorised according to severity levels and possible causes are determined.
	6.4.	Identified faults are reported to appropriate authority.
	6.5.	Fabric quality is identified and established.
	6.6.	Fibre and yarn properties are tested.
	6.7.	Test results are reported to appropriate authority.



Learning Outcome 6.1 - Identify Weaving Accessories

Contents:	Weaving accessories: <ul style="list-style-type: none"> ▪ shuttle ▪ shuttle box ▪ picker ▪ beam (cloth, warp) ▪ front rest ▪ lease rod ▪ sley ▪ reed ▪ temple ▪ back rest ▪ dropper 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): gloves, mask, apron and ear plug ▪ Tools and equipment: weaving machine 		
Learning Activities:	Activity	Resource	Student Guide Page
	6.1.1	<ul style="list-style-type: none"> ▪ Information Sheet 6.1.1 ▪ Self-Check Quiz 6.1.1 ▪ Answer Key 6.1.1 	86 89 99
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Weaving accessories are identified and selected as per job requirement ▪ Weaving accessories are used as required 		



Learning Outcome 6.2 - Identify Fabric Faults

Contents:	<ul style="list-style-type: none"> ▪ Types of fabric faults ▪ Causes of fabric faults 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): hand gloves, dust mask, safety shoes, goggles, apron ▪ Tools and equipment: fabric inspection table ▪ Materials: fabric 		
Learning Activities:	Activity	Resource	Student Guide Page
	6.2.1	<ul style="list-style-type: none"> ▪ Information Sheet 6.2.1 ▪ Self-Check Quiz 6.2.1 ▪ Answer Key 6.2.1 https://www.youtube.com/watch?v=iNPsPyTTNl4	90 93 99
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Fabric faults are identified and categorised according to standard system ▪ Causes of fabric faults are dete 		



Learning Outcome 6.3 - Test the Quality of the Fabric

Contents:	<ul style="list-style-type: none"> ▪ Fabric quality ▪ Yarn property 		
Resources Required:	<ul style="list-style-type: none"> ▪ Workplace (simulated or actual) ▪ Personal protective equipment (PPE): hand gloves, mask, apron ▪ Tools and equipment: fabric inspection table ▪ Materials: yarns and fabric 		
Learning Activities:	Activity	Resource	Student Guide Page
	6.3.1	<ul style="list-style-type: none"> ▪ Information Sheet 6.3.1 ▪ Job Sheet 6 ▪ Self-Check Quiz 6.3.1 ▪ Answer Key 6.3.1 <p> http://www-db.deis.unibo.it/courses/TW/DOCS/w3schools/js/js_whereo.asp.html https://www.quackit.com/javascript/examples/ https://www.w3schools.com/js/js_debugging.asp </p>	<p>94</p> <p>97</p> <p>98</p> <p>99</p>
Assessment Criteria:	<ul style="list-style-type: none"> ▪ Fabric quality is checked and identified ▪ Yarn properties are tested as required 		