

Program Guide

for

Senior Mason Helper

*A short term Apprenticeship Curriculum
for
International Labour Organisation/ Time Bound Program
and
World Education/Brighter Future Project*



Council for Technical Education and Vocational Training
CURRICULUM DEVELOPMENT DIVISION

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Introduction

The International Programme on the Elimination of Child Labour (IPEC) of the International Labour Organisation (ILO) has promoted a variety of measures to progressively eliminate child labour, giving priority to the eradication of the worst forms of child labour in Nepal. IPEC's interventions are implemented in partnership with the government, trade unions, employer's associations and non-governmental organizations. One of the innovative programmes promoted by IPEC include the Time Bound Programme (TPB), which aims to prevent and eliminate selected worst forms of child labour, as defined in ILO Convention No. 182, within a defined period of time.

The objective of the Time-Bound Programme (TBP) is to contribute to the Master Plan of His Majesty's Government of Nepal for the Elimination of Child Labour. The Time-Bound Programme is going to take various steps in eliminating the identified seven worst forms of child labour in Nepal: child porters, child domestics, children in trafficking, child raggickers, children in carpet factories, children in mine/stone quarries and child bonded labour.

The educational interventions of the TBP in Nepal have been among the most effective instruments for the prevention of child labour and the rehabilitation of former child workers. The TBP & Brighter Future Programme (BFP) of World Education (WEI) measures promote access to free education and appropriate vocational training and apprenticeship opportunities for all children and youth removed from the identified worst forms of child labour. In this context, ILO and World Education (WEI) have taken the initiative to design apprenticeship-training programs in various trade areas for the older children working in the worst forms of child labour.

Rational of the programme

The vocational trainings in Nepal have resulted mixed outcomes. Although, there is a rapid proliferation of the technical and vocational training providers and the youth enrolment has been in increasing trend, there are some fundamental problems. Basically, the training programmes are much structured and the training delivery is made in institution-based environment. Similarly, there are minimum standard that needs to be maintained for enrolment. Considering the low literacy background of children engaged in the identified worst forms of child labour, the standard for admission to vocational training institutes is too high. Furthermore, many vocational training institutes have a very high cost. Therefore, ILO and WEI have taken the initiative to look more carefully into apprenticeship models as an alternative to vocational training for older working children.

According to IPEC Nepal and WEI, the term apprenticeship for TBP refers to supervised on-the-job training that provides practical skills and theoretical knowledge and also the experience of a work environment. It is a learning method that prepares a young person at least 14 years of age for a real job by giving him/her a set of well-defined occupational abilities through close supervision and guidance from a potential employer, or from a mentor. Apprenticeship can build confidence in young people, and remind them that they have a positive role to play in their community, and in their country.

Overall objectives

The overall objective of the programme is to eliminate exploitative and hazardous child labour by providing them with skills and knowledge to attain better employment and economic opportunities and linking them to national development efforts including economic, educational and labour market policies of Nepal.

Terminal objectives

After the completion of this course an apprentice will be able:

- to perform works related to foundation,
- to perform cement sand mortar works,
- to perform measurement and unit conversion,
- to perform masonry(brick, stones and blocks) and curing works,
- to perform bar bending and binding works, and
- to perform scaffolding works.

Course description

This course is designed to help the apprentices to provide basic knowledge and skills on masonry works. The apprentices will develop their competencies working in the construction site under the supervision of mason in an unstructured way. This course especially provides skills focusing on taking measurements, making foundation, mortar preparation and application, masonry and curing works, and erection of scaffolding. This course also provides skills on bar bending and binding works.

Target group

This programme is targeted to the older children engaged in the worst forms of child labour who are above 14 years old. In Nepal, the worst form of child labour include;

1. Domestic child labourers,
2. Child porters,
3. Child bonded labourers,
4. Children involved in trafficking,
5. Rag picking children,
6. Child labourers in carpet industry, and
7. Child labourers in stone quarries and mines.

Group size

The number of apprentice can vary depending upon the facilities available with the apprenticeship-training providers. **Ideally, this should not exceed five in numbers.**

Entry criteria

An apprentice must be or have

1. Engaged in the worst form of child labour.
2. Between 14 to 18 years old.
3. Interest and commitment in apprenticeship training.
4. Current employer's/guardian's consent.
5. Basic literacy.

Duration

Three to five months (2 to 3 hours per day and 5 to 6 days a week) OR as per the agreement between apprenticeship provider and TBP implementing organisation. However, the theory and practical time should be arranged in the ratio of 20:80.

Medium of instruction Nepali.

Pattern of attendance

The apprentice should secure 90% attendance during the training period.

Certificate requirements

National Skill Testing Board (The Skill Testing Division of the Council for Technical Education and Vocational Training, CTEVT) according to its requirement administers skill tests and provides certificate to apprentice.

Apprenticeship provider's qualification

An apprenticeship provider must have:

1. Enthusiasm and motivation to train the older children in the worst form of child labour
2. Qualification and experience in training.
3. Proper tools, equipment and space for training.
4. Safe working environment.
5. Possibility of employment opportunity.

Trainees evaluation

The apprenticeship-training providers will continuously evaluate the apprentice based on their performance.

Equipment, tools and materials

Depending upon the frequency of uses and the number of apprentice the number/quantity of tools/equipment/material varies.

S.No.	Name of the tools/equipment	Units
1.	Measuring tape	
2.	Trowel	
3.	Plumb bob	
4.	Knife / brick cutter	
5.	Thread	
6.	Chisel	
7.	Hammer	
8.	Try square	
9.	Level pipe	
10.	Die	
11.	Hacksaw frame and blade	
12.	Saw	
13.	Shovel	
14.	Mortar pan	
15.	Bucket	
16.	Wire brush	
17.	Cue box	
18.	Paw	
19.	Cane basket	
20.	<i>Doko</i>	
21.	Helmet	
22.	Boot	

Summary of Duties and Competencies

S. No	Duties and Competencies/Tasks/Skills	Time (in hours)		
		Th.	Prac.	Total
A.	Perform Foundation Works			
	A.1. Perform foundation site cleaning.	½	1	1½
	A.2. Asst to layout foundation.	1	2	3
	A.3. Dig foundation.	1	2	3
	A.4. Perform bench press (<i>Dhurmus</i>).	½	½	1
	A.5. Assist to level foundation base.	½	1	1½
	A.6. Perform sand filling.	½	1	1½
	A.7. Perform soiling.	½	1	1½
	A.8. Perform PC C leveling.	½	2	2½
	A.9. Assist wall layout (to support rooms, stair, toilet).	½	2	2½
	A.10. Clean tools.	½	½	1
B.	Perform Mortar Works			
	B.1. Clean / wash sand	½	½	1
	B.2. Strain sand	½	1	1½
	B.3. Prepare PCC mixture	1	1	2
	B.4. Prepare RCC mixture	1	1	2
	B.5. Prepare mortar for brick/stone laying	½	1	1½
	B.6. Prepare mortar for punning	½	1	1½
C.	Perform Measurement Works			
	C.1. Measure wall angle level.	½	1	1½
	C.2. Measure sill level.	½	½	1
	C.3. Measure door window size.	½	½	1
	C.4. Measure lintel level.	½	½	1
	C.5. Measure top level.	½	½	1
	C.6. Calculate area.	½	1	1½
	C.7. Calculate volume.	½	1	1½
D.	Perform Brick / Stone/ Block Laying			
	D.1. Soak brick.	½	1	1½
	D.2. Perform double brick laying.	1	2	3
	D.3. Perform 1½ brick laying.	½	2	2½
	D.4. Perform single brick laying.	½	2	2½
	D.5. Perform ½ brick laying.	½	2	2½
	D.6. Assist to fit door.	½	1	1½
	D.7. Assist to fit window.	½	1	1½
	D.8. Clean wall site.	½	1	1½
	D.9. Clean brick with wire brush	½	1	1½
	D.10. Perform single brick laying	½	2	2½
	D.11. Perform simple stone laying in foundation	½	1	1½
E.	Perform Scaffolding Works			
	E.1. Assist to erect scaffolding poles	1	3	4
	E.2. Assist to fix horizontal pole	½	2	2½
	E.3. Tie poles	½	2	2
	E.4. Fit plank	½	2	2½
	E.5. Fit safety pole	½	2	2½
	E.6. Dismantle scaffolding	½	1	1½

S. No	Duties and Competencies/Tasks/Skills	Time (in hours)		
		Th.	Prac.	Total
F.	Perform curing works			
	F.1. Perform wall curing	1	2	3
	F.2. Perform column curing	½	2	2½
	F.3. Perform slab curing	½	2	2½
	F.4. Perform plaster curing	½	2	2½
	F.5. Perform punning curing	½	2	2½
G.	Perform bar bending			
	G.1. Assist to prepare base reinforcement net	1	2	3
	G.2. Assist to prepare column	½	2	2½
	G.3. Assist to prepare dwarf (share wall)	½	2	2½
	G.4. Assist to prepare beam	2	3	5
	G.5. Assist to prepare RCC slab	1	3	4
	G.6. Assist to prepare toilet slab	½	2	2½
	G.7. Assist to prepare kitchen slab	½	2	2½
H.	Communicate With Others			
	H.1. Communicate with auto mechanics.	1	2	3
	H.2. Communicate with client.	1	2	3
	H.3. Communicate with employer.	1	2	3
	H.4. Communicate with colleagues.	1	2	3
	H.5. Communicate with supervisor.	1	2	3
	H.6. Communicate with supplier.	1	2	3
	H.7. Communicate with visitor.	1	2	3
	H.8. Communicate with junior.	1	2	3
	H.9. Communicate with automobile parts shops.	1	2	3
	H.10. Receive telephone call.	1	2	3
I.	Grow Professionally			
	I.1. Consult mason.	1	2	3
	I.2. Visit equipped working places/sights.	1	3	4
	I.3. Read related materials (Documents, manuals, brochures etc.).	1	3	4
	I.4. Seek trainings places /programs.	1	4	5
	I.5. Attend training/ seminar/workshops.	1	2	3
	I.6. Watch Audio Visuals.	1	2	3
	I.7. Browse World Wide Web.	1	2	3
	Total	49	115	164

Duty 1: Perform Foundation Works.

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
1.	Perform foundation site cleaning.	<input checked="" type="checkbox"/> Site cleaning and Simple levelling procedure. <input checked="" type="checkbox"/> Use of simple hand tools (Spade, Shovel, Pick-axe, Rammer etc.).	½	1	1½
2.	Assist to layout foundation.	<input checked="" type="checkbox"/> 3,4,5 method. <input checked="" type="checkbox"/> Use of Mason's square, Plumb bob, Spirit level, Two-foot four-fold ruler. <input checked="" type="checkbox"/> Marking procedure	1	2	3
3.	Excavate foundation.	<input checked="" type="checkbox"/> Definition and purposes of foundation <input checked="" type="checkbox"/> Types of foundation (Wall footings and Column footings only). <input checked="" type="checkbox"/> Depth of foundation. <input checked="" type="checkbox"/> Foundation on sloping ground. <input checked="" type="checkbox"/> Precautions needed for excavation of foundation in waterlogged sites.	1	2	3
4.	Perform ramming (<i>Dhurmus</i>)	<input checked="" type="checkbox"/> Ramming tools (Rammer) and procedure. <input checked="" type="checkbox"/> Optimum Moisture Content.	½	½	1
5.	Assist to level foundation base.	<input checked="" type="checkbox"/> Measuring foundation level. <input checked="" type="checkbox"/> Handling procedure of spirit and pipe level.	½	1	1½
6.	Perform sand filling.	<input checked="" type="checkbox"/> Purpose and procedure of sand filling.	½	1	1½
7.	Perform soiling.	<input checked="" type="checkbox"/> Purpose and procedure of soiling.	½	1	1½
8.	Perform Plain Cement Concrete (PCC) leveling.	<input checked="" type="checkbox"/> Ramming green PCC. <input checked="" type="checkbox"/> Handling procedure of spirit and pipe level.	½	2	2½
9.	Assist to layout wall (to support rooms, stair, toilet).	<input checked="" type="checkbox"/> Foundation requirements of filler walls	½	2	2½
10.	Clean tools.	<input checked="" type="checkbox"/> Purpose and procedure of the cleaning tools.	½	½	1

Duty 2: Perform Mortar Works.

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
1.	Clean / wash sand.	<input checked="" type="checkbox"/> Removing the foreign	½	½	1

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
		materials from the sand.			
2.	Strain sand.	<input type="checkbox"/> Sand size. <input type="checkbox"/> Sieving procedure. <input type="checkbox"/> Quality of good sand.	1/2	1	1 1/2
3.	Prepare PCC mixture.	<input type="checkbox"/> Constituents of Plain Cement Concrete. <input type="checkbox"/> Function of fine aggregate (cement) and coarse aggregates. <input type="checkbox"/> Types of cement (Ordinary and White Cement only). <input type="checkbox"/> Mixing procedure. <input type="checkbox"/> Laying procedure of green PCC.	1	1	2
4.	Prepare Reinforced Cement Concrete mixture.	<input type="checkbox"/> Constituents of Reinforced Cement Concrete. <input type="checkbox"/> Function of fine aggregate (cement), coarse aggregates and reinforcement. <input type="checkbox"/> Pouring and compaction of green RCC. <input type="checkbox"/> Reasons of segregation and honey comb	1	1	2
5.	Prepare mortar for brick/stone lying.	<input type="checkbox"/> Mixing ratio and procedure <input type="checkbox"/> Water content	1/2	1	1 1/2
6.	Prepare mortar for punning.	<input type="checkbox"/> Mixing ratio and procedure <input type="checkbox"/> Purpose of punning	1/2	1	1 1/2

Duty 3: Perform Measurement Works.

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
1.	Measure wall angle level.	<input type="checkbox"/> Concept of right angle. <input type="checkbox"/> Unit of angular measurement.	1/2	1	1 1/2
2.	Measure sill level.	<input type="checkbox"/> Measurement units (FPS, MKS and SI units) <input type="checkbox"/> Conversion of units from feet to meter and vice-versa. <input type="checkbox"/> Definition of sill level.	1/2	1/2	1
3.	Measure door/ window size.	<input type="checkbox"/> Concept of length, breadth and height or depth.	1/2	1/2	1
4.	Measure lintel level.	<input type="checkbox"/> Definition of lintel level	1/2	1/2	1
5.	Measure top level.	<input type="checkbox"/> Definition of top level of the building.	1/2	1/2	1
6.	Calculate area.	<input type="checkbox"/> Concept of area. <input type="checkbox"/> Formula for area	1/2	1	1 1/2

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
		calculation. <input checked="" type="checkbox"/> Unit of area (m ² or ft ²)			
7.	Calculate volume.	<input checked="" type="checkbox"/> Concept of volume. <input checked="" type="checkbox"/> Formula for volume calculation. <input checked="" type="checkbox"/> Unit of volume (m ³ or ft ³)	½	1	1½

Duty 4: Perform Brick / Stone/ Block Lying.

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
1.	Soak brick.	<input checked="" type="checkbox"/> Purpose of soaking bricks. <input checked="" type="checkbox"/> Brick types. <input checked="" type="checkbox"/> Properties of good bricks.	½	1	1½
2.	Perform double brick thick wall lying.	<input checked="" type="checkbox"/> Terminologies. <input checked="" type="checkbox"/> Bonds in brick works (English, and Flemish only) <input checked="" type="checkbox"/> Procedure of applying mortar in brick masonry. <input checked="" type="checkbox"/> Level of each course of the brick.	1	2	3
3.	Perform 1½ brick thick wall lying.	<input checked="" type="checkbox"/> Refer task 2	½	2	2½
4.	Perform single brick thick wall lying.	<input checked="" type="checkbox"/> Refer task 2	½	2	2½
5.	Perform ½ brick thick wall lying.	<input checked="" type="checkbox"/> Refer task 2	½	2	2½
6.	Assist to fit door.	<input checked="" type="checkbox"/> Terminologies. <input checked="" type="checkbox"/> Erection of the doorframe. <input checked="" type="checkbox"/> Hold fast and its function. <input checked="" type="checkbox"/> Procedure of fixing hold fast on the wall.	½	1	1½
7.	Assist to fit window.	<input checked="" type="checkbox"/> Refer task 6	½	1	1½
8.	Clean wall site.	<input checked="" type="checkbox"/> Removing excess soil, mortar and bricks from the site.	½	1	1½
9.	Clean brick with wire brush.	<input checked="" type="checkbox"/> Purpose of cleaning brick with wire.	½	1	1½
10.	Perform single block lying.	<input checked="" type="checkbox"/> Properties of good block. <input checked="" type="checkbox"/> Mortar mix requirement.	½	2	2½
11.	Perform simple stone laying in foundation.	<input checked="" type="checkbox"/> Different types of stone masonry (dry and with mud and cement sand mortar). <input checked="" type="checkbox"/> Properties of good stones. <input checked="" type="checkbox"/> Mortar requirement.	½	1	1½

Duty 5: Perform Scaffolding Works.

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
1.	Assist to erect scaffolding poles.	<ul style="list-style-type: none"> ☒ Purpose of scaffoldings ☒ Types and quality of scaffolding poles. ☒ Erection procedure of the poles (in soil, hard and water logged surfaces) ☒ Fixing procedure (nailing, various types of ropes and knots) 	1	3	4
2.	Assist to fix horizontal poles.	<ul style="list-style-type: none"> ☒ Quality of the horizontal poles. ☒ Fixing procedure (nailing, various types of ropes and knots) 	½	2	2½
3.	Tie poles.	<ul style="list-style-type: none"> ☒ Purpose of tie poles (to prevent sway etc.) ☒ Quality of tie poles. 	½	2	2
4.	Fit planks.	<ul style="list-style-type: none"> ☒ Quality of good planks ☒ Fixing procedure of planks (nails, roping etc.) 	½	2	2½
5.	Fit safety pole.	<ul style="list-style-type: none"> ☒ Purpose of safety poles. ☒ Fixing procedure (nails, roping poles etc.) 	½	2	2½
6.	Dismantle scaffolding.	☒ Dismantling procedure.	½	1	1½

Duty 6: Perform curing works.

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
1.	Perform wall curing.	<ul style="list-style-type: none"> ☒ Definition and purpose of curing. ☒ Steps for wall curing (wrapping gunny bags, canvas, jute etc. and sprinkling water over the surface). ☒ Curing interval and period. 	1	2	3
2.	Perform column curing.	<ul style="list-style-type: none"> ☒ Steps for column curing (wrapping gunny bags, canvas, jute etc. and sprinkling water over the surface). ☒ Curing interval and period. 	½	2	2½
3.	Perform slab curing.	☒ Steps for slab curing (impounding water).	½	2	2½

		☒ Curing interval and period.			
4.	Perform plaster curing.	☒ Steps for plaster curing. ☒ Curing interval and period.	½	2	2½
5.	Perform punning curing.	☒ Steps for punning curing. ☒ Curing interval and period.	½	2	2½

Duty 7: Perform bar bending.

S. No	Competencies	Related Technical Knowledge	Time (in hours)		
			Th.	Prac.	Total
1.	Assist to prepare base reinforcement net.	☒ Reinforcing bars: Types (ordinary, ribs etc.), diameter and area of the reinforcing bars and its calculation, total steel area calculation. ☒ Main and distribution bars and their functions. ☒ Cover.	1	2	3
2.	Assist to prepare column	☒ Erecting column main bars. ☒ Fixing rings. ☒ Earthquake considerations. ☒ Load on column (simple concept only).	½	2	2½
3.	Assist to prepare dwarf (share wall).	☒ Importance of dwarf wall (share wall). ☒ Function of dwarf wall (share wall). ☒ Procedure.	½	2	2½
4.	Assist to prepare beam.	☒ Introduction to simply supported and common cantilever beams. ☒ Concept of effective and clear span, beam depth and cover. ☒ Loads on beams: simply supported and cantilever (simple concept only). ☒ Reinforcement requirement of simply supported and cantilever beam. ☒ Tensile reinforcement and shear reinforcement (stirrups). ☒ Earthquake considerations.	2	3	5
5.	Assist to prepare RCC slab.	☒ Concept of slab (one-way and two-way) ☒ Main and distribution reinforcements.	1	3	4

		<input type="checkbox"/> Earthquake considerations.			
6.	Assist to prepare toilet slab.	<input type="checkbox"/> Refer task 5.	½	2	2½
7.	Assist to prepare kitchen slab.	<input type="checkbox"/> Refer task 5.	½	2	2½

Duty 8: Communicate with others.

S. No	Competencies	Related Technical Knowledge	Time (in hrs.)		
			Th.	Prac.	Total
1.	Communicate with auto mechanics.	<input type="checkbox"/> Meaning and importance of communication. <input type="checkbox"/> Type of communication (oral, sign/gesture and written). <input type="checkbox"/> Oral communication techniques. <input type="checkbox"/> Communication for cooperative/collaborative tasks. <input type="checkbox"/> Learning and information sharing. <input type="checkbox"/> Prior consultation on assigned work with the seniors. <input type="checkbox"/> Uses of appropriate communication language (with higher and lower position staffs.)	1	2	3
2.	Communicate with client.	<input type="checkbox"/> Importance of listening and viewing the client's opinions (offering opinions, supporting statement and questions and clarification of the proposed job).	1	2	3
3.	Communicate with employer.	<input type="checkbox"/> Refer to task 2	1	2	3
4.	Communicate with colleagues.	<input type="checkbox"/> Importance of interpretation and explanation of the proposed job with friends.	1	2	3
5.	Communicate with supervisor.	<input type="checkbox"/> Refer to task 1	1	2	3

S. No	Competencies	Related Technical Knowledge	Time (in hrs.)		
			Th.	Prac.	Total
6.	Communicate with supplier.	<input checked="" type="checkbox"/> Refer to task 2	1	2	3
7.	Communicate with visitor.	<input checked="" type="checkbox"/> Refer to task 2	1	2	3
8.	Communicate with junior.	<input checked="" type="checkbox"/> Refer to task 4	1	2	3
9.	Communicate with automobile parts shops.	<input checked="" type="checkbox"/> Demand and supply order. <input checked="" type="checkbox"/> Bill / invoice. <input checked="" type="checkbox"/> Material supply and delivery.	1	2	3
10.	Receive telephone call.	<input checked="" type="checkbox"/> Meaning, importance and purpose of telephone <input checked="" type="checkbox"/> Telephone receiving technique <input checked="" type="checkbox"/> Etiquette of receiving telephone call. <input checked="" type="checkbox"/> Message writing technique.	1	2	3

Duty 9: Grow Professionally.

S. No	Competencies	Related Technical Knowledge	Time (in hrs.)		
			Th.	Prac.	Total
1.	Consult mason.	<input checked="" type="checkbox"/> Importance of participating in career exploration activities with the mason.	1	2	3
2.	Visit other's working place/ sight.	<input checked="" type="checkbox"/> Importance of learning from different workplaces and site visits.	1	3	4
3.	Read related materials (Documents, manuals, brochures)	<input checked="" type="checkbox"/> Importance of learning from trade relevant documents, manuals and other job related sheets.	1	3	4
4.	Attend training/ seminar/workshops	<input checked="" type="checkbox"/> Need of growing professionalism. <input checked="" type="checkbox"/> Importance of career development opportunities inside and outside the organization.	1	4	5
5.	Watch Audio-Visual.	<input checked="" type="checkbox"/> Familiarization of TVs	1	2	3

S. No	Competencies	Related Technical Knowledge	Time (in hrs.)		
			Th.	Prac.	Total
		channel/A/V aids. ☒ Importance of leaning from A/V.			
6.	Browse World Wide Web.	☒ Familiarization with computer. ☒ WWW browsing techniques.	1	2	3
7.	Seek trainings places / programs.	☒ Importance of trainings in career development. ☒ Possible training providers/institutes for refresher trainings.	1	2	3