

XI. STARTING OF THE BUILDING ACTIVITIES

After weeks of preparing, talking, mapping, drawing, planning and much more, it is finally time for you to start building the house. We know that the preparations took a lot of time and most likely you, your family and the community are eager to see what would be the results of it all. We know that the expectations are high and that you feel a little anxious. If it helps we build a house near Suam in 3 weeks' time due to the great community involvement (Figure 1). So remember that the key to a successful self-reliant project is the involvement of the family, their friends, family and community members. Their involvement depends on how happy they are, so make sure that you regularly chat with each of them and that you check if their expectations are being met (reward, knowledge exchange). The result of your project might not be a fully completed house, but a family and community capable of finishing it by themselves and more importantly planning, building and reproducing many more of them!



Figure 155: Church kitchen construction team

The key to enable your family and their community to continue building without your help is the effectiveness of the way you transfer your knowledge and skills. In this next section we will briefly explain how you can describe various skill levels according to an activity, how you can set skill goals for the family/community and which 'training' is appropriate for the described skill level. Effectively planning and evaluating how you trained the skills of the

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family/community. Ultimately enabling to maintain, extend or replicate the articulated solution by themselves.

Step number	Activity	September							October								
		Date	20	21	22	23	24	25	26	27	28	29	30	1	2	3	
		Day	WE	TH	FR	SA	SO	MO	TU	WE	TH	FR	SA	SO	MO	TU	
1	Measuring	1															
	Materials: string (Josephine), branches(1															
	Tools: tape measure (John), panga (Family)	1															
	People: Joseph, George, John	1															
	2	Excavation			2												
		Materials:			2												
		Tools: 2x shovel (Family and Dorkas)			2												
	People: Joseph			2													
	3	Substrate							3								
Materials: marram (Joseph), water (Family)								3									
Tools: 2x shovel (Family and Dorkas), panga (Family)								3									
People: Joseph, Francis							3										
4	Compacting surface								4								
	Materials: water (Family)								4								
	Tools: wooden compacter or large branch								4								
People: Joseph, Francis								4									
5	Foundation Slab									5							
	Materials: sand, ballast, cement (shop), water (Family)									5							
	Tools: 2x shovels (Famili and Dorkas)									5							
People: Joseph, John									5								
6	Masonry mixing										6						
	Materials: sand, cement (shop) and water (Family)										6						
	Tools: 2x shovel (Family and Dorkas)										6						
People: Joseph, John										6							
7	Masonry brick laying											7					
	Materials: string (Josephine), branches(Family)											7					
	Tools: 2xshovel (Family and Dorkas), tape measure (John)											7					
People: Joseph, Francis, John											7						
8	Covering trench												8				
	Materials:												8				
	Tools: 2xshovel (Family and Dorkas), panga (Family)												8				
People: Joseph												8					
9	Compacting surface														9		
	Materials:														9		
	Tools: wooden compacter or large branch														9		
People: Joseph, Francis														9			
	Deadline Foundation															9	

Figure 156: Example of a family/community planning

4. ACTIVITIES

Previously we used the following phases to generally describe the building process of a local dwelling by:

- Preparation
- Foundation
- Floor
- Walls
- Roof
- Finishes

Based on these phases you made a planning for the family and all involved community members that will help during the construction of the house (Figure 2). In this planning you have described the activities per phase and added the needed/planned capacities:

In each activity you planned when a certain skill level is required to successfully execute that activity. Not only the availability of manpower, tools and resources are important, also the availability of knowledge and skills. Some of the planned activities follow the skills of the family/community, however, some of them will be completely new to them. To make sure they get the right training this chapter will help you to articulate that training according to their current capacities. Before you can start we ask you to make a list of all the activities organized per building phase (see: Figure 3). In the example you will find some of the activities double, this is prepared as some of the activities will involve multiple skills (see: Figure 4).

Preparation & Positioning	1.1	Locating: Orientation
	1.2	Locating: Orientation
	1.3	Locating: Measuring
	1.4	Locating: Calculating
	2.1	Pegging: Collecting
	2.2	Pegging: Carrying
	2.3	Pegging: Cutting
	2.4	Pegging: Positioning
Foundation	3.1	Ground preparation
	3.2	Ground preparation
	4.1	Ground improvement
	4.2	Ground improvement
	5.1	Foundation Slab/Substrate
	5.2	Foundation Slab/Substrate
	6.1	Foundation Wall
	6.2	Foundation Wall
	7.1	Filling Trench
	7.2	Filling Trench
Floor	8.1	Ground preparation
	9.1	Ground improvement
	9.2	Ground improvement
	9.3	Ground improvement
	10.1	Floor edge making; casting
	10.2	Floor edge making; casting
	10.3	Floor edge making; casting
	10.4	Floor edge making; casting
	10.5	Floor edge placing; casting
	11.1	Steelwork floor
	11.2	Steelwork floor
	11.3	Steelwork floor
12.1	Floor casting	
12.2	Floor casting	

Figure 157: Example of activities for constructing a brick house

The more detailed you make the activities the more certain you will be of the project running smoothly and with an effective knowledge transfer. Forgetting activities might urge you to find tools and

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resources on an unexpected moment. Moreover, skipping activities in skill training might lead to the inability of the family/community to follow and understand the building process.

5. SKILLS

According to the previously made overview you can describe multiple skills needed to execute the task ahead. In the example below (Figure 4) we differentiate the skills according to a certain role in the building process: Builder (general tasks), ground worker, masonry, carpenter, concrete worker and steel worker, etc.

Preparation & Positioning	1.1	Locating: Orientation	Builder/Community: orientating social (openings)
	1.2	Locating: Orientation	Builder/Community: orienting Climate
	1.3	Locating: Measuring	Builder: measuring distance
	1.4	Locating: Calculating	Builder: calculating (size and distance)
	2.1	Pegging: Collecting	Builder: collecting (timber/sticks)
	2.2	Pegging: Carrying	Builder: carrying (timber/sticks)
	2.3	Pegging: Cutting	Builder: cutting/trimming (timber/sticks)
	2.4	Pegging: Positioning	Builder: positioning (hit into ground)
Foundation	3.1	Ground preparation	Groundworker: measuring
	3.2	Ground preparation	Groundworker: excavating soil
	4.1	Ground improvement	Groundworker: shovelling soil
	4.2	Ground improvement	Groundworker: compacting surface
	5.1	Foundation Slab/Substrate	Concrete worker: mixing
	5.2	Foundation Slab/Substrate	Concrete worker: pouring
	6.1	Foundation Wall	Masonry: mixing wall mortar
	6.2	Foundation Wall	Masonry: laying wall brick
	7.1	Filling Trench	Groundworker: covering trench
7.2	Filling Trench	Groundworker: compacting surface	
Floor	8.1	Ground preparation	Groundworker: excavating soil
	9.1	Ground improvement	Groundworker: floor substrate Hardcore
	9.2	Ground improvement	Groundworker: floor substrate Substrate
	9.3	Ground improvement	Groundworker: compacting surface
	10.1	Floor edge making; casting	Carpentry: measuring timber needed
	10.2	Floor edge making; casting	Carpentry: measuring on timber
	10.3	Floor edge making; casting	Carpentry: cutting timber to size
	10.4	Floor edge making; casting	Carpentry placing timber on floor
	10.5	Floor edge placing; casting	Carpentry: leveling timber according to top floor
	11.1	Steelwork floor	Steelworker: cutting iron mesh
	11.2	Steelwork floor	Steelworker: connecting iron mesh placing
	11.3	Steelwork floor	Steelworker: spacing iron mesh
12.1	Floor casting	Concrete worker: mixing	
12.2	Floor casting	Concrete worker: pouring	

Figure 158: Example of activities with their various skills

All the mentioned skills can be described in various levels of understanding the skill. For this purpose we can differentiate six levels of skills:

- 0: Unknown
- 1: Beginner
- 2: Familiar
- 3: Proficient

- 4: Expert
- 5: Teacher

Unknowing (0): Means that you are not familiar with for what purpose and how a certain activity needs to be performed/or you are unaware of the activity at all.

Beginner (1): Means that you have basic understanding of the purpose of a certain activity but, you do not know how to perform it

Familiar (2): Means that you have a basic understanding for what purpose and how a certain activity needs to be performed. You are not able to perform the activity precisely and without errors.

Proficient (3): Means that you have a substantial understanding for what purpose and how an activity needs to be performed. You can work accurately without mistakes.

Expert (4): Means that you have a profound understanding of the activity. You are able to synthesize alternatives ways to perform the activity, improving its speed, accuracy and the quality of the outcome.

Teacher (5): Means that you are an expert in your field and that you have the ability to transfer your knowledge and skills in a suitable manner.

Now based on these six skill levels you can describe skills according to your activity. In the example below we show the skills levels connected to cultural orientation of the house (design phase). Although this might not be perceived at first as a skill, it is highly important in the articulation of the house. As skill level 5 enables you to teach and does not contribute directly to your level of understanding, this is left out of the skill overview. However, enabling your family or community members to teach each other would be highly admirable, it will require substantial additional training.

Activity nr.				
		1 Locating	Skill Level (0-5)	Description
		Skills:		
1.1	Skill 1	Cultural Orientation	0 Unknowing	Does not now to orient culturally
			1 Beginner	Understands basic layout of family compound
			2 Familiar	Understands family hierarchy, position house and orientation
			3 Proficient	Is able to orient the building according to cultural norms
			4 Expert	Is able to come up with other ways to orient a building according to cultural norms

Figure 159: Example of skill level descriptions in a reseearch/design activity

To understand how you measure and evaluate the skills, it is of vital importance that you describe the skill levels per activity for the whole house. In the attached excel file (effective knowledge transfer) we listed an example of the skill levels per phase for the

realization of a regular brick house on Mt. Elgon. In the following step we will help you to identify the skill gap per activity.

6. IDENTIFYING THE SKILL GAP

Based on the observations and interviews you took you can estimate the existing skill level of the family/community. If you have any doubts or questions about the skills make sure you confirm them with the family/community. Any major changes on the training day itself might lead to some confusion and misunderstanding.

	nr.	Activity	Skill	Existing Skill level	Desire	Teaching direction
Preparation & Positioning	1.1	Locating: Orientation	Builder/Community: orientating social (openings)	3 Proficient	no	Inhabitant-Team
	1.2	Locating: Orientation	Builder/Community: orientating Climate	3 Proficient	yes	4 Expert
	1.3	Locating: Measuring	Builder: measuring distance	0 Unknowing	yes	2 Familiar
	1.4	Locating: Calculating	Builder: calculating (size and distance)	1 Beginner	yes	2 Familiar
	2.1	Pegging: Collecting	Builder: collecting (timber/sticks)	4 Expert	no	Inhabitant-Team
	2.2	Pegging: Carrying	Builder: carrying (timber/sticks)	4 Expert	no	Inhabitant-Team
	2.3	Pegging: Cutting	Builder: cutting/trimming (timber/sticks)	4 Expert	no	Inhabitant-Team
	2.4	Pegging: Positioning	Builder: positioning (hit into ground)	3 Familiar	yes	5 Expert

Figure 160: Example overview of existing and desired skill levels

Based on the skill levels you described the next step is to identify which level of the skill you think is needed to perform the activity. Although it is just estimation, it will help you to categorize different skill levels for different activities. In the example above (Figure 6) this is listed as the desired skill level. When you compare the existing skill level with the desired skill level you can evaluate if there is a need for improvement.

It is important to realize that some of the family/community skills are better than your own. Therefore, although the desired skill is available with the family/community, it might not be for you as a team. In this case you might setup training for yourself where the family/community teaches you. In the column teaching direction you can state if the family/community will train you (inhabitant-team) or that you will train the family/community (team-inhabitant).

7. IDENTIFYING THE TRAINING METHOD

Every skill level requires a different training to transfer the knowledge from the trainer to the trainee. According to Dale's cone of experience (Figure 7) the type of training has a substantial impact on what a trainee is able to remember/learn (effectiveness of the knowledge transfer). Here the cone ranges from more receiving methodologies (reading, listening and watching), to applied

methodologies (demonstrate, apply and practice) and finishing with empowering methodologies (analyse, design and evaluate).

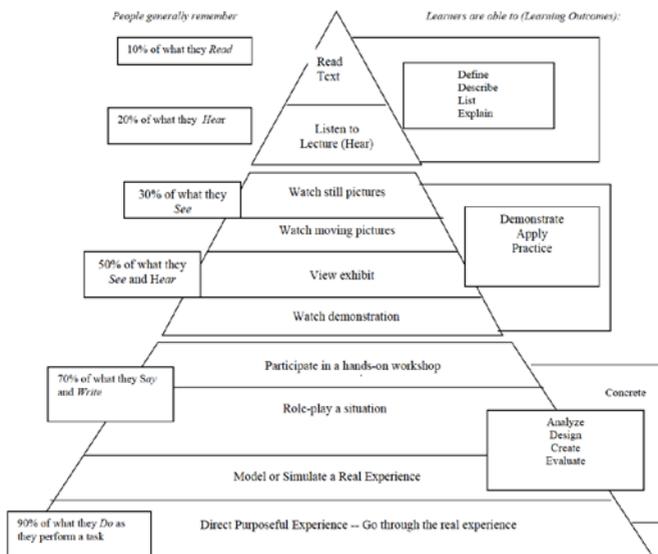


Figure 161: Adapted from E. Dale, *Audiovisual Methods in Teaching*, 1969, NY: Dryden Press.

In the excel file (effective knowledge transfer) you will find a tab called: Effective knowledge transfer. Here three different categories are described: Learning by Instruction (LBI), Learning on the Job (LOJ) and Teaching on the Job (TOJ). The lowest skill levels describe methods that transfer the theory behind the skill or instruct the trainee how to perform the skill. In most cases people have an idea on how (knowledge/basic understanding) a certain skill should be performed (sawing, hammering, etc.) but lack the practical understanding of how it is performed. In this first category we identified the following levels based on Dale's cone:

(skill level 0-0,5) Verbal Instructions: Tutor explains to inhabitants how to execute task. Gives general notions/ theory on a certain activity.

(skill level 0,5-1) Verbal instruction with demonstration: Tutor explains to inhabitants how to execute task. Gives general notions/ theory on a certain activity. Shows with attributes how the task should be performed.

(skill level 1-1,5) Reading book or text: Tutor explains why/how a given book or text adds understanding on activity or task. Inhabitant reads.

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(skill level 1,5-2) Viewing video or pictures: Tutor explains why/how a given video or picture adds understanding on activity or task. Inhabitant views.

(skill level 2-2,5) Practical instruction: Tutor shows and explains how a specific activity/task should be performed. Inhabitant tries to replicate without help (learning from mistakes).

In the second category the average level skills are situated. Here the trainee knows the theory (knowledge) behind the skill and had instructed trainings in multiple events (basic skills). In the learning on the job section, methodologies are used to gain more in-depth understanding of the skill while performing it on the job. The trainer will slowly let the trainee work by himself. By the end of the LoJ section the trainee can work independently. We identified the following categories:

(skill level 2,5-3) Demonstration, practical (tutor-inhabitant): Tutor shows and explains how a specific activity/task should be performed within a practical setting. Inhabitant observes and asks questions.

(skill level 3-3,5) Consecutive practical (tutor-inhabitant): Tutor and Inhabitant work consecutively on the same activity/task within a practical setting.

(skill level 3,5-4) Observed practical (tutor-inhabitant): Inhabitant shows and explains how a specific activity/task should be performed within a practical setting. Tutor observes and asks questions.

The third category is for the highest skill levels. Here the trainee understands the theory behind the skill, had multiple instructed trainings, had multiple on the job trainings and has gained independency. The trainee is able to reproduce activity independently without instructions from the trainer. The trainings can now focus on training the trainee to reproduce the knowledge to others. Here the trainee will be able to train their community members and exchange the gained knowledge effectively. We identified the following categories:

(skill level 4-4,5) Demonstration: practical (inhabitant-community member): Inhabitant shows and explains how a specific activity/task should be performed within a practical setting.

Community member observes and asks questions. Tutor observes and comments.

(skill level 4,5) Consecutive practical (inhabitant-community member): Inhabitant shows and explains how a specific activity/task should be performed within a practical setting. Community member observes and asks questions. Tutor observes and comments.

(skill level 5) Observed practical (inhabitant-community member): Community member shows and explains how a specific activity/task should be performed within a practical setting. Inhabitant observes and asks questions. Tutor observes and gives feedback afterwards.

Based on the existing skill level you can now set the type of training accordingly. In the excel file the training methods are sorted by skill level. Organizing consecutive trainings will enable you to effectively raise the skill level of the family/community or yourself. In the example below (Figure 8) you can see consecutive training for various skills.

Existing Skill level	Improvement needed?	Desire	Teaching direction	Reference in Skill level	Teaching Activity 1	Depth of Knowledge %	Teaching Activity 2	Depth of Knowledge %
3 Proficient	no		Inhabitant-Team	1	4-4,5: Demonstration: practical	80	4,5-5: Consecutive	90
3 Proficient	yes	4 Expert	Team-Inhabitant	1	4-4,5: Demonstration: practical	80	4,5-5: Consecutive	90
0 Unknowing	yes	2 Familiar	Team-Inhabitant	2	1-1,5: Reading book or tekst	20	1,5-2: Viewing video or	30
1 Beginner	yes	2 Familiar	Team-Inhabitant	1	2-2,5: Instruction practical	40	2,5-3: Demonstration:	50
4 Expert	no		Inhabitant-Team	1	4-4,5: Demonstration: practical	80	4,5-5: Consecutive	90
4 Expert	no		Inhabitant-Team	1	4-4,5: Demonstration: practical	80	4,5-5: Consecutive	90
4 Expert	no		Inhabitant-Team	1	4-4,5: Demonstration: practical	80	4,5-5: Consecutive	90
3 Familiar	yes	5 Expert	Team-Inhabitant	2	3-3,5: Consecutive practical	60	3,5-4: Observed practical	70

Figure 162: Example of training planning

The vast majority of the skills that will require training will run during the building activities of the house. Planning your activities according to the building phases will consolidate its progress and will provide with plenty training material. As you will notice many of the planned activities will repeat throughout the project: measuring, calculating, mixing, cutting, etc. Therefore, don't force all the training activities in the beginning of the project but spread them over the entire project. Remember you are supposed to enable the family to build the house by themselves at the end of the project.

8. PLANNING & TRACKING THE TRAINING PROCESS

As last step we want to help you plan and track the training process. It is important to state that you will need to train some of the skills to your family/community. However, there are also knowledge and skills that are substantially more developed with your family/community. Using those capacities in choosing design, building and material solutions has been the core element of this support. As a result you have hopefully identified many skills that you incorporated in the new house. Therefore, you will not only have to plan trainings for your family/community, but just as important for yourself. In the training planning tool attached to this chapter you will find the sheet shown below. This sheet will help you to plan day by day the training/building activities. As a team you will set the activities the night before. In case the family/community will organise the training, confirm with them which plan you have and what type of training you have planned.

a. PLANNING OF THE TRAINING ACTIVITIES DURING RESEARCH & DESIGN

During the research or design process you might have become curious about certain activities. This might range from how to use local digging tools to more fundamental issues; how traditional houses are being built. Some of the skills you will be able to train during observations or other activities (simply help the family ploughing their land). Others you will need to organize, as they might not be offered during every day.

Unlike previous chapters there is not a separate role between actor and observer anymore. You are all involved in the process; however, one of you (team, family or community) acts as trainer and the other makes sure the trainee is comfortable in the learning process (a coaching role; if someone is available). The others are trainees, receiving the training. In the example below (Figure 9) we show a case where the family is training the team (training direction: inhabitant-team).

In the title you can register who are the trainers and who of them will have a coaching role. Moreover, how long the training will last, what the estimated starting skill level is and the targeted skill level is. Finished by the teaching activity planned to perform the actual skill improvement. When the family/community are offering the training, we hope that involving them in the planning of the training

and reflecting on the outcomes will help them understand the importance of skills and trainings.

TRAINING PLANNING
 PHASE: Preparation & Position
 TRAINER: Dorkas (coach) & Peter
 TRAINEE(S): Michiel & Beata
 BUILDING WEEK: 1

Day	Activity nr.	Activity	Skill	Duration	Teaching direction	Starting Skill Level	Targeted Skill Level	Teaching Activity	Teaching Impact
04-10	1.1	Locating: Orientation	Builder/Community: orientation social (openings)	3 hours	Inhabitant-Team	3	4	Consecutive practical (inhabitant-tutor)	3-3,5
04-10	1.1	Locating: Orientation	Builder/Community: orientation social (openings)	1 hour	Inhabitant-Team	3	4	Observed practical (tutor-inhabitant)	3,5-4

Figure 163: Example of a planning during Research & Design

b. REGISTERING TRAINING ACTIVITIES DURING HOUSE CONSTRUCTION

One of the most important steps is to register the undertaken training activities. In the attached Training Registration tool (Registration of the training_Research & Design.docx) you will be able to register all the steps taken. In the example below (Figure 10) we elaborate a little more on the situation described above. Here Dorkas and Peter (family) trained Michiel and Beata to increase their understanding of the cultural orientation of the house during the design phase. In the previous steps you described the various skill levels on cultural orientation. Although Michiel and Beata gained a good understanding on cultural orientation during the research phase, they want to learn how they can orient the openings in such a way that it follows cultural norms. Moreover, they want to find a way how to design windows and doors in such a way that although they do not follow the general cultural rules, they respect them. In this way achieving a skill level 4 understanding of cultural orientation; coming up with an alternative approach, solution or interpretation.

Activity nr.		1 Locating	Skill Level (0-5)	Description
	Skills:			
1.1	Skill 1	Cultural Orientation	0 Unknowing	Does not now to orient culturally
			1 Beginner	Understands basic layout of family compound
			2 Familiar	Understands famiy hierarchy, poistion house and orientation
			3 Proficient	Is able to orient the building according to cultural norms
			4 Expert	Is able to come up with other ways to orient a building according to cultural norms

Figure 164: Example locating activity skill levels

As a result they will be able to explain/show to the family/community how windows and doors normally should be oriented. Moreover, how other typologies of windows and doors

could respect cultural norms although they do not follow the 'traditional' orientation. In this way finding an alternative way of dealing with cultural orientation in the design of the house.

TRAINING REGISTRATION
 PHASE: Preparation & Position
 TRAINER: Dorkas (coach) & Peter
 TRAINEE(S): Michiel & Beata
 BUILDING WEEK: 1

Day	Activity no.	Activity	Skill	Duration	Teaching direction	Starting Skill Level	Targeted Skill Level	Teaching Activity	Teaching Impact	What did you train	Photo
06-10	1.1	Locating: Orientation	Builder/Community: <i>orientation, social, (specimens)</i>	3 hours	Inhabitant-Team	3	4	Consecutive practical (inhabitant-tutor)	3-3,5	The family took us around showing houses in the neighbourhood and asked us how the structures were related and oriented to one another.	
06-10	1.1	Locating: Orientation	Builder/Community: <i>orientation, social, (specimens)</i>	1 hour	Inhabitant-Team	3	4	Observed practical (tutor-inhabitant)	3,5-4	The family gave us a scenario (plot & house) and asked us to orient the house (windows and doors) according to cultural orientation. We elaborated on our new way of making doors and windows.	

Number	Activity	Feedback Coach
1	1.1	(Dorkas) Michiel and Beata have a substantial understanding of cultural orientation and comfortable in explaining what they have learned.
2	1.1	(Dorkas) Exercise exercise went well and Michiel and Beata have proved to have substantial understanding in cultural understanding

Number	Activity	Decision Trainee
1	1.1	(Peter) We needed to make add an additional training activity to help Michiel and Beata to develop new ways of interpreting window/door openings.
2	1.1	(Peter) Activity is finished: Michiel and Beata have explained and proven a new way of making doors and windows respecting the cultural norms.

Figure 165: Example of an evaluation during Research & Design

In the example above (Figure 11) Dorkas coached and evaluated the training and Peter was the trainer. Here Peter was responsible for the type of training and hosting it. Dorkas made sure Michiel and Beata were comfortable and gave Peter feedback on the training. This approach was also used in a test project performed in 2014. Here we asked the local community if we could participate in the construction of a planned kitchen (see: Figure 12).



Figure 166: Test training on Mt Elgon; how to build a traditional house.

Here the community took the engineering team through every step taken during the traditional building process. Moreover showing where materials were found, how they were cured and processed before used in the building. Due to the training they gained basic skill levels like: local measuring (left image), rope making, local digging, cutting posts, tying (right image) and many more. We highly recommend everyone working in rural developing scenarios to

spend at least one week during the construction of a traditional dwelling during their research or design phase. Here the inhabitants are able to share their knowledge and building tradition and it can give great new insights into their building skills. Therefore, most of the skills trained during the research and design phase will be transferred from inhabitant to team. However, some of you will choose a building methodology or materials that you have not yet used yourself before (lack the skills). Therefore, some of you will use self-training to exercise some skills or might find someone with experience to train them outside the community. These skills you will first gain yourself up to the required level to enable you to train the family/community. Again tracking your own skill levels and training activities to reach required levels for the building phase is of vital importance to understand what and how you added skills to the family/community. In the next section we briefly discuss construction phase of the new house where the emphasis will mainly lie on the team training the family/community.

c. PLANNING TRAINING ACTIVITIES DURING CONSTRUCTION

It is inevitable for improving a house that the family/community lacks some of the needed skills to build, maintain or replicate the new building process. To make the family/community self-reliant in their built environment it will be of vital importance to train them how they can do so. In the example below (Figure 13) we show the described skill levels for mixing mortar and laying bricks.

		5 Foundation Wall	Skill Level (0-5)	Description
6.1	Skill 1	Masonry: mixing wall mortar	0 Unknowing	Does not know how to mix and with which ratios
			1 Beginner	Knows how to mix but does not know the ratios
			2 Familiar	Knows how to mix and with which ratios
			3 Proficient	Knows how to devide the different factors (sand and cement) evenly
			4 Expert	Knows how to prevent water to poor aways, knows the right consisten
6.2	Skill 2	Masonry: laying wall brick	0 Unknowing	Does not know how to lay bricks (laying mortar and bricks)
			1 Beginner	Knows how to lay mortar and bricks, but not how to do it evenly
			2 Familiar	Knows how to lay mortar and bricks evingly
			3 Proficient	Knows how to lay mortar and bricks spirit level and perpendicular
			4 Expert	Knows how to lay mortar and bricks to make lintels

Figure 167: Example of a planning during the construction of a house

d. REGISTERING TRAINING ACTIVITIES DURING CONSTRUCTION

Below we show an example (Figure 14) of a registration file (see attachment: Registration of the training_construction.docx) used to plan the training activities for mixing mortar and laying bricks. Although the family has extended knowledge on mixing soil for building, mixing mortar for masonry work is a completely new thing. Although the family does not know how to lay bricks the understanding of mixing is there. For this reason an practical

instruction was used to show them how the mortar is mixed. In the activity the family and some community members joined to help. The mixed mortar was used to make different thicknesses of mortar, which later on will be used to show the differences in strength. In the second activity, the trainer first gave a theoretical explanation followed by a short movie about masonry wall making.

TRAINING REGISTRATION
 PHASE: Preparation & Position
 TRAINER: Corné, Damian (coach)
 TRAINEE(S): Cleophas & Stella, some interested community members
 BUILDING WEEK: 9

Day	Activity No.	Activity	Skill	Duration	Teaching direction	Starting Skill Level	Targeted Skill Level	Teaching Activity	Teaching Impact	What did you train	Photo
18-10	6.1	Foundation Wall	Masonry: mixing wall mortar	3 hours	Team-Inhabitant	2	3	Instruction practical (Instructor-inhabitant)	2-2.5	Corné and Damian explained how the mortar mixers can be easily measured and how the mixing should be performed. Cleophas and Stella helped in the mixing.	
18-10	6.2	Foundation Wall	Masonry: laying wall brick	6 hour	Team-Inhabitant	0	1	Verbal instruction with demonstration (Instructor-inhabitant)	0.5-1	Corné started with a short instruction in reserved room in the community. Explaining the basics of brick dimensions, the thickness of needed mortar (thickness). Afterwards we showed a short movie about masonry works.	

Number	Activity	Feedback Coach
1	6.1	The group is happy and ready to start the teaching day. Corné has the didactic skills to make people feel comfortable however, they have difficulties to follow the explanation sometimes. I suggest that maybe Cleophas can translate what is said to Swahili which solves the problem.
2	6.2	The group feels distant and passive, they have difficulties to follow what is said although Cleophas is translating. I suggest to grab some bricks so they understand the dimensions and we use cardboard to show the different levels of mortar indicating the strength of the mortar. Especially the cardboard really works as they can feel the differences in strength.

Number	Activity	Decision Trainees
1	6.1	The group is clearly ready to start training on higher levels. We might skip some levels as the group is happy and comfortable to start practicing by themselves.
2	6.2	After a brief discussion we decided to ask Cleophas to join the teaching team. In this way the group finds it easier to address questions or debates they have.

Figure 168: Example of an evaluation during the construction of a house

The coach made some suggestions during the training, which improved the knowledge exchange. Based on the outcomes of the training the team was able to plan the trainings for the next day.

Remember it is of vital importance that you select picture in the registration tool that proof the activity that took place. This helps you proof that you were able to transfer the knowledge to the family or community. Furthermore when the project is finished you can explain step by step how you improved your own understanding (knowledge) and effectiveness (skills) during the project as a team. Moreover, how the family/community benefited from your project improving their building knowledge and skills; hopefully, providing a detailed recollection of your effective knowledge transfer, possibly providing an approach applicable to other communities in the area, country or continent.

9. OUTCOMES

The expected outcomes of this chapter are for every day during the

construction phase is:

1. Digitalized Planning of the training documents:
 - a. Research Phase
 - b. Design Phase
 - c. Self-training
 - d. Building Phase
2. Digitalized Registration documents (including pictures as proof of the executed training steps):
 - a. Research Phase
 - b. Design Phase
 - c. Self-training
 - d. Building Phase
3. Videos or photos of the training sessions.

The outcomes will be collected weekly. Please make folder named after the team and phase number and number of the week (week per phase) – e.g.: T1.P2.W1

