Planning and Building Wooden Houses with, And for, Refugees and Residents

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Abstract
In this paper we present the project "Building as Integration" conducted by the students at the higher level secondary technical and vocational college in Rankweil (HTL Rankweil). The project was initiated to help the integration of young refugees and immigrants in the most western part of Austria called Vorarlberg. Throughout the course of this project, a construction engineering class with 30 students wants to put their theoretical knowledge to a practical use and pass it on the refugees. These 30 students are divided into ten teams, each offering mentoring one refugee.

Keywords: building wooden houses, refugees, integration, HTL Rankweil

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Introduction

In the Austrian province of Vorarlberg there are 96 municipalities. Approximately 4 000 people are looking for accommodation. The asylum seekers increase this number every day. The concept of the three local architect that has developed in cooperation with the Vorarlberg timber architecture at the HTL Rankweil, is very impressive. Higher-level secondary technical and vocational colleges in Rankweil train the students in the industries, trade practice and the arts. The main subject's areas are information technology and construction engineering. The project deals with the essential issues of the integration process of young immigrants and refugees.

The aim of the project is the construction of the residential timber houses for the refugees as well as the residents. Under current conditions, planning processes for affordable social housing are going to be implemented. Consequently, the completion of the first house for unaccompanied, underage refugees is planned for next year. Experts on construction engineering, timber construction, carpentry, electrical engineering and installation technology alongside with the linguists, translators, communication and cultural experts work at the HTL Rankweil. Their common effort will be of crucial importance. The neighboring schools will contribute knowledge in the field of kitchen gardening, domestic management and cooking. The first wooden house is scheduled for in-school-construction in 2016. Completing the project requires a team work and a good communication as well between the students and the refugees in order to come up with the final solutions. The project is supported by teachers as well as various local institutions such as the diocese, the parishes, the State of Vorarlberg, the municipalities as well as building societies in cooperation with Vorarlberg timber craftsmen.

Planning and project work

This project commenced as the task during the workshops (GBK) in and the lessons Building Construction and Technology (BKT) at the HTL Rankweil. Without knowing what the wooden houses can be used for, the students began to draw. They started with the first sketch plans for the construction of floor (see Figure 1), sections and elevations. After completing the first sketch, the BKT teachers explained that the houses may be especially suitable for both, the refugees and the locals. The students became very interested and exciting about it. They made small changes to the current designs of the first models with scale 1:200 (see Figure 2) [1]. Simultaneously, the students discussed the process of the completion and re-using the wall and ceiling structures in various wooden designs.

Ecological aspects

Wood is a sustainable building material. It has excellent CO_2 and energy indicators. It is a renewable-and energy-efficient building materials with the best CO_2 balance. A wooden house for adolescents should be a zero-energy house (under 30 kWh/m^2). This house has to be built close to the town centre so that the refugees have good access to public transport. The extra surfaces are to be used for planting the gardens. This house is very ecological by using an energy balance at the construction, including its mobility possibilities.

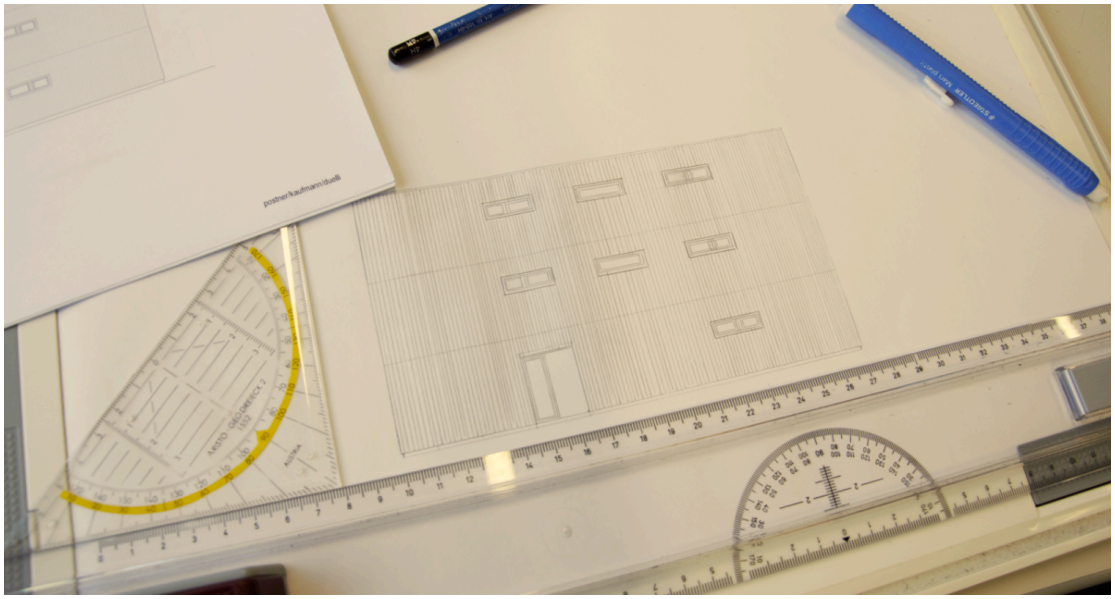

Figure 1: The first sketch for building the floor.

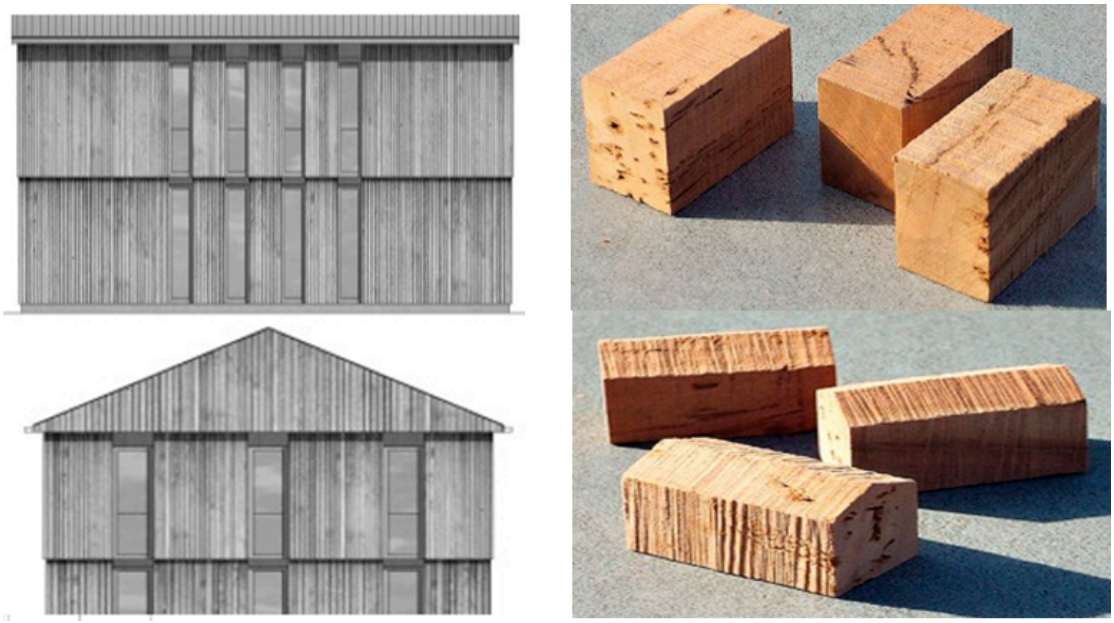

Figure 2: Housing patterns in wooden constructions (left) and the first models with the scale 1:200 (right).

Social aspects

The whole school project has also a social aspect. The refugees did not have any opportunity to learn something about the Austrian culture or language. And the other way round, the same was true for Austrian youngsters. In this project, the teamwork, self-organization and organizational skills were very important (see Figure 3) [2]. It gave the students a chance to get to know the refugees personally. This was the best way to become familiar with the purpose of the designs (see Figure 4) [3].

Figure 3: Social contact between students.

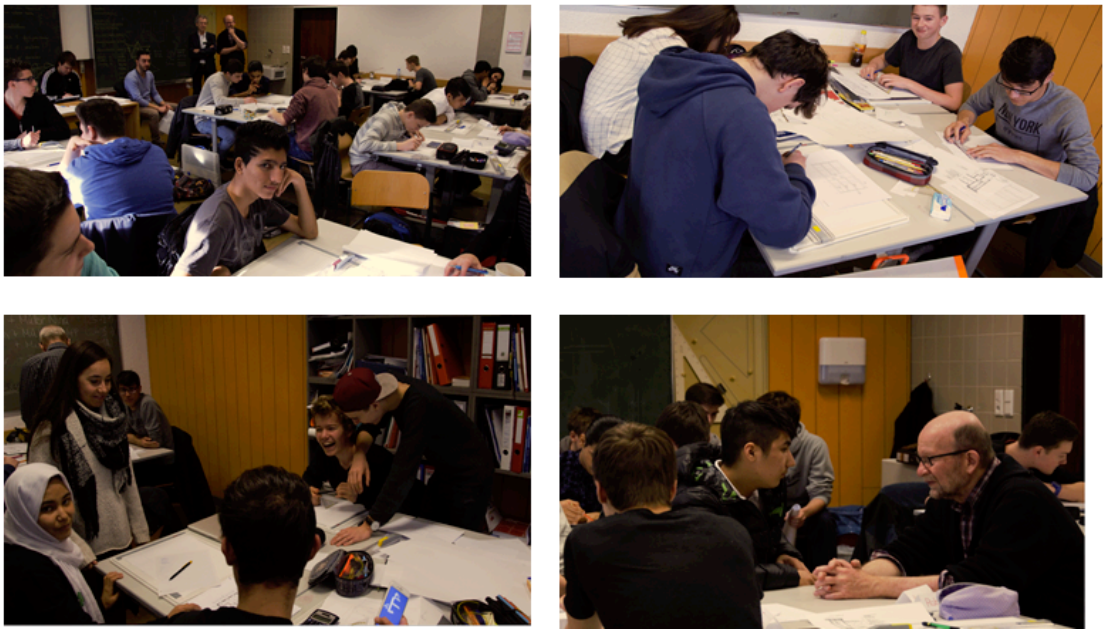

Figure 4: Students working on the project objectives in wooden constructions.

Economic aspects

The designed houses are very cost-effective, built by our employees in a very efficient way at the same time. The main concept concerning the residents of those houses, whether they are the refugees or the locals, is to help with the expansion. It refers to the interior design, possibly the facades, furniture - especially through recycling- and also to the gardens and surrounding areas. Those houses, once they are no longer accommodated by the refugees, can be immediately used as a guest house or apartment. This also involves the cooperation with the municipalities that come to term in a win-win situation.

Economic feasibility

Financially, the houses are entirely feasible. There will be three floors and it will officially cost about 540 000 Euro net, which is extremely cost-effective. It was estimated that the extra 10% could be saved due to the team own work and funding.

Objectives and Project Results

The first objective was to prepare the plans for the pre-fabrication of the wooden house in the timber workshop of the HTL Rankweil (see Figure 5). In order to achieve it, in the interim, a new goal was to make such progress in the designs with the scale 1:50 so that it could be built with the scale of 1:10 as a model plan in the summer 2016.

Figure 5: Wall and ceiling structures in wooden constructions.

The second objective was to give the young people from Afghanistan, Iraq, Iran and Syria, refugees at the same age (15 to 19 years) the chance to participate in the planning process (see Figure 6). Additionally, three students from the College in Bludenz came to the HTL Rankweil every day to teach them German language. There were more than 40 people in the classroom every day.

The third objective was to document the project work in order to present its results at the competition “Youth innovation” (see Figure 7 and 8).
The fourth objective was to come up with a vocabulary list in four different languages (see Figure 9, 10 and 11).

Figure 6: Making progress by participating in the project.

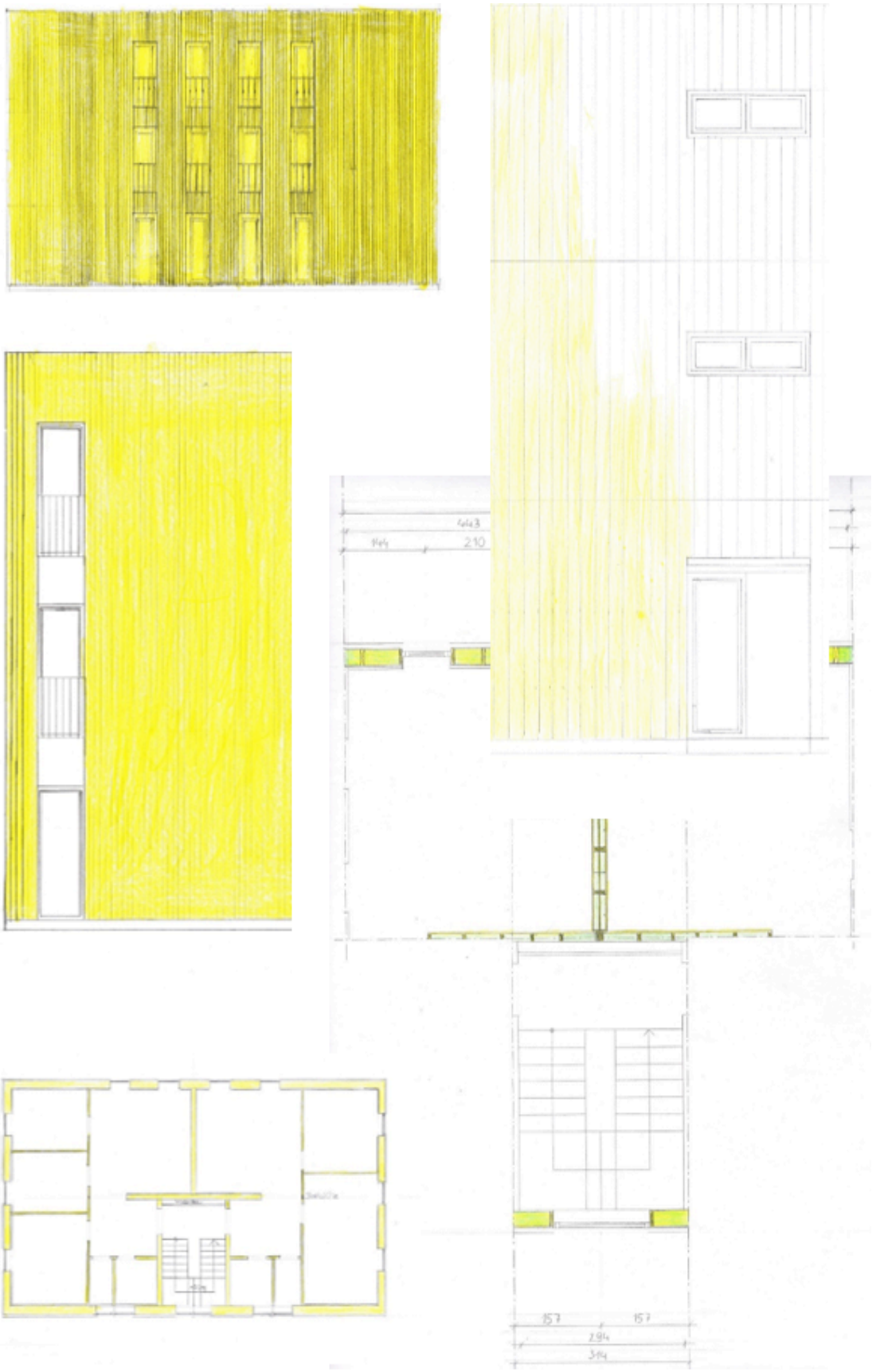

Figure 7: Examples of students ‘sketches.

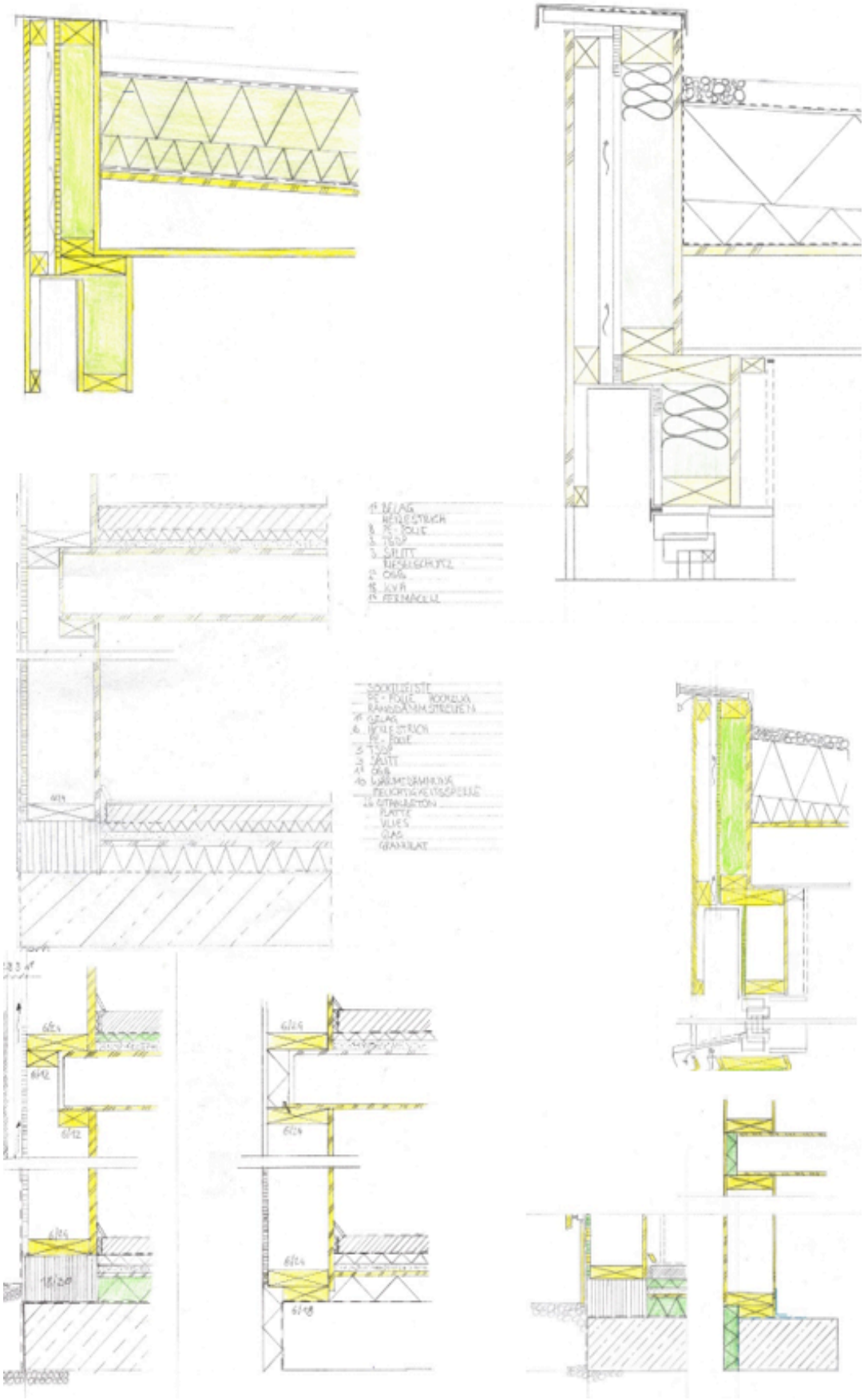

Figure 8: Examples of students' sketches.

Deutsch	Englisch	Persisch	Arabisch
Grundbegriffe fürs Bauen			
Grundstück	property	طرح	موقع البناء
Maßstab	scale	مقیاس	مقياس
Grundriss	floor plan	نقشه ساختمان	خطط البناء
planen	to plan	برنامه ریزی	خطط
Winkel	angle	زاویه	زاوية
Fassade	facade	نمای خارجی	واجهة
Wand	wall	دیوار	جدار
Straße	street	خیابان	شارع
Erdgeschoss	first floor	طبقه اول	طابق ارضي
Obergeschoss	upstairs	طبقه بالا	طابق علوي
Schnitt	section	مقطع، برش	مقطع
Baustelle	building site	محل ساختمان	موقع البناء
Decke	ceiling	قسمت داخلی سقف	داخلية السقف
Boden	floor	طبقه، زمین	أرضي
Ziegel	brick	آجر، خشت	بلوكة / لبنة
Beton	concrete	کانکریت	بيتون
Holz	wood	چوب	خشب
Stiege	stairs	پله	أدراج
Dämmung	insulation	عایق	عزل
Dach	roof	سقف	سقف
Fenster	window	پنجره، کلکین	نافذة
Türe	door	دروازه	باب

Figure 9: A list with technical terms in four languages.

Deutsch	Englisch	Persisch	Arabisch
Grundbegriffe für die Kommunikation			
Hallo	Hello	سلام	مرحبا
Tschüss	Bye	خداحافظ	إلى اللقاء
Wie heißt du?	What is your name?	نامت چیست؟	ما اسمك؟
Ich heiße...	My name is...	نام من هست...	أنا اسمي...
Wie alt bist du?	How old are you?	شما چند سال هستید؟	ما عمرك؟
Ich bin ... Jahre alt.	I am ... years old.	من ... سال هستم.	أنا ... سنة
Wie geht es dir?	How are you?	حال شما چطور است؟	كيف حالك
Mir geht es gut.	I am well.	من خوب هستم.	أنا بخير جيدة
Mir geht es schlecht.	I feel bad.	من خوب نیستم.	أنا أشعر بالسوء.
Woher kommst du?	Where are you from?	شما اهل کجا هستید؟	من أين أنت؟
Ich komme aus...	I came from...	من از ... آمده ام.	أنا أتيت من...
Was möchtest du essen?	What would you like to eat?	دوست دارید چه چیزی بخورید؟	ماذا تحب أن تأكل
Ich hätte gerne...	I would like to have...	من می خواهم داشته باشم...	أنا أفضل أن يكون
Was machst du gerne?	What do you like to do?	چه کاری را دوست دارید انجام دهید؟	ماذا تحب أن تفعل؟
Ich mache gerne...	I like to do...	من دوست دارم... را انجام دهم.	أنا أحب أن
Danke	Thank you	متشکرم، ممنون	شكرا لك
Bitte	please	لطفا، خواهش می کنم.	من فضلك
Entschuldigung	Sorry	معذرت می خواهم، ببخشید	متأسف

Figure 10: A list of useful words and expressions in four languages.

DEUTSCH	ENGLISCH	PERSISCH	ARABISCH
Räume / Zimmer			غرف
Wohnzimmer	living room	اطاق نشیمن	غرفة المعيشة
Treppenhaus	staircase	راه پله	بيت الدرج
Badezimmer	bathroom	حمام	حمام
Schlafzimmer	bedroom	اطاق خواب	غرفة النوم
Küche	kitchen	آشپزخانه	مطبخ
Garage	garage	گراج	كراج
Garderobe	wardrobe	جارختی . جالباسی	خزانة
Esszimmer	diningroom	اطاق غذاخوری	غرفة الطعام
Toilette	toilet	توالت . دستشوئی	تواليت
Abstellraum	storeroom	انبار	مستودع
Keller	cellar	زیرزمین	قبو
Dachboden	attic	اطاق زیرشیروانی	علية سقيفة
Hobbyraum	hobby room	اطاق بازی . اطاق سرگرمی	غرفة الهوايات (العب)

Figure 11: Vocabulary list in four languages.

The collaboration between the students and refugees

Everybody was very pleased with the communication between the students and the refugees. The pupils didn't know them at all before the Project Week. Nobody knew what would happen. Of course, the youngsters had some good experience from the workshop during the "Open Day" at the HTL [1]. One big advantage was that most refugees were at the similar age. The older people assimilated quickly and completely, had a lot of fun and helped with the translation. It also gave the Austrian teenagers a big chance to get in touch with the young people from Syria, Iraq, Iran and Afghanistan without any complications. It was a great opportunity to work together and have common goals. Of course, the students learnt as well that not all of the refugees were interested in the construction work. In spite of it, they were convinced that this was an interesting week for all. Besides, they laughed a lot while working. They visited some of the refugees during the holiday time. It was very interesting for them as well and they learnt a lot. Working together was very successful in spite of language and technical problems, because several colleagues helped a lot with translation: Professor Heidi Shah is an architect and works in the HTL Rankweil. She used to live and work in London for several years. When some of the complicated matters were discussed in German language, she could easily translate them into English. Zainab Murtazawi, a medical doctor and a computer science specialist from Afghanistan and Issa Almaaz, an architect from Syria could perfectly translate from English into Farsi and Arabic language.

Learning process in teams

Advantages: The key to the success during that week was good management of the project. The youngsters worked in small groups consisting of four people: the three locals and one guest per team. Sharing the responsibilities was crucial as well: drawing, transferring, documenting helped a lot while working together with the guests. Another big advantage was the possibility to continue working as long as it was necessary without any interruptions. The breaks and meals were well-timed. The students were very happy to have a day off on the "Carnival-Tuesday". The discussions with the experts were very informative. The pupils were pleased with the static calculations and the progress of particular solutions. The time spent with media, namely the ORF TV was exciting and they had a lot of fun together.

Drawbacks: The group had much more work than other HTL students. They also had to remain in school and work after the lessons. It really was an intensive period of time. But they all spoke with one voice and decided to continue working on this project. All in all, the project enabled the students to gain some unforgettable and practical experience of the world of work. In the future, they will be certainly using their computers more often. This was not possible at that time, because the pupils were not experienced enough and had too little training then.

The collaboration with the partners

The cooperation with the partners (companies, research institutes, authorities, media) was of primary importance as well. Several interviews were conducted with some authorities: University Professor Hermann Kaufmann, TU Muenchen, Herbert Brunner, Holzbaukunst Vorarlberg, Both of them invested a lot of time in order to explain essential details concerning the wooden constructions. They spent several hours with the group, way too few. However, the students hoped to be able to invite them again. Herbert Brunner explained thoroughly a great potential of 'wood construction' in Vorarlberg and gave the exact reasons why he was so fond of the project. His interview can be watched and heard on video. He expressed himself that he could imagine himself being involved in the making of the project [4]. Christian Breuss, the Department of Housing and Urban Development, Municipality in Rankweil, Wilfried Blum, priest in Rankweil were appointed to represent the president of Rankweil. They explained in detail all of the development projects nearby the HTL Rankweil, including the one chosen for the team to make their dreams come true. His statement let the group realise that above all a building with educational purposes for the teenagers was necessary. Wilfried Blum talked about his point of view as a priest. He encouraged the young people to pursue their goal. Obviously, a good atmosphere while working together in the group of the teenagers from different cultures, impressed him a great deal.

It was a very special event for the students to welcome the representatives of the local government in Vorarlberg during the Project Week. It was interesting to hear them both talking about their job, which correlates significantly and closely with the project. Both of them were impressed by it and considered the work completed by that time to be the first step in the whole process. They were also amazed how uncomplicated the teamwork (locals and refugees) was.

The visit paid by the journalists was an interesting experience to the students. Parizia Begle from the diocesan communication centre in Feldkirch and Stefan Krobath from the ORF Vorarlberg interviewed the students, most of them for the first time in their life. Making short videos with the ORF Vorarlberg was especially fascinating. The youngsters realised how much time and energy it required in order to present the project clearly to the TV-viewers [5]. Some shots had to be taken twice because of some minor problems. The second attempt worked out fine most of the time.

Conclusion

In this paper, the integration project "Building as Integration" was presented. The project was initiated by the refugees and the students at the higher level of secondary technical and vocational college in the HTL Rankweil. It was supported by their teachers as well as various local institutions like the parishes, the State of Vorarlberg and the municipalities. The project required a good cooperation of many building societies with the Vorarlberg timber craftsmen.
Hereby, the activities taken up by the HTL Rankweil students and the refugees, were described. Their work, step by step, including the planning, their project work, the ecological-social-economic aspects and eventually the results of the project were presented.

The whole process combined some hands-on experience of the job and approach to teaching with a continues improvement process, which included learning about construction engineering and information technology.
Forward planning for constructing the wooden houses was very successful because of the good time management, being efficient and working in a team. There was plenty of fun for all the students, refugees and the collaborators. Shared knowledge, effort and joy was a contributing factor in order to achieve a common goal.

Acknowledgements

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