



FINAL REPORT

PROJECT'S TITLE: AUTOMATED THE NON STANDARDS. FROM DIGITAL FABRICATION TO MASS CUSTOMISATION

PROJECT'S COORDINATOR

Roberta Capozucca

PROJECT'S SUPERVISOR

Daniele Piparo

TOTAL DURATION

N ° OF TEACHING HOURS: 40 hours 8 of which were supplied at and by VHIT (Bosch).

PERIOD OF ACTIVITIES: 09.12.2019 - 13.12.2019

FOR TOTAL DAYS: 5 DAYS

RECIPIENTS:

Bonato Francesco
Briken Erik
Kinderis Darius
Li Greci Giacomo
Kleshchenko Igor
Misani Davide
Nieddu Emanuele
Parschau Madeleine
Saulle Francesco
Suckow Maximilian
Taurat Nils

PARTNERS

SIAM, Villa Vigoni e BOSCH Italia

TEACHER

The teaching contract was assigned to Francesco Perego, who managed to deliver very complex themes in a very limited amount of time with efficacy. On the evaluation forms he scored 4.0 / 5.0 on both competence and willingness.

*the evaluation was made on a scale from 1 to 5, comments and scores were physically collected at the end of the day and they are available at SIAM's offices.

RESOURCES

As established, classes took place in SIAM's IT laboratories, which proved to be adequate for the activities. Students also made use of the SIAM's digital manufacturing laboratory (siamLAB), both with the teacher during classes and individually to produce objects.



RESULTS

With respect to the project structure, presented to Villa Vigoni on 09.10.2019, the objectives set were largely accomplished.

The course was activated with 12 students with a 95% attendance rate. For the selection, the most complex aspect was the selection of the German pupils; on this matter, the partnership developed with the *Vocational School Verden* (Germany) thanks to the head master Manfred Runge was fundamental.

From an educational point of view, the masterclass proved to be fruitful; only the 3 former SIAM students knew the software taught (namely **grasshopper**). The highlight of the week was certainly the visit to the Bosch plant -VHIT , which gave students the possibility to experience the daily routine of such a prestigious company and conclude the training by discussing about job prospects with Bosch's engineers.

The students participated with enthusiasm to the daily activities inside and outside the class, proving the positive effects of this kind of cultural exchanges. The German students were fascinated by the "Italian approach" to the matter and few of them expressed the interest to spend a longer period in Italy for a working experience. Also the Italian students had the chance to learn more on the German dual system and establish contacts in order to arrange visits to the industries where they are currently working. The masterclass was positive and definitely not tainted by prejudices; this allowed an honest exchange of opinions on the different schooling systems and job perspectives alongside a deep discussion on the differences between the Italian and the German Industry 4.0 system, which took place both at VHIT, under the coordination of Federico Astori, and during the last day in class under the coordination of Roberta Capozucca.

Both from speaking with the students and from the evaluation forms they handed in, the main concern that emerged was the project's duration: 5 days turned out to be not enough to digest this very vertical subject, to adapt to a new teaching method, but more importantly to sink into a new culture and share expectations and life goals with new peers.



EVALUATION FORMS' RESULTS

*the questionnaires were delivered to evaluate the satisfaction of the students anonymously, on specific question with a score from 1 to 5, where 1 corresponds to a very negative experience and 5 to a very positive experience. The results will be presented below after we processed the evaluation and calculated the average.

SECTION A : Relevance of the masterclass, degree of application of the lessons and classroom atmosphere.

<i>At the beginning of the course, were the objectives and contents adequately presented?</i>	3.8 / 5.0
<i>Were the contents consistent with respect to the objectives of the course?</i>	4.8 / 5.0
<i>Did the preparation of the teachers seem adequate in relation to the expectations on the course?</i>	4.9 / 5.0
<i>Are you satisfied with the teaching approach and the willingness shown by the teachers?</i>	4.5 / 5.0
<i>Did you consider the organization of the course to be satisfactory?</i>	4.2 / 5.0
<i>Did you consider the course logistics satisfactory (classrooms, teaching materials, equipment)?</i>	4.8 / 5.0
<i>In general, are you satisfied with the quality of the services provided by the operator?</i>	4.9 / 5.0
<i>Was the course corresponding to your expectations?</i>	4.5 / 5.0

SECTION B

General Satisfaction

<i>Do you consider the service which you have received as a whole satisfactory?</i>	4.7 / 5.0
<i>Are the services used consistent with the expectations and objectives set by you?</i>	4.4 / 5.0
<i>Thinking back to the initial motivations, do you think you got the results you expected?</i>	4.3 / 5.0
<i>In relation to the aspects just considered (degree of knowledge, clarity of exposition, ability to stimulate interest, effectiveness of methods and availability) what overall judgment would express for teachers?</i>	
<i>- of the teacher's competence (Francesco Perego)</i>	4.0 / 5.0
<i>- the willingness of the teacher (Francesco Perego)</i>	4.0 / 5.0
<i>- of the tutor's competence (Roberta Capozucca)</i>	4.5 / 5.0
<i>- the willingness of the tutor (Roberta Capozucca)</i>	4.9 / 5.0



STUDENTS' COMMENTS

*to be found in the customers' satisfaction forms.

“All the expectations were more than satisfied , the structures and the supplies are really good. The time during the lessons could have been managed better”

“Thank you very much for the invitation”

“Thank you for the great experience, please keep on giving pupils like us the opportunity to get such great experience”

“I think the of what we are going to learn, would have been helpful to pick up students who use the 4.0 technologies in their job more. Most of us in Germany are mechanics and do not use 3D printers of laser cutting machines. More free time would have been nice, but this is on us we could have booked another flight!”

“Describe the objectives of the course more concretely. Add more task for different professional skills and make it longer than 5 days”

SUGGESTIONS FOR THE IMPROVEMENT OF THE PROJECT

Selection:

Nonetheless, both SIAM and Villa Vigoni have embarked on such a project for the first time, it emerged that the selection of the German students could have been more accurate: namely, students should have been chosen not only on the base of their merits but also on their academic specialisation.

Also, as it emerges from the students comments and evaluation, there was a lack of clarity on the final objectives of the course and a bit of confusion on what to expect, which should have been clarified during the selection process more accurately.

Teaching: classes would have benefited from more time. As already mentioned, 5 days proved not to be enough time on various levels namely for the transmission of contents, which remained superficial both according to students and the teacher. More time could have been used for more laboratories and also for a deeper discussion on jobs opportunities and further academic prospects.

Cultural Exchange: one of the most precious aspect of the entire project was giving the students the possibility to interact and exchange points of view. Again, being in class 8 hours a day did not give students the chance to experience the city of Milan and as a group to tighten up and mingle, even though we did not miss the chance to spend time together after school!



Overall Suggestion: the project's success showed the potentials of this kind of projects.

On overall, what emerged as the most unsatisfying aspect was the project's duration. At SIAM, we profoundly believe that giving students more to learn, socialize and experience the industry 4.0 sector could have benefited a project, which already proved to be highly successful. Both the teacher and the students agreed that 2 weeks could have been useful for balancing the educational aspects and the cultural exchange.

To test the approach, we also believe, it could be useful to replicate the project in Germany, allowing the Italian students to experiment the German dual system in situ. Having the chance to build a real exchange between institutes, such as SIAM, and German schools could allow the partners to build a more integrated programme, which would allow students to evaluate the possibility to continue studying or working in one of the two European countries.

We believe, and hope, that this could be only the first step in the construction of a more structured educational programme, which has the aim of testing the potentials of the dual system in relation to specific characteristics of the country in which takes place.