

## O1-A2 Analyse Lernende (3 Dokumente)

Projekttitel	Learning e-Mobility Plus - Innovative Methoden und Strategien zum gemeinsamen Lernen in Kooperation von Berufsschule, Hochschule und Unternehmen - am Beispiel der Zukunftstechnologie Elektromobilität
Projektnummer	2014-1-DE02-KA202-001593

### Inhalt:

<b>O1-A2 Analyse Lernende in DE</b>	<b>2-16</b>
<b>O1-A2 Analyse Lernende in IT</b>	<b>17-20</b>
<b>O1-A2 Analyse Lernende in PL</b>	<b>21-22</b>



**Fachbereich 2**  
**Ingenieurwissenschaften – Technik und Leben**  
**Fahrzeugtechnik**

## O1-A2: Evaluation of Stakeholder Interviews: Learners

### Detailed Version

Both students of HTW Berlin (2<sup>nd</sup> and 3<sup>rd</sup> year) and of automotive vocational school (1<sup>st</sup> year) took part in the anonymous survey.

### a) Evaluation of Survey Results

#### Section 1 (Electromobility):

##### Summary

From the responses, we learn how different the education degree of both groups is. The majority of the apprentices were merely confronted with the topics of the researches, whereas the students were already conveyed the contents whether in labor experiments or in extra courses. The students have more practical orientations than the apprentices due to their first year of education. The students, who mostly are at the end of their studies, already heard of the topics in some courses. In general, the learning material of the student is similar to this of the apprentices. They all use specialist books, media like the internet and lecture notes. All of the participants are very interested in e-mobility, as it seems to be very current and guaranteed in the future.

##### Questions

1. Did you learn anything about e-mobility during your training in the VET-school (at university)?

Students		
1	2	3
1. the first time in this project 2. basic knowledge was imparted	1. negligible, in passing, particular experiments 2. not yet in detail 3. very negligible mentioned	1. Yes, <b>in general additional subjects ( soll heißen im AWE fach)</b> Energy save systems 2. yes, touched on in the fourth semester 3. voluntary <b>in general additional subjects( soll heißen im AWE fach)</b>



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Apprentices		
1	2	3
1. No 2. Not yet 3. No 4. Not yet	1. Yes, this topic was treated during the first year as an apprentice 2. basic electronic schematic	

2. What kind of learning material or models have been used? How do assess the materials?

Students		
1	2	3
	1. Learning materials: books, Internet, lecture notes, MS Office (PowerPoint). Practical experience: not very much 2. Learning materials: MS Office (PowerPoint). Practical experience: measuring at cars during a visit of the guild. 3. Learning materials: MS Office (PowerPoint), Matlab. Practical experience: negligible 4. Learning materials: presentations, lecture notes, energy saver, electrical engines. Practical experience: negligible 5. Learning materials: lecture notes. Practical experience: negligible in the past	1. Learning materials: MS Office (PowerPoint), Matlab, presentations. Practical experience: some topics are not clear. In general there are some practical experiences 2. Learning materials: experiment places, lecture notes. Practical experience: experiments 3: Learning materials: MS Office (PowerPoint) presentations. Practical experience: experiments (basics of electrical engines)



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Apprentices		
1	2	3
1. no responses 2. no responses 3. no responses 4. no responses 5. no responses	1. Books and learning sheets are used	

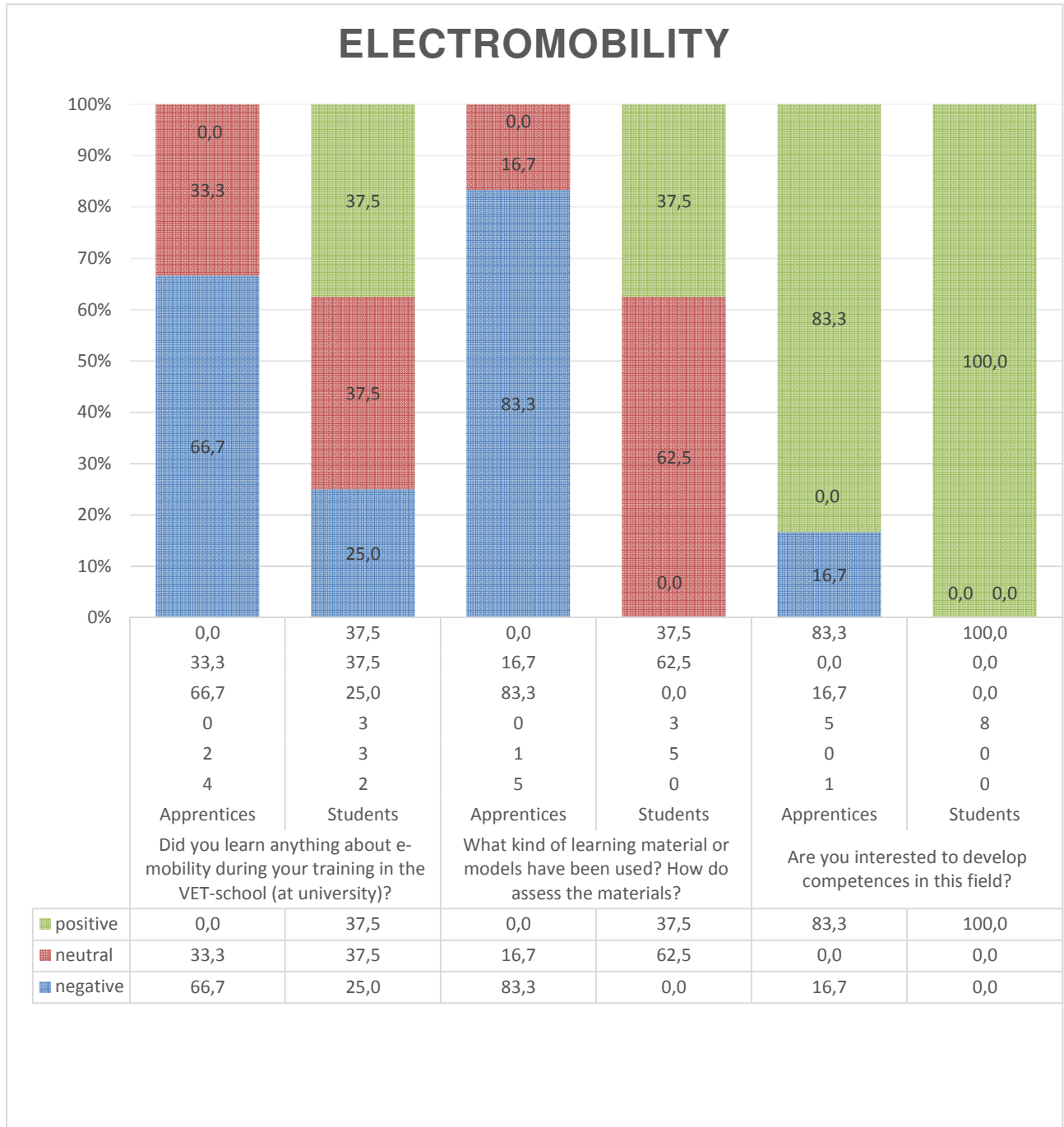
3. How do assess the practice-orientation? Are you interested to develop competences in this field?"

Students		
1	2	3
		1 Yes 2. Yes, in any case 3. Yes, there is an interest 4. Sure, because it very current 5. Yes, because it has a guaranteed future 6. Great interest, as it is parth-breaking 7. Yes 8. Yes, because there is a great interest in this technology

Apprentices		
1	2	3
1. no responses	1. Yes 2. Yes 3. Yes 4. Yes, as it is very important 5. Yes, because the work with electric cars will increase	



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**Fahrzeugtechnik**

**Section 2 (Cooperation with Companies):**

*Summary*

All of the students claim that there is a contact to enterprises during their work placement. The half of the interviewed apprentices says that they have this contact thanks to their dual training. Because of the insufficient experiences there are not any responses concerning the evaluation of the cooperation between companies and education institutions. The majority of the students has the opinion that this form of cooperation is useful. The only problem is the very short time for the work placement and the insufficient presence of the companies at the universities. This might be a possible improvement for the future.

*Questions*

1. *In which form do you make contacts / cooperate with companies during your training (dual training / work placements ...)?*

Students		
1	2	3
		1. Obligated work placement 2. Work placement during the 6 <sup>th</sup> semester 3. Work placement during the studies 4. Work placement of 3 months during the 6 <sup>th</sup> semester 5. Work placement during the 6 <sup>th</sup> semester 6. First references to this subject just during the 6 <sup>th</sup> semester 7. Work placement during the 6 <sup>th</sup> semester an just in this project first contact with the guild 8. Concluding work placement



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Apprentices		
1	2	3
1. No response 2. No response 3. No response		1. Dual training 2. Dual training 3. Dual training

2. How do you assess this? What opportunities for improvement do you see?

Students		
1	2	3
1. no experiences yet, because didn't take place	1. There is a need for more projects with companies and for a better cooperation of the studies with this companies 2. Allows to gain an insight into the work of the companies, the semester where one gains practical experiences should be longer 3. The cooperation between the universities and companies should be improved. Even the companies want that the work placement was prolonged.	1. This system proved successful, but the presents of companies has to be improved, for example with the offer of study trips or mini work placements. 2. The work placement offers the chance to present oneself at the companies. 3. proved good and important for the first experiences. 4. 10 weeks of work placement are enough to gain an insight to the industry.



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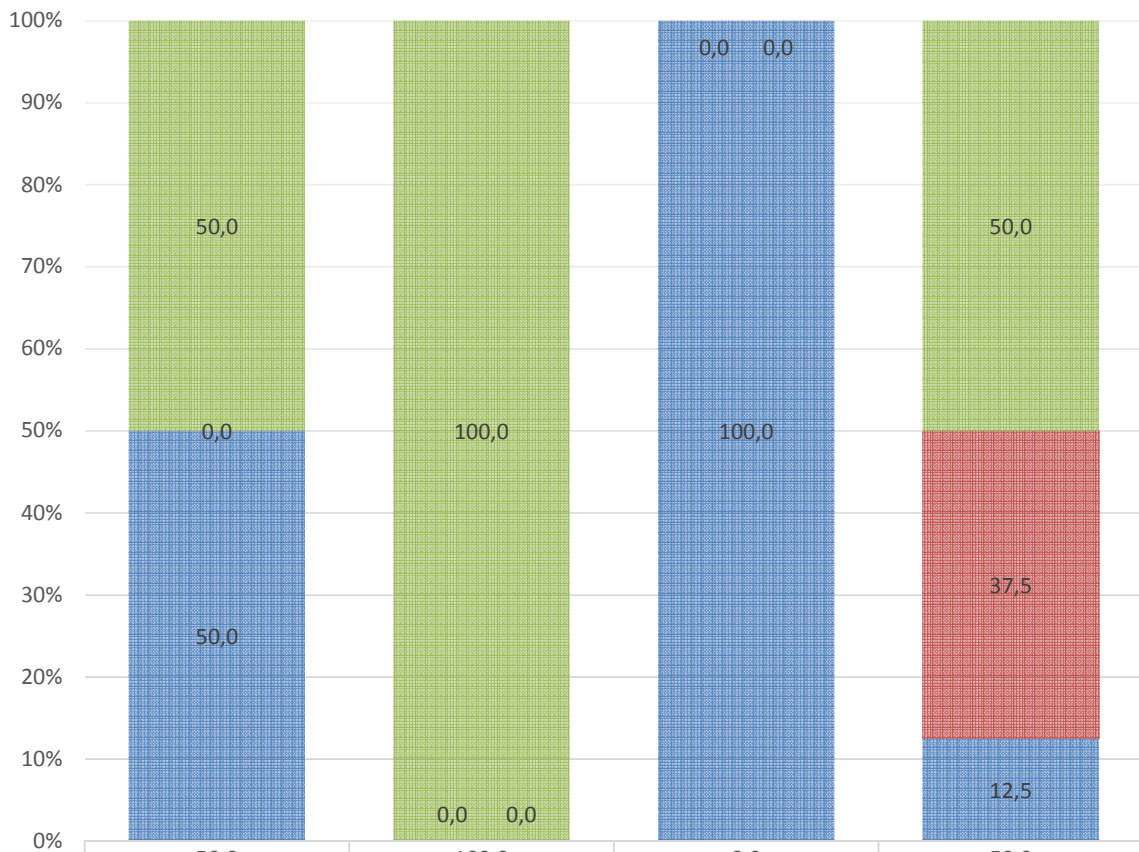
Apprentices		
1	2	3
1. no responses 2. no proposal for improvement 3no proposal for improvement 4. no responses 5. no responses 6. no responses		





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**Fahrzeugtechnik**

### COOPERATION WITH COMPANIES



50,0	100,0	0,0	50,0
0,0	0,0	0,0	37,5
50,0	0,0	100,0	12,5
3	8	0	4
0	0	0	3
3	0	6	1
Apprentices	Students	Apprentices	Students

In which form do you make contacts / cooperate with companies during your training (dual training / work placements ...)? How do you assess this? What opportunities for improvement do you see?

positiv	50,0	100,0	0,0	50,0
neutral	0,0	0,0	0,0	37,5
negativ	50,0	0,0	100,0	12,5



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**Fahrzeugtechnik**

**Section 3 (Cooperation with VET – University/Research Institutions):**

*Summary*

The apprentices are in contact with HTW of Berlin. The students are in cooperation with the automotive guild. Besides, from time to time some events are hold where students can attend, e.g. Technical University of Berlin. The participation of apprentices is of certain importance for them, as they hope for practical reference. A performance specification is prepared by the students and a system specification to see how different the demands can be. Another advantage is that the students can practice how to associate with clients. There is a certain hope for the continuance of such projects. Contact persons of companies, who can give some information about opportunities, are desired as well. The time for the education for some is too short. It should be longer, so that the stress could be provided.

*Questions*

1. *Is your VET-school in contact with universities or research institutions (for university students: Is there any contact of your university to VET-schools)? If yes, name the institutions.*

Students		
1	2	3
		1. Yes, within the framework of this project 2. Yes, within the framework of this project 3. The university offers from time to time events during which the students can establish contacts with other institutions. 4. Automotive guild 5. In this project for the first time. 6. Automotive guild, TU of Berlin 7. Automotive guild 8. Yes, within the framework of this project



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**Fahrzeugtechnik**

Apprentices		
1	2	3
1. no response 2. Not yet		1. Yes, to HTW of Berlin 2. Yes, to HTW of Berlin 3. Yes, to HTW of Berlin 4. Yes, to HTW of Berlin



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**Ingenieurwissenschaften – Technik und Leben**  
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2. *How are you as learners involved? Do you find such a contact useful? What are your suggestions for the future?*

Students		
1	2	3
		1. Student assistant, to gain experience 2. To write a performance specification, useful contact to impart general knowledge to apprentices and to show the path for the future. 3. Project assistant/ auditor, worth knowing and interesting 4. Useful for apprentices to broaden their horizon, because there is a lot of additional knowledge for further education 5. Writing performance specification, it's very interesting to see how different the requirements can be. 6. Contacts are very useful because they offer the chance to come into contact with the companies. 7. To gain in experience in dealing with clients and to impart knowledge. 8. To work for the realization of this project. To continue such projects



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Fahrzeugtechnik**

Apprentices		
1	2	3
1. No response 2. No response 3. No response 4. No response		1. To propose ideas. Sometimes it is possible to solve problems during practical works. Very useful because you can learn a lot from the students. Proposal for improvement: The cooperation with the institutions should be more intensely. 2. To work at the project, useful contact to gain knowledge.

3. *Your ideas / wishes what shall be improved regarding your training (your study) and regarding the access to the labour market / the employers*

Students		
1	2	3
1. No proposals 2. No proposals 3. No proposals, because not so much experience		1. Bigger practical orientation of the studies, more contact to big companies. 2. More job advertisements for student assistants in the companies. 3. More persons of contact at the universities, who support the students before during and after the work placement. 4. The problem consists in the duration of the bachelor, which is too short, and the resulting pressure to learn the contents of the studies. 5. More fairs to the big companies and for their contact.



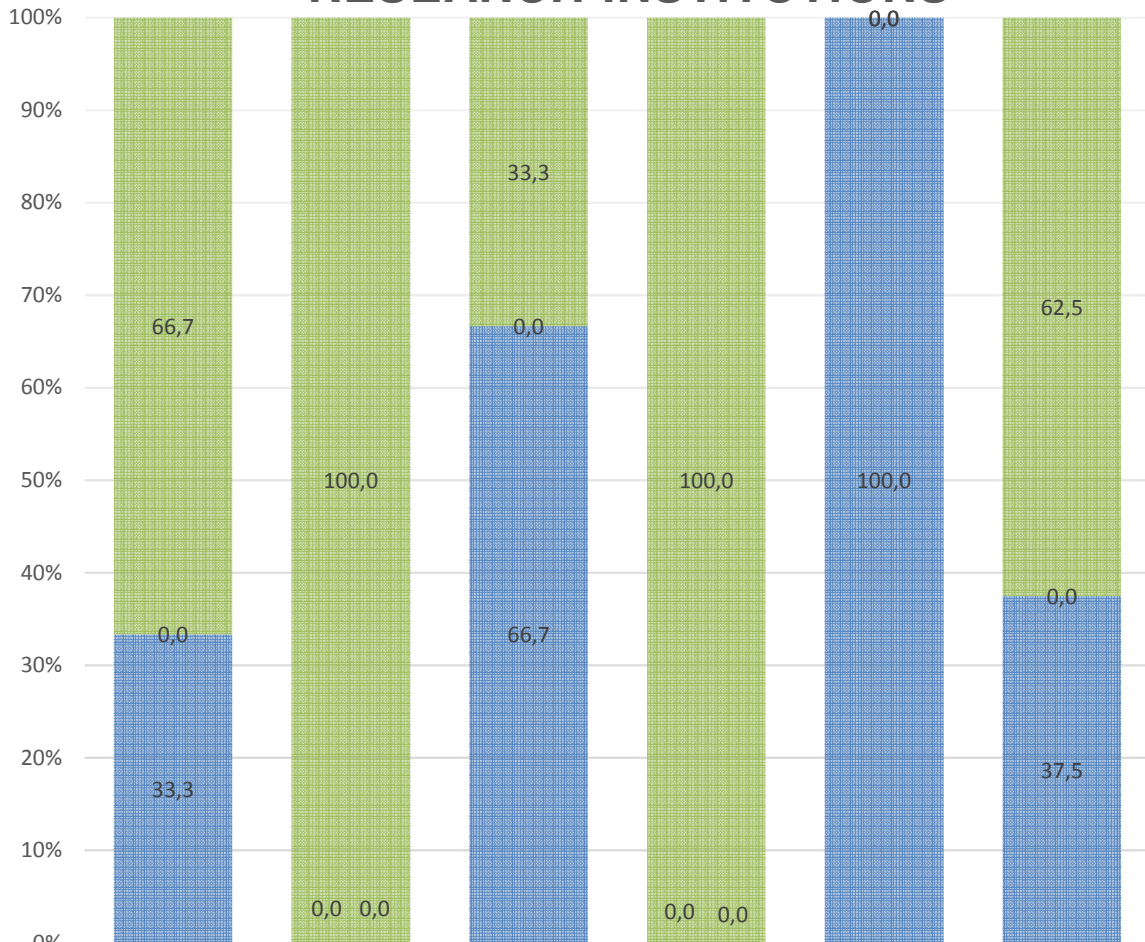
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**Fahrzeugtechnik**

Apprentices		
1	2	3
1. No response 2. No response 3. No response 4. No response 5. No response 6. No response		



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Fahrzeugtechnik**

## COOPERATION WITH UNIVERSITIES/ RESEARCH INSTITUTIONS



66,7	100,0	33,3	100,0	0,0	62,5
0,0	0,0	0,0	0,0	0,0	0,0
33,3	0,0	66,7	0,0	100,0	37,5
4	8	2	8	0	5
0	0	0	0	0	0
2	0	4	0	6	3
Apprentices	Students	Apprentices	Students	Apprentices	Students

Is your VET-school in contact with universities or research institutions (for university students: Is there any contact of your university to VET-schools)? If yes, name the institutions. How are you as learners involved? Do you find such a contact useful? What are your suggestions for the future? 3. Your ideas / wishes what shall be improved regarding your training (your study) and regarding the access to the labour market / the employers

positiv	66,7	100,0	33,3	100,0	0,0	62,5
neutral	0,0	0,0	0,0	0,0	0,0	0,0
negativ	33,3	0,0	66,7	0,0	100,0	37,5



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**b) Interpretation of Results and Relation to Questions Concerning the Interlectual Output.**

*“How can the quality of learning systems be evaluated?”*

The most obvious and most popular method to evaluate the quality of learning systems is the assessed exam in the beginning, at the end and during the semester. The comparison of the three marks allows to give evidence about the quality of this method. A disadvantage is constituted by the efficiency of the learning group and it is also connected with the “Rule 80/20”. Assuming that the group does not know anything about the taught topic, the learning progress will be great. 80% will be reached with the lowest expenditure, the last 20% will grow exponentially to the expenditure. This is why it is difficult to enlarge students’ knowledge. Concerning the apprentices it is easier, as they do not have previous knowledge so that the 80% take effect. Besides, the learning groups criticize the poor practical orientation, which is the connection between theoretical knowledge and the internalization of learning system. The practical orientation would allow to learn sustainable.

*“Which conditions exist for the learning environments (LE’s)?”*

Both target groups have to be confronted with the other learning environment. The student learns the details and the apprentice learns extensive. As the students explains the topics to apprentices there is a positive influence on both sides, which is produced by the different level of knowledge and the resulting demands. Both learning groups are satisfied with the cooperation between different institutions. It is regarded as future orientated.

*“Which opportunities exist for common learning?”*

No evidence can be given concerning the time and the level of knowledge or the year of training. Both groups have in common that they wish to work together, as they hope that they can learn from each other.

*“Are they any hindering factors for the common learning?”*

In both learning groups the poor practical orientation is regarded as a hindering factor during the theoretical learning. In addition, the learning groups criticize the negligible presence of the companies. Interests in topics concerning the project or problems in the coordination of time are not mentioned.

*“Which weaknesses do the latest learning systems have?”*

The short duration of the bachelor is criticized and the resulting learning pressure by the students. Another point concerns the negligible contact to the companies and the missing of the contact person who offers the opportunities for a work placement.



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# STAKEHOLDER INTERVIEWS

## Protokoll



Projekttitel:	Learning e-Mobility Plus - Gemeinsam Lernen in der Zukunftstechnologie Elektromobilität – Kooperation von Berufsschule, Hochschule und Unternehmen geht neue Wege.
Projektnummer:	2014-1-DE02-KA202-001593

### (c) Lernende (Auszubildende)

Institution	Pia Società San Gaetano, Vicenza
Gesprächspartner	Schuljahr 2014/2015 Anzahl Schüler: 45 (männlich 45 / weiblich 0)
Datum	19/12/14

#### 1. Elektromobilität

Wurde das Thema Elektromobilität in der Ausbildung behandelt?

Alle Berufsschüler geben an, dass das Thema Elektromobilität während des Unterrichts nicht behandelt worden ist und unterstreichen damit einen Ausbildungsmangel. Eine Analyse der obligatorischen Curriculumsinhalte während der Ausbildung auf Grundlage der heute noch gültigen Vereinbarung zwischen italienischem und regionalem Bildungsministerium vom 27/07/2011 ergibt, dass diese Thematik noch nicht zum Unterrichtsstoff gehört.

Welche Unterrichtsmaterialien / Modelle wurden verwendet?

Wie bewerten Sie den Praxisbezug dabei?



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In den verwendeten Unterrichtsmaterialien finden sich einige Angaben hinsichtlich der Technologie von Elektromotoren. Die Behandlung beschränkt sich allerdings auf eine ausschließlich oberflächliche und es wird lediglich die Technologie dargestellt, ohne ein vertiefendes Studium der Thematik bzw. Eine praktische Anwendung vorzusehen.



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Haben Sie Interesse, Kompetenzen in diesem Bereich zu erwerben?

Die Antworten auf diese Fragen wird von den Schülern weitgehend einheitlich beantwortet: 85% ist interessiert, Kompetenzen in diesem Bereich zu erwerben (20% sind SEHR INTERESSIERT). Die wenigen nicht interessierten Schüler sind gegenüber der neuen Technologie eher ablehnend und haben Angst, dass die Verbreitung der Elektromobilität die zukünftige Arbeit sehr viel schwieriger wird. Dabei ist festzustellen, dass es sich bei den wenig interessierten Schüler um die älteren (über 18 Jahre) Befragten handelt.

## 2. Kooperationen mit Unternehmen

In welcher Form erfolgt der Kontakt zu / die Zusammenarbeit mit Unternehmen im Rahmen Ihrer Ausbildung (duale Ausbildung / Praktika)?

Alle Berufsschüler halten das Betriebspraktikum für das wichtigste Element in der Zusammenarbeit von Schule und Arbeitswelt. Im dritten Ausbildungsjahr hält ein niedriger Anteil der Befragten die Betriebsbesuche für ein wichtiges Element, das mehr Bedeutung als das Praktikum hat.

Wie bewerten Sie dies? Welche Verbesserungsmöglichkeiten sehen Sie?

Die Antworten der Befragten stimmen weitgehend überein. Die Praktikumserfahrung wird als die wichtigste der ganzen Berufsausbildung angesehen. Der höchste Zufriedenheitsgrad ist im 3. Ausbildungsjahr festzustellen, während im 2. in verschiedenen Fällen eine geringere Zufriedenheit aufgetreten ist, was auf das geringe Vertrauen des Praktikumsbetriebs und eine geringe Arbeitsautonomie zurückzuführen ist.

Nur wenige Schüler haben Verbesserungsmöglichkeiten gesehen. Hierbei sind genannt worden: eine Verlängerung des Praktikums oder ein Praktikum während der Ferienzeit im Sommer.

## 3. Kooperation mit Hochschulen / Forschungseinrichtungen

Gibt es in der Berufsausbildung Kontakte zu Hochschulen oder Forschungseinrichtungen (für Studenten: Gibt es Kontakte zu Einrichtungen der beruflichen Bildung)? Wenn ja, zu welchen?

Die Berufsschüler kennen keine Formen der Zusammenarbeit mit Universitäten oder Forschungseinrichtungen. Einige Befragten geben an, dass sie existieren, allerdings auf einem höheren Niveau, z.B. fuhr die Weiterbildung der Berufsschullehrer, wo aber keinerlei Einbeziehung der Berufsschüler vorgesehen ist.

In welcher Form sind Sie als Auszubildende (Studenten) beteiligt? Wie nützlich finden Sie einen solchen Kontakt? Was würden Sie für die Zukunft vorschlagen?

Die Berufsschüler sind nicht an daran interessiert, an einer Zusammenarbeit mit Forschungseinrichtungen oder Universitäten mitzuwirken. Der theoretische Berufsschul-Unterricht wird als ausreichend angesehen, um ihre Erwartungen zu erfüllen. In einigen Fällen halten sie ihn für ihre Berufsausbildung als zu tiefgehend.

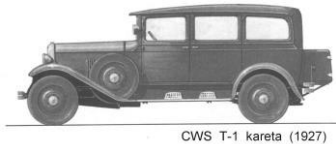
Ihre Verbesserungswünsche für die Ausbildung und den Zugang zu Unternehmen/Arbeitgebern

Die Verbesserung der schulischen Berufsausbildung ist durch eine Erhöhung der praktischen Werkstattarbeit gegenüber dem theoretischen Unterricht zu erreichen.

**Interviewer:**

Name: Alessandro Scaldaferro

Organisation: Pia Società San Gaetano, Vicenza



CWS T-1 kareta (1927)

ZSS Poznań

## The analysis of the diagnostic survey

### “Electromobility in vocational training”- students.

*Students of automotive vocational school (technical upper secondary school and vocational school) took part in the anonymous survey. The survey has been conducted among the students of the oldest groups.*

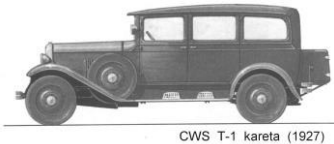
#### 1. The answers to the question:

**„Does the school teach students in the matter of electrical drives? What kind of teaching aids/ models have been used? What is your opinion on the idea of teaching in this matter? Are you interested in gaining abilities in this subject?”**

show the various, in some cases contradictory answers. Some students agree, that the matter of electromobility has been discussed during the theoretical classes concerning the construction of motor vehicles. The rest of respondents deny this subject have ever been discussed during the lessons. On the basis of the survey's results one may come to the conclusion that the question of electromobility is not discussed by each and every teacher during the lessons, although it should be covered according to obligatory curriculum.

The teachers covering the subject of electromobility usually take advantage of multimedia presentations as well as the models of chosen components. In the majority of cases students are interested in this subject and perceive this knowledge quite useful, as the number of hybrid and electrical motor vehicles is increasing. They also believe, that in the future they will deal with such vehicles working as car mechanics.





CWS T-1 karetá (1927)

## ZSS Poznań

### 2. For the question:

**„ How does the school fulfil cooperation with employers in the field of vocational education – dual training/ practice/ apprenticeship? How do you estimate it? How would you improve it?”**

the majority of students express positive opinions, especially when it comes to practical training in car service stations. Respondents criticize the lessons in school workshops, which in their opinion are “boring” and their attractiveness depends on the type of repair order they are requested to perform. Such negative opinion may be related to the fact, that classes in school workshops are mainly devoted to the basic information and skills of the vocation, while the manual skills of students at the beginning of their education are poor. That is why, the teachers need to devote a lot of time teaching the basics of the vocation. In general, the students estimate positively the system of practical vocational training, they do not see the need of introducing relevant changes.

### 3. The answers to the questions:

**“Does your school cooperate with any universities or academic institutions? If yes, provide the names of partners? Are you involved in this cooperation as a trainee/ apprentice? Is this cooperation profitable? What would you change in it?”**

show the range of various, in some cases contradictory answers. Some students acknowledge such cooperation with Poznan University of Technology and other vocational schools, some of them do not know anything about it. A few of the respondents even confirm their participation in such cooperation. Some respondents do not see the need of introducing any changes in this field, but the rest of students claim that it is relevant to cooperate with universities and their lecturers. These institutions, in their opinion, may be the source of knowledge and technological innovations.

Andrzej Kwasniewski  
Coordinator of ZSS Poznan  
auryn11wp.pl  
mobile: +48 503 123 067

