

Increase of Students' personal Development by Internationalisation

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**GAUDEO DISCERE
UT DOCEAM**

(Seneca)

Abstrakt a klíčová slova v češtině

Habilitační práce zkoumá, zda mezinárodní aktivity podporují osobnostní rozvoj studentů.

Oficiální dokumenty – většinou na úrovni Evropské unie – vyžadují úzkou spolupráci mezi členskými státy EU v oblasti vzdělávání a stanovují strategické cíle. Ale jen velmi zřídka existují vědecky ověřené důkazy, které popisují, jaké výhody získávají studenti z mezinárodních aktivit. Tuto mezeru autor vyplňuje předkládanou prací.

Na Vojenské Akademii Marie Terezie se používají tři způsoby stanovení osobnostního rozvoje studentů. První z nich je srovnání úrovně studentů před a po období mobility. Druhý je porovnání metabolických dat studentů, opět před a po jejich mobilitě. Třetí je analýza existujících externích hodnotících zpráv z Modulu společné bezpečnostní a obranné politiky, vedených na Vojenské akademii Marie Terezie v minulých letech.

Výsledky ukazují – pokud jde o známky – že všichni studenti po jejich návratu ze semestru v zahraničí vykazují lepší výkony, než studenti bez mobility. Pokud jde o metabolická data, studenti po mobilitě mají mnohem lepší výchozí schopnosti se vyrovnat s výzvami, než studenti bez mobility. Třetí výzkum ukazuje, že dokonce i krátké mezinárodní akce mají pozitivní dopad na osobnostní rozvoj studentů.

V závěru – na základě výsledků této práce – autor navrhuje navázat na výsledky výzkumu a předložit doporučení k rozšíření a usnadnění výměnných pobytů.

Klíčová slova v abecedním pořadí: Evropská Unie, Internacionalizace, Kompetence, Metabolická data, Modul Společné Bezpečnostní a Obranné Politiky, Osobnostní Rozvoj, Srovnání úrovně, Studenti, Vojenský Erasmus, Vyhodnocení klinického stresu.

Abstract und Schlagworte in deutscher Sprache

Die Habilitationsschrift untersucht, ob internationale Aktivitäten die Persönlichkeitsentwicklung von Studierenden fördern.

Offizielle Dokumente – hauptsächlich auf Ebene der EU – fordern ihre Mitgliedstaaten zu einer engen Kooperation im Bereich der Ausbildung auf und legen die strategischen Ziele fest, jedoch existieren kaum wissenschaftliche Studien über die Vorteile für Studierende, welche auf internationalen Aktivitäten basieren. Diese Lücke wird mit der vorliegenden Schrift geschlossen.

Drei verschiedene Zugänge werden angewandt, um die Persönlichkeitsentwicklung von Studierenden der Theresianischen Militärakademie festzustellen. Die erste Untersuchung vergleicht die Studierendennoten vor und nach deren Auslandsentsendungen. Die zweite Untersuchung vergleicht ihre Stoffwechselwerte, wiederum vor und nach ihrer Auslandsausbildung. Der dritte Zugang ist eine Analyse von bereits vorhandenen externen Evaluierungsberichten bezüglich der Gemeinsamen Sicherheits- und Verteidigungspolitik-Module, welche an der Theresianischen Militärakademie in den letzten Jahren durchgeführt wurden.

Die Ergebnisse bezüglich der Noten zeigen, dass sämtliche Noten von Studierenden, welche in ein Auslandssemester entsandt wurden, nach ihrer Rückkehr besser sind als die Noten von Studierenden, welche keine Auslandsausbildung absolvierten. Betreffend die Stoffwechselwerte haben Auslandsstudierende im Vergleich zu Studierenden, welche nicht im Ausland waren, eine bessere Ausgangssituation, um Herausforderungen besser zu bewältigen. Die dritte Untersuchung zeigt, dass sogar kurze internationale Aktivitäten eine positive Auswirkung auf die Persönlichkeitsentwicklung von Studierenden haben.

Auf Basis der Ergebnisse schlägt der Autor am Ende Folgeforschungen vor und erlaubt sich, Empfehlungen und Anregungen zur Erleichterung und Intensivierung der Austausche zu geben.

Schlagworte in alphabetischer Reihenfolge: Clinical Stress Assessment, Europäische Union, Internationalisierung, Kompetenzen, Militär-Erasmus, Modul der Gemeinsamen Sicherheits- und Verteidigungspolitik, Notenvergleich, Persönlichkeitsentwicklung, Stoffwechselwerte, Studierende.

Abstract and Keywords in English

The Habilitation Thesis researches if internationalisation-activities increase students' personal development.

Official documents – mostly on European Union level – request close cooperation among the EU Member States in the field of education and set strategic goals, but very rarely scientifically proven evidences exist which describe the benefits for students based on internationalisation-activities. This gap the author fills with the present thesis.

Three avenues of approach are used to determine the personal development of students of the Theresan Military Academy. The first one is a comparison of students' grades before and after their mobility periods. The second one is a comparison of students' metabolic data, again before and after their mobility periods. The third one is an analysis of still existing external evaluation reports for Common Security and Defence Policy modules conducted at the Theresan Military Academy during the past years.

The results are that – concerning the grades – all mobility students perform better than non-mobility students after their return from a semester abroad. Concerning their metabolic data mobility students have a much better starting situation to manage their challenges better than non-mobility students. The third research shows that even short international events have a positive impact on students' personal development.

Finally – based on the thesis' results – the author proposes followup researches and ventures to give recommendations and suggestions to facilitate and increase exchanges.

Keywords in alphabetical order: Clinical Stress Assessment, Common Security and Defence Policy Module, Comparison of Grades, Competences, European Union, Internationalisation, Metabolic Data, Military Erasmus, Personal Development, Students.

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2. Preface

The chapter describes the author's personal relationship to the topic and provides acknowledgements to certain persons and institutions.

*“National champions are outdated.”*¹ According to this citation by the European Union (EU) Commissioner for Competition, the Theresan Military Academy (TMA) started its major exchange activities in 2005. Because of the tremendous increase of incoming and outgoing students and lecturers, there was the need to create an International Office (IO)² dealing with all these exchanges. In 2012 the author of the present thesis was appointed as the head of this organisation.³ That is why it is a personal interest of the author and should be of value as well to have a deeper scientific look, if exchange activities may have a benefit for the future officers' personal developments.

In 2015 the author was appointed as the Chairman of the Implementation Group (IG)⁴ of the *“European initiative for the exchange of young officers inspired by Erasmus”*.⁵ This Initiative's goal is to harmonise the European Basic Officer Education – one main avenue of approach is to increase exchange activities. As stated above, a scientific evidence for future officers' increased personal developments by exchanges would help a lot for better argumentation against those persons who criticise exchanges owing to the increased costs.

The author would like to express his gratitude to the Faculty of Military Leadership at the University of Defence in Brno – in particular to the Dean, Col Assoc. prof. Ing. Vladan Holcner, Ph.D. – for the possibility to submit this Habilitation Thesis in English.

A special thanks goes to the Commission Members for this Habilitation Thesis who render a lot of effort to go through the entire thesis. With all the elaborations of the past

1 Citation of Kroes, N., European Union Commissioner for Competition. Cit. acc. to the homepage of Wirtschaftszitate.de. URL: http://www.wirtschaftszitate.de/autor/kroes_neelie.php. [7-8-15].

2 Remark of the author: The official Austrian name of the IO translated into English is: Docentship for Comparative Military Leadership Education (International Cooperation).

3 Remark of the author: The author's Curriculum Vitae (CV) can be found in sub-chapter 17.6.

4 Ibid.

5 Remark of the author: The quoted name is the original one as of 2009. Other names are *“Military Erasmus”*, *“Erasmus Militaire”*, *“EMILYO”* (Exchange of Military Young Officers) or *“The Initiative”*. The last expression is in most common use at present time and is also used in this thesis hereinafter.

years the author hopes to be able to convince them that the results are valid, accurate and beneficial for all the persons and institutions involved in international activities.

A cordial thanks goes to Univ.-Prof. Dr. Sepp Porta and his family. The head of the institute for applied stress-research contributed with his decades-long experience to one of the most important thesis' results. He supported with his Clinical Stress Assessment (CSA) method the scientific findings essentially.

The Head of Institute and Programme Director of the FH Bachelor Programme Military Leadership at the TMA – BrigGen Mag. Karl Pichlkastner – supported the author in allowing him to use databases of officer cadets' grades and supported the Habilitation Process as such. The author expresses his gratitude to him.

The author also would like to take a call to Mrs. Eva Rainer from the Department for Study Affairs of the FH Bachelor Programme Military Leadership who tried hard to provide officer cadets' and civilian students' grades of the past ten years to the author.

A special thanks goes also to Mrs. Maria Meitz from the library of the FH Bachelor Programme Military Leadership who reviewed this thesis with a special plagiarism program to make sure that not any thesis' part can be accused of plagiarism.

Mag. Christian Thuller – English teacher of the FH Bachelor Programme Military Leadership at the Theresan Military Academy – checked the present thesis concerning proper English. Many thanks for his efforts.

Last but not least the author gives thanks to the 165 probands who not only had to endure different burdens but also had to provide their blood for the stress measurements with the CSA method.

3. Preamble

The chapter draws the reader's interest to the topic, should convey the importance of the Habilitation Thesis and should inspire to continue reading.

„In a changing world, a person who is able to drive different types of cars will always be a better driver than those ones who just drive a single type their whole life.“⁶ In the spirit of this citation, in 2009 during one of the Bologna follow-up conferences the following strategic goal was issued: “In 2020, at least 20% of those graduating in the European Higher Education Area should have had a study or training period abroad.”⁷ In this communiqué it is stated that the mobility of students, researchers and staff enhances the quality of programmes and that mobility is important for personal development. Mobility also increases the competition and cooperation between higher education institutions.⁸

We can see these statements as arguments of politicians to reach a certain goal, but are they valid? Does the mobility of students really enhance their personal development? In the communiqué not any scientific research was mentioned which verifies the statements' validity. With this thesis the author would like to prove, if – taking into consideration the strategic goal for the year 2020 – Higher Education Institutions (HEI) are on the right track or go astray.

In 2008 the Implementation Group (IG) for the “*European initiative for the exchange of young officers inspired by Erasmus*” was founded⁹ based on a Council decision of the EU Ministers of Defence.¹⁰ Education experts from all 28 EU Member States are to

6 Citation made by Col Rainer, R. (2015) from the Austrian Ministry of Defence and Sports during a discussion with the author about the grades of TMA students sent abroad for one semester in comparison with those one who were not sent abroad.

7 Bologna follow-up Group (2009). The Bologna Process 2020 – The European Higher Education Area in the new decade. Communiqué of the Conference of European Ministers Responsible for Higher Education. Leuven and Louvain-la-Neuve. P. 4.

8 Cf.: Ibid. P. 4.

9 Remark of the author: Compare with footnote No. 5.

10 Cf.: Council of the European Union (2008). 2903rd meeting of the Council – General Affairs and External Relations. Council Decision. Document 15396/08. Brussels. P. 5.

and

Cf.: Council of the European Union (2009). 2974th External Relations Council meeting. Council conclusions on ESDP. Brussels. P. 16.

solve problems to pave the way for exchanges mainly on Basic Officer Education level.¹¹ In detail, the following strategic goals were determined:¹²

- Improve interoperability and increase a European security and defence culture.
- At basic level, students and cadets should share parts of their education with those ones from other countries to become familiar with future roles and responsibilities in international security.
- Lift barriers which may oppose free mobility of knowledge, skills and competences of future military officers, their teachers and instructors between the European Basic Officer Education Institutions.
- Supplement the action of the fora that have been created by European military institutes of a same service, such as the Conference of Superintendents of the European Naval Academies, the European Air Force Academies and the European Military Academies Commandants' Seminar (EMACS).
- Measure the increasing
 - number of exchanges,
 - mutual recognition,
 - use of Erasmus mobility,
 - opening of national educational opportunities to young European officers,
 - learning and teaching about Europe and its defence, such as the creation of a common modules and
 - promotion of the learning of several foreign languages.¹³

Again the question arises: Are these goals the right ones? If we deduce it from the on-going missions and operations – where our officers from different European countries are to work together – we could say that we take the right actions, but this argument is just based on a gut instinct. If we base the goals on scientific evidences, it would be much easier to argue if we head in the right direction.

11 Gell, H. (2015). Europeanising the initial Officers' Curriculum. Some Challenges – many Opportunities (Visions from the operational Aspect). Zagreb. Publication for a RACVIAC compendium – Centre for Security Cooperation. Passim.

12 Cf.: Homepage of European Initiative for the Exchange of Military Young Officers. URL: <http://www.emilyo.eu/node/30>. [8-8-15].

13 Cf.: Ibid.

Scientifically proven or not, the fact is that since 2005 the Theresan Military Academy has increased its exchanges – mainly for officer cadets – tremendously.¹⁴ Additionally, an increased cooperation between the University of Defence in Brno and the TMA has taken place since 2011.¹⁵ In particular cooperation between these two institutions is made in the following major fields:

- **Semester exchanges:** Officer cadets and civilian students spend an entire semester at the respective other institution.¹⁶
- **Lecturer exchanges:** Within the ERASMUS+ frame lecturers of both institutions teach at the respective other institution.
- **Short term exchanges:** Officer cadets and civilian students – mainly from UoD

14 Cf.: Gell, H. (2005). The Bologna-Process and its Impact onto the Austrian Officer Education. Vienna. Armis et Litteris 15. Scientific Series of the FH Bachelor Programme Military Leadership. P. 113-123.

and

Cf.: Gell, H. (2009). European Initiative for the exchange of young officers inspired by ERASMUS. Vienna. Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 4686/09. P. 53-57.

and

Cf.: Gell, H. (2010). One Year „European Initiative for the exchange of young officers inspired by ERASMUS“. Vienna. Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 4313/10. P. 63-69.

and

Cf.: Gell, H. (2011). Internationalization within the frame of Basic Officer Education. Vienna. Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 4432/11. P. 88-106.

and

Cf.: Gell, H. (2012). Internationalization. Vienna. Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. P. 70-77.

and

Cf.: Gell, H. (2013). Going International – Just an Interim Report? Vienna. Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 5292/13. P. 118-146.

and

Cf.: Gell, H. (2014). Internationalization at the FH Bachelor Programme Military Leadership. Vienna. Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 4821/14. P. 78-108.

15 Cf.: Gell, H. (2011). ERASMUS Agreement between the University of Defence BRNO and the FH Bachelor Programme Military Leadership of the Theresan Military Academy. Wiener Neustadt. Internet article. URL: <http://83.64.124.70/campus/news/2012/pdf/2011-11-Austria-ERASMUS-Agreement-with-UoD-Brno.pdf>. [8-8-15].

16 Cf.: Homepage of the University of Defence Brno. Faculty of Military Leadership. URL: http://info.unob.cz/en/Pages/2015/04/20150427_1.aspx. [8-8-15].

Brno – participate in short modules conducted at the TMA.¹⁷

- **The Initiative:** Both institutions participate in the IG-meetings, for a sub-group dealing with lifelong learning (LLL), UoD Brno is responsible for. During annual so-called LOD-7 meetings in Brno the road is paved primarily for up-coming international Military Academic Forums (iMAFs).
- **iMAF:** Both institutions signed a contract – together with three other institutions from Poland, Romania and Hungary – to conduct future iMAFs according to a rotation principle to share the costs. Since 2012 iMAFs have been dedicated to topics referring to the Initiative.¹⁸
- **Strategic Partnership:** Within the ERASMUS+ programme the five iMAF institutions agreed on a future development of an international semester. The lead-institution is the Military Academy of Land Forces (MALF) in Wroclaw. In August 2015 this project received a grant from the Polish ERASMUS+ agency.¹⁹
- **Joint Degree Master on Common Security and Defence Policy (CSDP):** In 2015 UoD Brno and TMA started a project for a Joint Degree Master programme under the lead of the Jagiellonian University in Cracow. It is planned to start the programme in winter semester 2017.

17 Cf.: Homepage of the University of Defence Brno. URL: <http://info.unob.cz/en/Pages/2014/04/20140428.aspx>. [8-8-15].

18 Cf.: Gell, H. (2013). iMAF 2013 – 5th anniversary of the Initiative – Theresan Military Academy hosted Europe. Brussels. 10th Mobility Newsletter of the European Security and Defence College. P. 5-6.

and

Paile, S. & Gell, H. (2013). iMAF 2013: Lessons Learnt from the international Military Academic Forum 2013. Vienna. ISBN 978-3-9503699-0-8. Passim.

and

Gell, H. & Paile, S. (2014). iMAF 2014: Lessons Learnt from the international Military Academic Forum 2014. Vienna. ISBN 978-3-9503699-1-5. Passim.

and

Cf.: Gell, H. (2014). The international Military Academic Forum 2014 (iMAF 2014) in Austria. Brussels. 12th Mobility Newsletter of the European Security and Defence College. P. 6-9.

and

Cf.: Gell, H. (2014). The international Military Academic Forum 2014 (iMAF 2014). Vienna. Article in Military Series "Truppendienst" 5/2014 (No. 341). P. 409-414.

19 Cf.: Official e-mail from the MALF Erasmus coordinator on 5th of August, 2015. The mail is cited as evidence for trueness in sub-chapter 17.4.5 "Grey Literature".

All these cooperations between the UoD and the TMA poses again the question if there is a scientifically proven evidence for benefits from all these exchanges. Experienced educators of course may observe an increase of personal developments – but is observing enough to spend a lot of money and extensive administration work for all these exchanges?

Of course education cannot always be weighted with just money – education needs money – but in times of decreasing defence budgets the question may occur if we set the right priorities?

If the reader of this thesis wants to know the answers to the above mentioned questions and if the reader wants to know how the author tried to answer them by scientifically proven evidences, then it should be worth to continue reading.

4. Introduction

The chapter describes the thesis concept, which problems will be solved, which problems will explicitly not be solved and how the problems will be solved with the elaborations. Necessary terms and definitions are described as well to clarify them for the entire thesis.

4.1 Thesis' Concept

This Habilitation Thesis is authored following an advice of the Austrian Academy of Science which should be used for all variants of scientific theses. The sequence of the thesis' chapters guarantees a golden thread because one chapter is built upon previous ones. This scientific structure as such is also taught by the author at various universities and academies; according to this structure scholar books were published by the author as well.²⁰

Formal guidelines – such as quotation rules or to capitalise headlines – are used within

20 Gell, H. (2012). Directive for authoring Scientific Theses. Corvinus University Budapest & Sigmund Freud University Vienna. Passim.

and

Gell, H. (2013). International Cooperation: Regulation No. 24 for authoring Bachelor and Master Theses by International Students. Wiener Neustadt. Passim.

and

Gell, H. (2013). International Cooperation: Appendix to Regulation No. 24 for authoring Bachelor and Master Theses by International Students. Evaluation of Bachelor and Master Theses. Wiener Neustadt. Passim.

and

Gell, H. (2013). Internationale Kooperationen: Regelung Nr. 24 zur Erstellung von Bachelor- und Masterarbeiten durch internationale Studierende. Remark of the author: Translated into English the title means: International Cooperation: Regulation No. 24 for authoring Bachelor and Master Theses by International Students. Wiener Neustadt. Passim.

and

Gell, H. (2014). Regulation No. 05 for authoring the Bachelor Thesis 2 during the fifth and sixth Semester. Wiener Neustadt. Passim.

and

Gell, H. (2014). International Cooperation: Regulation No. 04 for authoring the Bachelor Thesis 1 during the fourth Semester. Wiener Neustadt. Passim.

and

Gell, H. (2014). Internationale Kooperationen: Regelung Nr. 04 zur Erstellung der Bachelorarbeit 1 im vierten Semester. Remark of the author: Translated into English the title means: International Cooperation: Regulation No. 04 for authoring the Bachelor Thesis 1 during the fourth Semester. Wiener Neustadt. Passim.

the thesis according to the directives and regulations mentioned in footnote No. 20. Within the entire thesis British English is used, exceptions are original names which require American English in some specific cases.

The previous chapter describes the cooperation between the UoD Brno and the TMA on the one hand; on the other hand the TMA conducts a lot of other annual exchange programmes with other countries. Just as of the academic year 2014/2015 these outgoing and incoming activities are visualised with three sketches hereinafter.



Figure 1: Number of outgoing TMA officer cadets for the International Training on the Job (ITJ) during the academic year 2014/2015.²¹

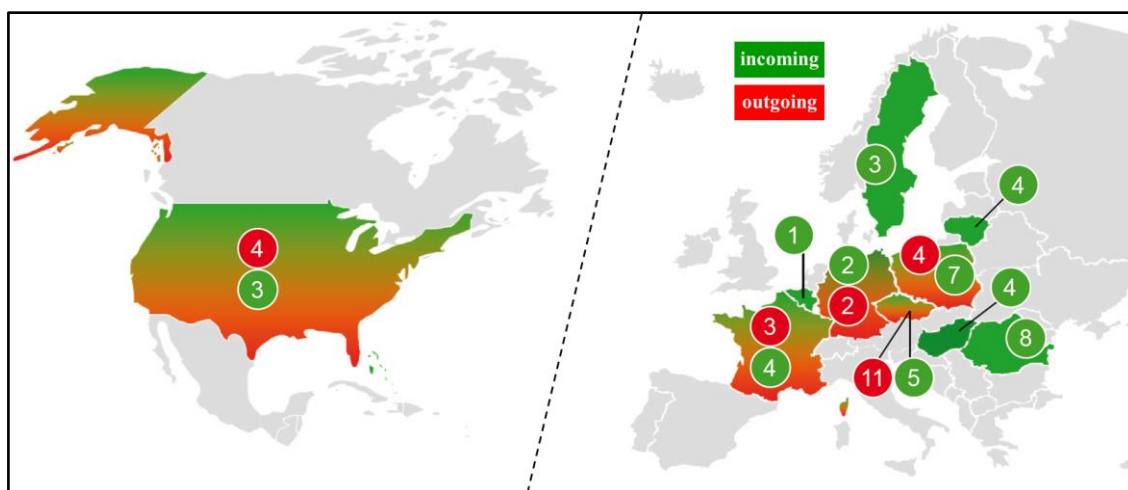


Figure 2: Number of incoming and outgoing officer cadets and civilian students for TMA semester exchanges during the academic year 2014/2015.²²

21 Remark of the author: Sketch created by the author based on statistical databases of the IO/TMA and Cf.: Publications of footnote No. 14.

22 Remark of the author: Sketch created by the author based on statistical databases of the IO/TMA and Cf.: Publications of footnote No. 14.

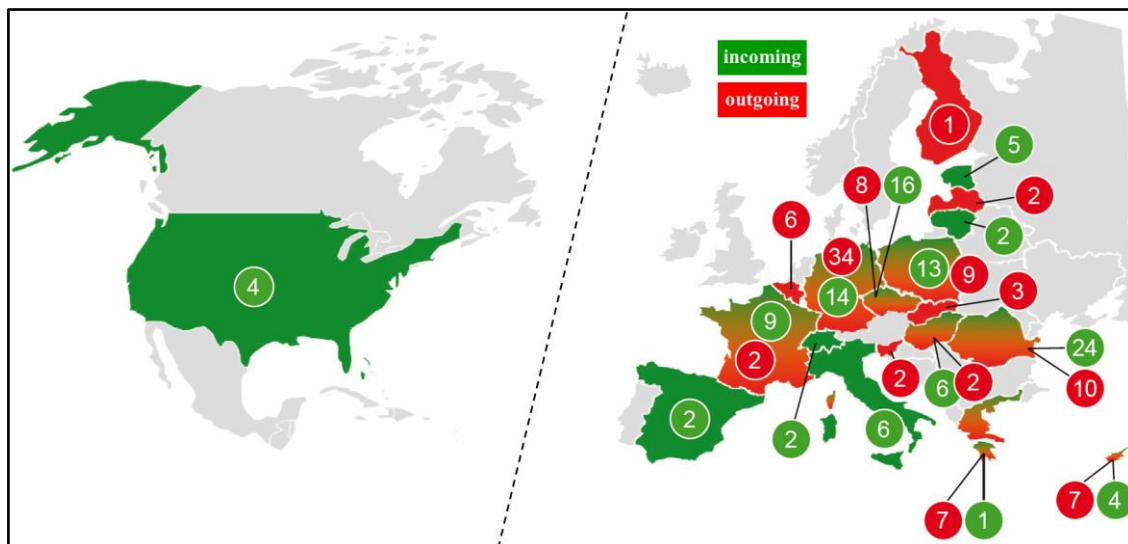


Figure 3: Number of incoming and outgoing lecturers, staff, officer cadets and civilian students for short term TMA exchanges during the academic year 2014/2015.²³

With these above pictured huge number of exchanges – just for the academic year 2014/2015 there were 24 different outgoing and also 24 different incoming activities with a total number of 142 outgoing and 149 incoming persons – the questions occurs, which exchanges should be taken to come to a valid and accurate scientific result to ascertain that exchange activities increase personal developments? As a consequence of a decision process the author concentrates his elaborations onto the following concept:

- **Outgoing activities:** Because of TMA officer cadets' availability of data, mainly these outgoing activities are researched.
- **Duration of outgoing activities:** Because of the long-term effect of longer stays abroad, officer cadets' and students' semester exchanges are researched. If this group of persons or lecturers or staff spent just few days abroad, there is the risk that these results are not valid.
- **Incoming activities:** At the TMA, for incoming activities an external evaluation took place for seven of the so-called Common Modules²⁴ – the Common Modules on CSDP. Using the publications for these CSDP modules it is worth to analyse

²³ Remark of the author: Sketch created by the author based on statistical databases of the IO/TMA and Cf.: Publications of footnote No. 14.

²⁴ Remark of the author: The term “*Common Module*” is described in sub-chapter 4.2 “*Terms and Definitions in alphabetical Order*”.

the results in terms of increasing personal development during this period.²⁵ Other short-term exchanges will not be analysed because either data are not available or the danger of just short effects may lead to non-valid results.

- **Type of data:**

- **Grades:** Grades of TMA officer cadets and civilian students may express a long-term development of an individual before and after going abroad. That is why the grades are used to analyse these developments.
- **CSA data:** By measuring the blood with the Clinical Stress Assessment method²⁶ it can be determined, how stressable an individual is. If these data are compared between persons going abroad with those ones who are not going abroad, it may lead to certain differences and to certain scientific results.
- **Evaluation reports:** As mentioned above, during the CSDP modules an

25 Paile, S. & Gell, H. (2012). Common Security and Defence Policy Modules 2010 – External Evaluation Report. Vienna. Armis et Litteris 25. Scientific Series of the FH Bachelor Programme Military Leadership. Passim.

and

Paile, S. & Gell, H. (2012). Common Security and Defence Policy Modules 2011 – External Evaluation Report. Vienna. Armis et Litteris 27. Scientific Series of the FH Bachelor Programme Military Leadership. Passim.

and

Gell, H. (2013). Module Description of the Common Module on “CSDP (Common Security and Defence Policy)”. Wiener Neustadt. Passim.

and

Paile, S. & Gell, H. (2013). Common Security and Defence Policy Module 2012 – External Evaluation Report. Vienna. Armis et Litteris 28. Scientific Series of the FH Bachelor Programme Military Leadership. Passim.

and

Paile, S. & Gell, H. (2014). Common Security and Defence Policy Module 2013 – External Evaluation Report. Vienna. Armis et Litteris 30. Scientific Series of the FH Bachelor Programme Military Leadership. Passim.

and

Paile, S. & Gell, H. et al. (2015). Common Security and Defence Policy Module 2015 – External Evaluation Report. Vienna. Armis et Litteris 33. Scientific Series of the FH Bachelor Programme Military Leadership. Passim.

26 Remark of the author: How the measurements with the CSA method are conducted, is described within the sub-chapter 9.3 “*Methodology for Comparisons of metabolic Data*”.

and

Porta, S. & Desch, G. & Gell, H. et al. (2012). Biomedical Science, Engineering and Technology. Chapter 20: CSA – Clinical Stress Assessment. Rijeka. ISBN 978-953-307-471-9. Passim.

external evaluation took place. The results of these reports are analysed to figure out if also short-term exchanges may have an effect onto the personal development of officer cadets and civilian students.

To sum up, the author's concept is to research on the one hand semester exchanges of Austrian officer cadets and civilian students by analysing their grades and their blood, on the other hand to analyse external evaluation reports for the CSDP modules. Thus, with the findings of the present thesis the author uses not only earlier publications, but also gets new results based on new scientific researches.

The goal is to ascertain if exchanges may have a benefit for officer cadets' and civilian students' personal development and – as a consequence – to be able to pass a clear recommendation to military Higher Education Institutions (HEIs).

If the following statistical graph is taken into consideration, the author finds it worth to come to a clear result to ensure if the international activities are headed in the right direction. The graph shows the development of semesters abroad for TMA officer cadets and civilian students of the last six graduations and the forecast for the next two years.

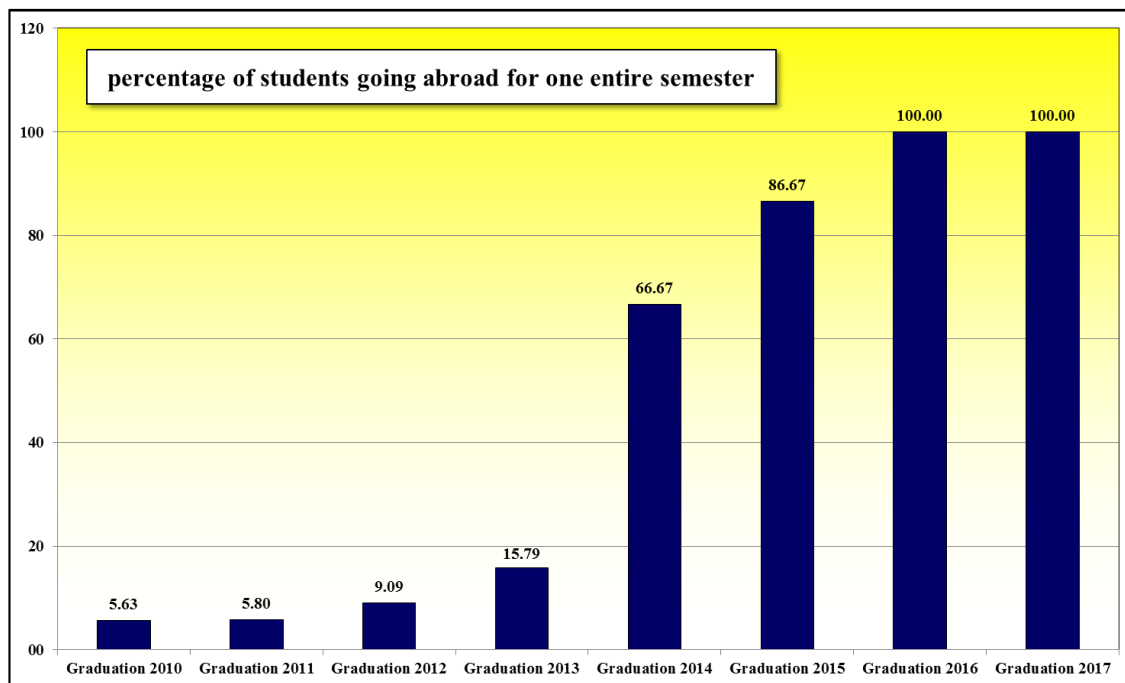


Figure 4: Development of the percentage – within one class – of semesters abroad completed by TMA students until 2015 and forecast for the years 2016 and 2017.²⁷

27 Remark of the author: Graph created by the author based on statistical databases of the IO/TMA.

4.2 Terms and Definitions in alphabetical Order

Clinical Stress Assessment (CSA) Method:

Before the CSA method can be explained, readers have to know what the term “*stress*” means.²⁸

A persons' or an animals' workload, stress compatibility, duration of stress and also the intensity and the kind of stress can be determined with the CSA method within three minutes by collecting about 100 microliters of capillary blood, usually from the fingertip. The sample is routinely analysed for pH, pCO₂, pO₂, O₂-saturation, ionized magnesium, ionized potassium, ionized calcium and ionized sodium, lactate, blood glucose, base excess and HCO₃.²⁹ All these data are determined by special technical equipment and can be analysed with CSA software to quantify individual's burden.



Figure 5: The technical equipment to measure the blood's metabolic data – the so-called Nova Biomedical Phox-M device.³⁰

Common Module:

A Common Module is designed by one or more EU Member State and presented within the Implementation Group. It should comprise a topic being of importance for the Basic Officer Education. If all the 28 EU Member States adopt it, it is foreseen to be

28 Remark of the author: The term “*stress*” – which is explained within the present sub-chapter later – should be read before reading the term “*CSA*”.

29 Cf.: Porta, S. & Desch, G. & Gell, H. et al. (2012). Biomedical [...]. Op. cit. P. 489-490.

30 Remark of the author: Picture made by the author during an experiment with TMA officer cadets in 2012.

implemented in the curriculum of all European Basic Officer Institutions within an accreditation circle voluntarily. At present time there are Common Modules existing which may cover two academic semesters. The term “module” may lead to misinterpretation, in this EU-context a “module” describes one type of topic which can be conducted with just two ECTS within one week – most of the academic programmes in Europe use more ECTS for the term “module”.

Mobility Students and non-mobility Students:

When using the term “mobility students” the author describes those persons who are educated at a Military Higher Education Institution – such as the University of Defence in Brno or the Theresan Military Academy – and who spent at least one entire semester abroad. The term “non-mobility students” describe those ones who did not spend any semester abroad at all. These two terms are important when it comes to a comparison of their different performances. The term “officer cadet” is also meant when mentioning the term “student”.

Stress:

In most cases stress is mixed up with the term “stressor” describing a certain burden for an individual. According to stress-researchers, in truth stress is an individual reaction of the human being or animal body onto a physical and/or psychological burden or stimulus.³¹ This reaction can be aptly measured by metabolic data and their interpretation detected with special technological equipment.

31 Cf.: Gell, H. (2011). Führungskräfteauswahl – Optimierung der Führungskräfteauswahl für Einsatzorganisationen (First Responder) durch neue Methodiken mit besonderer Berücksichtigung der Auswahl beim Militär. Translated into English the title means: Selection of Leaders – Optimisation the Selection of Leaders for Emergency Organisations (First Responder) by new Methods, with special Consideration onto the Selection within Military. Berlin. ISBN 978-3-86386-112-4. P. 10-14.

and

Cf.: Porta, S. & Hlatky, M. (2009). Stress verstehen – Burnout besiegen. Translated into English the title means: Understand stress – Overcome burnout. Vienna. Publishing company of the doctors. 1st edition. ISBN 978-3-902552-43-3. P. 15.

and

Cf.: Selye, H. (1956). The Stress of Life. New York. McGraw-Hill Edition. ISBN 978-0070562127. P. 61, 472.

5. Linkage to Scientific Disciplines

The chapter describes which scientific communities, which institutions and which persons are addressed by the thesis' topic. It also describes the importance of the topic for specific scientific communities and who may benefit from the thesis' results.

Who may have a benefit from this thesis' results? In a lot of cases scientific communities cannot be clearly separated, disciplines are overlapping, especially when it concerns the scientific community of military science. Somehow this overlapping can be compared with a slime mould; on the one hand it is a coherent organism with specific functions for its components, on the other hand – if separated – the different parts adjust their *modi vivendi* and are able to survive independently.

In spite of that overlapping, the author tries to classify in advantages for the following categories:

- **Scientific communities:**
 - **Military science:** Military science is a comprehensive academic discipline. That is why all those scientists who are concerned with the education and training of students should have a closer look at the thesis' results.
 - **Educational science:** Scientists who are dealing with pedagogy may have a benefit if they take students' performance before and after mobility-periods into consideration.
 - **Social science:** Social scientists could be interested in the results because of the outcomes of human beings' performance in an international environment.
 - **Medical science:** Because of the methodology used for one part of the researches – where metabolic data are used to determine probands' resilience – medical scientist could be interested in the results.

- **Institutions:**
 - **Officer Education Institutions:** All the Officer Education Institutions which send their students abroad and which accept students from abroad should be interested in the thesis' results to receive a confirmation if their international endeavours are aiming in the right direction.
 - **Civilian Higher Education Institutions:** Also those institutions who educate civilian students exclusively, may receive an additional advice concerning their international programmes, in particular about long-term exchanges within the frame of the ERASMUS+ programme.
 - **Training centres:** Those institutions which educate students during their vocational training may have an interest because exchanges also take place during these phases.

- **Persons:**
 - **Decision makers:** Those persons who are responsible for deciding how many students and which ones are to send abroad receive a better argumentation by the thesis' results.
 - **Persons being responsible for recognition:** A lot of exchanges are harmed by difficulties in recognition of topics – which were passed abroad – at the home institution.³² Military and civilian persons being responsible for recognition may be convinced by the thesis' results to recognise topics for their own study programmes more complaisantly.
 - **Persons belonging to international offices:** Most military and civilian HEIs have departments dealing with students', lectures' and staff's exchanges of the respective institution. Moreover, some HEIs have additional Erasmus-coordinators within their sub-organisations. For all the

32 Remark of the author: This statement is based on the author's experience within the Implementation Group of the Initiative.

and

Gell, H. (2010). Users' Guide for Workloads' Calculation of Non-Academic Basic Officer Education. Brussels. European Security and Defence College – The Steering Committee. DECISION SC/2010/1 of 24th of February, 2010. Passim.

persons of such organisations being involved in exchanges the thesis' results should be more than helpful.

The target audiences – mentioned above – are those ones which from the author's point of view may have a benefit from the thesis before the research is made. Probably in chapter 13 "*Benefit for Scientific Disciplines*" target audiences are to be adjusted because chapter 13 functions as regeneration for the present chapter taking into consideration the discussion of results and on the restriction of validity.

From the current author's point of view a huge number of sciences, institutions and persons may have a benefit from the thesis' results.

6. Current State of Research

The chapter describes the state of the art with respect to the chosen topic. It also describes how research results have been achieved so far, mentioning the methodology and the results itself, mainly referring to own publications. With this chapter the author avoids a repeated research – not to reinvent the wheel.

6.1 General Remarks

Based on sub-chapter 4.1 “*Thesis' Concept*” the author divides his researches for the present thesis into the following three different parts:

- Investigation of students' **grades**, compared between those persons who were to spend a semester abroad with those ones who were not abroad for the purpose of determining their personal developments.
- Investigation of students' **metabolic data** measured with the CSA method compared between those persons who were to spend a semester abroad with those ones who were not abroad for the purpose of determining their resilience as a pre-condition for personal developments.
- Investigation of the effect of short-term international participation onto students' personal developments based on **external evaluation reports** for CSDP modules conducted at the TMA.³³

Consequently, the thesis' results are not only based onto already existing author's publications, but also onto author's new researches. The present chapter has the goal to state clearly what has been researched so far to avoid duplications.

6.2 Model of Competences

What is personal development? This expression stays the course through the entire thesis. Before the above question can be answered, the model of competences – which should be achieved until graduation by TMA students – is to be invoked. Graduates of

33 Remark of the author: See footnote No. 25.

the Austrian Basic Officer Education need to prove the following competences:^{34, 35}

- **Methodological-technical competence:** Graduates apply critical-analytical thinking and problem-solving techniques. They are able to independently acquire new knowledge and to conduct – mainly – independently research and development projects. Their actions are characterised by organisational skills and systematic approaches.³⁶
- **Personal competence:** Graduates' professional lives are characterised by high moral standards, loyalty, discipline, self-responsibility, and self-management.³⁷
- **Social-communicative competence:** Graduates are able to motivate themselves and others, feature a high potential of communication, conflict-resolution and problem-solving skills and are cooperative and responsible. They are convincing in their argumentation and exchange ideas with international experts.³⁸
- **Action competence:** Graduates' professional lives are characterised by decisiveness, initiative, optimism, endurance, perseverance, and providing stimuli.³⁹

If with this thesis students' personal developments are researched, they aim at all

34 Remark of the author: These competences are based on the “*Heyse-Erpenbeck model of competences*”. Cf.: Heyse, V. & Erpenbeck, J. (2004). *Kompetenztraining*. Translated into English the title means: Training of Competences. Stuttgart. ISBN 3-7910-2263-6. P. XXI-XXX.

35 Cf.: Gell, H. (2015). *Motivation of Students*. Brno. XXIII. Colloquium, Faculty of Military Leadership, UoD Brno. Conference CD. P. 10-11 of the original provided paper.

and

Gell, H. (2013). *Better Cooperation for better Operation of the future Visegrad EU Battle Group*. Gell's article: *Necessary Officer's Competences for International operations*. Wroclaw. Editor: Kulczycki, M. ISBN 978-83-61315-68-1. Passim.

and

Königshofer, J. & Gell, H. et al. (2008). *Internationalisierung und Kompetenzentwicklung am Studiengang*. Translated into English the title means: Internationalisation and development of competencies at the FH Bachelor Programme. Vienna. Article in *Military Series “Truppendienst”*. Special *Truppendienst 2/2008 (Series 7)*. Passim.

36 FH Bachelor Programme Military Leadership (2011). *Application for Recognition and Accreditation of the FH Bachelor Programme Military Leadership (FH BP-ML)*. Vienna and Wiener Neustadt. P. 18-19.

37 Ibid.

38 Ibid.

39 Ibid.

competences mentioned above.⁴⁰ Of course the different methods will provide results for specific competences more detailed than for other ones. For example, on the one hand the CSA method will provide more results for endurance; on the other hand grades provide a good representative sample about all competences.

Based on the Heyse-Erpenbeck's model of competences, the Head of Institute and Programme Director of the FH Bachelor Programme Military Leadership – BrigGen Pichlkastner – developed the “*Theresan Leadership Model*”.⁴¹ According to this model the leader should have physical fitness, mental strength and intercultural competence; owning this it will lead to successful leadership acting providing excellent performances. The following sketch illustrates the model.

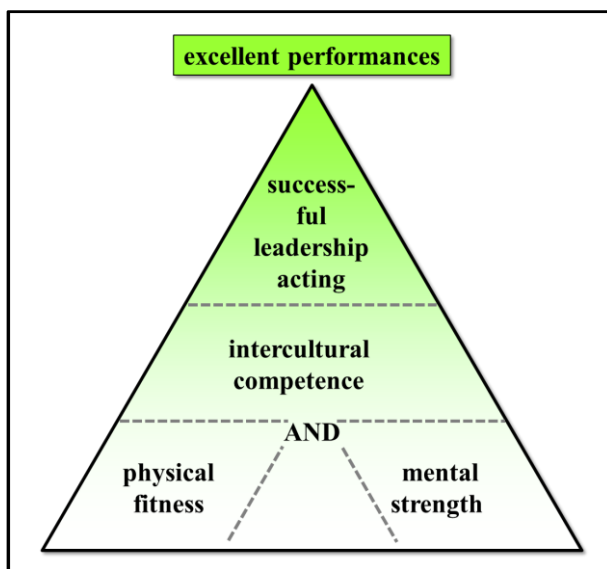


Figure 6: The Theresan Leadership Model.⁴²

Referring to the chapter's goal – to search for still published literature to avoid duplications – as a conclusion it can be stated that there is no need to research on the students' competences as such, but the fact is that a comparison of personal developments of students who spend semesters abroad with those ones who stayed at the home institution has not been conducted so far.

40 Cf.: Gell, H. (2011). Selection of Leaders [...]. Op. cit. P. 18-23.

41 Cf.: Homepage of the FH Bachelor Programme Military Leadership. Sub-page Quality Management. URL: http://www.miles.ac.at/miles/_QM/Fuehrungsmodell.php. [16-8-15].

42 Remark of the author: Sketch created by the author based on Pichlkastner's Theresan Leadership Model.

6.3 Comparisons of Grades

Officer cadets' and civilian students' grades express their performance during the study phase. For the Austrian Basic Officer Education the grades do not necessarily express a certain level of just special knowledge; grades also express performances of other competences which are mentioned within the previous sub-chapter. That is why a personal development as such can also be expressed by grades.

Having a closer look at the available published literature concerning the thesis' topic,⁴³ some elaborations can be found which touches the topic a bit and which are introduced hereinafter. If research results can be taken over for the topic of the present thesis – or cannot be taken – it is stated clearly.

- Sweeney – a United Kingdom (UK) Bologna Expert from the University of York – writes in his booklet which identifies challenges and opportunities for UK Higher Education Institutions (HEIs) in the Bologna Process and the European Higher Education Area (EHEA) that “.... *students with a mobility experience achieve better degree performance*” but on the other hand “....*it is impossible to know what degree they would have achieved had they not been mobile.*”⁴⁴ Sweeney's statements are based on reports of students⁴⁵ and rely on a report of The Higher Education Funding Council for England (HEFCE).⁴⁶

Within Sweeney's elaborations the author of the present thesis could not find a scientific research on comparisons of grades.

- Bridger from the University of Bradford writes in her research project commissioned by the UK Higher Education International Unit (IU) and the Higher Education Academy (HEA)⁴⁷ that “*the report does indicate that better*

43 Remark of the author: Publications in German and English were searched which causes not that disadvantage because most of the HEI published their elaborations in English anyway.

44 Sweeney, S. (2014). *Going Mobile: Internationalisation, mobility and the European Higher Education Area*. University of York. P. 27.

45 Cf.: Ibid. P. 26.

46 Cf. Ibid. P. 26-27.

47 Bridger, K. (2015). *Academic perspectives on the outcomes of outward student mobility*. Higher Education Academy York. BSV Associates Ltd. Research project. Passim.

*degree outcomes are achieved by students who participated in an Erasmus placement*⁴⁸ however, in the same way she criticises this statement when she writes: *“For example the greater proportion of participating students are from higher socio-economic groups, or in terms of institution, attend Russell Group universities*⁴⁹. *It may well be therefore that these students would be high achievers even without the mobility experience.*”⁵⁰

Bridger mentions a comparison of students' grades but she comments the better performance with higher socio-economic groups of mobility students. Taking into consideration the pre-conditions for mobility of TMA students it can be stated that all of them are treated in the same way without any regard to their social background. That is why Bridger's statements cannot be taken for the comparison of grades of the present thesis.

- Gresser and Weber from the University Stuttgart write in a study about their graduates that even out of the approximately 60 percent of students who did not graduate within the standard period of study – some 25 percent blame this effect on their semesters abroad.⁵¹ This outcome mirrors one of the main problems of some universities – they request semesters abroad, but either do not recognise learning outcomes or do not make arrangement in advance concerning the topics for the purpose of avoiding disadvantages for students' study periods.⁵²

Also within Gresser's and Weber's study the author of the present thesis could not find a comparison of grades referring to mobility students.

48 Ibid. P. 12.

49 Remark of the author: The Russell Group is a self-selected association of 24 prestigious British elite universities, such as the University of Cambridge or the University of Oxford.

50 Bridger, K. (2015). Op. cit. P. 12.

51 Cf.: Gresser, J. & Weber, H. (2012). Studienqualität im Rückblick – Absolventenstudie der Universität Stuttgart – Überblick über den Abschlussjahrgang 2010. Translated into English the title means: Study-quality in hindsight – Graduates' study of the University Stuttgart – Class of 2010 at a glance. University of Stuttgart. P. 10-11.

52 Remark of the author: Argument based on the author's work within the IG. One of the main policies for exchanges on EU level is to send officer cadets abroad to those education events only, which can be recognised at the home institution to avoid double education.

- Alesi, Neumeyer and Flöther from the University of Kassel write in their study about their graduates that – based on a questionnaire – some 17 percent of students base their arguments for prolonged study periods on stays abroad.⁵³ In spite of that, they state – based on their own research – that no significant correlation for prolonged study periods because of staying abroad could be found.⁵⁴ Most probably it was an excuse of mobility students.

Within the above mentioned elaborations the author of the present thesis could not find a scientific research on comparisons of grades between mobility and non-mobility students.

- The most comprehensive research study about mobility students' grades was done by the European Commission (EC) published in 2014.⁵⁵ With this research a lot of comparisons are made between students who spent parts of their education abroad and those ones who did not. Students' grades are also mentioned but in the context of importance for later employments.⁵⁶ Comparisons between students going abroad and not going abroad are made as well, again in the context of employment. Former students had to answer an alumni-questionnaire.⁵⁷ The most valued results are that mobile students consider they stay abroad for later employments “*to have confidence and a conviction of one's own abilities*” and that they are “*open and curious about new challenges.*”⁵⁸

Within the EC's research study the author of the present thesis could not find a scientific research on comparisons of grades either.

53 Cf.: Alesi, B. & Neumeyer, S. & Flöther, C. (2014). Studium und Beruf in Nordrhein-Westfalen – Analysen der Befragung von Hochschulabsolventinnen und -absolventen des Abschlussjahrgangs 2011. Translated into English the title means: Study and Profession in North Rhine-Westphalia – Analyses of the Questionnaire of Graduates of the Class of 2011. University of Kassel. International Centre for Higher Education Research Kassel (INCHER-Kassel). P. 19, 27-28.

54 Cf.: Ibid. P. 24.

55 European Commission (2014). The Erasmus Impact Study. Effects of mobility on the skills and employability of students and the internationalisation of higher education institutions. Luxembourg. Catalogue number: NC-04-14-545-EN-N. ISBN 978-92-79-38380-9. Passim.

56 Cf.: Ibid. P. 68, 95-97.

57 Cf.: Ibid. P. 78.

58 Ibid. P. 78.

To resume available literature concerning the comparison of mobility students' grades, it can be stated that

- obviously almost all of them certify mobility students better language skills after return,^{59, 60}
- only one study compared mobility students' grades with those one who did not go abroad, but the validity is limited because of the higher socio-economic background of mobility students,⁶¹ and
- the author of the present thesis has not found any valid research which results could be taken over for the comparison of grades before and after mobility periods.

6.4 Comparisons of metabolic Data

Since 2009 a huge number of research studies have been conducted with TMA students⁶² under the auspices of Univ.-Prof. Dr. Porta with his CSA method.⁶³ The present sub-chapter has the aim to introduce some relevant CSA research series which are still published and which may have a link to the thesis' topic.

- The first CSA test series took place in 2009 during officer cadet aspirants' entrance exam to the TMA. One representing example can be mentioned here, the CSA measurements before and after the military obstacle course.⁶⁴ Among a variety of different findings based on metabolic data,⁶⁵ the probands' attitude in

59 Remark of the author: This statement is not explicitly underlined with citations because almost all the research studies – investigated by the author – express it.

60 Remark of the author: If this statement agrees with reality for TMA officer cadets and civilian students is mentioned in chapter 10 "*Research and Results of Research*".

61 Remark of the author: See footnote No. 47, 48, 49 and 50.

62 Cf.: Porta, S. & Gell, H. & Moser, M. (2014). Stressforschung am Fachhochschul-Bachelorstudiengang Militärische Führung. Translated into English the title means: Stress Research at the FH Bachelor Programme Military Leadership. Vienna. Article in Military Series "Truppendienst" 5/2014 (No. 341). P. 402-407.

63 Remark of the author: A short introduction of the CSA method is made in sub-chapter 4.2 "*Terms and Definitions in alphabetical Order*", in chapter 9 "*Methodology*" a more detailed description is brought in.

64 Cf.: Porta, S. & Gell, H. et al. (2009). Direct correlation between Mg⁺⁺ changes and awarded scores in military steeplechase (HIB). Munich. Scientific Journal Trace Elements & Electrolytes. 2009 4th Quarter, Vol. 26 Issue 4. P. 177-180.

65 Cf.: Gell, H. (2011). Selection of Leaders [...]. Op. cit. P. 114-115, 126-132.

combination with their performance could be determined.

Although data were not used to compare mobility students with those ones who did not go abroad, at a later stage these data can be used to compare them with measurements of those students who spend an entire semester abroad.

- In March 2010 – during a research week – some 50 students had to bear a variety of extraordinary charges. Before and after different burdens the probands' metabolic data were measured with the CSA method.⁶⁶ Again a variety of different findings could be determined.⁶⁷

The advantage of this series of tests is that out of all probands a certain number of students still spent a semester abroad. These data can be taken for the present thesis for a later comparison of their resilience.

- 34 officer cadets from the graduation class were tested with the CSA method during an entire research week in March 2011.⁶⁸ With the blood measurements a huge number of metabolic data could be acquired which interpretations⁶⁹ were published. Probands had to endure sleep deprivation, long marches, running- and shooting competitions and psychological tests. Each testing was accompanied

66 Cf.: Gell, H. (2010). Forschungsprojekt Stressforschung. Translated into English the title means: Research Project: Stress Research. Wiener Neustadt. Internet article. URL: <http://campus.milak.at/campus/news/2010/Forschungsprojekt.php>. [12-8-15].

67 Cf.: Gell, H. (2011). Selection of Leaders [...]. Op. cit. P. 141-156.

68 Cf.: Gell, H. (2011). Stressforschung. Translated into English the title means: Stress Research. Wiener Neustadt. Internet article. URL: <http://campus.milak.at/campus/news/2011/stressforschung.php>. [12-8-15].

69 Cf.: Durnig, A. & Porta, S. & Gell, H. et al. (2012). Mg⁺⁺ and exhaustion: correlations between Mg⁺⁺ and bio-feedback parameters after exhaustion as well as Mg⁺⁺ state of soldiers in love. Munich. Scientific Journal Trace Elements & Electrolytes. 2012 3rd Quarter, Vol. 29 Issue 3. P. 212.

and

Cf.: Porta, S. & Gell, H. et al. (2012). Is there a quantitative influence of gender, age, BMI or the hypomagnesiemic threshold upon Mg⁺⁺-modifiable metabolic parameters? Munich. Scientific Journal Trace Elements & Electrolytes. 2012 3rd Quarter, Vol. 29 Issue 3. P. 2016.

and

Cf.: Porta, S. & Gell, H. et al. (2012). Mg⁺⁺ and metabolic changes during sleep deprivation. Munich. Scientific Journal Trace Elements & Electrolytes. 2012 3rd Quarter, Vol. 29 Issue 3. P. 2016.

with the CSA method which provided valuable findings.

Again, some of the test persons still spent a semester abroad which is important for the present thesis' new research, because their data – in the sense of their resilience – can be compared with non-mobility students.

- Between 2012 and 2015 numerous test series using the CSA method took place. The results of these series were published in scientific journals and books.⁷⁰ During these test series TMA students' blood was again measured before and

70 Cf.: Pamminger, N. & Porta, S. & Gell, H. et al. (2015). Jobs with mostly mental workload may lead to difficulties in oxygen and magnesium liberation into tissues – a staff health survey. Munich. Scientific Journal Trace Elements and Electrolytes 2015 1st quarter, Vol. 32 Issue 1. P. 1-7.

and

Cf.: Porta, S. & Gell, H. & Moser, M. (2014). Stress Research [...]. Op. cit. P. 402-407.

and

Cf.: Porta, S. & Gell, H. et al. (2014). The secret of the chewing gum vending machine (military workload and military stress). Vienna. Armis et Litteris 31. Scientific Series of the FH Bachelor Programme Military Leadership. P. 71-124.

and

Pichlkastner, K. & von Ehrlich, B. & Gell, H. et al. (2013). 2. Österreichisch-Deutsche Expertengespräche über Magnesiumsubstitution, Sport und Erholung 2012. Translated into English the title means: 2nd Austro-German expert talks about Magnesium substitution, sports and recovery 2012. Munich. Scientific Journal Nieren- und Hochdruckkrankheiten. No. 1/2013. Passim.

and

Cf.: Porta, S. & Gell, H. et al. (2013). A system of changes of ionized blood Mg through sports and supplementation. Munich. Scientific Journal Trace Elements and Electrolytes 2013 3rd Quarter, Vol. 30 Issue 3. P. 105-107.

and

Cf.: Stossier, H. & Porta, S. & Gell, H. et al. (2013). The effects of antioxidative treatment upon electrolyte and metabolic reactions of a chronically stressed group. Munich. Scientific Journal Trace Elements and Electrolytes 2013 1st Quarter, Vol. 30 Issue 1. P. 1-6.

and

Cf.: Porta, S. & Gell, H. et al. (2013). Evidence of progress and success of Mg substitution by correlating Mg dynamics and metabolic parameters. Munich. Scientific Journal Trace Elements and Electrolytes 2013 3rd Quarter, Vol. 30 Issue 3. P. 87-93.

and

Cf.: Porta, S. & Gell, H. et al. (2012). Diagnostic and prognostic role of the Ca/Mg (ion.) quotient in sport. Munich. Scientific Journal Trace Elements and Electrolytes 2012 4th Quarter, Vol. 29 Issue 4. P. 227-231.

and

Cf.: Porta, S. & Gell, H. et al. (2012). Metabolic changes and hypomagnesiemia. Munich. Scientific Journal Trace Elements and Electrolytes 2012 3rd Quarter, Vol. 29 Issue 3. P. 206-211.

after different burdens. In general, students' resilience could be determined in interpreted with reference to the received tasks.

All the tested officer cadets were from the first classes and had not spent stays abroad. That is why these data only can be used to compare them with mobility students' measurements.

To sum up all testing with the CSA method it can be stated that

- not any literature was found which expresses a comparison of mobility students with non-mobility students measured with the CSA method,
- a huge number of students' CSA data is available at the TMA,
- not any comparison between mobility persons and non-mobility persons using the CSA method has been made at the TMA so far, and
- for a research of the present thesis the available CSA data can be used to determine mobility students' resilience in comparison with non-mobility ones.

6.5 The Initiative and the Analysis of external Evaluation Reports

On 11th of December, 2008 the report on the Implementation of the European Security Strategy (ESS) was issued.⁷¹ Within this report the necessity of a common training on Basic Officer Education level was stressed⁷² to prepare young officers for managing their future challenges which they may face when working within an international frame after graduation.⁷³

Also in 2008, all EU-Ministers of Defence approved a document launching the European young officers exchange scheme, modelled on Erasmus. The aim is to develop exchanges between officers in their initial training phase, in order to reinforce the ability of the European armed forces to work together and the interoperability of forces. This Initiative – which should facilitate exchanges between national training

71 European Union (2008). Report on the Implementation of the European Security Strategy – Providing Security in a Changing World. Brussels. Document S407/08. Passim.

72 Cf.: Ibid. P. 9.

73 Cf.: Gell, H. (2015). Europeanising [...]. Op. cit. P. 3-11.

institutions – should be implemented on a national and voluntary basis, with assistance from the European Security and Defence College (ESDC).⁷⁴

When the Implementation Group (IG) for the Initiative had its first meeting in February 2009, very soon five so-called “Quick-Wins (QW)” were defined – among them the implementation of a common module on ESDP.^{75, 76, 77} For the first time such a module was conducted in Portugal with offers for international participation.⁷⁸

At a later stage the QWs were re-named to “Lines of Development (LoDs)” and new problem areas were defined to be solved for facilitating exchanges on Basic Officer Education level. The new eight Lines of Development are listed with their description hereinafter.⁷⁹

- **LoD 1: System of Equivalences**

In different Basic Officer Education systems different education parts are belonging to either the academic or the vocational education. An education passed abroad may cause disadvantages for recognition of students' achieved learning outcomes if belonging to another part than needed. That is why the author of the present thesis was tasked to write a regulation, how vocational working hours can be transferred to ECTS and vice-versa.⁸⁰

The developed document was officially adopted by a Steering Committee decision.

74 Council of the European Union (2008). 2903rd meeting [...]. Op. cit. P. 5.

75 Remark of the author: The fact of this statement is based on the present thesis author's work within the IG.

76 Remark of the author: With the Treaty of Lisbon's ratification the term “ESDP” was re-named to the term “CSDP”.

77 Remark of the author: The other four QWs were “*Provision of internet access to raw data of detailed stocktaking*”, “*Creation of a dedicated forum for the exchange programme*”, “*Creation of a framework agreement for administrative and legal challenges linked to the Initiative*” and “*Development of other common training modules*”.

78 Cf.: Gell, H. (2009), Homepage of the FH Bachelor Programme Military Leadership. URL: <http://83.64.124.70/campus/iep/pdf/Portugal-Military-ERASMUS-ESDP-Module.pdf>. Internet article. [19-8-15].

79 Cf.: Gell, H. (2015). Europeanising the initial Officers' Curriculum. [...]. Op. cit. P. 9.

80 Gell, H. (2010). Users' Guide for Workloads' Calculation [...]. Op. cit. Passim.

- **LoD 2: Development of Competences**

At many HEIs the problem is that they still think “input-oriented” – in terms of importance of just special knowledge for certain lectures. According to the European Qualification Framework (EQF) as well as the National Qualification Frameworks (NQFs) lectures should increase more, in particular knowledge, skills and competences. The problem was that with the same terms different HEIs understand different learning outcomes. That is why a document with common descriptors was worth to be developed.

In 2014 the final document was adopted by the Implementation Group. It describes which competences an officer cadet should develop and achieve.⁸¹

- **LoD 3: Development of Interactive Distance Learning (IDL)**

Preparations for certain educations may be conducted via e-learning to be more efficient. On the one hand a lot of IDL modules still exist but on the other hand all the HEIs are requested to create new ones providing it for students for the purpose of distance-learning. Because of changing contents and developing new IDL modules, this LoD is a “living one” and still in progress.

- **LoD 4: Creation of an Information Technology (IT) Platform**

To be more efficient in exchange matters, a platform is needed to have access to useful documents, latest news and education offers of EU Member States. Very soon after the foundation of the Implementation Group a webpage was created which was re-launched in a new outfit in May 2015.⁸²

81 Cf.: Homepage of the European Initiative for the Exchange of Military Young Officers. URL: <http://www.emilyo.eu/filedepot?cid=20&fid=154>. [19-8-15].

82 Cf.: Homepage of the European Initiative for the Exchange of Military Young Officers. URL: <http://www.emilyo.eu>. [19-8-15].

- **LoD 5: Supporting Develop Mechanism/(Legal) Framework**

There was the need to elaborate a document which describes how to deal with administrative and legal matters referring to exchange activities. Originally the document was developed by France, adopted in 2010, revised by the author of the present thesis in 2014 and finally adopted again in 2015.⁸³

If the main issue of this document is extracted, it can be stated that officer cadets from European Union countries should be treated in the same way as the own ones by the host institution.

- **LoD 6: National Implementation of the Programme**

This LoD aims at the information flow to national authorities and responsible persons concerning exchanges who should know about the Initiative to support it. There are different avenues of approach to furnish them with the Initiative's information, such as Wikipedia pages⁸⁴ or the presence of the IG-Chairman at conferences of military HEIs' commandants⁸⁵ or the international Military Academic Forum.⁸⁶

- **LoD 7: Lifelong Learning (LLL)**

This LoD was brought in by the former rector-commandant of the UoD Brno – prof. Ing. BrigGen (ret.) Rudolf Urban, CSc. – very soon after the Initiative's foundation in 2009. The aim was to identify possibilities to support the Initiative's

83 Cf.: Homepage of the European Initiative for the Exchange of Military Young Officers. URL: <http://www.emilyo.eu/filedepot?cid=29&fid=279>. [19-8-15].

84 Cf.: Homepage of Wikipedia. URL: https://en.wikipedia.org/wiki/European_initiative_for_the_exchange_of_young_officers_inspired_by_Erasmus. [19-8-15].

and

Cf.: Homepage of Wikipedia. URL: https://cs.wikipedia.org/wiki/Evropsk%C3%A1_iniciativa_pro_v%C3%BDm%C4%9Bnu_mlad%C3%BDch_d%C5%AFstojn%C3%ADk%C5%AF_inspirovan%C3%A1_programem_Erasmus. [19-8-15].

85 Cf.: Homepage of the Italian Military Academy. URL: http://www.esercito.difesa.it/comunicazione/Pagine/EUROPEAN_141017.aspx. [19-8-15].

86 Cf.: Homepage of the international Military Academic Forum. URL: http://www.maf-reichenau.at/imaf_universal/index.html. [19-8-15].

goals by funding of existing exchange programmes – such as the ERASMUS+ programme – and to widen the approaches also to more than just the Basic Officer Education. A regular LoD 7-meeting was established which takes place at UoD Brno on an annual basis.⁸⁷

This LoD should make use of the above mentioned possibilities and provide the information to all persons being responsible for exchanges.

- **LoD 8: Development of new Common Modules**

The characteristics of a Common Module is still described in sub-chapter 4.2 “*Terms and Definitions in alphabetical Order*”. According to the Initiative’s goal, if Common Modules are implemented at all military HEIs for the Basic Officer Education, step by step the European curricula will be harmonised.

The existing Common Modules with their workloads are listed in alphabetical order hereinafter; the curricula of all these modules – if the reader wants to have detailed information – are still published by the author of the present thesis.⁸⁸

- Basic Military English (BME) 2 ECTS.
- Battle Physical, Mental and Survival Training 3 ECTS.
- Common Operating Environment 3 ECTS.
- Common Security and Defence Policy (CSDP) 2 ECTS.
- Common Security and Defence Policy Olympiad 2 ECTS.
- Comprehensive Approach 4 ECTS.
- Crisis Management Operation/Peace Support
Operation (CMO/PSO) consisting of 4 Sub-Modules⁸⁹ 12 ECTS.
- Cultural Awareness 2 ECTS.
- Defence and Security Economics 4 ECTS.

87 Cf.: Homepage of the University of Defence Brno. URL: <http://info.unob.cz/en/Pages/2013/10/20131016.aspx>. [19-8-15].

88 Cf.: Gell, H. & Paile, S. (2014). iMAF 2014 [...]. Op. cit. P. 139-205.

89 Remark of the author: Out of these 12 ECTS – 2 weeks are non-academic at the TMA.

-
- How to meet the Media 2 ECTS.
 - Individual Personal Development and
Meta-Communication 2 ECTS.
 - Law of Armed Conflict (LOAC) 2 ECTS.
 - Leadership & Agility in Complex Environments 2 ECTS.
 - Maritime Leadership 2 ECTS.
 - Military Instructor Training 3 ECTS.
 - Small Unit Tactics 4 ECTS.
 - Train the Trainer (TtT)⁹⁰ no ECTS.

In total the Common Modules cover 51 ECTS which are almost two academic semesters. At present time – in September 2015 – there are three further modules in the development or project phase. These modules – foreseen to be adopted by the IG as Common Modules in 2015 or 2016 – are:⁹¹

- Electronic Warfare 2 ECTS.
- Cyber Security 2 ECTS.
- CSDP Tactical Level Exercise 2 ECTS.

Each European Union Member State is called to propose further modules being considered to be important for the Basic Officer Education of future European officers.

The next steps are to create international semesters; Common Modules may be a part of it. The initial elaborations were made during the international Military Academic Forum in Sibiu in 2015; further steps will follow within the ERASMUS+ Strategic Partnership Programme, where UoD Brno and TMA will cooperate with the other iMAF partners.

If a Common Module is foreseen to be conducted the first time at a military HEI, an external evaluation promises benefits for all the involved persons. That is why in 2009

90 Remark of the author: The module should be conducted during 2 days. It should be taken into account that this module is not in the same category as the Common Modules of the Initiative and it was approved by the Executive Academic Board (EAB) – not the IG – as an ESDC course.

91 Remarks of the author: The facts are based on the author's work as Chairman of the Implementation Group.

the TMA started a pilot-project in conducting the common module on ESDP – without any international participation – but using the standard internal quality assurance system.

One year later, in 2010, the re-named common module on CSDP was implemented on a regular basis – with 2 ECTS and a duration of one week – and was opened to participation of international students and lecturers. Since then all the Common Modules on CSDP have been evaluated by a specialist from the University of Liège working also for the ESDC⁹² and the author of the present thesis has acted as Course Director for all these modules.

Hereinafter the evaluation outcomes of these modules are listed and it is pointed out if there are some arguments which can be taken for the thesis' topic. In contrary to exchanges mentioned in sub-chapters above, CSDP module participation refers to short exchanges.

- **Common Modules on CSDP 2010:** In 2010 two CSDP modules took place at the TMA. Altogether, 67 Austrian students⁹³ and 13 international ones from seven institutions took part. These two modules are interesting for the thesis' elaborations because one module had almost not any international participation – just three German-speaking students – that is why the comparison of the two ones may lead to differences in the results.

Paile-Calvo's evaluation pointed out the following findings:^{94, 95}

- The level of study did not matter. If Bachelor or Master Students participated in this module, it did not play a role.

92 Remark of the author: The modules were evaluated by Dr. Paile-Calvo Sylvain, LL.M., MS who is the author of all the evaluation reports mentioned in this thesis. All these reports were accompanied by a foreword of the present thesis' author and were published with scientific series of the FH Bachelor Programme Military Leadership at the TMA.

93 Remark of the author: the term “*student*” comprises in the context of the CSDP modules officer cadets as well as civilian students.

94 Cf.: Paile-Calvo, S. & Gell, H. (2012). Common Security and Defence Policy Modules 2010 – External Evaluation Report. Vienna. Armis et Litteris 25. Scientific Series of the FH Bachelor Programme Military Leadership. P. 30-33, 43-49.

95 Remark of the author: Only those findings are listed which have a reference to the thesis' topic. Other findings – such as improvements for the administration or organisation – are ignored in this particular case because they are not relevant for the thesis' topic.

- International participation and interactive learning were the keys for success.⁹⁶
- The second module – which had more international participation – achieved better learning outcomes. This may not necessarily be caused in the international participation; also a feedback from previous module's participants could be a reason for that.
- Grades for working skills, improvement of competences and improvement of social abilities of the second module – with more international participation – were better than the first one, as the following three graphs show.

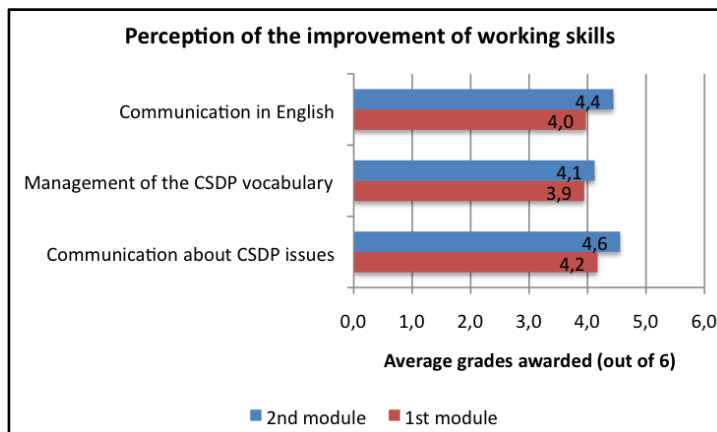


Figure 7: Comparison of working skills between the first and second CSDP module 2010.⁹⁷

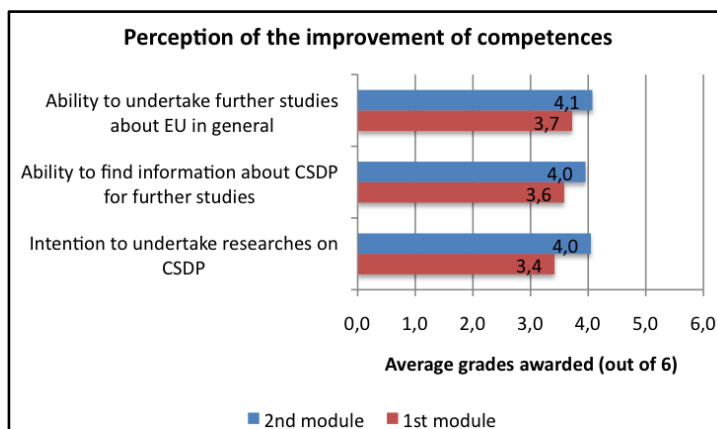


Figure 8: Comparison of competences between the first and second CSDP module 2010.⁹⁸

⁹⁶ Cf.: Paile-Calvo, S. & Gell, H. (2012). Common Security [...] 2010. Op. cit. P. 54.

⁹⁷ Paile-Calvo, S. & Gell, H. (2012). Common Security [...]. Op. cit. P. 45. Remark of the author: Graph created by Dr. Paile-Calvo.

⁹⁸ Ibid. P. 46. Remark of the author: Graph created by Dr. Paile-Calvo.

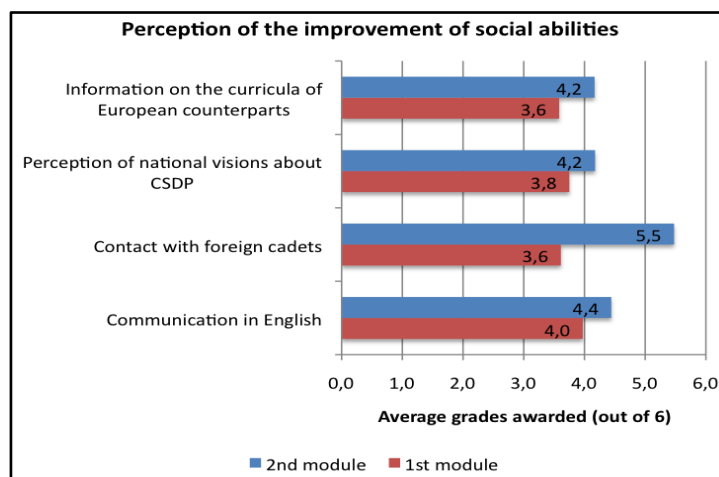


Figure 9: Comparison of social abilities between the first and second CSDP module 2010.⁹⁹

- **Common Modules on CSDP 2011:** Also in 2011 two CSDP modules took place at the TMA. 85 Austrian and 18 international students – out of them four ones from UoD Brno – participated in both modules. Paile-Calvo's evaluation pointed out the following – for the present thesis important – findings:¹⁰⁰
 - The level of study did not matter. Students came from Bachelor up to PhD level, but this fact did not play any role.
 - The second module had a slight bigger number of international participation, seven students in the first module and eleven ones in the second module. The means of the grades were similar, just the second module had a better mean at the exist test, as shown in the table below.

	1 st CSDP module mean of grades out of 12	2 nd CSDP module mean of grades out of 12
Test before the module (entrance test)	4.95	5.03
Test after the module (exit test)	8.50	9.60

Table 1: Comparison of grades' means of the CSDP modules 2011.¹⁰¹

⁹⁹ Ibid. P. 49. Remark of the author: Graph created by Dr. Paile-Calvo.

¹⁰⁰ Cf.: Paile-Calvo, S. & Gell, H. (2012). Common Security and Defence Policy Modules 2011 – External Evaluation Report. Vienna. Armis et Litteris 27. Scientific Series of the FH Bachelor Programme Military Leadership. P. 30-31, 42-65.

¹⁰¹ Remark of the author: Table created by the author based on Dr. Paile-Calvo's evaluation data.

- Students could improve their English, as shown in one part of the graph below.

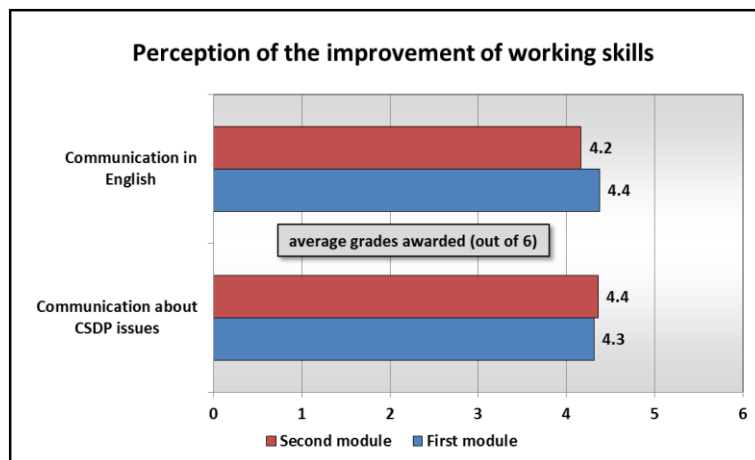


Figure 10: Improvements of English during the first and second CSDP module 2011.¹⁰²

- An interaction between the participants and the lecturers and between the participants led to increasing self-confidence of the participants in their individual abilities.
- **Common Module on CSDP 2012:** In 2012 just one CSDP module was conducted with 76 participants – out of them 24 international ones – from nine countries¹⁰³ which was an increase of international participation in comparison to past modules. The module was again evaluated by Dr. Paile-Calvo.¹⁰⁴ Because some of the findings are similar to previous evaluations, only those ones are listed hereinafter which are new or which are important for the thesis' topic to underline certain arguments.
 - Students improved their English – as one part of the graph shows below – not only during official lectures but also during social life. Grades were

¹⁰² Cf.: Paile-Calvo, S. & Gell, H. (2012). Common Security and Defence Policy Modules 2011 [...]. Op. cit. P. 50. Remark of the author: Graph created by the author based on Dr. Paile-Calvo's evaluation data.

¹⁰³ Remark of the author: Participants came from Austria, Czech Republic, Estonia, France, Italy, Lithuania, Poland, Romania and the United States.

¹⁰⁴ Cf.: Paile-Calvo, S. & Gell, H. (2013). Common Security and Defence Policy Module 2012 – External Evaluation Report. Vienna. Armis et Litteris 28. Scientific Series of the FH Bachelor Programme Military Leadership. P. 42-75.

similar, as for the previous CSDP modules.

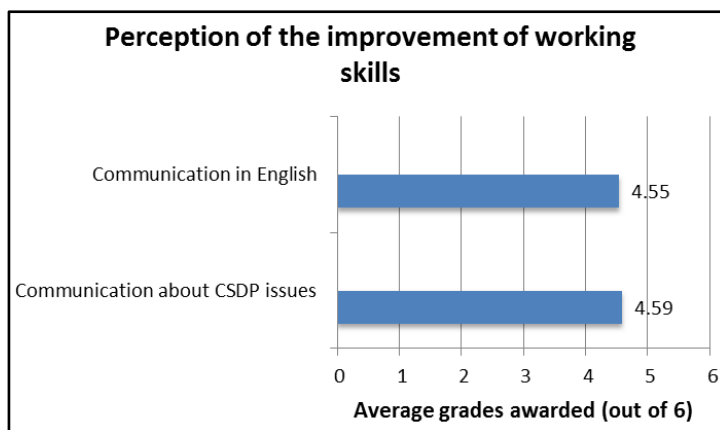


Figure 11: Improvements of English during the CSDP module 2012.¹⁰⁵

- Comments stressed that the CSDP module gave the opportunity to open minds not only during social timeframes but also during learning times.
- One conclusion was that “*international cadets are very important for this module*”¹⁰⁶ and “*the networks created with officer cadets from other participating countries are the most important (gain) from this module*”.¹⁰⁷
- Students improved their social competences within just this week, as shown in the graph below.

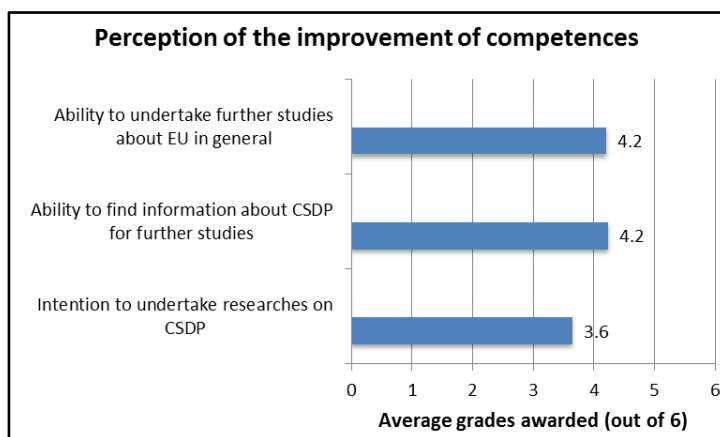


Figure 12: Improvements of competences during the CSDP module 2012.¹⁰⁸

¹⁰⁵ Ibid. P. 62. Remark of the author: Graph created by Dr. Paile-Calvo.

¹⁰⁶ Ibid. P. 70.

¹⁰⁷ Ibid. P. 72.

¹⁰⁸ Ibid. P. 63. Remark of the author: Graph created by Dr. Paile-Calvo.

- The final conclusion was that the keys for success were international participation and interactive learning which led to increasing self-confidence.¹⁰⁹
- **Common Module on CSDP 2013:** In 2013 again just one CSDP module was conducted with 56 participants in total – out of them 28 international ones – from nine countries¹¹⁰ which was an increase of international participation up to 50 percent. Again, only those findings of Dr. Paile-Calvo's evaluation¹¹¹ are listed hereinafter which are new in comparison with older evaluation reports or which are important for the thesis' topic to underline certain arguments.
 - 43 students came from Bachelor level, eleven ones from Master level and two ones from PhD level, but in all the results this fact did not play any role.¹¹²
 - Obviously, an increase a special knowledge could be achieved, as the following graph shows.

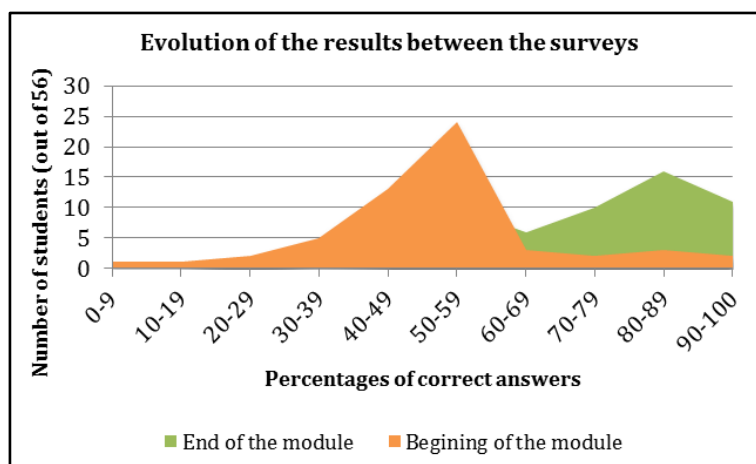


Figure 13: Improvements of special knowledge during the CSDP module 2013.¹¹³

109 Cf.: Ibid. P. 74-75.

110 Remark of the author: Participants came from Austria, Czech Republic, Estonia, France, Italy, Lithuania, Poland, Romania and the United States.

111 Cf.: Paile-Calvo, S. & Gell, H. (2014). Common Security and Defence Policy Module 2013 – External Evaluation Report. Vienna. Armis et Litteris 30. Scientific Series of the FH Bachelor Programme Military Leadership. P. 36-71.

112 Cf.: Ibid, P. 38.

113 Ibid. P. 53. Remark of the author: Graph created by Dr. Paile-Calvo.

- Students could improve their English though the timeframe was limited.¹¹⁴
- Students could improve their social abilities, as the following graph shows.

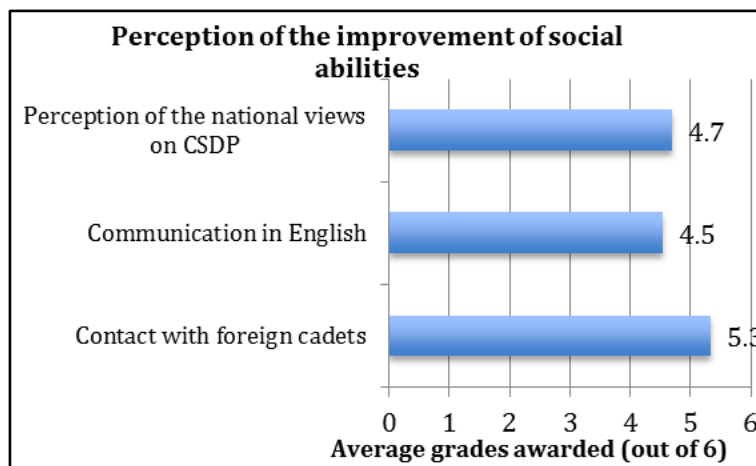


Figure 14: Improvements of social abilities during the CSDP module 2013.¹¹⁵

- The interaction between the participants – from different countries, different services and different study levels – led to increased self-confidence.¹¹⁶
 - International participation remained a key for self-development of individuals and the group.¹¹⁷
- **Common Module on CSDP 2015:** Because of an internal postponing within the winter semester, no CSDP module took place in 2014. The last one – which can be mentioned in this thesis – took place in January 2015 with 46 students, out of them 24 ones came from abroad.¹¹⁸ Because of a regular increase of quality referring to the TMA quality assurance system since the very beginning of conducting the CSDP modules, this 2015-module was the last one which is foreseen to be evaluated externally by Dr. Paile-Calvo. His findings – relevant for

¹¹⁴ Cf.: Ibid. P. 64.

¹¹⁵ Ibid. P. 64. Remark of the author: Graph created by Dr. Paile-Calvo.

¹¹⁶ Cf.: Ibid. P. 70-71.

¹¹⁷ Cf.: Ibid. P. 71.

¹¹⁸ Remark of the author: Participants came from Austria, Czech Republic, Estonia, France, Germany, Greece, Hungary, Italy, Lithuania, Poland and Romania.

the thesis' topic – are listed hereinafter.¹¹⁹

- A similar evolution of test results as for the 2013-module took place, as the following graph shows.

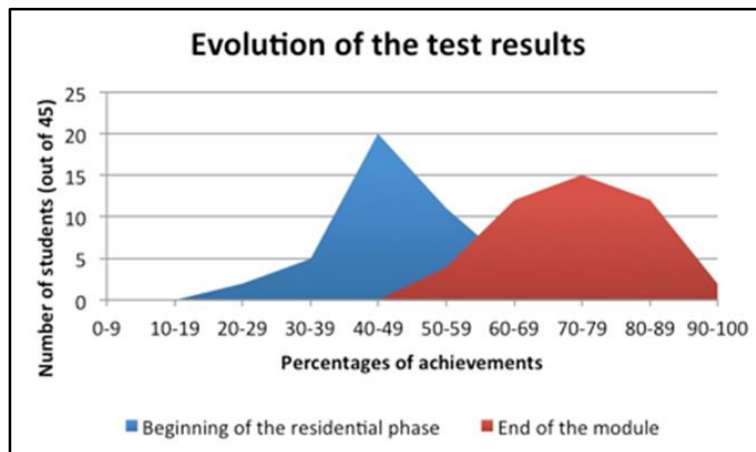


Figure 15: Improvements of test results during the CSDP module 2015.¹²⁰

- This module did not only spread knowledge, but also raised skills and competences which support the education of future military elites.¹²¹
- In spite of lasting just five days, students could improve their communication skills and vocabulary in English.¹²²
- *“International participation [...] remains the key for success of the CSDP module.”*¹²³
- *“The CSDP module [...] reached an adequate stage for being considered as a model of organisation for the CSDP module and other common modules.”*¹²⁴
- The interaction between the participants from different countries led to

119 Cf.: Paile-Calvo, S. & Gell, H. et al. (2015). Common Security and Defence Policy Module 2015 – External Evaluation Report. Vienna. Armis et Litteris 33. Scientific Series of the FH Bachelor Programme Military Leadership. P. 52-94.

120 Ibid. P. 72. Remark of the author: Graph created by Dr. Paile-Calvo.

121 Cf.: Ibid. P. 75.

122 Cf.: Ibid. P. 76.

123 Ibid. P. 86.

124 Ibid. P. 91.

increasing self-confidence and self-development.¹²⁵

To sum up the essential findings of the external evaluation reports for the CSDP modules 2010-2015, the following statements can be made:

- International participation is the key for success. The following table shows the number and percentage development of national and international students to underline that the TMA tried hard to increase international participation.

	Number of Austrian students	Number of international students	Total number of students	Percentage of national students	Percentage of international students
CSDP modules 2010	67	13	80	83.8	16.3
CSDP modules 2011	85	18	103	82.5	17.5
CSDP module 2012	52	24	76	68.4	31.6
CSDP module 2013	28	28	56	50.0	50.0
CSDP module 2015	22	24	46	47.8	52.2
Total	254	107	361	70.4	29.6

Table 2: Number and percentage development of CSDP modules' national and international students.¹²⁶

- Even short modules – each CSDP module lasted just five days – increase students' English ability.
- International participation improves students' competences – such as social competences and special knowledge in terms of taking other views into consideration.
- Interaction with international participants leads to increased self-confidence and increased self-development.

In almost all the evaluation reports also one main problem is mentioned – these are the financial obstacles which sending institutions face. In most of the cases sending institutions have to pay a certain fee to officer cadets when they are sent abroad for short exchanges according to national laws. One solution to avoid these fees could be to consider EU member states – for education purposes – as the home country. This could

¹²⁵ Cf.: Ibid. P. 91.

¹²⁶ Remark of the author: Table created by the author based on CSDP modules' statistics.

be an idea which is to be promoted within the IG in Brussels and to be accepted on national level on a next step.

6.6 Summary of the Chapter

The author decides to sum up longer chapters – such as the present “*Current State of Research*” – with an own chapter-summary to keep track of the thesis and to continue with the next chapters in a logical way.

Within the present chapter three avenues of approach are investigated to determine students’¹²⁷ personal development by searching for still published literature.

In the first part literature is searched which expresses **differences in grades** of mobility students in comparison with non-mobility students. The outcome is that only one study exists but the findings cannot be taken for this thesis because the study-author justifies better grades of mobility students with their higher socio-economic background.

In the second part literature is searched which expresses differences in students’ **metabolic data** measured with Prof. Porta’s CSA method. The outcome is that a lot of students’ data are available but not any literature exists concerning comparisons between mobility and non-mobility students.

In the third part – after an introduction of the Initiative’s current state – an **analysis of external evaluation reports** for all TMA-CSDP modules is conducted to research if even during short modules an increase of students’ personal development may take place. A lot of findings still exist which can be taken and which cause not necessarily more detailed investigations during the thesis’ main chapter, the “*Research and Results of Research*”.

127 Remark of the author: When here the term “*students*” is mentioned, the author includes also “*officer cadets*” meaning all persons who study at an Officer Education Institution.

7. Research Gap

The chapter describes that – based on the chapter before – a certain part of the research is still in its infancy and no researches have been done so far. It also describes in detail, which parts have not been researched and as a first conclusion it describes the importance of the author's topic to close the research gap.

Going abroad for study purposes costs money,¹²⁸ requests a lot of paperwork – if taking national military or Erasmus administration into consideration – and needs several costly meetings of responsible persons in advance. Moreover, it is certainly a personal decisive turning point for students. That is why – from the present thesis author's point of view – it should be essential to prove scientifically, if exchange programmes have a benefit for students and if the responsible institutions and persons are on the right track.

The author uses three avenues of approach to identify benefits for exchange programmes – comparisons of grades, comparisons of metabolic data and an analysis of evaluation reports.

Within the chapter “*Current State of Research*” the author ascertains that – so far – not any study has been conducted which compares students' grades before and after their mobility period which could be taken as evidence for exchange benefits. This is a clear research gap which is filled with this thesis' elaborations.

In the same chapter the author identifies measurements elaborated with the CSA method to determine students' resilience. A lot of students' data exist, but not any comparison has been made between mobility and non-mobility students to detect differences. This is again a clear research gap which is filled with this thesis' elaborations.

Finally the author analyses in the previous chapter evaluation reports for a short exchange period based on external evaluations of seven events with the same content. There are still findings – the research gap can be identified with comparing all these reports to search for overlapping empirical findings.

To fill the research gap certain research questions must be identified and – at a later stage – be answered. These research questions are introduced in the next chapter.

128 Remark of the author: The argument is based on the author's experience as the Head of IO & Chairman of the IG.

8. Research Questions

The chapter lists the research questions. If the research questions are answered, the research gap is closed. The research questions function as a guideline mainly through the chapter “*Research and Results of Research*”.

“*If there are no questions, there will be no answers.*”¹²⁹ According to this citation the author determines research questions which also function as headlines of sub-chapters to ensure a clear and logical sequence of the thesis.

The thesis' research has the purpose to find out if internationalisation may increase students'¹³⁰ personal development. Of course, not all approaches can be answered with just one thesis; that is why the author concentrates his elaborations onto those ones, which provide on the one hand foreseeable valid results and on the other hand which data could be figured out.

Usually research questions may not have a wording which provides answers with just yes or no¹³¹ because the answer could be pretty short. For the present thesis the author makes an exception, because on the one hand answers for sub-questions request detailed explanations anyway, and on the other hand the overall thesis' goal is to ascertain if international exchanges – **as such** – may have a benefit for students' personal developments. That is why the main research question of the thesis is determined as follows:

Does Internationalisation cause personal developments of students?

129 Cage, J. (1961). Lecture and nothing. Cit. acc. to homepage of the University of Connecticut: URL: <http://davidbeermann.tumblr.com/post/87598824416/if-there-are-no-questions-there-are-no-answers>. [15-8-15].

130 Remark of the author: As stated in previous chapters, the author includes officer cadets and civilian students into this term.

131 Cf.: Gell, H. (2013). International Cooperation: Regulation No. 24 for authoring Bachelor and Master Theses by International Students. Wiener Neustadt. P. 22.

and

Cf.: Gell, H. (2014). Lecture for authoring scientific theses. Vienna. Power Point presentation at the Sigmund Freud University. P. 24. Remark of the author: This Power Point presentation is grey literature, that is why the applicable slide is copied to the sub-chapter 17.4.5 “*Grey Literature*”.

In order to answer the main question, it is necessary to divide it into sub-questions. If the sub-questions are answered properly, a valid result for the main question can be guaranteed. The three sub-questions are determined as follows:

Sub-question No. 1: How is the personal development of mobility students in comparison with non-mobility ones illustrated – based on their grades?

Sub-question No. 2: How is the personal development of mobility students in comparison with non-mobility ones illustrated – based on their resilience measured with the CSA method?

Sub-question No. 3: How is the personal development of students during short exchanges – based on an analysis of external evaluation reports?

How the author's intent is to answer all these questions is described in the next chapter, the chapter "*Methodology*".

9. Methodology

The chapter describes how the author intends to yield the results from the starting point via the route of research – the approach – to the end point. It describes the consistency in the author's research work and which scientific methodology is used to answer the respective research sub-question.

9.1 General Remarks

In this thesis the term “method” was mentioned several times. According to the literature a method is a “*systematic approach to gain as accurately as possible findings in a specific scientific field.*”¹³² The definition of methodology – on the other hand – is the application of a method for a certain purpose or in a specific case.¹³³ To answer the research sub-questions the author uses different methodologies which are described within the present chapter.

All in all a huge number of data are processed for the present thesis' elaborations which are listed in the following table.¹³⁴

	total number of researched students	total number of students' grades / data / perceptions
students' grades	409	22,371
students' metabolic data	165 in total, 18 extracted	216
evaluation reports' perceptions	361	23,104
total	788	45,691

Table 3: Students' number and data processed for the present thesis.¹³⁵

132 Homepage of the University Duisburg-Essen. URL: https://www.uni-due.de/imperia/md/content/dokforum/methoden_i_einf_hrung.pdf. [15-8-15].

133 Cf.: Gell, H. (2011). Selection of Leaders [...]. Op. cit. P. 23-24.

134 Remark of the author: Grades and metabolic data are processed for the present thesis, data of evaluation reports are still published, and a summary of the findings is still made in chapter “*Current State of Research*”.

and

Cf.: Footnote No. 25.

135 Remark of the author: Table created by the author based on databases which overviews are listed in sub-chapter 17.4.5 “*Grey Literature*”.

Before the methodology for the respective research is presented, the author's intent is to illustrate the three different avenues of approach for answering the thesis' main question with the following sketch to present an overview to the reader.

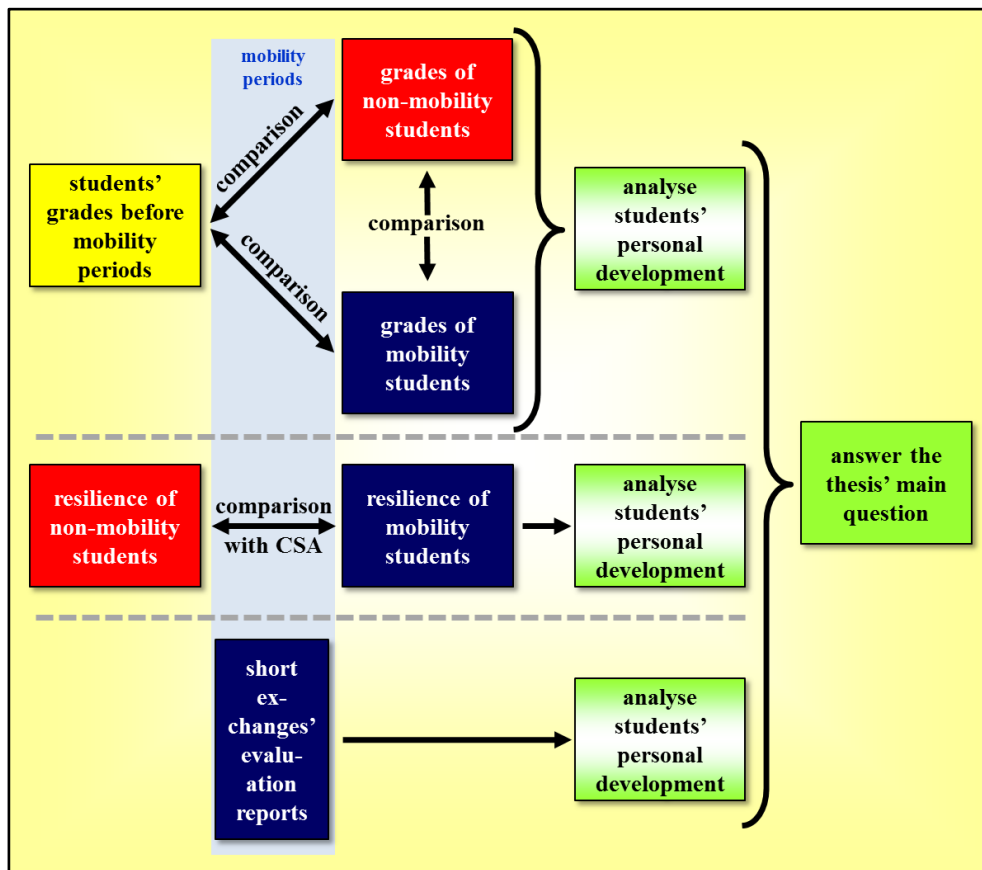


Figure 16: Route of research to answer the thesis' main question.¹³⁶

9.2 Methodology for Comparisons of Grades

For the comparison of grades the following methodology is chosen by the author:

- All the grades of all exams achieved during the entire study period at the FH Bachelor Programme Military Leadership are taken and placed in lists. In total, there are 22,371 grades available from the years 2006-2015.
- Only those students who passed their studies within regular study periods from the entrance exam to the graduation are taken for further elaborations. In the Austrian system it is possible that – if a student fails during a semester according to the exam-directives – studies can be continued with a younger class depending

¹³⁶ Remark of the author: Figure created by the author.

to a decision of the programme director. Because these grades may falsify statistical results, the author eliminates all these grades from further considerations.

- Only those classes' grades are taken which had mobility students within their class. Grades of classes without mobility students – this refers to those classes only which students are foreseen to go abroad in the next years – are eliminated. That is why – out of all available grades – 18,517 grades are left for the statistical review.
- In the Austrian system it is possible – if a student fails in an exam – to repeat it two times. For the statistical elaborations only the first grade achieved is taken. Further grades may falsify the results.
- The first interpretation of data is done within one class; on a later stage all the grades of all classes are compared between mobility and non-mobility students.
- For the statistical analysis the arithmetical mean of all students of a certain period is taken for further comparisons. As an example: In one class 632 students' grades are available for one semester. With the arithmetical mean – out of all these grades, from there just one single figure – further comparisons are made.
- One may argue that only those students are sent abroad – either as a kind of reward or not to blame the sending institution – who show a better performance. For older graduation classes this argument may be true, that is why it is important to compare the development of mean-differences between mobility and non-mobility students before and after the mobility periods. For younger classes this argument is false because almost all students are sent abroad and there is no possibility just to send the best ones. The development of mobility periods is still displayed in the present thesis with figure 4.

According to the procedure described above the author uses a methodology resting upon the **method of empirical analysis** to ascertain if – based on a huge number of students' grades – mobility students show a personal development after their mobility periods or not.

9.3 Methodology for Comparisons of metabolic Data

Before the author describes the methodology utilised to determine differences of mobility and non-mobility students' resilience, the principles of Prof. Porta's CSA method is to be explained.¹³⁷

The equipment – a so-called Nova Biomedical Phox-M device which measures probands' metabolic data – is transportable; therefore, measurements can be conducted where workloads occur.



Figure 17: Blood measurements in the field.¹³⁸

The advantages of measurements in the field are that much more realistic results can be determined in comparison with sometimes artificial atmospheres in laboratory

137 Cf.: Gell, H. (2011). Selection of Leaders [...]. Op. cit. P. 29-30, 52-54, 75-77, 88-95.

and

Cf.: Gell, H. (2012). Sammelband der Publikationen Stressforschung 2009-2012. Translated into English the title means: Miscellany (book) of the Publications for Stress Research from 2009-2012. Wiener Neustadt. P. 17, 23, 31-32, 117, 127-130.

and

Cf.: Porta, S. & Desch, G. & Gell, H. et al. (2012). Biomedical [...]. Op. cit. P. 488-490.

and

Cf.: Porta, S. & Gell, H. et al. (2014). The secret of [...]. Op. cit. P. 75-78.

and

Cf.: Porta, S. & Gell, H. & Moser, M. (2014). Stress Research [...]. Op. cit. P. 402-407.

138 Remark of the author: Picture taken by the author during a blood measurement in the field. The student's face is pixelized to preserve student's anonymity.

environments.

Usually, some drops of blood from a person's fingertip are taken before and after a certain workload. From such a sample about twelve different parameters can simultaneously be determined. Changes in the parameters caused by the workload are considered as stress hormone effects. For example, if the breathing frequency increases due to a physical or mental burden, the amount of oxygen entering the blood and the amount of carbon dioxide leaving the blood can be determined.

Also changes of blood glucose and lactate levels – to get an idea about the energy turnover – can be determined, as well as blood acidity due to the increased lactate input. The compensational action against this acidifying effect – the so-called buffer capacity – can be measured too and the shift of electrolytes like calcium, potassium, sodium or magnesium from the blood into tissues or vice versa in the aftermath of burdens can be determined. All these measurements can be done within three minutes.

The most important feature of the measuring system is that from the measurement device data are immediately transferred via cable transmission to an automatic interpretation software – called Clinical Stress Assessment (CSA). This software associates right away the relation of each data to any other and also the alteration of those proportions due to the burden.

Thus, a kind of pattern – a personal fingerprint – of every single proband can be ascertained and – as a consequence – the weak and strong points in relation to a certain kind of burden can be determined. As an example, a measurement – aspirants had to run an obstacle course – is shown in the following graph.

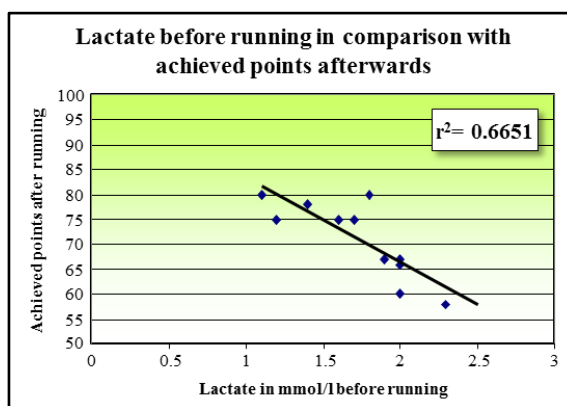


Figure 18: Example for a pattern based on blood measurements with the CSA method.¹³⁹

139 Remark of the author: Graph created by the author based on Porta's database.

Out of the above mentioned example interpretations can be made. For example it can be said that out of probands' basal data predictions about their later performance are possible. On the other hand one may say that – because of the probands' physical condition – such an outcome is obvious. This statement is correct, that is why in such cases more different metabolic data are to be compared in combination to each other and moreover, data should also be compared before and after burdens to ascertain changes of the respective data and to draw a conclusion concerning probands' resilience.¹⁴⁰ The following figure shows such a measurement conducted with one person for resilience's determination before and after a burden.

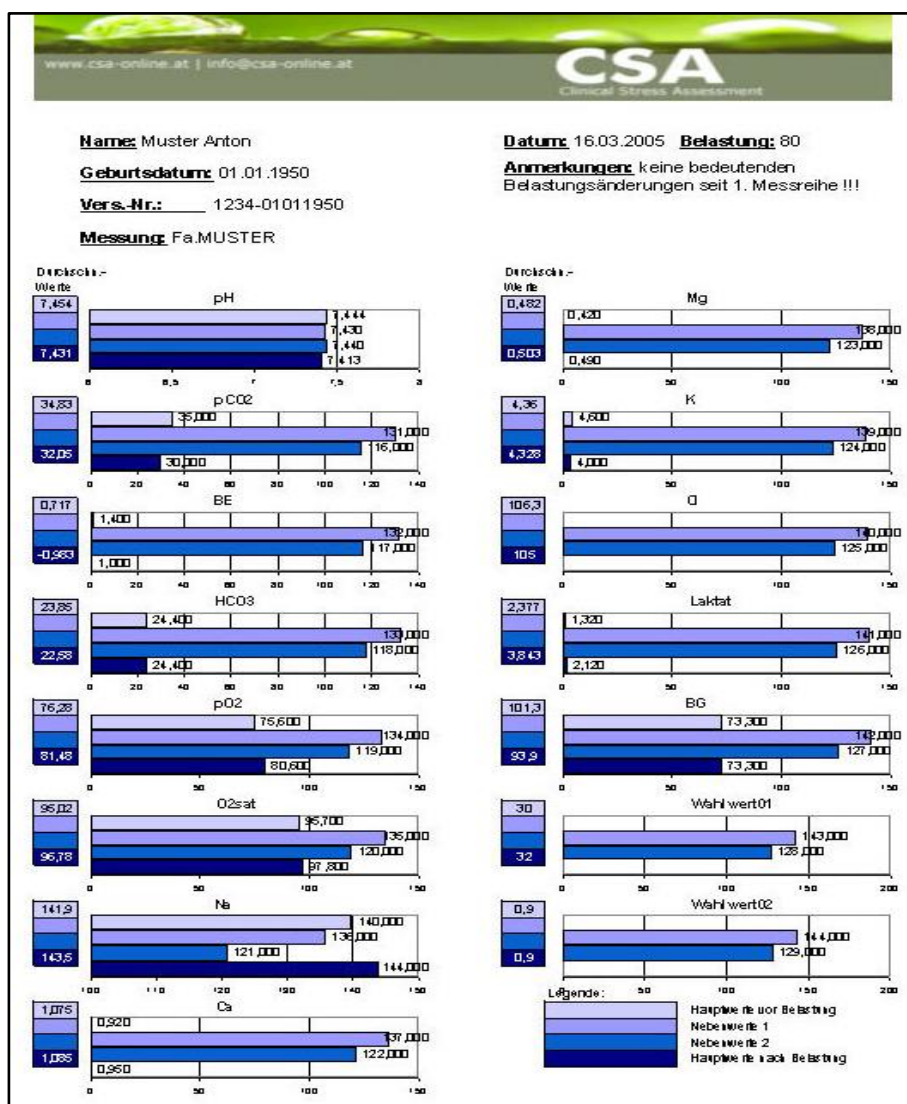


Figure 19: Example for person's data measured with the CSA method.¹⁴¹

140 Cf.: Gell, H. (2011). Selection of Leaders [....]. Op. cit. P. 123-140.

141 Remark of the author: Graph created by Prof. Porta, Porta, S. & Gell, H. et al. (2014). The secret of [....]. Op. cit. P. 76.

How now the CSA method can be used to determine students' personal development after mobility periods?

A lot of the available CSA data were measured at the TMA during research periods when probands had to undergo a variety of burdens. Because – as explained in sub-chapter 4.2 – stress is an **individual reaction** of the human being or animal body onto a physical and/or psychological **burden** or stimulus, provocation-measurements should be based on comparable situations.

To determine a possible personal development – in the sense of increased resilience – only those CSA data have to be considered valid which depict on the one hand the situation before and after mobility periods,¹⁴² and on the other hand which are not taken after specific burdens. Thus, only basal data are to be considered reliable. In this regard the mobility period – as such – can be considered as the burden or the challenge.

When Prof. Porta's **CSA method** is used for the present thesis to determine students' resilience, the **methodology** in this particular case is to compare mobility students' CSA basal data with non-mobility ones.¹⁴³

9.4 Methodology for the Analysis of external Evaluation Reports

An analysis is “*a systematic examination and evaluation of data or information, by breaking it into its component parts to uncover their interrelationships.*”¹⁴⁴

The analysis defined in the quotation above is still done by ascertaining all the students' data of the past seven CSDP modules and their interpretation. They were published in several external evaluation reports.¹⁴⁵ Those reports' parts which can be transferred into the present thesis are still done in the chapter “*Current State of Research*”. In the context of searching for a **methodology** of this transfer of important findings into the present thesis it can be stated that a **hermeneutical approach** is used.

142 Remark of the author: When using the term “*mobility period*”, longer periods such as entire semesters spent abroad are meant.

143 Remark of the author: This statement is based on author's experiences according to previous publications.

144 Homepage of BusinessDictionary.com.
URL: <http://www.businessdictionary.com/definition/analysis.html>. [16-8-15].

145 Cf.: Footnote No. 25. Paile, S. & Gell, H. (2010-2015). External Evaluation Reports of the Common Security and Defence Policy Modules 2010-2015. Op. cit.

10. Research and Results of Research

The chapter describes what the author has done to answer the research question as well as the results of the research for the respective research questions. At the end of the chapter the research results are summarised.

10.1 Personal Development of Mobility Students ascertained by their Grades

10.1.1 General Remarks

In order to answer the research sub-question No. 1 – *“How is the personal development of mobility students in comparison with non-mobility ones illustrated – based on their grades?”* – the author lists hereinafter on a first stage the respective statistical data of a single class with an interpretation of their data and at the sub-chapter's end a comparison of all data of all classes.

To illustrate easily readable interpretations, the author decides to use pillar graphs. The ordinate represents the grades. In the Austrian study-system the grade “1” is the best achievable grade, that is why the scaling always starts with a “1”. This means that the lower a pillar is the better the grade is.

Depending on the highest number of means the scaling ends with a certain number which provides a good overview of the graph.

On the abscissa those semesters are shown which have relevance either to the development of grades during study periods and/or have relevance to mobility periods.

Those means of grades which a priori falsify data – such as grades achieved at different branch schools or grades achieved during study periods abroad at different Universities or Academies – are not taken for statistical elaborations, in most cases these were the semesters four or five. The reason is that it cannot be ensured that different education institutions evaluate different students in the same way. That is why only those grades – before and after mobility periods – are taken which were achieved by the students when they were together in one class and had the same preconditions for their exams.

10.1.2 Graduation Class 2010

For the statistics 6,056 grades from 71 students – out of them four students spent the 7th semester¹⁴⁶ abroad – are processed. Mobility students represent 5.6 percent of the entire class. The following graph shows grades' development of mobility students in comparison with non-mobility ones. The respective means are represented.

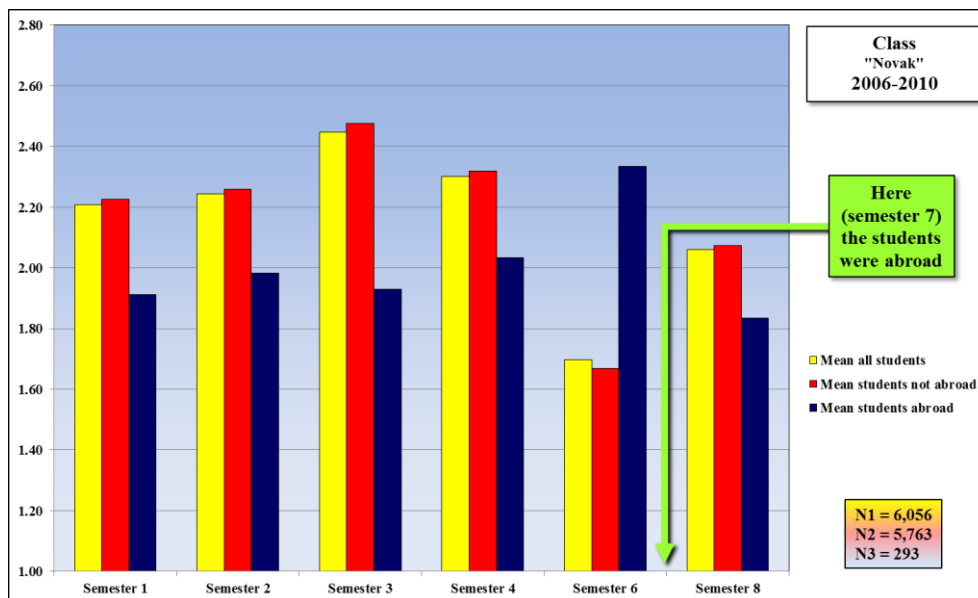


Figure 20: Development of grades of the graduation class 2010.¹⁴⁷

Interpretation:

- In general, the mobility students showed a better performance than non-mobility students, the exception is in the 6th semester.
- The mean-distance before and after the mobility period between mobility and non-mobility students remain almost the same – as the following table shows. In the 3rd semester mobility students can achieve the biggest mean-distance to non-mobility students.

146 Remark of the author: The graduation classes 2010 and 2011 studied in a system before implementation of the Bologna Process. In comparison to the later Bachelor studies, for statistical elaborations it is not a disadvantage because the arithmetical means are based just on more grades before mobility periods.

147 Remark of the author: Graph created by the author based on his grades' database.

	Semester 1	Semester 2	Semester 3	Semester 4	Semester 6	Semester 8
Mean non-mobility students	2.23	2.26	2.48	2.32	1.67	2.07
Mean mobility students	1.91	1.98	1.93	2.03	2.33	1.83
Difference	-0.31	-0.28	-0.55	-0.28	0.67	-0.24

Table 4: Comparison of mobility and non-mobility students' means of the graduation class 2010 for the entire study period.¹⁴⁸

- Mobility students could achieve their best mean after the mobility period.
- Because of maintaining the mean-distance after mobility periods by mobility students it can be stated that the semester abroad had a positive effect onto them.

10.1.3 Graduation Class 2011

For the statistics 5,867 grades from 69 students – out of them four students spent the 7th semester abroad – are processed. Mobility students represent 5.8 percent of the entire class. The following graph shows grades' development of mobility students in comparison with non-mobility ones. The respective means are represented. Because of spending the 5th semester at branch schools and because of too few grades in the 6th semester, these means are not taken into consideration.

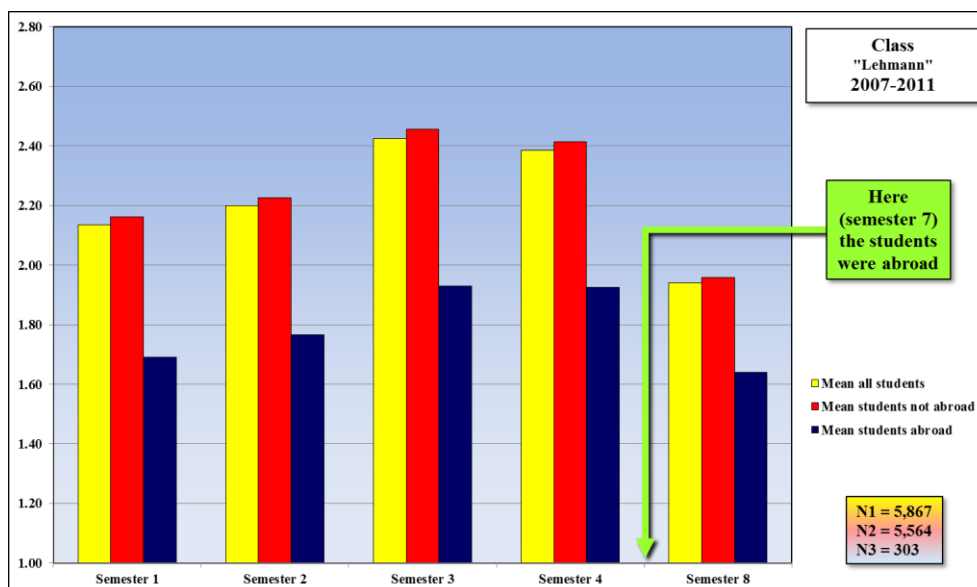


Figure 21: Development of grades of the graduation class 2011.¹⁴⁹

148 Remark of the author: Table created by the author based on his grades' database.

149 Remark of the author: Graph created by the author based on his grades' database.

Interpretation:

- In general, the mobility students showed also for this class a better performance than non-mobility students.
- The mean-distance before the mobility period between mobility and non-mobility students remain almost the same – as the following table shows.

	Semester 1	Semester 2	Semester 3	Semester 4	Semester 8
Mean non-mobility students	2.16	2.23	2.46	2.41	1.96
Mean mobility students	1.69	1.77	1.93	1.93	1.64
Difference	-0.47	-0.46	-0.53	-0.49	-0.32

Table 5: Comparison of mobility and non-mobility students' means of the graduation class 2011 for the entire study period.¹⁵⁰

- On the one hand mobility students could achieve their best mean after the mobility period, but on the other hand the mean-distance between them and non-mobility students decreases a bit.
- Because of maintaining a certain mean-distance after mobility periods by mobility students it can be stated that the semester abroad had at least not a negative effect onto them.

10.1.4 Graduation Class 2012

The graduation class 2012 was the first one in the new Bachelor system with six semesters which statistical data are taken for the present thesis' elaborations.

For the statistics 3,184 grades from 66 students – out of them six students spent the 5th or 6th semester abroad – are processed. Mobility students represent 9.1 percent of the entire class. The following graph shows grades' development of mobility students in comparison with non-mobility ones. The respective means are represented. Because of spending the 4th semester at branch schools these means are not taken into consideration.

150 Remark of the author: Table created by the author based on his grades' database.

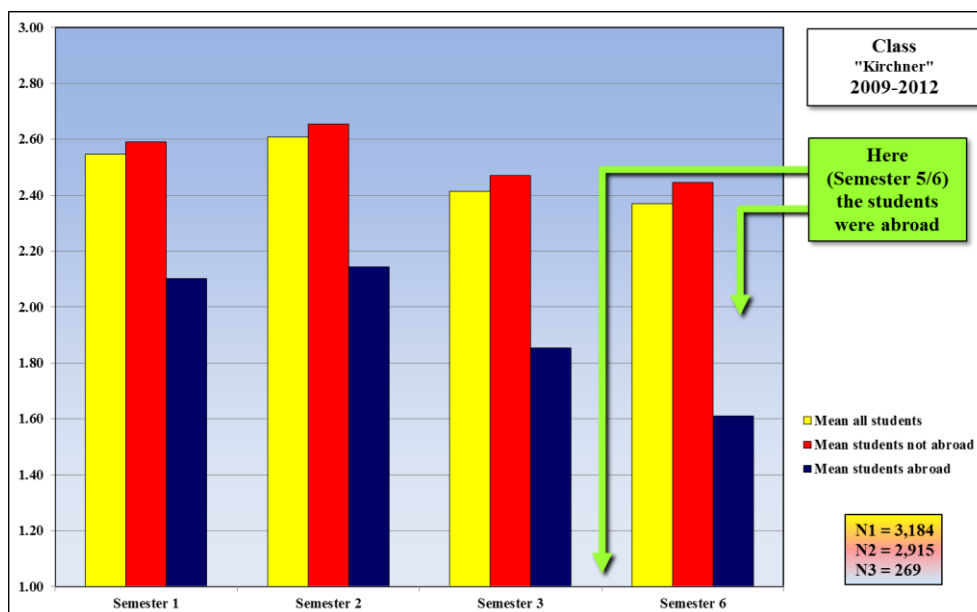


Figure 22: Development of grades of the graduation class 2012.¹⁵¹

Interpretation:

- In general, the mobility students showed a much better performance than non-mobility students.
- The mean-distance before the mobility period between mobility and non-mobility students remain almost the same, whereas the distance after the mobility period increases – as the following table shows.

	Semester 1	Semester 2	Semester 3	Semester 6
Mean students not abroad	2.59	2.66	2.47	2.45
Mean students abroad	2.10	2.14	1.85	1.61
Difference	-0.49	-0.51	-0.62	-0.84

Table 6: Comparison of mobility and non-mobility students' means of the graduation class 2012 for the entire study period.¹⁵²

- Mobility students could achieve their best mean after the mobility period which does not go hand-in-hand with tendencies of non-mobility students.
- Because of increasing the mean-distance after mobility periods by mobility

¹⁵¹ Remark of the author: Graph created by the author based on his grades' database.

¹⁵² Remark of the author: Table created by the author based on his grades' database.

students it can be stated that the semester abroad had a very positive effect onto them.

10.1.5 Graduation Class 2013

For the statistics 3,509 grades from 76 students – out of them 12 students spent the 5th or 6th semester abroad – are processed. Mobility students represent 15.8 percent of the entire class. The following graph shows grades' development of mobility students in comparison with non-mobility ones. The respective means are represented. Because of spending the 4th semester at branch schools these means are not taken into consideration, but in this specific case also the 5th semester is in the graph because there are enough grades available for statistical data.

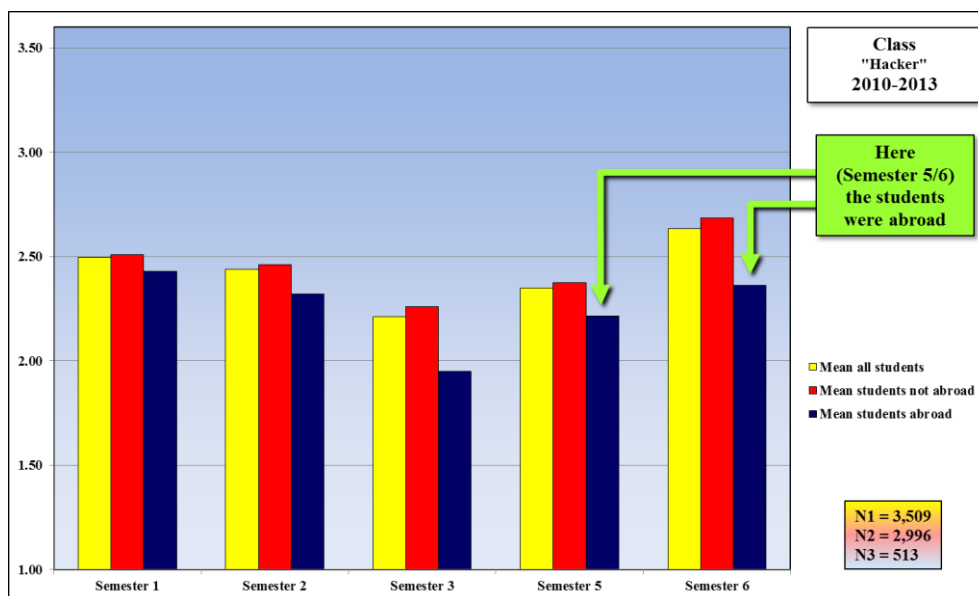


Figure 23: Development of grades of the graduation class 2013.¹⁵³

Interpretation:

- In general, the mobility students showed a better performance than non-mobility students.
- The mean-distance before the mobility period between mobility and non-mobility students is steadily increasing up to the 3rd semester – as the following table shows.

¹⁵³ Remark of the author: Graph created by the author based on his grades' database.

	Semester 1	Semester 2	Semester 3	Semester 5	Semester 6
Mean students not abroad	2.51	2.46	2.26	2.38	2.68
Mean students abroad	2.43	2.32	1.95	2.22	2.36
Difference	-0.08	-0.14	-0.31	-0.16	-0.32

Table 7: Comparison of mobility and non-mobility students' means of the graduation class 2013 for the entire study period.¹⁵⁴

- Mobility students could achieve their best mean-distance to non-mobility students after the mobility period, it is slightly better than during the 3rd semester.
- Because of having the best mean-distance after mobility periods by mobility students it can be stated that the semester abroad had a positive effect onto them.

10.1.6 Graduation Class 2014

For the statistics 1,861 grades from 51 students – out of them 34 students spent the 4th or 5th semester abroad – are processed. Mobility students represent 66.7 percent of the entire class which means that for the first time more students spent a semester abroad than stayed at home. The following graph shows grades' development of mobility students in comparison with non-mobility ones. The respective means are represented.

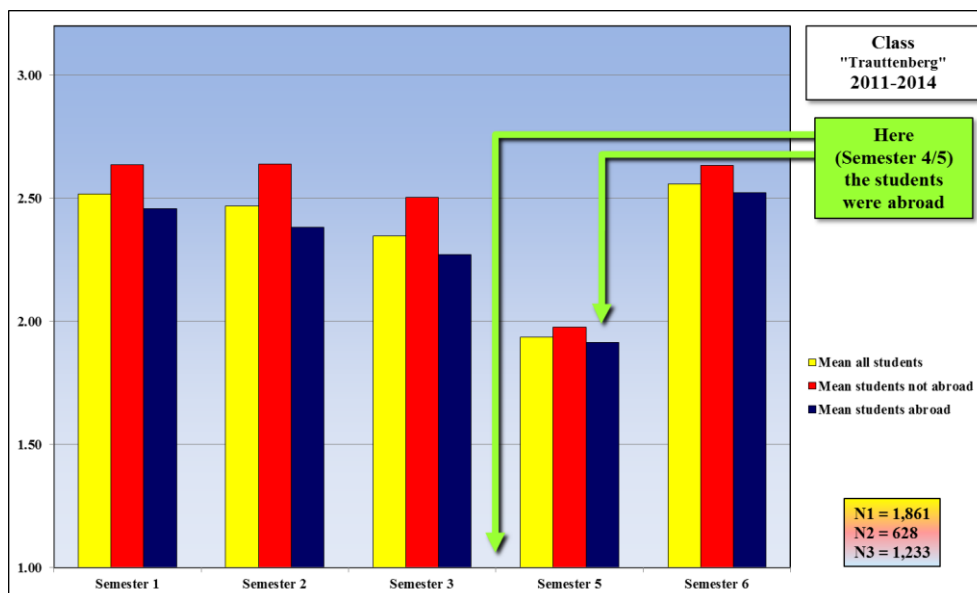


Figure 24: Development of grades of the graduation class 2014.¹⁵⁵

154 Remark of the author: Table created by the author based on his grades' database.

155 Remark of the author: Graph created by the author based on his grades' database.

Interpretation:

- In general, the mobility students showed a better performance than non-mobility students.
- The mean-distance before the mobility period between mobility and non-mobility students is a bit better than after the mobility period – as the following table shows.

	Semester 1	Semester 2	Semester 3	Semester 5	Semester 6
Mean students not abroad	2.64	2.64	2.50	1.98	2.63
Mean students abroad	2.46	2.38	2.27	1.92	2.52
Difference	-0.18	-0.26	-0.23	-0.06	-0.11

Table 8: Comparison of mobility and non-mobility students' means of the graduation class 2014 for the entire study period.¹⁵⁶

- Mobility students have their smallest mean-distance to non-mobility students after their mobility period, but this can be considered as not that disadvantage because in the 5th semester all the students achieve their best grades. The closer the means come to the best possible grade, the more difficult it is to keep the distance. When the grades are getting worse in the 6th semester, also the mean-distance increases again.
- Because of keeping a certain mean-distance after mobility periods by mobility students it can be stated that the semester abroad had at least no negative effect onto them.

10.1.7 Graduation Class 2015

For the statistics 1,003 grades from 30 students – out of them 26 students spent the 4th or 5th semester abroad – are processed. Mobility students represent 86.7 percent of the entire class. Grades of the 4th semester are not taken into consideration because most of the students spent this semester at different Universities or Academies abroad. The 6th semester is not taken into consideration either, because the majority of students who spent the 4th semester abroad had to absolve a so-called International Training on the

¹⁵⁶ Remark of the author: Table created by the author based on his grades' database.

Job abroad additionally, which may falsify the statistics because this was also an international event which may cause personal developments but is not expressed with grades. The following graph shows grades' development of mobility students in comparison with non-mobility ones. The respective means are represented.

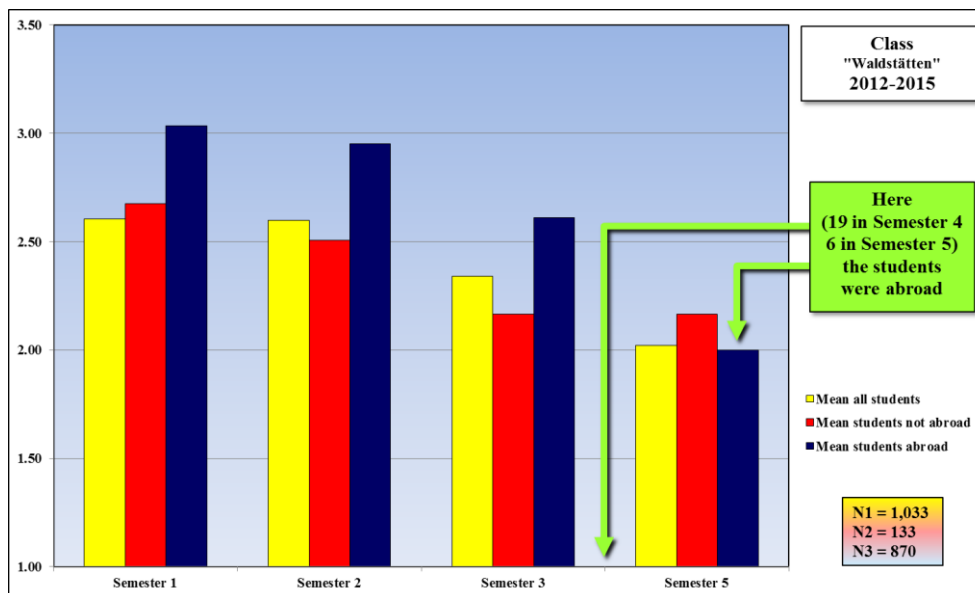


Figure 25: Development of grades of the graduation class 2015.¹⁵⁷

Interpretation:

- In general, the mobility students showed a poorer performance before the mobility period.
- Mobility students' mean after the mobility period between mobility and non-mobility students is the only one which is better in comparison with non-mobility students – as the following table shows.

	Semester 1	Semester 2	Semester 3	Semester 5
Mean students not abroad	2.68	2.51	2.17	2.17
Mean students abroad	3.03	2.95	2.61	2.00
Difference	0.36	0.45	0.44	-0.17

Table 9: Comparison of mobility and non-mobility students' means of the graduation class 2015 for the entire study period.¹⁵⁸

157 Remark of the author: Graph created by the author based on his grades' database.

158 Remark of the author: Table created by the author based on his grades' database.

- Because of reaching the only better mean after mobility periods by mobility students it can be stated that the semester abroad had a very positive effect onto them.

10.1.8 Comparison of all Graduation Classes

The exams of the same topics in different classes may have different pre-conditions. That is why in a first step of comparisons of grades of all classes, the differences of the best and worst mean of one entire study period is calculated compared with the mean of mobility students after their mobility periods. In total 18,517 grades for these differences are calculated and are presented with the following table.

graduation	entire class			mobility students	
	best mean	worst mean	difference	difference of mobility students' mean after mobility period	percentage of better grades of mobility students
2010	1.67	2.48	0.81	-0.24	-29.41
2011	1.64	2.46	0.82	-0.32	-39.16
2012	1.61	2.66	1.04	-0.84	-80.00
2013	1.95	2.68	0.73	-0.32	-44.09
2014	1.92	2.64	0.72	-0.11	-15.26
2015	2.00	3.03	1.03	-0.17	-16.13

Table 10: Comparison of the best and worst mean of an entire study period compared with the mobility students' mean after their mobility period.¹⁵⁹

Interpretation:

- Differences of means within one class last from 0.72 to 1.04 – which is within the Austrian 5-steps grading scale approximately one grade.
- Mobility students of all classes achieve after their mobility periods **always** better grades than the rest of the class. When calculated in percent, it can be stated that mobility students' grades are from 15.26 to 80.0 percent better than the rest of the class.

¹⁵⁹ Remark of the author: Table created by the author based on his grades' database.

When the mean of all classes of all non-mobility students' grades before and after mobility periods are calculated and compared with the mean of all classes of all mobility students' grades before and after their mobility periods, the graph looks like as follows:

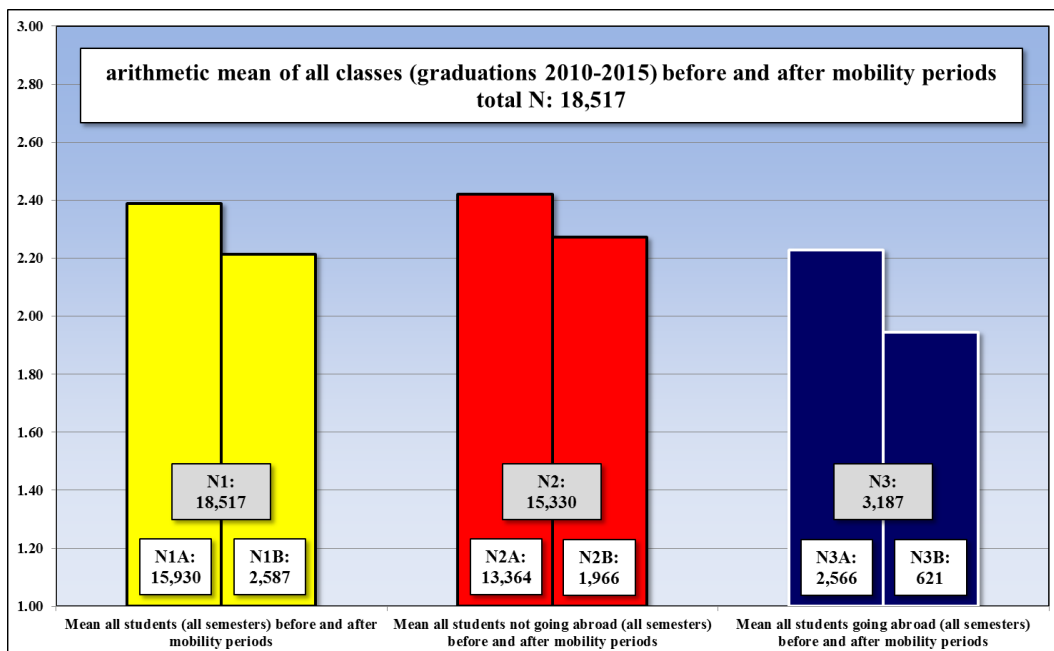


Figure 26: Development of grades of all graduation classes 2010-2015 before and after mobility periods.¹⁶⁰

Interpretation:

- To the end of studies all the grades turn better.
- After mobility periods, mobility students increase their grades more than non-mobility students. After mobility periods non-mobility students' grades are 0.15 better, whereas mobility students' grades are 0.28 better, which is almost twice as big.

As a conclusion of all calculations it can be stated that mobility periods – more specifically, semesters abroad – have a positive effect on mobility students' grades. With going abroad for longer periods they increase their personal development! This result approves the TMA approach to send 100 percent of students abroad in the future.

¹⁶⁰ Remark of the author: Graph created by the author based on his grades' database.

10.2 Personal Development of Mobility Students ascertained by their metabolic Data

10.2.1 General Remarks

According to the findings in the previous sub-chapter, mobility students were invariably successful in their next following semester. The statistical significance of this implication is ascertained and confirmed.

The reasons for such a success can be manifold and some of them will remain speculative. The certain knowledge that mobility students are able to overcome new challenges and that additional skills have been acquired which are successfully applicable to domestic problems – in fact a calmer and more assured attitude to personal problems as well as to occupational ones – may well range prominently among the reasons touched above.

During the TMA research projects with Prof. Porta,¹⁶¹ a check system was accidentally developed which objectively quantifies the amount of mental arousal, determined by a change in metabolic blood parameters.

The simple rationale consists of the knowledge, that adrenaline-increase proportionally influences parameters of breathing, such as

- $p\text{CO}_2$ decrease and $p\text{O}_2$ increase,¹⁶²
- buffer potential, this may be considered as compensatory power,
- lactate and glucose changes, characterising the state of carbohydrate metabolism, and
- changes of blood electrolytes like sodium (Na), potassium (K), calcium (Ca) and magnesium (Mg), all of them are shifted in and out of body tissues in proportion to the intensity of mental load.

Especially the changing interrelationships between the above mentioned parameters are sensible instruments to measure not only the quantity of a mental load but also the

161 Remark of the author: Cf.: Footnote No. 70.

162 Remark of the author: $p\text{CO}_2$ is the partial pressure of carbon dioxide; $p\text{O}_2$ is the partial pressure of oxygen.

individual stress capability. In other words: Mental arousal triggers adrenaline secretion; adrenaline increases impacts upon metabolic parameters, that is why the precise quantity of mental arousal is detectable from the change of those metabolic parameters.

If now the mental arousal of mobility students is lower than of non-mobility students, it can be deduced that mobility students increased their personal development – as such – during their stay abroad.

10.2.2 The Calculation

From the contents of the available database of hundreds of such above mentioned metabolic tests with students, a comparatively small, but statistically sufficient number of persons is extracted – eight ones after their mobility period and ten without it – whose metabolic state was tested both, after returning from a mobility period or without having been abroad. To achieve a valid result, group averages are calculated and compared and not data of just individuals.

The approach is to compare those metabolic data of mobility students with non-mobility ones which allow drawing conclusions about their mental arousals.

The following table comprises group averages of mobility students' metabolic basal data after their mobility period – with their means, standard deviations (SD)¹⁶³ and standard errors of mean (SEM).¹⁶⁴

163 Remark of the author: The standard deviation is a measure that is used to quantify the amount of variation or dispersion of a set of data values.

164 Remark of the author: The standard error of mean is the standard deviation of the sample-mean's estimate of a population mean.

	pH	pCO ₂	BE ¹⁶⁵	HCO ₃ ¹⁶⁶	pO ₂	O ₂ sat ¹⁶⁷	Na	Ca	Mg	K	BG ¹⁶⁸
Unit	value	mmHg ¹⁶⁹	mmol/l ¹⁷⁰	mmol/l	mmHg	%	mmol/l	mmol/l	mmol/l	mmol/l	mg/dl
Mean	7.423	35.175	-1.475	23.188	71.213	94.300	144.425	1.115	0.504	4.528	103.125
SD	0.027	2.909	1.798	1.656	6.546	1.872	2.456	0.076	0.028	0.242	7.492
SEM	0.009	1.029	0.636	0.585	2.315	0.662	0.868	0.027	0.010	0.086	2.649

Table 11: Metabolic data of mobility students after their mobility period.¹⁷¹

The following table comprises group averages of non-mobility students' metabolic basal data – with their means, standard deviations (SD) and standard errors of mean (SEM).

	pH	pCO ₂	BE	HCO ₃	pO ₂	O ₂ sat	Na	Ca	Mg	K	BG
Unit	value	mmHg	mmol/l	mmol/l	mmHg	%	mmol/l	mmol/l	mmol/l	mmol/l	mg/dl
Mean	7.411	34.770	-2.550	22.270	73.450	94.660	143.760	1.055	0.501	2.992	104.500
SD	0.017	2.577	1.059	1.140	6.332	1.388	1.165	0.031	0.025	0.267	15.565
SEM	0.006	0.911	0.374	0.403	2.239	0.491	0.412	0.011	0.009	0.094	5.503

Table 12: Metabolic data of non-mobility students.¹⁷²

-
- 165 Remark of the author: Base excess (BE) expresses the amount of acid or alkaline which is necessary to restore an acid alkaline balance according to the normal pH-value of the body.
- 166 Remark of the author: Hydrogen Carbonate (HCO₃) acts in bodies as blood buffer system to restore an acid alkaline balance.
- 167 Remark of the author: Oxygen saturation (O₂sat) is a relative measure of the amount of oxygen that is dissolved or carried in a given medium.
- 168 Remark of the author: Blood glucose (BG) is the amount of glucose – or sugar – present in the blood and is the primary source of energy for the body's cells.
- 169 Remark of the author: Millimetre of Mercury (mmHg) is a unit to express the blood pressure or other body fluids.
- 170 Remark of the author: A mole is a unit of measurement for the amount of a substance. It describes as many atoms as there are in 12 grams of pure carbon. As a figure it expresses 6.022×10^{23} parts. A millimole per litre (mmol/l) expresses the thousandth part of it within 1 litre.
- 171 Remark of the author: Table created by Prof. Porta and reshaped by the author based on metabolic tests' database.
- 172 Remark of the author: Table created by Prof. Porta and reshaped by the author based on metabolic tests' database.

According to the tables above, already the group averages show the following significant differences (t-test, $p < 0.05$):

- BE of non-mobility students is significantly lower.
- Ca and K of non-mobility students are significantly lower.

Lower BE as well as lower Ca and K point unanimously towards increased basal metabolism of non-mobility students.

The following graphs illustrate correlations between the pH-value (pH) and the partial pressure of carbon dioxide ($p\text{CO}_2$) as well as with the partial pressure of dioxygen ($p\text{O}_2$), on the one hand for mobility students and on the other hand for non-mobility ones. With such comparison a certain level of nervousness and mental arousal can be determined. The interpretation is made after the end of all graphs.

- **Mobility students' correlations between pH and $p\text{CO}_2$.**

The increased acid production of basal metabolism is counteracted by overcompensatory loss of CO_2 – which means more frequent breathing – that could shift pH into alkaline regions – which can be seen at the lowermost point.

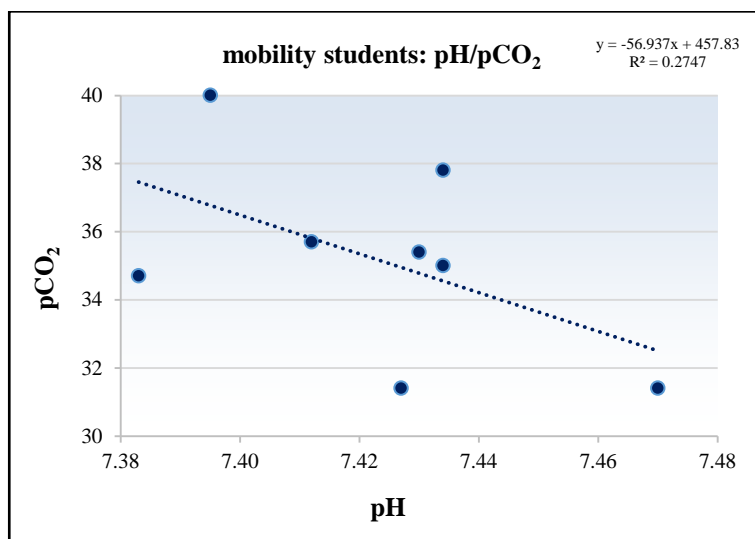


Figure 27: Mobility students' correlations between pH and $p\text{CO}_2$.¹⁷³

173 Remark of the author: Graph created by Prof. Porta and reshaped by the author.

- **Non-mobility students' correlations between pH and pCO₂.**

Non-mobility students show a much higher significance of CO₂ influence on pH (0.58) and double the slope ($y=113x$) compared to mobility students. Both facts point strongly to a much higher basal metabolism – in fact mental arousal – of non-mobility students in comparison with mobility ones.

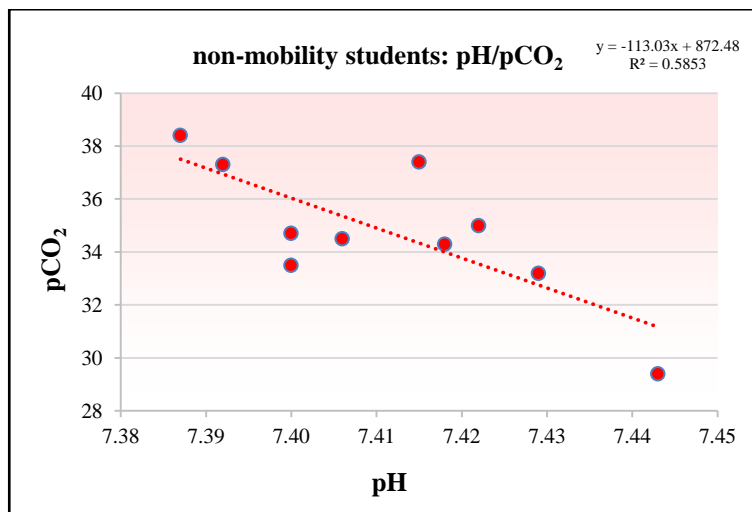


Figure 28: Non-mobility students' correlations between pH and pCO₂.¹⁷⁴

- **Non-mobility students' correlations between pH and pO₂.**

Increasing pH – see figure 28 above – binds more O₂, which is being withheld from tissues like muscles, heart and brain.

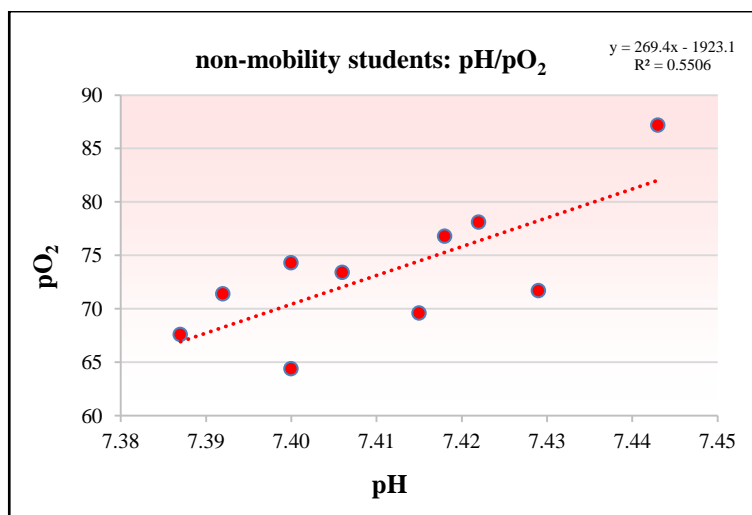


Figure 29: Non-mobility students' correlations between pH and pO₂.¹⁷⁵

¹⁷⁴ Remark of the author: Graph created by Prof. Porta and reshaped by the author.

¹⁷⁵ Remark of the author: Graph created by Prof. Porta and reshaped by the author.

- **Mobility students' correlations between pH and pO₂.**

The significance of mobility students' pH/pO₂ relation is similar to the non-mobility one, but the slope – increasingly bound O₂ – is about 65 percent less. Consequently, basal metabolism of tissues is provided with more O₂.

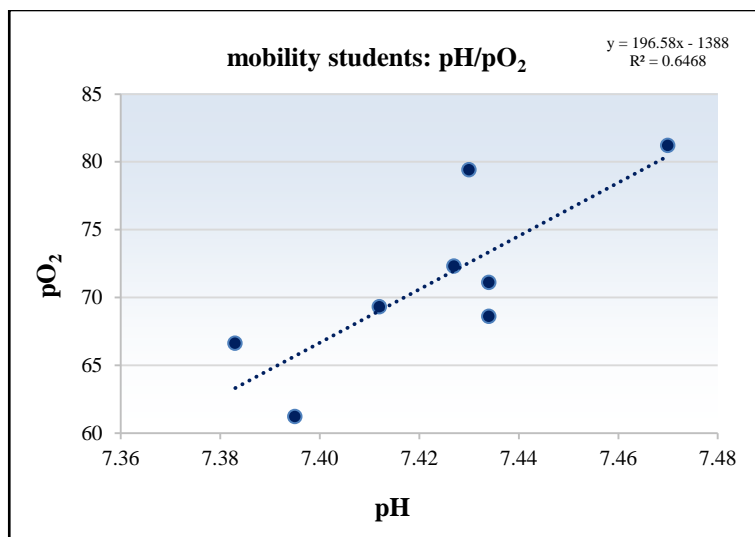


Figure 30: Mobility students' correlations between pH and pO₂.¹⁷⁶

10.2.3 The Interpretation

A sensible tool for the interpretation of the impact of mental arousal on the metabolism of a person is the comparison between the blood pH-value and pCO₂ on the one hand, and blood pH-value and pO₂ on the other hand.

The more “nervous” the breathing frequency becomes, the more CO₂ must be lost to influence the blood pH-value. Non-mobility students need about double amount of CO₂-loss to induce the same pH-change as mobility students.

At the same time, the rate of CO₂-decrease is proportional to O₂-binding in the blood, meaning that non-mobility students' oxygen is bound to the blood much stronger – see figure 29 – than in mobility students' blood, which means that tissues of mobility students are better equipped with oxygen.

All in all, these are situations in which less “nervousness” of mobility students also benefits their oxygen transfer from the blood into the brain, the heart and the muscles.

¹⁷⁶ Remark of the author: Graph created by Prof. Porta and reshaped by the author.

As a conclusion of the calculations and interpretations of students' metabolic data it can be stated that mobility students – after their mobility period – benefit from their better oxygen transfer in comparison with non-mobility students.

As a consequence, going abroad for longer periods increases mobility students' personal development because the chances to manage challenges better and their resilience are increased. This result approves – as the calculations with students' grades – the TMA approach to send 100 percent of students abroad in the future.

10.3 Personal Development of Students ascertained by external Evaluation Reports

There are more Common Modules than the CSDP one implemented in the Austrian Basic Officer Education. All of them are evaluated according to an internal quality assurance system which should be state of the art for a HEI. On the other hand an external evaluation – as carried out for all the Austrian CSDP modules – provides always another view from outside and reduces the danger of becoming routine-blinded.

In present thesis' chapter 6 "*Current State of Research*", in particular in sub-chapter 6.5 "*The Initiative and the Analysis of external Evaluation Reports*" the essential outcomes of these external evaluation reports are still worked out,¹⁷⁷ that is why there is no need to repeat these outcomes here again. Hereinafter, the author's intent is to merge overlapping outcomes – different modules may have the same results – to provide the pre-conditions for a clear answer to the research sub-question No. 3.

177 Paile, S. & Gell, H. (2012). Common Security and Defence Policy Modules 2010. [...] Op. cit. Passim.

and

Paile, S. & Gell, H. (2012). Common Security and Defence Policy Modules 2011. [...] Op. cit. Passim.

and

Paile, S. & Gell, H. (2013). Common Security and Defence Policy Module 2012. [...] Op. cit. Passim.

and

Paile, S. & Gell, H. (2014). Common Security and Defence Policy Module 2013. [...] Op. cit. Passim.

and

Paile, S. & Gell, H. et al. (2015). Common Security and Defence Policy Module 2015. [...] Op. cit. Passim.

When comparing the evaluation reports' overlapping outcomes, the following statements can be made:

- Participants came from different study levels – from Bachelor up to PhD level – which does not hamper the increase of learning outcomes; on the contrary, these different levels are very useful for interactive learning, open students' minds and lead to increased self-confidence and increased self-development.
- An increased international participation leads to better students' learning outcomes and increases their social competence.
- Even in short modules – just within five days – students can improve their communication skills and their vocabulary in English.
- Interactive learning – between the lecturers and the students, but also between the students themselves – leads to better learning outcomes.
- The final statement in almost all the evaluation reports is that international participation is the key for success.

Based on the evaluation outcomes of the Austrian CSDP modules it can be stated that even short international events – such as the CSDP one with just five days each – have a benefit onto students' personal development. This result could encourage all the European Union military HEIs to implement the CSDP and other Common Modules into their curricula including paving the way for international participation.

10.4 Summary of the Chapter

The present chapter has the goal to ascertain if there exists an increase of mobility students' performance after their mobility period in comparison with non-mobility students. Three inquiries are made.

The first one – a comparison of six classes with 18,517 students' grades achieves the result that mobility students – in any case – have better grades after their mobility period than non-mobility students. If calculated within one class, the improvements range from 15.26 to 80.0 percent. If all the grades of all classes are compared to find out differences before and after mobility periods, it can be stated that mobility students have – according to the Austrian grading scale – a 0.28 better grading than non-mobility

students which is twice as big. As a conclusion of this research it can be said that mobility periods have a benefit onto students' personal development.

The second inquiry is made in comparing metabolic data of mobility and non-mobility students. Out of a database with hundreds of students, 18 students with 216 data are extracted. The result is that non-mobility students' oxygen is bound to the blood much stronger which means that the mobility students' tissues are much better saturated with oxygen and – as a consequence – mobility students benefit from their oxygen transfer from the blood into the brain, the heart and the muscles. As a conclusion it can be said that mobility students have – after their mobility period – much better chances to manage challenges in comparison with non-mobility students and – as a consequence – they increase their personal development.

The third inquiry analyses still existing external evaluation reports of short events in particular of seven CSDP modules with 23,104 data in total – with international participation. The result is that also during short events under certain pre-conditions – in terms of international participation – students benefit from it and increase their personal development.

11. Discussion of Results (pros and cons)

The chapter discusses the results from different points of view mentioning the pros and cons. The research questions are mentioned again and – based on the author's discussion – they are answered clearly.

The thesis' main research question is: *“Does Internationalisation cause personal developments of students?”*

In order to answer the main question, three sub-questions are defined. The answers to these sub-questions are discussed within the present chapter from different points of view to determine the strengths and weaknesses of the respective research.

The first research sub-question is: *“How is the personal development of mobility students in comparison with non-mobility ones illustrated – based on their grades?”*

Pros:

- The research is based on a huge number of grades, in particular on 18,517 ones. With this huge number valid results can be expected.
- Grades of each single student which could falsify the results are eliminated and not taken into further consideration from the very beginning – such as students who failed during their studies or students who repeated classes. Only those grades are taken for the calculations which are based on students' regular time of study.
- Grades achieved during the studies at the FH Bachelor Programme Military Leadership do not only express a certain level of just special knowledge, they express more, such as other competences listed in the accreditation paper.¹⁷⁸ That is why any comparison of “just” grades refers also to students' personal development.
- For the calculations it is important that not only the increase or decrease of grades is calculated. All the calculations should express the difference-developments between mobility and non-mobility students – before and after mobility periods.

178 Cf.: FH Bachelor Programme Military Leadership (2011). Application [...]. Op. cit. P. 18-19.

To underline this statement, the author brings in a graph of the last graduation class. The same data are used as in figure 25, but another outfit visualises the importance of differences between mobility and non-mobility students' means of grades. On the ordinate the grades are scaled – just to remember, the lower, the better is the grade – on the abscissa the time in years is scaled; because of saving space, the time before the last semester is not scaled, just the results are illustrated.

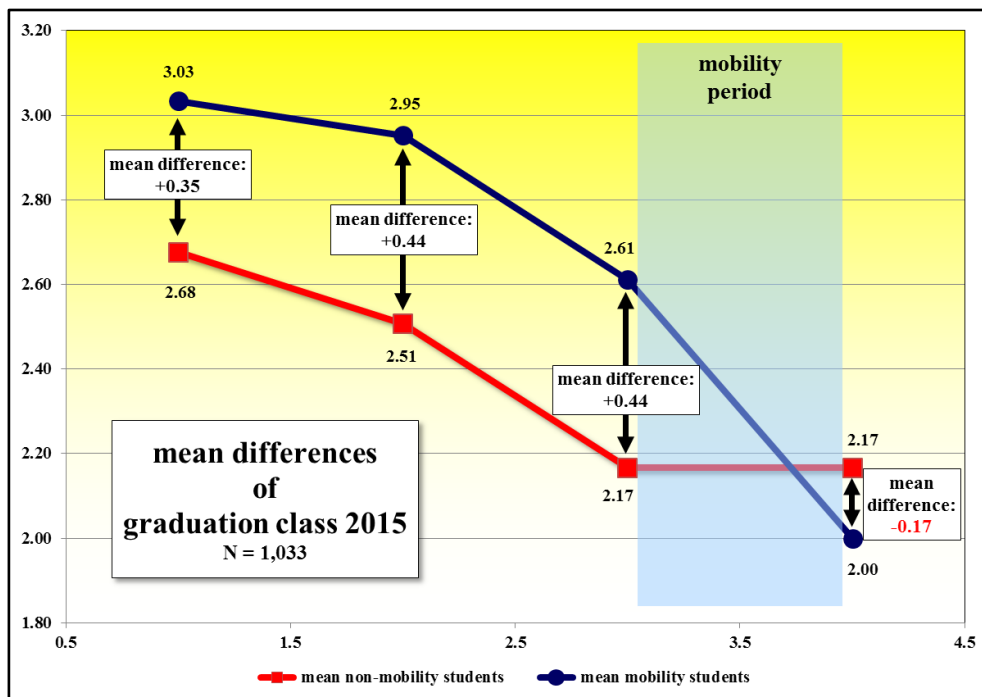


Figure 31: Development of mean differences of the graduation class 2015 between mobility and non-mobility students.¹⁷⁹

Cons:

- All the grades express a certain performance of students. Grades cannot express the reason for a certain performance. When mobility students' grades are better than non-mobility students' ones after mobility periods, the conclusion can be drawn that “something” happened during the mobility period which causes their better performance. This gap cannot be ascertained just with grades; on the other hand this is not questioned by the research sub-question.

When the research on students' grades and its pros and cons are weighted, the research

¹⁷⁹ Remark of the author: Graph created by the author.

sub-question No. 1 can be answered clearly: **Based on students' grades, mobility students increase their personal development after mobility periods.**

The second research sub-question is: *“How is the personal development of mobility students in comparison with non-mobility ones illustrated – based on their resilience measured with the CSA method?”*

Pros:

- With the CSA method students' metabolic data can be quantified extremely accurately.
- The interpretation of the results of an extracted group of mobility and non-mobility students is based on hundreds of measurements with the CSA method. Therefore the results can be taken as valid.
- Mobility students have a significant lower bound of O₂ to the blood which means that their oxygen transfer from the blood into the brain, the heart and the muscles is much better than the transfer of non-mobility students. That is why the conclusion can be drawn that mobility students have a better chance to manage their challenges.

Cons:

- Needless to say that the calculations are made with different persons' metabolic data – with mobility and non-mobility students' ones. If the same students would be accompanied by CSA measurements during their entire study period, probably more detailed information could be ascertained, for example by measurements of their metabolic data close before and after mobility periods.
- Pretty much as the comparisons with the grades, the metabolic calculations cannot ascertain what in detail happened with mobility students during their mobility period. CSA data can just determine that mobility students show – after their return – an increased personal development in terms of increased resilience.

When the research on students' metabolic data and its pros and cons are weighted, the research sub-question No. 2 can also be answered clearly: **Based on students' metabolic data, mobility students increase their personal development after mobility periods in terms of increased resilience.**

The third research sub-question is: *“How is the personal development of students during short exchanges – based on an analysis of external evaluation reports?”*

Pros:

- For the evaluation reports a huge number of data – in total 23,104 – were worked out and synthesised in five evaluation reports for seven CSDP modules with a total number of 361 participating students – out of them 107 international ones. These numbers represent good pre-conditions for valid results.
- The evaluation reports were created by an external person. This ensures a high quality, contrary to internal systems which sometimes cause the danger of organisational blindness.
- Similar results between the different evaluations were detected which can be interpreted as significance of the results.

Cons:

- The evaluation reports focus – by purpose – onto students' performances during the module. A long-term effect research was not the general idea and therefore cannot be determined.

When the analysis of the evaluation reports and their pros and cons are weighted, the research sub-question No. 3 can also be answered clearly: **Based on an analysis of external evaluation reports, students increase their personal development also during short periods with international participation.**

Because of the clear answers of the three sub-questions also the main research question can be answered: **Based on students' grades, on their metabolic data and on external evaluation reports it can be stated that internationalisation cause personal developments of students!**

A point for discussion could be – if military HEIs are forced to select students for going abroad – whom they should send? Is HEIs' intent to support the best ones – the future elites – or should they provide an almost equal level of future officers to the armed forces? If the second group of persons are to be provided, then HEIs have to send the worst students; this is at least an argument to think about.

12. Restriction of Validity¹⁸⁰

The chapter discusses the validity of the researches. Clear statements are made for which parts and for whom the author's researches are valid and for which parts and for whom they are not valid.

To affect the calculations of all students' grades it can be stated that all means of mobility students after their mobility period are better than all the means of non-mobility students. Therefore it can be concluded that mobility periods have a positive effect onto students' personal development and the result can be taken as valid. On the other hand – if going into detail – the calculations cannot answer the reasons for certain developments within one class, for example the reasons for the means' differences before mobility periods. As an example the graph of graduation class 2010 can be taken, it is the same graph as in figure 20 but pictured in another shape.

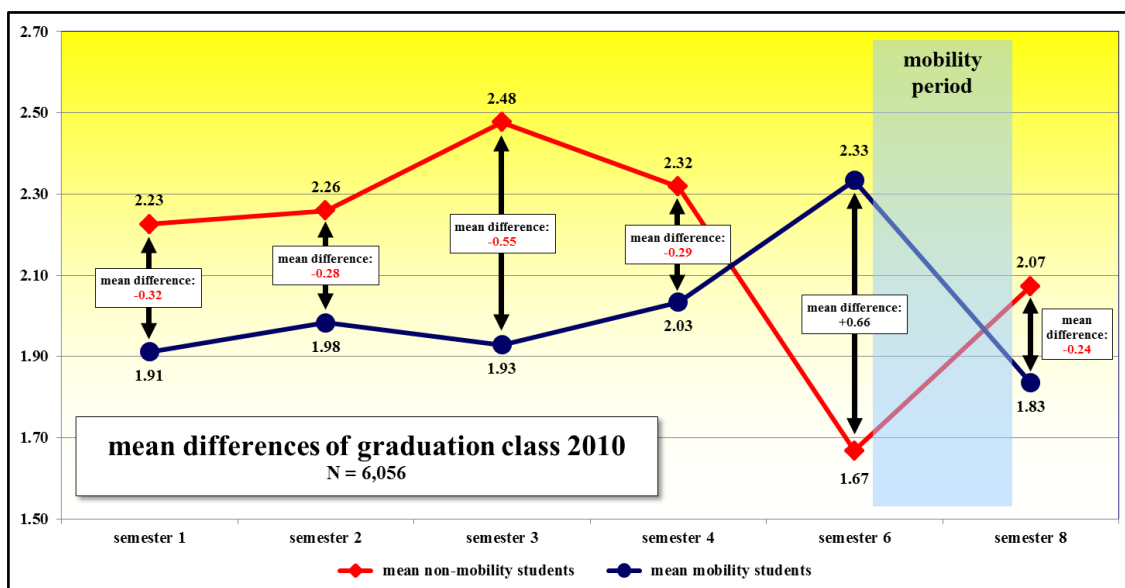


Figure 32: Development of mean differences of the graduation class 2010 between mobility and non-mobility students.¹⁸¹

As the graph shows above – during the first four semesters – mobility students could achieve better grades than non-mobility students. Then “something” happened which cannot be detected by just grades – the grades of mobility students declined and after

¹⁸⁰ Remark of the author: All the chapter's statements represent the personal opinion of the author.

¹⁸¹ Remark of the author: Graph created by the author.

their mobility period they turned better again. Therefore, for the reasons of better or worse grades before mobility periods the calculations are not valid, it would be worth to conduct an own research on that.

Furthermore it must be stated that the results of the calculations refer to the **Austrian system of grades** for the FH Programmes Military Leadership at the TMA. If at other HEIs the curricula focus more on special knowledge than on competences and if important topics are taught step by step during the entire study period which in parts are missed by mobility students during their mobility period, then the results may differ. This situation could be the reason why the results of German universities' alumni-questionnaires – as listed in chapter 6.3 "*Comparisons of Grades*" – are not that positive towards mobility periods when responding to reasons for prolonged study periods.

The outcome of the comparison of students' metabolic data – in particular the relation of the pH-value with pCO_2 and pO_2 before and after mobility periods – can be taken as valid, because on the one hand measurements with the CSA method are extremely accurate and on the other hand the metabolic data taken for the present thesis' research show significant differences. Mobility students' oxygen transfer from the blood into the brain, the heart and the muscles is much better than the transfer of non-mobility students.

Apart from that, the sample refers to basal data which means that the starting conditions – or in other words, the chances to manage challenges – are determined. If mobility and non-mobility students' CSA data are measured before and after mobility periods – including certain challenging burdens which must be the same for both groups – most probably more differences and more detailed outcomes could be ascertained. In doing so differences between different mobility periods could also be detected to draw conclusions which mobility periods have better or worse effects onto students' resilience and – as a consequence – to be able to advise decision makers which mobility periods should be preferred. The validity of the conducted research with students' metabolic data for the present thesis refers just to mobility periods – **as such**.

Referring to the analysis of external evaluation reports it can be stated that the results of the seven CSDP modules are valid for the period itself. All the reports – based on

23,104 answers of questionnaires – show similar or even the same outcomes.

But – as stated in the previous chapter – validity for long-term effects is not approved by this method. If such an evidence should be discovered, students must be accompanied by an own research project during their entire study period.

All in all, the validity to answer the purpose of the present thesis' researches – in particular to answer the question if mobility periods increase students' personal development – is hereby assigned.

The clear validity concerning the comparison of grades refers to the Austrian system. The validity concerning students' metabolic data refer to mobility period – as such – and can be taken for all HEI if chances to manage challenges better are compared. The validity of the CSDP modules' analysis refers to short events with international participation.

13. Benefit for Scientific Disciplines

The chapter mentions, which importance and which benefits the research results may have for a certain scientific community, for certain persons or for certain topics.

In chapter 5 “*Linkage to Scientific Disciplines*” those target audiences are listed – before the researches were performed – which may have a benefit from the thesis' results. The present chapter's purpose is to determine – now based on the discussion of results and on the restriction of validity – if deviations to chapter 5 exist or if even other audiences may benefit from the outcomes.¹⁸²

- **Scientific communities:**

The researches' results are based on data figured out mainly from military students – meaning officer cadets. That is why **military science** is concerned with the findings. **Educational science** and **social science** may find the results interesting as well because the researches are based on data of persons being in their education phase and their social relationship to each other – although the outcomes more focus on ramifications than on the reasons behind. Especially social science may find it interesting to discover the reasons for students' personal development during mobility periods. For medical science – which is mentioned in chapter 5 – the author does not see that impact because measuring of metabolic data and their interpretation is anyway standard procedure for medical doctors. The correlations of CSA data reasoned by specific circumstances – such as burdens – are much more interesting for the other sciences mentioned above.

- **Institutions:**

With the present thesis' research **military Higher Education Institutions (HEIs)** and **military training centres** have scientific evidence that their endeavours of sending students abroad are on the right track. If specific researches will be conducted with CSA measurements, even the quality of different mobility periods ought to be determined, which should make their decisions easier where students should be sent to. For **civilian**

182 Remark of the author: All the chapter's statements represent the personal opinion of the author.

HEIs which try to fulfil any strategy concerning internationalisation, the present thesis' results may convince them to overcome their "input-oriented" thinking because – as discovered in sub-chapter 6.3 "*Comparisons of Grades*" when students reason their prolonged study periods in international exchanges – mobility periods should cause advantages for students and not vice-versa. That is why mobility periods have to focus on knowledge, skills and competences which are mirrored within the respective curriculum and which can be achieved during mobility periods being recognised at the home institution. If not, the respective HEI should reconsider its international strategy.

- **Persons:**

When budgets are decreasing priorities are to be set. Based on the present thesis' results the **decision makers** have evidence that investments for students' mobility periods are the right main effort. Those **persons who are responsible for recognition** of learning outcomes should be convinced by the thesis' outcomes that mobility students show a better performance after their return and that not always only the special knowledge is to be taken into consideration. Also all other **persons who are touched anyhow with mobility affairs** have now arguments to justify their efforts concerning exchanges.

As a whole, the thesis' results give a huge number of sciences, institutions and persons scientifically proved arguments to continue or to increase international events. Now it depends on their real intention.

14. Prospects¹⁸³

The chapter describes possible starting points for further researches based on the author's research of the present thesis.

*“The outcome of any serious research can only be to make two questions grow where only one grew before.”*¹⁸⁴ According to this citation also within the present thesis some new questions occurred when investigating for the answers of the research questions. These questions which have arisen during the research are listed with some proposals how to answer them hereinafter:

Reviewing the thesis' results concerning comparing students' grades and metabolic data it can be stated that mobility periods – as such – increase their personal development. But the question occurs, what are the reasons for this development? From the authors point of view it would be worth to ascertain which parts of students' stays abroad ensure this development. This could be a task for sociologists who supervise mobility periods or elaborate available data which could be achieved by diaries or post-mobility questionnaires.

Referring to mobility students' metabolic data it would be worth – as still stated in chapter 12 *“Restriction of Validity”* – if CSA data are measured immediately before and after mobility periods. Specific series of tests could be set for the purpose of having more data – before and after workloads – available. In doing so better advice to decision makers could be provided.

The methodologies used for the three thesis' avenues of approach provide results which all refer to study periods themselves and which end before graduation. The research for long-term effects is not the thesis' goal but would be of value to determine the impacts of internationalisation onto graduates' later profession. Within chapter 6 *“Current State of Research”*, in particular in sub-chapter 6.3 *“Comparisons of Grades”* the author lists available research studies based on alumni-questionnaires. All these findings refer to civilian graduates; therefore the author would find it worth to bear in mind the specifics of the military profession in terms of alumni-questionnaires conducted by officers some

183 Remark of the author: All the chapter's statements represent the personal opinion of the author.

184 Veblen, T. B. (1919). American economist and sociologist. Cit. acc. to homepage of Eigen's Political & Historical Quotations. URL: <http://politicalquotes.org/node/59785>. [21-8-15].

years after graduation. The outcome would have a practical effect for decision makers of military HEIs.

Taking into account the evaluation reports of the CSDP modules, the results refer to the module period itself. It could be interesting to find out if such short modules also have an effect onto later study periods – in terms of increasing specific students' personal developments also for the rest of their studies before graduation.

Summarising the above mentioned open questions it can be stated that there are a lot of possibilities for further researches which could give full particulars or could elaborate on specific needs.

15. Summary

The chapter summarises the most important parts of the present thesis to provide an overview to the reader.

15.1 Motivation

During the past years the author of the present thesis has been monitoring increasing endeavours of Higher Education Institutions to ascribe importance to international activities.

Most of the efforts had its origin in the years 2008 and 2009. In 2008 the Report on the Implementation of the European Security Strategy was issued, which – among other topics – also stressed the necessity of a European Union common training on Basic Officer Education level.¹⁸⁵ In the same year the European Union Ministers of Defence approved a document launching the European young officers exchange scheme, modelled on Erasmus.^{186, 187} The so-called Implementation Group for this Initiative – based on the Ministers' decision – was founded and had its first meeting in February 2009.¹⁸⁸ Also in 2009, the European Union set the strategic goal for all Higher Education Institutions with the Communiqué of Leuven when stating “*In 2020, at least 20% of those graduating in the European Higher Education Area should have had a study or training period abroad.*”¹⁸⁹

Since then, almost all European Higher Education Institutions have tried hard to increase their international exchanges, mostly within the ERASMUS+¹⁹⁰ frame and – referring to military Higher Education Institutions – also within the Military Erasmus frame which the Initiative deals with. But the author of the present thesis asked himself, if there is a benefit justified by all these exchanges and do scientifically proven evidences exist for increasing advantages based on exchanges? In times of decreasing

185 European Union (2008). Report on the Implementation [...]. Op. cit. P. 9.

186 Remark of the author: Later it was re-named to „European initiative for the exchange of young officers inspired by Erasmus“.

187 Council of the European Union (2008). 2903rd meeting [...]. Op. cit. P. 5.

188 Remark of the author: In the meanwhile – September 2015 – the Initiative had its 27th meeting.

189 Bologna follow-up Group (2009). The Bologna Process 2020 [...]. Op. cit. P. 4.

190 Remark of the author: All the “ERASMUS-lines” were re-named to “ERASMUS+” in 2014.

budgets these questions must be asked to discover if all the efforts are on the right track? These questions were the author's motivation to write the thesis and of course also because of personal interest in the topic as the Head of International Office at the Theresan Military Academy and Chairman of the Initiative's Implementation Group at European Union level. The author decided to base the research onto three different avenues of approach, onto a comparison of students' grades, their metabolic data and onto an analysis of external evaluation reports for Common Security and Defence Policy modules to find scientifically proven evidences for students' personal developments by internationalisation during their study period.

15.2 Search for completed Studies

When searching for available literature referring to students' grades some studies could be found authored for universities from the United Kingdom and Germany. Just one of these studies referred to a comparison of students' grades, but the results were limited because mobility students had a much better socio-economic background. The most comprehensive research study was conducted by the European Commission published in 2014.¹⁹¹ Neither the results of this study could be taken because findings are based on alumni-questionnaires to detect former mobility students' chances for employment. All in all the available literature could not contribute to any parts of present thesis' research concerning comparison of grades.

A second approach to determine personal developments of mobility students was to compare their metabolic data with non-mobility students' ones. Since 2009 a huge number of measurements with the so-called Clinical Stress Assessment method has been taking place at the Theresan Military Academy which results were published. A comparison of students' metabolic data between mobility and non-mobility students has not been conducted so far.

The third line of research was an analysis of external evaluation reports for the Common Security and Defence Policy modules which were still published. In total the different reports reflect seven of these modules. A lot of findings of this still existing literature were worked out and were taken for later consideration.

191 European Commission (2014). The Erasmus Impact Study [...]. Op. cit. Passim.

15.3 Methodology

For the comparison of students' grades before and after mobility periods 22,371 grades were available. At a later stage some of them were eliminated because it was possible that they falsify the results – such as students who failed during the study period. With the rest of 18,517 grades the means of mobility and non-mobility students – within one of the six available classes – were calculated for each semester of their study period. Then the development as well as the difference between mobility and non-mobility students – before and after the mobility period – were figured out. In the end all means of all students were compared concerning the time before and after mobility periods.

For the comparison of students' metabolic data to determine a possible personal development, only those Clinical Stress Assessment data were considered valid which depict on the one hand the situation before and after mobility periods, and on the other hand which are not taken after specific burdens. Thus, only basal data were considered reliable. From the contents of the available database of hundreds of metabolic tests with students, a comparatively small, but statistically sufficient number of mobility and non-mobility students was extracted. To achieve a valid result, group averages were calculated and compared and not just data of individuals.

The methodology to ascertain if even short events may cause students personal development was to analyse the five available external evaluation reports for the seven Common Security and Defence Policy modules. The main purpose was to find out if there were overlapping results which could be taken as generally valid.

15.4 Results of Research

The research with the comparison of students' grades – calculated with their means – achieved the result that mobility students – in any case – had better grades after their mobility period than non-mobility students. Within one class the improvements range from 15.26 to 80.0 percent better grades. If all the means of all classes are compared to find out differences before and after mobility periods, the calculations showed that mobility students had – according to the Austrian 5-steps grading scale – a 0.28 better grading than non-mobility students which is twice as big as non-mobility students. Therefore, based on students' grades it can be stated, that mobility periods have a

benefit onto students' personal development.

The inquiry of comparing metabolic data of mobility and non-mobility students showed the result that non-mobility students' oxygen was bound to the blood much stronger. This means that mobility students' tissues were much better saturated with oxygen, thus, mobility students benefitted from their oxygen transfer from the blood into the brain, the heart and the muscles, therefore mobility students had much better chances to manage their challenges. As a conclusion it can be stated that mobility students increased their personal development after mobility periods.

The analysis of still existing external evaluation reports of short events – based on 23,104 data – showed the result that even short events with international participation, such as the Common Security and Defence Policy module with just five days, had positive effects on students' personal development. They increased their learning outcomes and social competences, improved their English and benefitted from interactive learning very much.

15.5 Concluding Chapters

In the discussion of the results the author pointed out that on the one hand students increased their personal developments because of mobility periods, but on the other hand the reasons behind, why these improvements occurred, were not answered which was not the thesis' intent at all. Further researches would be worth to discover this gap. Also some specific pre- and post-mobility periods' experiments using the Clinical Stress Assessment method could provide more detailed information concerning the reasons for students' improvements.

The researches did not point to long-term effects. The author recommended alumni-questionnaires some years after graduation to provide useful information for decision makers at military Higher Education Institutions with focus onto mobility periods.

The thesis results could be interesting for the scientific communities of military, social and educational science, for military and civilian Higher Education Institutions and military training centres as well as for persons who are involved in international activities such as decision makers, persons who are responsible for recognition of learning outcomes and persons who are linked to mobility affairs in any way.

16. Suggestions and Recommendations

The chapter provides suggestions and recommendations for those persons and institutions that are touched by the thesis' topic.

Most of the following suggestions and recommendations are based on the author's work as Chairman of the Implementation Group and as the Head of International Office.¹⁹²

- **Money:**

When discussing international exchanges most of the comments refer to money, because a lot of European Union (EU) countries have to pay extra fees to officer cadets when they are sent abroad. The question does not refer that much to lecturer or staff exchanges because for them short periods can be covered by the ERASMUS+ programme which is also valid for military students, but only for longer periods. Short periods – such as common modules – cannot be covered by ERASMUS+ for students.

The first solution is that EU Member States send a letter to the European Security and Defence College to accept the framework which was elaborated under Line of Development 5. In this framework one essential statement is that officer cadets from other EU Member States are to be treated in the same way as the own ones which means that in principle for the stay in another EU country no expenses arise.

A second solution could be that all the military Higher Education Institutions (HEIs) try to convince national Erasmus agencies to provide money for student-exchanges also for shorter periods than three months – similar to lecturer or staff mobility. In doing so students may accumulate mobility periods during their entire study period. This cannot be achieved from one day to another – but a kind of lobbying on national level may help to find a solution on European level.

A third solution could be – when curricula of EU military HEIs are more and more harmonised – to conduct certain parts of education together, in terms of

192 Remark of the author: All the chapter's statements represent the personal opinion of the author mostly based on his work within the Implementation Group.

“pooling & sharing” to share the costs. Common programmes – preferably between those military HEIs which are situated regionally close – may lead to reduced costs for each involved institution. A good example for this is the cooperation of the international Military Academic Forum (iMAF). Not very much focusing on students' participation but paving the way for increasing students' exchanges, iMAF conferences share the costs between military HEIs from Austria, Czech Republic, Hungary, Poland and Romania.

The fourth solution could be to consider EU countries – for education purposes – from legal point of view as the home country which will abolish all the national extra fees. Why should officer cadets receive an extra fee when driving from UoD Brno just two hours to the TMA Wiener Neustadt when anyway all the costs for education, accommodation and meals are covered by military regulations? This approach is a point for discussion on national as well as on EU level – and again a certain national lobbying would help to achieve the goal.

- **English:**

According to the experiences of the last years, conducting events in English is the key for success to increase international participation. As stated in the present thesis' research results an international participation increases the personal development of all students involved – therefore it makes sense to conduct classes in English to attract students from abroad.

The problem which almost all the military HEIs face is that not all HEI's personnel are ready to teach or conduct a conversation in English. According to the Austrian Council of Universities of Applied Science, students even overtake the lecturers concerning English skills, that is why HEIs' decision makers should put a lot of effort into the improvement of lecturers' English skills. But also administrative staff has to be able to conduct a conversation in English because they are in touch with international students. A desired end-state could be that it does not matter if classes are conducted in English or the national language.

To reach this goal it needs time – that is why the author recommends implementing English courses at the respective HEI on a regular basis as soon as possible – focusing on lecturers and administrative staff.

- **Recognition of learning outcomes achieved abroad:**

When quoted in present thesis' sub-chapter 6.3 "*Comparisons of Grades*" that German students caused their prolonged study periods by semesters abroad, something went totally wrong. According to the author's experience also a lot of persons being responsible for recognition are afraid to lose importance when recognising learning outcomes from abroad. The approach of the Implementation Group is different, because the policy is to send students abroad to only such events which can be recognised at the home institution.

At present time a first approach is to negotiate with exchange-partners in advance to get knowledge of the respective partner-curriculum and to take those events for exchanges only which can be recognised at the home institution.

A next very important approach is to describe learning outcomes – within the national curriculum – according to common descriptors with the focus on knowledge, skills and especially competences which should be achieved by the respective learning period. Just to give an example: Some years ago the TMA Wiener Neustadt sent officer cadets to the Naval Academy in France to participate in the "Common Module Maritime Leadership". The author of the present thesis was accused of not knowing that Austria has no Navy anymore and that it makes no sense to spend money on exchanges where Army cadets learn Navy procedures. If both institutions would have a module in their curricula with a common wording – such as "improving leadership competences under harsh conditions" – this accusation would not appear. Within the Implementation Group this problem was solved with the Line of Development 2 document "*Comparison of courses based on competences*". Also the new ECTS User's Guide – as of 2015 – provides recommendations how to describe learning outcomes.

All the Common Modules use these common descriptors. The author's recommendation is to implement those Common Modules into the national curricula which fit to the national needs. In doing so – step by step mostly during re-accreditation circles – the EU-HEIs' curricula will be harmonised and – as a consequence – exchanges and recognition of learning outcomes will be facilitated.

The next step after implementing Common Modules could be the implementation of international semesters. During iMAF 2015 in Sibiu 105 representatives from

24 military HEIs created the frame and the pre-conditions for such an international semester. Within the strategic partnership programme as well as within the Implementation Group it is foreseen to elaborate further details to provide all military HEIs a product worth to take over. Thus, exchanges and recognition of learning outcomes achieved abroad will be facilitated, even automatized – as the ECTS User's Guide proposes.

- **Information flow:**

Military HEIs have the need to receive all information about exchange programmes because they are the ones which are affected. Very often the author faced the problem that relevant information simply does not reach military HEIs because national representatives either do not pass it or it gets lost on the way through the military echelons.

To solve this problem the author sees the need to send national representatives to the quarterly IG meetings who are members of the military HEIs to ensure that the information reaches the right persons.

A participation in Commandants' meetings – such as the European Military Academies Commandants' Seminar (EMACS) – is a must because the Commandants are the decision makers who control the fate of military HEIs' policy.

In this context also regional cooperation is important – as UoD Brno exemplarily showed with the foundation of Central European Forum on Military Education (CEFME) – because on the one hand shorter ways reduce costs and on the other hand it is easier to cooperate within near cultural circles.

At present time webpages are important for the information flow continuity. The Initiative re-launched its IT-platform in May 2015 – but the respective military HEI must designate persons who make use of it.

- **Whom should we sent?**

The current thesis' results ascertained personals developments of students during

their mobility period. As a conclusion it could be stated that – if the national regulations allow it – all students should be sent abroad to increase their competences. At most military HEIs this is not the case, that is why priorities have to be set.

Military HEIs' task is to provide well educated persons to the armed forces; their task is not to provide just a few elites. At least a point for discussion could be to send the worst students abroad for the purpose of balancing their personal development in comparison with those students who show better performances.

A contrary approach could be to advertise mobility periods in such a way that students start competing for them, then mobility periods could become a kind of reward. It is up to the military HEIs' decision makers to implement such a system according to their internationalisation policy.

- **Vision for the future:**

The European Security Strategy (ESS) and the Report on the Implementation of the ESS describe common threats for the EU Member States. As a consequence, in 2008/2009 a closer cooperation among EU member States in the field of military education was determined. Since then cooperation has increased slowly but steadily. Also slowly but surely we have faced a reduction of the armed forces in EU Member States with some exceptions in north-eastern European countries. All this means that if EU countries send troops to an operation, the troop composition is multinational – not a single EU operation is conducted by just one country. Thus, European forces have to cooperate, also in the field of officer education.

When officers from different countries have to cooperate anyway, the author concludes that it is a must to educate them together, too. As the Special Adviser to the President of the European Commission stated in June 2015, joint military academies in the frame of regional cooperation could achieve this goal.¹⁹³ The question is which country or which institution is game enough to take over responsibility?

193 Cf.: Barnier, M. (2015). In Defence of Europe – Defence Integration as a Response to Europe's Strategic Moment. Brussels. EPSC Strategic Notes. Issue 5/2015. P. 8.

17. Annexes

17.1 List of Abbreviations

Assoc. prof.	Associated Professor
BE	Base Excess
BG	Blood Glucose
BME	Basic Military English
BMI	Body Mass Index
BOE	Basic Officer Education
BP	Bachelor Programme
BrigGen	Brigadier General
Ca	Calcium
CD	Compact Disc
CEFME	Central European Forum on Military Education ()
Cf.	Confer / Compare
Cit. acc. to	Cited according to
CMO/PSO	Crisis Management Operation/Peace Support Operation
Col	Colonel
CSA	Clinical Stress Assessment
CSDP	Common Security and Defence Policy
CV	Curriculum Vitae
Dr.	Doctor
EAB	Executive Academic Board
EC	European Commission
ECTS	European Credit Transfer and Accumulation System
EHEA	European Higher Education Area
EMACS	European Military Academies Commandants' Seminar
EMILYO	Exchange of Military Young Officers
EQF	European Qualification Framework
ESDC	European Security and Defence College
ESDP	European Security and Defence Policy
ESS	European Security Strategy

Et al	Et alii / And others
EU	European Union
FH	Fachhochschule ¹⁹⁴
HCO ₃	Hydrogen Carbonate
HEA	Higher Education Academy
HEFCE	The Higher Education Funding Council for England
HEI	Higher Education Institution
HEIs	Higher Education Institutions
HIB	Hindernisbahn / Military Obstacle Course
Ibid	Ibidem / The same place
IDL	Interactive Distance Learning
IG	Implementation Group
iMAF	International Military Academic Forum
INCHER-Kassel	International Centre for Higher Education Research Kassel
Ing.	Engineer
IO	International Office
ISBN	International Standard Book Number
IT	Information Technology
ITJ	International Training on the Job
IU	International Unit
K	Potassium
LL.M.	Master of Laws / Legum Magister
LLL	Lifelong Learning
LOAC	Law of Armed Conflict
LoD	Line of Development
LoDs	Lines of Development
Mag.	Magister
MALF	Military Academy of Land Forces
MBA	Master of Business Administration
Mg	Magnesium

194 Remark of the author: The term “*Fachhochschule*” is just used in Austria, Germany and Switzerland and is usually not translated into English. A possible translation is “*University of Applied Science*”. Their academic study programmes focus more on certain professions in contrary to universities with a general broad education.

Mg ⁺⁺	Ionised Magnesium
ML	Military Leadership
mmHg	Millimetre of Mercury
mmol/l	Millimole per Litre
Mrs.	Misses
MS	Master of Science
MSc	Master of Science
MSD	Master of Security and Defence Management
Na	Sodium / Natrium
No.	Number
NQF	National Qualification Framework
O ₂	Dioxygen
O ₂ sat	Oxygen Saturation
Op. cit.	Opera citato / In the thesis still cited
P.	Page
Passim	Here and there / Everywhere
pCO ₂	Partial Pressure of Carbon Dioxide
pH	Power of Hydrogen / Potentia Hydrogenii
Ph.D.	Doctor of Philosophy
pO ₂	Partial Pressure of Dioxygen
QW	Quick-Wins
RACVIAC	Regional Arms Control Verification and Implementation Assistance Centre
SC	Steering Committee
SD	Standard Deviation
SEM	Standard Error of Mean
TtT	Train the Trainer
TMA	Theresan Military Academy
UK	United Kingdom
Univ.-Prof.	University Professor
UoD	University of Defence
URL	Uniform Resource Locator
Vol.	Volume

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17.4 List of Literature

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- 09 Homepage of the Italian Military Academy. URL: http://www.esercito.difesa.it/comunicazione/Pagine/EUROPEAN_141017.aspx. [19-8-15].

195 Remark of the author: The list of webpages is formatted with an exception to the norm with left justification because if using the norm with full justification the type face looks strange.

- 10 Homepage of the University Duisburg-Essen. URL: https://www.uni-due.de/imperia/md/content/dokforum/methoden_i_einf__hrung.pdf. [15-8-15].
- 11 Homepage of the University of Connecticut: URL: <http://davidbeermann.tumblr.com/post/87598824416/if-there-are-no-questions-there-are-no-answers>. [15-8-15].
- 12 Homepage of the University of Defence Brno. Faculty of Military Leadership. URL: http://info.unob.cz/en/Pages/2015/04/20150427_1.aspx. [8-8-15].
- 12 Homepage of the University of Defence Brno. URL: <http://info.unob.cz/en/Pages/2014/04/20140428.aspx>. [8-8-15].
- 14 Homepage of the University of Defence Brno. URL: <http://info.unob.cz/en/Pages/2013/10/20131016.aspx>. [19-8-15].
- 15 Homepage of Wikipedia. URL: https://cs.wikipedia.org/wiki/Evropsk%C3%A1_iniciativa_pro_v%C3%BDm%C4%9Bnu_mlad%C3%BDch_d%C5%AFstojn%C3%ADk%C5%AF_inspirovan%C3%A1_programem_Erasmus. [19-8-15].
- 16 Homepage of Wikipedia. URL: https://en.wikipedia.org/wiki/European_initiative_for_the_exchange_of_officers_inspired_by_Erasmus. [19-8-15].
- 17 Homepage of Wirtschaftszitate.de. URL: http://www.wirtschaftszitate.de/autor/kroes_neelie.php. [7-8-15].

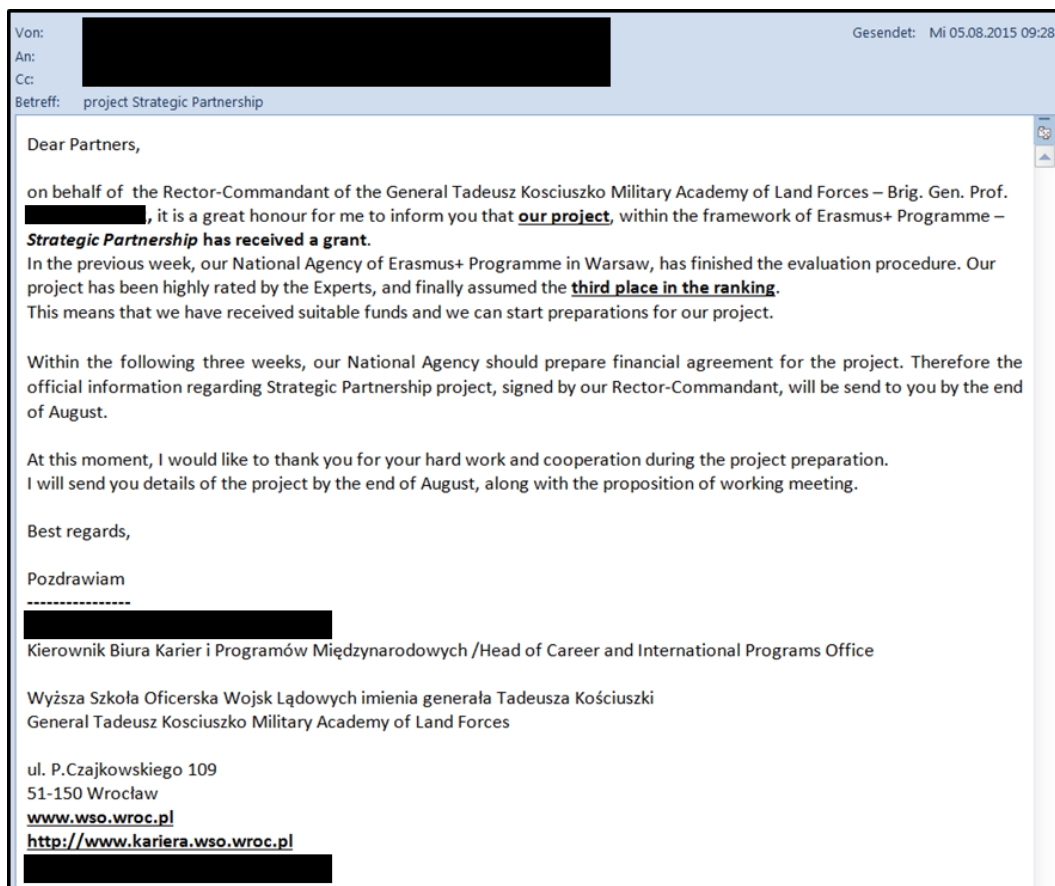
17.4.4 Official Documents

- 01 Alesi, B. & Neumeyer, S. & Flöther, C. (2014). Studium und Beruf in Nordrhein-Westfalen – Analysen der Befragung von Hochschulabsolventinnen und -absolventen des Abschlussjahrgangs 2011. Translated into English the title means: Study and Profession in North Rhine-Westphalia – Analyses of the Questionnaire of Graduates of the Class of 2011. University of Kassel. International Centre for Higher Education Research Kassel (INCHER-Kassel).
- 02 Barnier, M. (2015). In Defence of Europe – Defence Integration as a Response to Europe's Strategic Moment. Brussels. EPSC Strategic Notes. Issue 5/2015.
- 03 Bologna follow-up Group (2009). The Bologna Process 2020 – The European Higher Education Area in the new decade. Communiqué of the Conference of European Ministers Responsible for Higher Education. Leuven and Louvain-la-Neuve.
- 04 Bridger, K. (2015). Academic perspectives on the outcomes of outward student mobility. Higher Education Academy York. BSV Associates Ltd. Research project.
- 05 Council of the European Union (2008). 2903rd meeting of the Council – General Affairs and External Relations. Council Decision. Document 15396/08. Brussels.

- 06 Council of the European Union (2009). 2974th External Relations Council meeting. Council conclusions on ESDP. Brussels.
- 07 European Union (2008). Report on the Implementation of the European Security Strategy – Providing Security in a Changing World. Brussels. Document S407/08.
- 08 FH Bachelor Programme Military Leadership (2011). Application for Recognition and Accreditation of the FH Bachelor Programme Military Leadership (FH BP-ML). Vienna and Wiener Neustadt.
- 09 Gresser, J. & Weber, H. (2012). Studienqualität im Rückblick – Absolventenstudie der Universität Stuttgart – Überblick über den Abschlussjahrgang 2010. Translated into English the title means: Study-quality in hindsight – Graduates' study of the University Stuttgart – Class of 2010 at a glance. University of Stuttgart.
- 10 Sweeney, S. (2014). Going Mobile: Internationalisation, mobility and the European Higher Education Area. University of York.

17.4.5 Grey Literature

Official e-mail from the Polish Erasmus coordinator.¹⁹⁶



¹⁹⁶ Remark of the author: To preserve the persons' anonymity all the names, e-mail addresses and other personal data are blacked out.

Slide of the author's Power Point presentation at the Sigmund Freud University Vienna stating that research questions may not be answered with yes or no.¹⁹⁷



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ObstdhmfD Dr. GELL
November 2014

Textbausteine

Inhalt

Allgemeines

Textbausteine

Zusätzliche Kapitel

Zusammenfassung

Diskussion

%	Nr	Kapitelname
1	1	<i>Vorwort</i>
3	2	<i>Einleitung</i>
10	3	<i>Einführung</i>
2	4	<i>Vorschau</i>
3	5	<i>Disziplinäre Anbindung</i>
15	6	<i>Forschungsstand</i>
1	7	<i>Forschungslücke</i>
1	8	Forschungsfrage
10	9	<i>Methodik</i>
30	10	<i>Untersuchung</i>
10	11	<i>Untersuchungsergebnisse</i>
5	12	<i>Ergebnisdiskussion</i>
1	13	<i>Einschränkung d. Gültigkeit</i>
5	14	<i>Disziplinäre Rückbindung</i>
1	15	<i>Resümee</i>
1	16	<i>Ausblick</i>
1	17	<i>Nachwort</i>
	18	<i>Anhänge</i>

Kurzbeschreibung:

Formulierung einer Aussage im Modus des Fragens, der den ganzen Erkenntnisprozess der wiss. Arbeit leitet
(**nicht** ja/nein)

Bereitet diese Aussage vor, leitet sie ab, begründet die Formulierung und zeigt, welche Auswirkungen die gewählte Formulierung für die Arbeit hat
(bis zu 10 Unterfragen)

www.sfu.ac.at

On the next pages lists of grades of the respective class – according to the year of graduation – are quoted because these lists are just available within the author's database; therefore belong to “grey literature”.

To preserve students' anonymity their names are deleted and replaced with shorthand symbols.

For overview purposes data of the respective class are printed double-sided, that is why the margins differ from the rest of the thesis.

¹⁹⁷ Remark of the author: The slide refers to formulating research questions. Translated into English the right part of the slide means: Short description: Formulating of a statement with a mode of questioning which guides through the entire finding-process of the scientific thesis (not yes/no). Prepares the statement, deduces it, justifies the formulation and shows which effect the chosen formulation has for the thesis (up to 10 sub-questions).

Graduation Class 2010

Novak 2006-2010	Grading Semester 1 Only '1st Grading' is in the list										Grading Semester 2 Only '1st Grading' is in the list										Grading Semester 3 Only '1st Grading' is in the list										Grading Semester 4 Only '1st Grading' is in the list									
	Name	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9
No 01	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Arithmetic Mean of 1st Semester	1.76										1.93										1.93										2.29									
Arithmetic Mean of 2nd Semester	1.96										2.24										2.24										2.45									
Arithmetic Mean of 3rd Semester	2.29										2.29										2.29										2.29									
Arithmetic Mean of 4th Semester	2.73										2.73										2.73										2.73									
Arithmetic Mean of all Semesters (all Cadets) before going abroad	2.21										2.24										2.45										2.30									
Arithmetic mean of the respective Semester (all Cadets)	2.21										2.24										2.45										2.30									
Arithmetic mean of the respective Semester (only those Cadets who are not going abroad)	2.23										2.26										2.48										2.32									
Arithmetic mean of all Semesters (all Cadets) before going abroad	2.21																																							
Arithmetic mean of all those Cadets only who are going abroad (of respective Semester)	1.91										1.98										1.93										2.03									
Difference (arithmetic mean) between all Cadets and those Cadets who are going abroad	-0.30										-0.26										-0.52										-0.27									
Difference (arithmetic mean) between Cadets going and not going abroad	-0.31										-0.28										-0.55										-0.28									
N1 (number all Cadets)	40																																							
N2 (number not abroad)	30																																							
N3 (number abroad)	10																																							
Percentage of Cadets going abroad (calculated from number of Cadets above)	5.6																																							
Cadets who failed during their studies (not any grading is taken into consideration)																																								
No 72	0.00										0.00										#DIV/0!										#DIV/0!									
No 73	0.00										0.00										#DIV/0!										#DIV/0!									

Grading Semester 5	Grading Semester 6 Only "1st Grading" is in the list										Grading Semester 7 Only "1st Grading" is in the list										Grading Semester 8 Only "1st Grading" is in the list										
Because of spending the 5th Semester at different Branch Schools, statistical data (comparison of topics) are not relevant	Arithmetic Mean of 6th Semester										Arithmetic Mean of 7th Semester										Arithmetic Mean of 8th Semester										
	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	2.25	2.00	
	1.70										2.26											2.06									

Overview for statistical graphs

Novak	Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Mean of Cadets	2.21	2.24	2.45	2.30	1.70	2.06
Mean Cadets not abroad	2.23	2.26	2.48	2.32	1.67	2.07
Mean Cadets abroad	1.91	1.98	1.93	2.03	2.33	1.83

	before	after	Difference
Mean of Cadets all semesters before and after going abroad	2.18	2.06	-0.12
Mean of Cadets not going abroad all semesters before and after "abroad period"	2.19	2.07	-0.12
Mean of Cadets going abroad all semesters before and after going abroad	2.04	1.83	-0.20

	before	after
N1A	4550	632
N2A	4390	691
N3A	250	31
N1B		
N2B		
N3B		

Graduation Class 2011

Name	Grading Semester 1 Only "1st Grading" is in the list										Grading Semester 2 Only "1st Grading" is in the list										Grading Semester 3 Only "1st Grading" is in the list										Grading Semester 4 Only "1st Grading" is in the list									
	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
Lehmann 2007-2011	<p> 1. Lehmann 2007-2011 2. ... 3. ... 4. ... 5. ... 6. ... 7. ... 8. ... 9. ... 10. ... 11. ... 12. ... 13. ... 14. ... 15. ... 16. ... 17. ... 18. ... 19. ... 20. ... 21. ... 22. ... 23. ... 24. ... 25. ... 26. ... 27. ... 28. ... 29. ... 30. ... 31. ... 32. ... 33. ... 34. ... 35. ... 36. ... 37. ... 38. ... 39. ... 40. ... 41. ... 42. ... 43. ... 44. ... 45. ... 46. ... 47. ... 48. ... 49. ... 50. ... 51. ... 52. ... 53. ... 54. ... 55. ... 56. ... 57. ... 58. ... 59. ... 60. ... 61. ... 62. ... 63. ... 64. ... 65. ... 66. ... 67. ... 68. ... 69. ... 70. ... 71. ... 72. ... 73. ... 74. ... 75. ... 76. ... 77. ... 78. ... 79. ... 80. ... 81. ... 82. ... 83. ... 84. ... 85. ... 86. ... 87. ... 88. ... 89. ... 90. ... 91. ... 92. ... 93. ... 94. ... 95. ... 96. ... 97. ... 98. ... 99. ... 100. ... </p>																																							
Arithmetic mean of the respective Semester (all Cadets)	2.13										2.20										2.43										2.39									
Arithmetic mean of the respective Semester (only those Cadets who are not going abroad)	2.16										2.23										2.46										2.41									
Arithmetic mean of all Semesters (all Cadets) before going abroad	2.19																																							
Arithmetic mean of all those Cadets only who are going abroad (of respective Semester)	1.69										1.77										1.93										1.93									
Difference (arithmetic mean) between all Cadets and those Cadets who are going abroad	-0.44										-0.43										-0.50										-0.46									
Difference (arithmetic mean) between Cadets going and not going abroad	-0.47										-0.46										-0.53										-0.49									
N1 (number all Cadets)	100																																							
N2 (number not abroad)	60																																							
N3 (number abroad)	40																																							
Percentage of Cadets going abroad (calculated from number of Cadets above)	5.3																																							

Graduation Class 2012

Table with columns for Name, Grading Semester 1 (Only '1st Grading' is in the list), Grading Semester 2 (Only '1st Grading' is in the list), Grading Semester 3 (Only '1st Grading' is in the list), and Arithmetic Mean of 1st Semester, 2nd Semester, and 3rd Semester. Rows include individual cadets (KI 01 to KI 72) and summary statistics for all cadets and those who spent an entire semester abroad.

Gradings Semester 4	Gradings Semester 5 Only "1st Grading" is in the list					Gradings Semester 6 Only "1st Grading" is in the list						
Because of spending the 4th Semester at different Branch Schools, statistical data (comparison of topics) are not relevant	4.6.2 Military English for Multinational Operations / ILV					4.6.2 Military English for Multinational Operations / ILV						
	5.1. Studium wirtschaftlicher Systeme: Modul / ILV					5.1. Studium wirtschaftlicher Systeme: Modul / ILV						
5.4.1. Grundlagen: Einsatz im mm. Verbund / ILV					5.4.1. Grundlagen: Einsatz im mm. Verbund / ILV							
5.4.2. Taskk. (x+P)Task Force im mm. Verbund / ILV					5.4.2. Taskk. (x+P)Task Force im mm. Verbund / ILV							
5.4.3. Führung: Einsatz im mm. Verbund / UE					5.4.3. Führung: Einsatz im mm. Verbund / UE							
Arithmetic Mean of 5th Semester					Arithmetic Mean of 6th Semester							
3	3	5	4	3	3.60	1	3	3	2	4	1	2.33
2	4	3	3	4	3.20	1	3	3	2	3	2	2.33
1	2	3	4	3	2.60	1	3	3	1	4	1	2.17
2	3	1	4	2	2.40	1	5	2	2	3	2	2.50
2	2	1	4	2	2.20	1	3	3	2	3	2	2.33
1	2	3	4	2	2.40	1	5	3	2	5	3	3.17
3	4	5	5	4	4.20	1	5	5	2	4	2	3.17
1	2	2	4	2	2.20	1	3	2	2	3	1	2.00
2	4	3	4	3	3.20	1	5	2	2	4	1	2.50
1	3	2	4	2	2.40	3	3	3	2	2	2	2.50
2	3	3	3	3	2.50	1	1	1	1	2	1	1.20
2	3	3	4	3	3.00	1	4	2	2	3	1	2.17
3	3	2	4	3	3.00	1	5	4	1	4	1	2.67
3	4	2	4	3	3.20	1	5	2	2	3	1	2.33
1	2	2	3	2	2.00	1	5	1	1	1	1	1.67
1	2	1	4	1	1.80	1	4	2	2	4	1	2.33
3	3	1	4	2	2.60	2	4	5	2	4	1	3.00
2	3	3	3	3	2.80	1	5	2	2	4	1	2.50
2	4	3	2	1	2.40	1	3	2	1	5	1	2.17
2	4	2	5	3	3.20	1	5	3	2	4	3	3.00
4	5	3	5	2	3.80	1	5	3	2	5	1	2.83
2	5	2	5	3	3.40	1	3	3	1	4	3	2.50
2	4	2	4	2	2.80	1	5	4	2	4	3	3.17
2	4	3	5	2	3.20	1	4	3	2	3	1	2.33
2	2	3	4	3	2.80	1	5	4	2	3	1	2.67
3	3	3	4	3	3.20	1	5	3	2	2	1	2.33
2	3	2	3	1	2.20	2	5	3	2	3	4	3.17
2	3	3	4	2	2.80	1	3	2	2	4	3	2.50
1	2	2	2	1	1.50	1	3	2	2	2	1	1.80
3	5	2	5	2	3.40	1	3	5	1	2	1	2.17
4	4	1	5	3	3.40	1	3	3	2	2	2	2.17
2	2	1	4	3	2.40	1	4	2	2	3	1	2.17
1	4	2	4	3	2.80	1	3	3	2	3	3	2.50
3	5	2	4	3	3.40	1	5	3	2	4	3	3.00
4	4	2	4	3	3.40	1	4	4	2	4	2	2.83
1	2	2	2	1	1.50	1	2	2	2	2	1	1.60
1	3	2	2	2	2.00	1	2	2	2	1	1	1.40
2	3	3	3	3	2.80	1	3	2	2	3	3	2.33
1	3	4	4	4	3.20	3	3	4	2	4	3	3.17
1	1	1	1	1	1.00	1	3	2	1	3	1	1.83
2	4	1	2	3	2.40	1	3	3	1	3	1	2.00
1	3	3	3	3	2.80	1	3	3	1	2	1	1.83
1	3	1	2	1	1.60	1	5	2	2	3	3	2.67
2	3	3	5	3	3.20	1	3	2	1	2	3	2.00
2	4	2	5	2	3.00	1	3	4	2	3	1	2.33
1	3	2	3	4	2.60	1	3	3	1	3	1	2.00
1	3	2	3	2	2.20	1	2	3	2	1	1.80	
2	4	3	3	3	3.00	1	3	2	1	4	1	2.00
1	2	1	3	2	1.80	1	3	2	2	2	1	1.83
1	3	1	5	2	2.40	1	2	3	2	2	2	2.00
2	4	3	3	3	3.00	1	5	5	2	5	1	3.17
2	3	3	4	1	2.60	1	3	3	2	2	1	2.00
2	3	2	5	2	2.80	1	1	3	2	4	2	2.17
1	2	3	3	3	2.00	1	3	3	2	4	2	2.50
1	3	1	3	3	2.20	1	4	2	2	2	2	2.17
3	4	2	5	2	3.20	1	5	3	2	5	1	2.83
1	3	2	3	2	2.20	1	3	3	2	4	2	2.50
2	2	1	4	1	2.00	1	5	3	2	2	1	2.33
1	2	1	3	1	1.60	1	3	2	1	2	1	1.67
3	5	1	3	2	2.40	1	5	3	2	4	1	2.67
3	5	4	4	1	3.40	1	5	3	2	4	1	2.67
3	4	1	4	3	3.00	1	5	3	1	2	1	2.17
2	4	3	4	4	3.40	1	4	3	2	3	3	2.67
3	4	2	5	2	3.20	1	5	5	2	4	2	3.17
2	3	2	4	2	2.60	1	4	3	1	2	1	2.00
1	3	2	3	4	2.60	1	5	3	2	4	2	2.83

Overview for statistical graphs

Kirchner	Semester 1	Semester 2	Semester 3	Semester 6
Mean all Cadets	2.55	2.61	2.41	2.37
Mean Cadets not abroad	2.59	2.66	2.47	2.45
Mean Cadets abroad	2.10	2.14	1.85	1.61

	2.68	2.37
--	------	------

Remark: not taken into statistics because too less data of Cadets abroad

	2.76	2.45
--	------	------

Remark: not taken into statistics because too less data of Cadets abroad

	1.70	1.61
--	------	------

Remark: not taken into statistics because too less data of Cadets abroad

	-0.98	-0.76
--	-------	-------

Remark: not taken into statistics because too less data of Cadets abroad

	-1.06	-0.84
--	-------	-------

Remark: not taken into statistics because too less data of Cadets abroad

0	81	84	84	88	87	88	88	82	85	88	88	3194 = total N1
0	60	60	60	68	67	68	68	60	69	69	68	2916 = total N2
0	1	4	4	0	0	6	6	2	6	6	6	269 = total N3

	before	after	
N1A =	2469	391	= N1B
N2A =	2261	359	= N2B
N3A =	228	32	= N3B

	4	2			3.00					
	3	4	5		4.00	5				5.00
	1	2	3		2.00					
	1	3	3		2.33					
	2	3	5	3	3.25					

Gradings Semester 4	Gradings Semester 5 Only "1st Grading" is in the list									Gradings Semester 6 Only "1st Grading" is in the list				
	1	2	3	4	5	6	7	8	9	10	1	2	3	4
2.57	2.14	3	3	1	2	3	3	4	3.33	2.57	3	3	3	2.67
2.00	2	2	2	1	2	2	2	1	2.67	2.00	4	3	3	1
3.29	4	4	4	4	4	3.29	4	4	4	4.00	4	4	4	4.00
1.75	2	2	2	2	2	1.75	2	2	2	2.00	2	2	2	2.00
3.43	4	4	4	4	3	3.43	4	4	3	3.33	4	4	3	3.33
2.14	4	4	4	4	4	2.14	4	4	4	3.00	4	4	4	3.00
1.29	2	2	2	2	1	1.29	2	2	2	1.67	2	2	2	1.67
2.57	4	4	4	4	3	2.57	4	4	3	2.67	4	4	3	2.67
2.71	3	3	3	3	3	2.71	3	3	3	2.67	3	3	3	2.67
2.50	2	2	2	2	3	2.50	2	2	3	2.67	2	2	3	2.67
3.43	3	3	3	3	4	3.43	3	3	3	2.33	3	3	3	2.33
1.71	2	2	2	2	3	1.71	2	2	3	2.00	2	2	3	2.00
2.57	4	4	4	4	1	2	2.57	4	4	3	2.67	4	4	3
2.57	3	3	3	3	4	1	2.57	3	4	2.67	3	3	4	2.67
1.71	2	2	2	2	3	1	1.71	2	2	1	1.33	2	2	1
2.14	3	3	3	3	3	1	2.14	3	3	1	2.33	3	3	1
3.14	4	4	4	4	2	3	3.14	4	4	3	3.00	4	4	3
2.14	2	2	2	2	2	2	2.14	2	2	1	2.33	2	2	1
1.57	3	3	3	3	3	1	1.57	3	3	2.67	3	3	3	2.67
3.43	4	4	4	4	2	5	4	4	2	3.33	4	4	2	3.33
2.50	2	2	2	2	3	2	2.50	2	2	4	4.50	2	2	4
2.17	3	3	3	3	2	1	2.17	3	3	3	3.00	3	3	3
2.29	3	3	3	3	2	2	2.29	3	3	4	3	3.33	3	3.33
1.57	2	2	2	2	3	1	1.57	2	2	4	1	2.33	2	2.33
2.57	4	4	4	4	3	2	2	2.57	4	5	4	4.33	4	4.33
2.29	3	3	3	3	1	4	2.29	3	3	4	4	3.33	3	3.33
2.29	4	4	4	4	2	1	3	2.29	4	4	3	3.67	4	3.67
2.57	4	4	4	4	3	3	2	2.57	4	4	3	3.67	4	3.67
2.00	3	3	3	3	2	2	2	2.00	3	4	1	2.67	3	2.67
3.00	4	4	4	4	3	5	4	3.00	4	3	3	3.33	4	3.33
1.83	2	2	2	2	3	1	2	1.83	2	3	1	2.00	2	2.00
3.71	5	5	5	5	3	2	3	3.71	5	5	1	3.00	5	3.00
1.57	2	2	2	2	1	1	3	1.57	2	1	1	1.33	2	1.33
3.29	4	4	4	4	3	5	3	3.29	4	4	4	4.00	4	4.00
2.14	2	2	2	2	2	1	2	2.14	2	4	1	2.33	2	2.33
3.29	4	4	4	4	3	5	3	3.29	4	3	2	3.00	4	3.00
2.00	3	3	3	3	3	1	2	2.00	3	3	1	2.33	3	2.33
2.67	4	4	4	4	3	4	3	2.67	4	4	3	2.67	4	2.67
1.33	2	2	2	2	1	1	1	1.33	2	1	1	1.33	2	1.33
2.29	3	3	3	3	4	3	3	2.29	3	4	3	3.33	3	3.33
2.71	2	2	2	2	5	2	2	2.71	2	1	1	1.33	2	1.33
1.57	2	2	2	2	1	1	1	1.57	2	3	1	2.00	2	2.00
2.14	2	2	2	2	2	2	2	2.14	2	1	2	1.67	2	1.67
2.50	2	2	2	2	3	2	2	2.50	2	3	3	2.67	2	2.67
2.57	1	1	1	1	2	2	2	2.57	1	4	1	2.00	1	2.00
2.43	2	2	2	2	3	4	3	2.43	2	4	3	3.00	2	3.00
1.71	2	2	2	2	1	1	1	1.71	2	2	2	2.00	2	2.00
2.00	2	2	2	2	1	2	2	2.00	2	2	2	2.33	2	2.33
2.75	2	2	2	2	5	3	2	2.75	2	3	3	2.67	2	2.67
2.57	4	4	4	4	3	5	2	2.57	4	3	1	2.67	4	2.67
1.86	2	2	2	2	1	1	1	1.86	2	3	1	2.00	2	2.00
3.29	2	2	2	2	3	4	3	3.29	2	5	1	2.67	2	2.67
2.71	2	2	2	2	4	2	2	2.71	2	2	3	2.33	2	2.33
1.86	3	3	3	3	2	2	2	1.86	3	2	4	3.00	3	3.00
2.50	3	3	3	3	4	1	2	2.50	3	4	1	2.67	3	2.67
3.50	3	3	3	3	4	1	2	3.50	3	4	1	2.67	3	2.67
3.60	3	3	3	3	4	2	3	3.60	3	4	2	3.00	3	3.00
1.71	3	3	3	3	1	1	1	1.71	3	4	2	3.00	3	3.00
2.43	3	3	3	3	2	2	2	2.43	3	3	3	3.00	3	3.00
2.43	2	2	2	2	4	1	2	2.43	2	4	1	2.33	2	2.33
2.43	3	3	3	3	4	3	3	2.43	3	4	3	3.33	3	3.33
2.57	3	3	3	3	4	1	2	2.57	3	4	1	2.67	3	2.67
3.25	3	3	3	3	5	1	2	3.25	3	5	1	3.00	3	3.00
2.29	3	3	3	3	3	3	3	2.29	3	3	3	3.00	3	3.00
1.50	2	2	2	2	1	2	2	1.50	2	3	1	2.00	2	2.00

Overview for statistical graphs

Hacker	Semester 1	Semester 2	Semester 3	Semester 5	Semester 6
Mean all Cadets	2.50	2.44	2.21	2.35	2.63
Mean Cadets not abroad	2.51	2.46	2.26	2.38	2.68
Mean Cadets abroad	2.43	2.32	1.95	2.22	2.36

	before	after	Difference
Mean all Cadets all semesters before and after going abroad	2.38	2.63	0.25
Mean all Cadets not going abroad all semesters before and after "abroad-period"	2.41	2.68	0.28
Mean all Cadets going abroad all semesters before and after going abroad	2.23	2.36	0.13

	before	after	
N1A =	2804	224	= N1B
N2A =	2368	188	= N2B
N3A =	436	36	= N3B

3	1	3	5	3	5	3	3.29							0.00
										3				3.00

Graduation Class 2015

anonymised	Gradings Semester 1										Gradings Semester 2										Gradings Semester 3												
	Only "1st Grading" is in the list																																
Name	1.1.1	1.1.2	1.1.3	1.3.1	1.3.2	1.3.3	1.3.4	1.5.1	1.5.2	1.5.3	1.6.1	1.6.2	Arithmetic Mean of 1st Semester	1.5.2	2.2.1	2.2.2	2.2.3	2.1	2.2	2.3	2.4	1.6.2	Arithmetic Mean of 2nd Semester	1.5.3	3.3.1	3.3.2	3.3.3	3.1	3.2	3.4	1.6.3	Arithmetic Mean of 3rd Semester	
Wa 01	2	1	2	3	1	3	3	3	3	3	4	4	2.40	2	2	2	3	3	3	3	3	3	3	2.14	3	2	2	2	1	1	3	2.00	
Wa 02	2	1	3	5	2	1	3	3	3	3	3	3	2.60	4	2	3	3	3	3	3	3	3	3	3.29	4	2	2	3	3	3	3	2.67	
Wa 03	2	5	2	3	2	1	2	1	2	4	2	4	2.40	1	3	2	3	3	3	3	3	3	3	2.14	2	2	3	1	1	3	3	2.00	
Wa 04	1	4	2	4	3	4	3	3	2	3	3	3	2.90	2	4	5	3	2	3	3	3	3	3	3.14	4	2	2	2	3	3	3	2.67	
Wa 05	2	2	4	3	3	5	2	3	3	3	3	3	3.00	2	2	4	3	2	3	4	4	3	2.86	4	3	2	3	2	3	3	2.83		
Wa 06	3	2	3	2	2	3	2	3	3	3	3	3	2.60	3	5	4	3	3	3	3	2	2	3.29	4	2	2	2	3	3	3	2.67		
Wa 07	2	3	4	5	3	4	3	1	2	4	4	3	3.10	1	3	3	3	3	3	3	5	5	3.00	3	2	3	3	3	3	3	2.83		
Wa 08	3	2	5	4	2	2	3	2	3	4	4	3	3.00	2	3	2	3	3	3	3	5	5	3.00	3	2	2	1	2	3	3	2.17		
Wa 09	2	1	1	1	2	3	3	1	2	3	3	3	1.90	1	1	1	2	1	2	3	3	3	1.57	2	2	1	1	2	3	3	1.83		
Wa 10	3	4	3	3	4	4	2	0	2	2	2	2	2.56	4	4	4	1	2	2	3	3	3	2.67	4	2	3	2	2	3	3	2.67		
Wa 11	2	2	1	1	1	3	2	2	1	1	1	1	1.60	1	2	1	1	1	1	2	2	2	1.43	2	2	3	2	2	2	2	2.17		
Wa 12	2	2	2	2	2	3	1	2	2	3	3	3	2.10	1	4	2	3	2	3	5	5	5	2.86	2	2	2	1	1	2	3	1.67		
Wa 13	2	2	2	4	3	1	2	3	1	3	3	3	2.30	2	2	2	2	2	4	3	3	3	2.43	3	2	2	1	2	3	3	2.50		
Wa 14	3	2	2	2	5	1	2	3	2	4	4	3	2.60	2	2	1	5	2	3	3	3	3	2.57	3	2	2	2	2	3	3	2.50		
Wa 15	3	2	3	5	4	1	2	3	3	4	4	3	3.00	3	2	1	2	2	3	3	3	3	2.29	4	2	2	2	2	4	4	2.67		
Wa 16	2	2	2	3	4	2	1	2	3	3	3	3	2.40	2	2	1	3	2	3	3	3	3	2.29	3	2	2	1	1	3	3	2.33		
Wa 17	2	1	1	2	2	1	2	2	2	2	2	2	1.70	1	2	1	1	1	1	2	2	2	1.43	1	2	1	2	2	2	2	1.67		
Wa 18	3	2	3	5	4	1	3	3	2	3	3	3	2.90	3	4	2	2	2	3	3	3	3	2.71	4	2	3	1	3	3	3	2.67		
Wa 19	2	1	1	4	2	3	1	2	1	4	4	4	2.10	1	4	1	3	3	3	3	3	3	2.57	3	2	1	1	2	3	3	2.00		
Wa 20	2	1	2	2	3	2	2	1	2	3	3	3	2.00	2	3	3	2	2	3	3	3	3	2.57	4	2	1	2	2	3	3	2.33		
Wa 21	2	3	2	5	5	3	3	3	1	4	4	4	3.10	4	3	1	1	3	3	3	3	3	2.57	2	2	2	2	1	4	4	2.17		
Wa 22	3	5	2	2	2	4	2	3	3	2	2	2	2.80	2	3	1	3	2	3	3	3	3	2.43	4	2	3	2	3	2	3	2.67		
Wa 23	4	1	2	2	2	3	2	3	2	3	3	3	2.40	2	2	1	1	2	3	3	3	3	2.00	2	2	1	1	3	3	3	2.00		
Wa 24	4	4	1	4	3	1	3	3	2	3	3	3	2.80	4	3	2	1	2	3	2	2	2	2.43	4	2	1	1	2	3	3	2.17		
Wa 25	4	2	2	4	5	5	2	3	1	3	3	3	3.10	4	2	1	3	2	5	4	4	3.00	4	2	3	2	2	3	3	2.67			
Wa 26	4	2	2	4	5	2	2	4	3	4	4	4	3.20	4	5	5	3	2	5	5	5	5	4.14	4	2	2	2	3	3	3	2.67		
Wa 27	3	1	4	3	2	2	3	4	3	3	3	3	2.80	2	2	4	2	2	3	3	3	3	2.57	2	2	1	1	2	2	3	1.67		
Wa 28	2	5	4	3	4	4	2	3	2	2	2	2	3.00	2	2	2	2	4	3	3	3	3	2.60	3	2	1	1	2	3	3	2.00		
Wa 29	3	2	3	4	4	2	2	3	3	3	3	3	2.90	3	4	3	4	2	2	5	5	5	3.29	4	2	3	2	3	3	3	2.83		
Wa 30	3	2	2	4	4	3	2	2	3	4	4	4	2.90	4	2	4	1	2	3	3	3	3	2.71	3	2	3	2	2	3	3	2.50		
Cadets who spent an entire Semester abroad																																	
Arithmetic mean of the respective Semester (all Cadets)												2.61	Arithmetic mean of the respective Semester (only those Cadets who are not going abroad)												2.51	Arithmetic mean of all Semesters (all Cadets) before going abroad						2.51	
Arithmetic mean of all those Cadets only who are going abroad (of respective Semester)												3.03	Difference (arithmetic mean) between all Cadets and those Cadets who are going abroad												0.43	Difference (arithmetic mean) between Cadets going and not going abroad						0.44	
N1 (number all Cadets)												30	N2 (number not abroad)												4	Percentage of Cadets going abroad (calculated from number of Cadets above)						86.7	
Cadets who failed during their studies or started their studies later in this class (not any grading is taken into consideration)																																	
Wa 31																																	
Wa 32																																	
Wa 33																																	
Wa 34																																	
Wa 35																																	
Wa 36								3	3		2	4	3.00	1	3	1	3	2	3	5	5	5	2.57	4	2	4	2	3	3	3	3.00		
Wa 37																																	

Gradings Semester 4	Gradings Semester 5 Only "1st Grading" is in the list				Gradings Semester 6 Only "1st Grading" is in the list										
Because of spending the 4th Semester at different Universities and Academies abroad (ERASMUS-Semesters), statistical data (comparison of topics) are not relevant	4.6.2 Military English for MN Operations / ILV				4.6.3 Language Skills Proficiency Training										
	5.2.1 Verwaltungsverfahren und PVG / ILV				5.1.2 Ausg. Probleme des Berufslehrgangs II / SE										
	5.4 Einsatz im mV Verbund / ILV				5.2.2 Einf. in ausg. Aspekte der Rechtswiss. / VO										
	4.7.2 2nd language (not for statistics)				5.2.3 Dienst- und Besoldungsrecht / ILV										
	Arithmetic Mean of 5th Semester				6.1.1 Führung, Recht und Moral / VO										
	2.67				6.1.2 HDG und MMSG / ILV										
	2.67				6.1.3 Wehrrecht / ILV										
	2.67				6.1.4 MBGR-Normen für Ausb. und Dienstlehr. / ILV										
	1.67				4.7.3 2nd language (not for statistics)										
	2.33				Arithmetic Mean of 6th Semester										
	2.33				2.13										
	2.33				2.75										
	2.33				2.13										
	1.00				1.75										
	2.67				2.13										
	1.00				2.50										
	2.67				2.25										
	1.00				2.25										
	1.67				1.63										
	2.67				2.50										
1.00				1.38											
1.33				1.63											
2.00				2.75											
2.67				2.38											
2.33				2.63											
1.67				1.63											
1.33				1.00											
2.67				2.75											
2.00				1.75											
2.00				2.13											
2.00				2.63											
2.33				2.88											
2.00				2.63											
3.00				2.50											
1.00				2.25											
2.00				2.75											
2.00				1.75											
2.00				1.38											
2.00				2.38											
2.67				2.00											
2.02				2.17											
2.17				1.84											
2.00				2.21											
-0.02				0.04											
-0.17				0.36											
0	24	30	24	0	30	30	30	30	30	30	30	0	1003 = total N1		
0	4	4	4	0	4	4	4	4	4	4	4	0	133 = total N2	N1A = 685	78 = N1B
0	20	26	20	0	26	26	26	26	26	26	26	0	870 = total N3	N2A = 89	12 = N2B
														N3A = 596	66 = N3B
2	2	3		2.33											
2	3	3		2.67											

Overview for statistical graphs

Waldstätten	Semester 1	Semester 2	Semester 3	Semester 5
Mean all Cadets	2.61	2.60	2.34	2.02
Mean Cadets not abroad	2.68	2.51	2.17	2.17
Mean Cadets abroad	3.03	2.95	2.61	2.00

	before	after	Difference
Mean all Cadets all semesters before and after going abroad	2.51	2.02	-0.49
Mean all Cadets not going abroad all semesters before and after "abroad-period"	2.45	2.17	-0.28
Mean all Cadets going abroad all semesters before and after going abroad	2.87	2.00	-0.87

Remark: not taken into statistics because the majority of Cadets were present in 5th semester

	before	after	
N1A =	685	78	= N1B
N2A =	89	12	= N2B
N3A =	596	66	= N3B

17.5 Author's Publications

- **Publications (Articles) in Journals / in international Databases**

(Publications which are in German are translated into English and marked with blue colour – if not in English originally).

No.	Year	Name(s) of Author(s) & Gell's %	Title of Publication Translation in English	Place of Publication	Publication Identification	Type of Publication	Type of Database
01	2015	Porta et al (Gell=15%)	Jobs with mostly mental workload may lead to difficulties in oxygen and magnesium liberation into tissues – a staff health survey.	Deisenhofen, Munich, Germany	Trace Elements and Electrolytes 01/2015; 32(1). 7 p.	Scientific Journal	Web of Science & SCOPUS & OCLC & BASE
02	2013	Porta et al (Gell=15%)	A system of changes of ionized blood Mg through sports and supplementation.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2013 3 rd Quarter, Vol. 30 Issue 3, p. 105-107. 3 p.	Scientific Journal	Web of Science & EBSCO
03	2013	Stossier et al. (Gell=20%)	The effects of antioxidative treatment upon electrolyte and metabolic reactions of a chronically stressed group.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2013 1 st Quarter, Vol. 30 Issue 1, p. 1-6. 6 p.	Scientific Journal	Web of Science & EBSCO
04	2013	Porta et al (Gell=12%)	Evidence of progress and success of Mg substitution by correlating Mg dynamics and metabolic parameters.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2013 3 rd Quarter, Vol. 30 Issue 3, p. 87-93. 7 p.	Scientific Journal	Web of Science & EBSCO
05	2012	Porta et al (Gell=15%)	Diagnostic and prognostic role of the Ca/Mg (ion.) quotient in sport.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2012 4 th Quarter, Vol. 29 Issue 4, p. 227-231. 5 p.	Scientific Journal	Web of Science & EBSCO
06	2012	Porta et al (Gell=15%)	Metabolic changes in Mg-deficient village counselors after a session.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2012 3 rd Quarter, Vol. 29 Issue 3, p. 194-200. 7 p.	Scientific Journal	Web of Science & EBSCO
07	2012	Porta et al (Gell=15%)	Mg ⁺⁺ -Stoffwechselkorrelationen als Diagnose und Prognose beim Sport und bei Hypertonikern. Mg ⁺⁺ metabolism-correlations as diagnostics and prognosis for sports and for hypertensives.	Gablitz, Austria	Austrian Journal of Hypertension, 2012; 16 (4), p. 18-22. 5 p.	Scientific Journal	SCOPUS & EMBASE & SCIE World Research Library & DOAJ
08	2012	Porta et al (Gell=25%)	Metabolic changes and hypomagnesiemia.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes; 2012 3 rd Quarter, Vol. 29 Issue 3, p. 206-211. 6 p.	Scientific Journal	Web of Science & EBSCO & BASE
09	2011	Porta et al (Gell=15%)	The role of ionized magnesium in metabolic changes during 54 hours of exhaustive sleep deprivation – a case report.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2011 2 nd Quarter, Vol. 28 Issue 2, p. 83-87. 5 p.	Scientific Journal	Web of Science & EBSCO

10	2011	Porta et al (Gell=15%)	Differences in electrolyte mismanagement between normotonic and hypertonic Type 2 diabetics detectable by correlative capillary blood evaluation.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2011 1 st Quarter, Vol. 28 Issue 1, p. 31-36. 6 p.	Scientific Journal	Web of Science & EBSCO
11	2010	Porta et al (Gell=10%)	Interdependencies of electrolyte- and metabolic parameters can characterize handicaps and predict success probability in sports.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2010 3 rd Quarter, Vol. 27 Issue 3, p. 103-109. 7 p.	Scientific Journal	Web of Science & EBSCO & Bio-informatic Harvester
12	2009	Porta et al (Gell=10%)	Direct correlation between Mg ⁺⁺ changes and awarded scores in military steeplechase (HIB).	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2009 4 th Quarter, Vol. 26 Issue 4, p. 177-180. 4 p.	Scientific Journal	Web of Science & EBSCO

- **Publications (Articles) in Journals / reviewed Publications**

(Publications which are in German are translated into English and marked with blue colour – if not in English originally).

No.	Year	Name(s) of Author(s) & Gell's %	Title of Publication Translation in English	Place of Publication	Publication Identification	Type of Publication
01	2015	Pamminger et al. (Gell=15%)	Changes in ionized Mg and blood gases in smokers by moderate excitement – a staff health survey.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. Volume 32, No. 2/2015 (2 nd quarter).	Scientific Journal
02	2015	Porta et al. (Gell=15%)	Provoked metabolic- and Mg changes in CFS patients and in a healthy Mg substituted group – a quantitative survey.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. Volume 32, No. 3/2015 (3 rd quarter).	Scientific Journal
03	2015	Porta et al. (Gell=15%)	Significant changes in blood stress markers and subjective pain consciousness after 30 days of Mg substitution.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. Volume 32, No. 3/2015 (3 rd quarter).	Scientific Journal
04	2013	Porta et al. (Gell=15%)	Korrelative Stoffwechsel-, Elektrolyt- und Blutdruckmessungen erlauben frühe Diagnosen und schützen vor Beurteilungsartefakten Correlative metabolism change-, electrolyte- and blood pressure-measurements allow earlier diagnostics and protect from evaluation-artefacts.	Deisenhofen, Munich, Germany	Nieren- und Hochdruck-krankheiten. Jahrgang 43, No. 3/2014.	Scientific Journal
05	2013	Porta et al. (Gell=15%)	2. Österreichisch-Deutsche Expertengespräche über Magnesiumsubstitution, Sport und Erholung 2012. 2 nd Austro-German expert talks about Magnesium substitution, sports and recovery 2012.	Deisenhofen, Munich, Germany	Nieren- und Hochdruck-krankheiten. Jahrgang 42, No. 1/2013.	Scientific Journal
06	2012	Porta et al. (Gell=25%)	Mg ⁺⁺ and metabolic changes during sleep deprivation.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2012 3 rd Quarter, Vol. 29 Issue 3, p. 216.	Scientific Journal

07	2012	Porta et al. (Gell=25%)	Is there a quantitative influence of gender, age, BMI or the hypomagnesiemic threshold upon Mg ⁺⁺ -modifiable metabolic parameters?	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2012 3 rd Quarter, Vol. 29 Issue 3, p. 216.	Scientific Journal
08	2012	Porta et al. (Gell=20%)	Mg ⁺⁺ and exhaustion: correlations between Mg ⁺⁺ and bio-feedback parameters after exhaustion as well as Mg ⁺⁺ state of soldiers in love.	Deisenhofen, Munich, Germany	Trace Elements & Electrolytes. 2012 3 rd Quarter, Vol. 29 Issue 3, p. 212.	Scientific Journal
09	2010	Porta et al. (Gell=15%)	Eine neue Möglichkeit zur Erfassung und Erklärung von Stoffwechselbesonderheiten bei hypertonen Typ2 Diabetikern. A new capability for gathering and explanation of metabolic characteristics for type-2-diabetics.	Deisenhofen, Munich, Germany	Nieren- und Hochdruckkrankheiten. Jahrgang 39, No. 5/2010.	Scientific Journal
10	2010	Porta et al. (Gell=10%)	Risiko für stressinduzierte Hypertonie – Abschätzung aus Kapillarblutparametern. Risks for stress-induced hypertonic – evaluation from capillary blood parameters.	Deisenhofen, Munich, Germany	Nieren- und Hochdruckkrankheiten. Jahrgang 39, No. 5/2010.	Scientific Journal

- **Publications (Articles) in Journals / other Publications**

(Publications which are in German are translated into English and marked with blue colour – if not in English originally).

No.	Year	Name(s) of Author(s) & Gell's %	Title of Publication Translation in English	Place of Publication	Publication Identification	Type of Publication
01	2014	Gell (Gell=100%)	Das international Military Academic Forum (iMAF) 2014 The international Military Academic Forum 2014 (iMAF 2014)	Vienna, Austria	Truppendienst 5/2014 (No. 341). P. 409-414. 6 p.	Article in Military Series "Truppendienst"
02	2014	Porta & Gell & Moser (Gell=40%)	Stressforschung am Fachhochschul-Bachelorstudiengang Militärische Führung Stress Research at the FH Bachelor Programme Military Leadership	Vienna, Austria	Truppendienst 5/2014 (No. 341). P. 402-407. 6 p.	Article in Military Series "Truppendienst"
03	2008	Gell (Gell=100%)	Von Bologna nach Wr. Neustadt – Der Fachhochschul-Studiengang geht mit From Bologna to Wiener Neustadt – The FH Bachelor Programme goes along	Vienna, Austria	Special Truppendienst 2/2008 (Series 7). 3 p.	Article in Military Series "Truppendienst"
04	2008	Königshofer & Gell (Gell=75%)	Internationalisierung und Kompetenzentwicklung am Studiengang Internationalization and development of competencies at the FH Bachelor Programme	Vienna, Austria	Special Truppendienst 2/2008 (Series 7). 5 p.	Article in Military Series "Truppendienst"

• **Articles in Conference Proceedings / indexed in international Databases**

No.	Year	Name(s) of Author(s) & Gell's %	Title of Publication	Place of Publication	Publication Identification	Type of Publication	Type of Database
01	2015	Gell (Gell=100%)	Motivation of Students (8 A4 pages)	Brno, Czech Republic XXIII. Colloquium, Faculty of Military Leadership, UoD Brno	acc. to UoD Brno	Conference CD	acc. to UoD Brno

• **Articles in Conference Proceedings / other Publications**

No.	Year	Name(s) of Author(s) & Gell's %	Title of Publication	Place of Publication	Publication Identification	Type of Publication	Remarks
01	2015	Gell (Gell=100%)	Europeanising the initial Officers' Curriculum. Some Challenges – many Opportunities (Visions from the operational Aspect)	Zagreb, Croatia		RACVIAC Conference Proceeding Book Chapter	15 A4 pages
02	2013	Wiedner & Gell (Gell = 40%)	Symmetry versus Asymmetry. The problems of "new manifestation of war" evolving from non-state actors and its effects on armed forces: Symmetry versus Asymmetry – or two sides of one coin?	Wroclaw, Poland		Conference Proceeding Book chapter	25 A4 pages
03	2013	Porta & Gell (Gell=30%)	On site research or supervision of stress, using transportable IC (Intensive Care) equipment	Dornbirn, Austria	Conference Proceeding: 7 th Research Forum of the Austrian universities of Applied Science. P. 498-505. 8 p.	Book Chapter	
04	2012	Wiedner & Gell (Gell = 75%)	Europeanization – an option or a necessity?	Wroclaw, Poland		Conference Proceeding Book chapter	27 A4 pages

- Books and/or Chapters in Books**

(Publications which are in German are translated into English and marked with blue colour – if not in English originally).

No.	Year	Name(s) of Author(s) & Gell's %	Title of Publication Translation in English	Place of Publication	Publication Identification	Type of Publication	Type of Database
01	2014	Gell & Paile (Eds.) (Gell=30%)	iMAF 2014: Lessons Learnt from the international Military Academic Forum 2014	Vienna, Austria	ISBN 978-3-9503699-1-5, 209 p.	Book	Google Scholar
02	2014	Gell (Gell=100%)	Internationalisierung am Fachhochschul-Bachelorstudiengang Militärische Führung Internationalization at the FH Bachelor Programme Military Leadership	Vienna, Austria	Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 4821/14. P. 78-108. 26 p.	Book chapter	-
03	2014	Gell (Gell=100%)	Foreword: Development of stress-researches at the Fachhochschul Bachelor Programme Military Leadership	Vienna, Austria	Armis et Litteris 31. Scientific Series of the FH Bachelor Programme Military Leadership. P. 67-69. 3 p.	Book chapter	-
04	2014	Porta & Gell & Moser & Pichlkastner (Gell=40%)	The secret of the chewing gum vending machine (military workload and military stress)	Vienna, Austria	Armis et Litteris 31. Scientific Series of the FH Bachelor Programme Military Leadership. P. 71-124. 54 p.	Book	-
05	2014	Gell (Gell=100%)	Vorwort: Entwicklung der Stressforschung am Fachhochschul-Bachelorstudiengang Militärische Führung: Foreword: Development of stress-researches at the Fachhochschul Bachelor Programme Military Leadership	Vienna, Austria	Armis et Litteris 31. Scientific Series of the FH Bachelor Programme Military Leadership. P. 5-7. 3 p.	Book chapter	-
06	2014	Porta & Gell & Moser & Pichlkastner (Gell=25%)	Das Geheimnis des Kaugummiautomaten. Belastung und Stress beim Militär The secret of the chewing gum vending machine. Workload and stress at the Military	Vienna, Austria	Armis et Litteris 31. Scientific Series of the FH Bachelor Programme Military Leadership. P. 9-61. 51 p.	Book	-
07	2014	Paile & Gell (Gell=15%)	Common Security and Defence Policy Module 2013 – External Evaluation Report Foreword by Gell	Vienna, Austria	Armis et Litteris 30. Scientific Series of the FH Bachelor Programme Military Leadership. P. 5-7. 3 p.	Book chapter	-
08	2014	Michał Matyasik (Ed.)	15 years of Polish membership in NATO – Experiences & future challenges Gell's article: Contributions to NATO Crisis Management of a non-NATO country.	Cracow, Poland	ISBN: 978-83-937321-7-3 141 pages, Gell's chapter has 6 p.	Book chapter	-

09	2013	Gell (Gell=100%)	Going International – Lediglich ein Zwischenbericht? Going International – Just an Interim Report?	Vienna, Austria	Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 5292/13. P. 118-146. 15 p.	Book chapter	-
10	2013	Paile & Gell (Eds.) (Gell=30%)	iMAF 2013: Lessons Learnt from the international Military Academic Forum 2013	Vienna, Austria	ISBN 978-3-9503699-0-8, 110 p.	Book	Google Scholar
11	2013	Paile & Gell (Gell=15%)	Common Security and Defence Policy Module 2012 – External Evaluation Report Foreword by Gell	Vienna, Austria	Armis et Litteris 28. Scientific Series of the FH Bachelor Programme Military Leadership. P. 5-14. 10 p.	Book chapter	-
12	2013	Zambas (Ed.)	The 1 st Common Security and Defence Policy Olympiad Gell's chapter: CSDP-Olympiad in Cyprus. A great event to increase European thinking	Brussels, Belgium	ISBN 978-9963-7489-2-1 176 pages, Gell's chapter has 2 p.	Book chapter	-
13	2013	Marek KULCZYC KI (Ed.)	Better Cooperation for better Operation of the future Visegrad EU Battle Group Gell's article: Necessary Officer's Competences for International operations.	Wroclaw, Poland	ISBN 978-83-61315-68-1 179 pages, Gell's chapter has 9 p.	Book chapter	Google Scholar
14	2012	Gell (Gell=100%)	Internationalisierung Internationalization	Vienna, Austria	Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 7 p.	Book chapter	-
15	2012	Paile & Gell (Gell=15%)	Common Security and Defence Policy Modules 2011 – External Evaluation Report Foreword by Gell	Vienna, Austria	Armis et Litteris 27. Scientific Series of the FH Bachelor Programme Military Leadership. P. 3-8. 6 p.	Book chapter	-
16	2012	Gell (Ed.)	Sammelband der Publikationen Internationalisierung Miscellany (book) of the Publications for Internationalization	Wiener Neustadt, Austria	Internal TMA-Publication, 289 p.	Book	-
17	2012	Gell (Ed.) (Gell=100%)	Sammelband der Publikationen Stressforschung 2009-2012 Miscellany (book) of the Publications for Stress Research from 2009-2012	Wiener Neustadt, Austria	Internal TMA-Publication, 276 p.	Book	-
18	2012	Porta et al (Gell=25%)	Biomedical Science, Engineering and Technology Chapter 20: CSA – Clinical Stress Assessment.	Rijeka, Croatia	ISBN 978-953-307-471-9, 902 pages, chapter 20 has 24 p.	Book chapter	World Cat & EBSCO & BASE & Google Scholar
19	2012	Mariusz Wiatr (Ed.)	Citizens in Uniform Gell's article: Basic officer education & internationalization.	Wroclaw, Poland	ISBN 978-83-63900-68-7 130 pages, Gell's chapter has 6 p.	Book chapter	Google Scholar

20	2011	Gell (Gell=100%)	Führungskräfteauswahl – Optimierung der Führungskräfteauswahl für Einsatzorganisationen (First Responder) durch neue Methodiken mit besonderer Berücksichtigung der Auswahl beim Militär Selection of Leaders – Optimisation the Selection of Leaders for Emergency Organisations (First Responder) by new Methods, with special Consideration onto the Selection within Military	Berlin, Germany	ISBN 978-3-86386- 112-4, 288 p.	Book	BASE & ECON- BIZ
21	2011	Gell (Gell=100%)	Internationalisierung im Rahmen der Truppenoffiziersausbildung Internationalization within the frame of Basic Officer Education	Vienna, Austria	Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 4432/11. P. 88-106. 5 p.	Book chapter	-
22	2011	Paile & Gell (Gell=15%)	Common Security and Defence Policy Modules 2010 – External Evaluation Report. Foreword by Gell	Vienna, Austria	Armis et Litteris 25. Scientific Series of the FH Bachelor Programme Military Leadership. P. 3-7. 5 p.	Book chapter	-
23	2010	Gell (Gell=100%)	Ein Jahr „European Initiative for the exchange of young officers inspired by ERASMUS“ One Year „European Initiative for the exchange of young officers inspired by ERASMUS“	Vienna, Austria	Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 4313/10. P. 63-69. 7 p.	Book chapter	-
24	2010	Gell (Gell=100%)	Users' Guide for Workloads' Calculation of Non-Academic Basic Officer Education.	Brussels, Belgium	European Security and Defence College – The Steering Committee. DECISION SC/2010/1 of 24 th of February 2010. 24 p.	Users' Guide Book	EU data- base
25	2009	Gell (Gell=100%)	European Initiative for the exchange of young officers inspired by ERASMUS European Initiative for the exchange of young officers inspired by ERASMUS	Vienna, Austria	Yearbook of the Theresan Military Academy. Heeresdruckzentrum 1030 Wien. 4686/09. P. 53-57. 5 p.	Book chapter	-
26	2008	Königshofer & Gell & Lampers- berger & Werban- schitz (Gell=75%)	Moderne Ausbildung – Synergieeffekte durch Internationalisierung Modern Education – Synergy- Effects by Internationalization	Vienna, Austria	Armis et Litteris 19. Scientific Series of the FH Bachelor Programme Military Leadership. P. 1-21. 21 p.	Book chapter	-
27	2008	Gell (Gell=100%)	ECTS – Eine Möglichkeit, die Bildung in Europa (aus ökonomischer Sicht) zu reorganisieren? ECTS – a possibility to re- organise education in Europe from economical point of view?	Vienna, Austria	Armis et Litteris 19. Scientific Series of the FH Bachelor Programme Military Leadership. P. 293- 311. 19 p.	Book chapter	-

28	2005	Gell (Gell=100%)	Der Bologna-Prozess und seine Auswirkungen auf die Österreichische Offiziersausbildung The Bologna-Process and its Impact onto the Austrian Officer Education	Vienna, Austria	Armis et Litteris 15. Scientific Series of the FH Bachelor Programme Military Leadership. P. 113-123. 11 p.	Book chapter	-
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- **Other Publications**

(Publications which are in German are translated into English and marked with blue colour – if not in English originally).

No.	Year	Name(s) of Author(s)	Title of Publication Translation in English	Place of Publication	Publication Identification
01	2014	Gell	The international Military Academic Forum 2014 (IMAF 2014) in Austria.	Brussels, Belgium	12 th Mobility Newsletter of the European Security and Defence College, P. 6-9. 4 p.
02	2014	Gell	Internationale Konferenz an der Jagiellonian Universität. International Conference at the Jagiellonian University.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2014/konferenz_Jagiellonian_Universitaet.php
03	2013	Gell	iMAF 2013 – 5 th anniversary of the Initiative – Theresan Military Academy hosted Europe.	Brussels, Belgium	10 th Mobility Newsletter of the European Security and Defence College, P. 5-6. 2 p.
04	2013	Gell	Die internationalen Kooperationen an der Theresianischen Militärakademie im Rahmen des Fachhochschul-Bachelorstudienganges Militärische Führung. The international cooperation at the Theresan Military Academy within the frame of the FH Bachelor Programme Military Leadership.	Wiener Neustadt, Austria	Internal TMA-Publication, 6 p.
05	2012	Gell	Austrian Officer Cadets of the Theresan Military Academy visiting the Winter Ball of Czech Republic's University of Defence in Brno.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/p/pdf/201202WinterBallinBrno.pdf
06	2012	Gell	ERASMUS Agreement between the General Tadeusz Kosciuszko Military Academy of Land Forces in Wroclaw and the FH Bachelor Programme Military Leadership of the Theresan Military Academy.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/p/pdf/2012/201204PolandERASMUSAgreementwithMALF.pdf
07	2012	Gell	ERASMUS Agreement between the Royal Military Academy in Brussels and the FH Bachelor Programme Military Leadership of the Theresan Military Academy.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/p/pdf/2012/2012-06-Belgium-ERASMUS-Agreement-with-RMA.pdf
08	2012	Gell	ERASMUS Agreement between the Armed Forces Academy in Liptovsky Mikulas and the FH Bachelor Programme Military Leadership of the Theresan Military Academy.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/p/pdf/2012/2012-06-Slovakia-ERASMUS-Agreement-with-AFA.pdf

09	2012	Gell	ERASMUS Agreement between the Military Academy of Lithuania in Vilnius and the FH Bachelor Programme Military Leadership of the Theresan Military Academy.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/iep/pdf/2012/2012-07-Lithuania-ERASMUS-Agreement-with-MAL.pdf
10	2012	Gell & Lampersberger & Mopils & Wiedner (Gell=30%)	Beilage der FHK im Standard: Vorreiter in Sachen Friedenserhalt. Annex to the Newspaper „Standard“: Trendsetter in Peacekeeping.	Vienna, Austria	Newspaper “Der Standard”, Special contribution booklet of the Conference of the Austrian Universities of Applied Science supported by the Ministry for Science and Research. P. 17. 1 p.
11	2012	Gell	Stressforschungsprojekt am FH-BaStg MilFü. Stress research project at FH Bachelor Programme Military Leadership.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2012/StressFo_2702.php
12	2012	Gell	ERASMUS Abkommen mit Polen. ERASMUS agreement with Poland.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2012/erasmus_polen.php
13	2012	Gell	Spitzenleistung österreichischer Fähnriche bei CSDP-Olympiade. Top-performance of Austrian Cadets at the CSDP Olympiad.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2012/CSDP_Olympiade.php
14	2012	Gell	Common Module on CSDP 2012.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2012/csdp.php
15	2011	Gell	ERASMUS Agreement between the University of Defence BRNO and the FH Bachelor Programme Military Leadership of the Theresan Military Academy.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/news/2012/pdf/2011-11-Austria-ERASMUS-Agreement-with-UoD-Brno.pdf
16	2011	Gell	Common Modules on Security and Defence Policy at the Theresan Military Academy.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/iep/pdf/201110AustriaInternationalCSDPModulesJ-1andJ-2.pdf
17	2011	Gell	Cadet Exchange Program at the Royal Netherlands Military Academy in Breda.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/iep/pdf/2011-05-Netherlands-Cadet-Exchange-Program.pdf
18	2011	Gell	First ERASMUS Semester exchange with Swedish National Defence College.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/news/2011/pdf/201106AustriaErasmusexchangewithSNDC.pdf
19	2011	Gell	Stressforschung. Stress Research.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2011/stressforschung.php
20	2011	Gell	Internationale Fachgespräche über die Offiziersausbildung. International professional talks about Officer education.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2011/Delegation_Armenien.php

21	2011	Gell	Stressforschungsprojekt am FH-BaStg MilFü. Stress research project at FH Bachelor Programme Military Leadership.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2011/forschung.php
22	2011	Gell	Symposium 2011. Symposium 2011.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2011/symposium11.php
23	2011	Gell	Visit of Students from University of Defence BRNO.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2011/Besuch_Bruenn.php
24	2010	Gell	International PSO Module C.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/pdf/2010_04_Austria_International_PSO-Module_C1.pdf
25	2010	Gell	Common Module on Security and Defence Policy at the Theresan Military Academy (J1)	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/pdf/2010-10-Austria-International-CSDP-Module-J-1.pdf
26	2010	Gell	Common Module on Security and Defence Policy at the Theresan Military Academy (J2).	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/pdf/CSDP_Module_J2.pdf
27	2010	Gell	Forschungsprojekt Stressforschung. Research Project: Stress Research.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2010/Forschungsprojekt.php
28	2009	Gell	International PSO-Module C.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/pdf/Austria-International-PSO-Module-C.pdf
29	2009	Gell	Austrian Officer Cadets passed ESDP Module in Portugal.	Wiener Neustadt, Austria	Internet Article, URL: http://83.64.124.70/campus/ie/pdf/Portugal-Military-ERASMUS-ESDP-Module.pdf
30	2009	Gell	FH-Campus: Taking up the challenge. FH-Campus (Remark: A Journal of the Universities of Applied Science): Taking up the challenge.	Vienna, Austria	Series of the Austrian Universities of Applied Science supported by the Ministry for Science and Research. 5p.
31	2009	Gell	Führungskräfteauswahl durch Stressmessung. Selection of Leaders by stress measurements.	Wiener Neustadt, Austria	Internet Article, URL: http://campus.milak.at/campus/news/2009/img/gell_projekt.pdf

- **Regulations & Scholar Books for the Theresan Military Academy**

(Those ones which are in German only are translated into English in blue colour).

No.	Year	Author's Name(s)	Title Translation in English	Remarks
01	2015	Gell	Regulation for the Final Exams of the entire FH Bachelor Programme Military Leadership.	
02	2014	Gell	Richtlinie: Internationale Kooperationen. Directive: International Cooperation (Strategic Guidelines for Internationalisation of the FH Bachelor Programme Military Leadership).	
03	2014	Gell	Internationale Kooperationen: Regelung Nr. 04 zur Erstellung der Bachelorarbeit 1 im vierten Semester. International Cooperation: Regulation No. 04 for authoring the Bachelor Thesis 1 during the fourth Semester.	
04	2014	Gell	International Cooperation: Regulation No. 04 for authoring the Bachelor Thesis 1 during the fourth Semester.	Also used by those international Institutions where Austrian Cadets are sent to (CZ, DE, FR, PL, US).
05	2014	Gell	Regelung Nr. 05 zur Erstellung der Bachelorarbeit 2 im fünften und sechsten Semester. Regulation No. 05 for authoring the Bachelor Thesis 2 during the fifth and sixth Semester.	
06	2013	Gell	Internationale Kooperationen: Regelung Nr. 24 zur Erstellung von Bachelor- und Masterarbeiten durch internationale Studierende. International Cooperation: Regulation No. 24 for authoring Bachelor and Master Theses by International Students.	
07	2013	Gell	International Cooperation: Regulation No. 24 for authoring Bachelor and Master Theses by International Students.	
08	2013	Gell	International Cooperation: Appendix to Regulation No. 24 for authoring Bachelor and Master Theses by International Students. Evaluation of Bachelor and Master Theses.	

- **Regulations & Scholar Books for International Institutions**

(Those ones which are in German only are translated into English in blue colour).

No.	Year	Author's Name(s) & Gell's %	Title <i>Translation in English</i>	Remarks
01	2015	Gell	Terms & Characteristic of International Organisations with Focus on Crisis Management.	Scholar Book for Common Module CMO (for all EU Member States which implement this Common Module). It is a book contribution (140 pages) to a comprehensive book for Crisis Management.
02	2015	Kehle & Gell (Gell=15%)	Module Description of the Common Module "Electronic Warfare".	For all EU Member States which implement this Common Module.
03	2014	France & Gell (Gell=10%)	Revised FRAMEWORK regarding the European initiative for on the exchange of young officers inspired modelled by on Erasmus.	For all EU Member States (revised by Gell).
04	2014	Pauschenwein & Gell (Gell=15%)	Module Description of the Common Module "Basic Military English".	For all EU Member States which implement this Common Module.
05	2013	French AFA & Gell (Gell=50%)	Module Description of the Common Module "Law of Armed Conflict".	For all EU Member States which implement this Common Module.
06	2013	Gell	Module Description of the Common Module on "CSDP (Common Security and Defence Policy)".	For all EU Member States which implement this Common Module.
07	2012	Gell	Richtlinie für die Erstellung wissenschaftlicher Arbeiten. <i>Directive for authoring Scientific Theses.</i>	For Corvinus University Budapest and Sigmund Freud University Vienna.
08	2011	Gell	Module Description of the Common Modules Crisis Management Operations (Peace Support Operations).	For all EU Member States which implement this Common Module.
09	2010	Gell	Users' Guide for Workloads' Calculation of Non-Academic Basic Officer Education.	For all EU Member States.

17.6 Curriculum Vitae



After High School Harald Gell learned a trade as photographer. With 19 years he joined the Austrian Armed Forces in 1982. After serving as an NCO and mortar squad leader in an Mountain Infantry Battalion he studied at the Theresan Military Academy and graduated as best of class as an Artillery Officer. He spent the first part of his career in an Artillery Regiment as Battery-2iC, Battery Commander of a self-propelled Artillery Battery, Signal Officer and as guest instructor for negotiation techniques at the Austrian Peace Support Command.

After serving as a Team Leader with the European Union Monitor Mission in Bosnia-Herzegovina and Croatia in 1998 he was transferred to the Theresan Military Academy as Desk Officer and as Senior Lecturer for Leadership Training. During this time he also served as Chief of Staff of an Infantry Battalion and graduated from some 15 EU, UN and NATO courses up to CJTF level.

In 2002 he graduated as best of class with a Master of Security and Defence Management (MSD) degree from the National Defence Academy in Vienna and started Master studies in Pedagogics which he finalised in 2006 (MBA). In parallel he studied Defence Economy at the Corvinus University in Budapest where he graduated from as MSc in 2007. In the same year – after serving as Chief Operations Officer with UNDOF in Syria – he started his PhD-studies in Security Research and took the doctoral degree from the Sigmund Freud University in Vienna in 2010.

Since 2010 he has been the course director of all the Common Security and Defence Policy-Modules conducted at the Theresan Military Academy. In 2012 he was appointed as the Head of the Docentship for Comparative Military Leadership Education at the Theresan Military Academy in Austria and promoted to Colonel, also being responsible for all international exchanges.

On 1st of April, 2015 he was appointed by the Steering Committee of the European Security and Defence College composed of 28 EU member states as new Chair of the “Military Erasmus” Implementation Group.

Memberships:

- Austrian Representative of the Implementation Group for the European initiative for the exchange of young officers, inspired by Erasmus from the very beginning since 2009 / Chairman of this group since 1st of April, 2015.
- Member of the Council of the Degree Programs in Military Leadership – Austrian Ministry of Defence and Sports from 2012-2015.
- Honorary Senator of the “Nicolae Balcescu” Land Forces Academy in Sibiu/Romania.
- Designated Member of the Scientific Board of the University of Defence in Brno/Czech Republic.
- Member of the Academic Council of the Moravian University College Olomouc in Czech Republic.
- Member of the Scientific Committee for the international Military Academic Forum.

Missions & Operations:

- 1991: Artillery observer in a border security operation during the Slovenian War of Independence.
- 1993-1997: Several border security operations at the Austro-Hungarian border and several deployments for disaster management.
- 1998: Team Leader of the European Union Monitor Mission in Bosnia-Herzegovina and Croatia.
- 2002-2015: Some 150 international activities, in European Union countries, Canada, Switzerland, Ukraine and the United States.
- 2005-2014: Liaison Officer to civilian authorities for disaster management.
- 2007: Chief Operations Officer with UNDOF in Syria.

18. Affidavit

I declare that I have written the present Habilitation Thesis independently and on my own. I have clearly marked any language or ideas borrowed from other sources as not my own and documented their sources. The thesis does not contain any work that I have handed in or have had graded as a previous scientific paper earlier on – with exceptions of those ones which I still have published on my own or together with other authors.

I am aware that any failure to do so constitutes plagiarism. Plagiarism is the presentation of another person's thoughts or words as if they were my own – even if I summarize, paraphrase, condense, cut, rearrange, or otherwise alter them.

I am aware of the consequences and sanctions plagiarism entails. Among others, consequences may include nullification of the thesis, exclusion from the awarding of a degree, and legal consequences for lying under oath. These consequences also apply retrospectively, i.e. if plagiarism is discovered after the thesis has been accepted and graded. I am fully aware of the scope of these consequences.



(Colonel Dr. Harald GELL, MSc, MSD, MBA)

Wiener Neustadt, Austria & Brno, Czech Republic in September 2015