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Running head: Academic education in addiction research

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Running head: Academic education in addiction research

Abstract

This paper reports on the European Graduate School in Addiction Research (ESADD), which contributes to the scientific education of PhD/MD addiction research students and promotes interdisciplinary cooperation and academic networking in Europe.

ESADD is a two- year course, built first from a conceptual analysis of knowledge needs, then iteratively refined based on practical experiences. Its major components are six seminar weeks, homework assignments and an internship in a foreign research group. As part of an internal quality management system, comprehensive evaluations of the program took into account goals and objectives of the seminar weeks, workloads, study materials, relevance and usefulness of acquired skills, and organisational issues. Assessments of lecturers evaluated their teaching performance and the relevance of their topics. Forty-two out of 45 participants from all over Europe completed one of three courses carried out between 2008 and 2015. All reported that ESADD provided them with a broad overview of knowledge in the field, and 41 participants were satisfied with the quality of the seminar weeks.

ESADD thus seems to be an effective way to educate PhD students from different research disciplines and to provide a comprehensive body of scientific knowledge and competencies on addiction-related research topics. Further ESADD enriches the higher education landscape in addiction education.

Keywords

PhD training, research training, substance use disorders, graduate school, addiction, doctoral

education

Running head: Academic education in addiction research

Introduction

The aim of the European Commission, to promote healthy well-being and aging¹, is challenged by severe risks, including the health, social, and economic burdens related to harmful and disordered use of psychotropic substances. According to conservative estimates, the total social costs of alcohol dependence in Europe accounted for €50 -€120 billion in 2010 (Shield et al., 2015). These costs include workplace and productivity losses, health care, crime and public disorder, prevention, research, as well as costs to the drug users, their families, other people within their social networks, and strangers.

Despite the societal burden, currently available options for prevention and treatment of drug use including harm reduction, show limited effectiveness and range. The prevalence figures for classes of substances use disorders, other than smoking, which has experienced a reduction in some western countries (Ng et al., 2014), have remained stable for many years or are on the rise (e.g. prescription opioids and stimulants, (McCabe et al., 2014)). However, only a small proportion of persons with disorders can be reached for treatment, and positive treatment outcome rates are at best around 50%; for most substances they are much lower (Rehm et al., 2013; Wang et al., 2007; Whiteford et al., 2013). Improvements are therefore needed in all areas, by applying existing interventions more comprehensively and quickly. The quality and capacity of addiction research should also be strengthened, as a basis for developing more effective interventions (Bühringer et al., 2016). A survey on the state of research on illicit drugs confirmed that Europe is deficient in this research

capacity, compared to Australia and the United States (Bühringer et al., 2009; EMCDDA, 2012). Innovative and high quality scientific research is a precondition for developing new insights into the pathways of substance use disorders, new treatment approaches, and in reducing associated individual and societal burdens.

Research in the addiction field is highly specialised and fragmented. However, a comprehensive understanding of core individual vulnerabilities, social and substance-related risk factors, aetiopathological processes, and effective interventions requires tight cooperation between disciplines. For example, comprehensive societal- and individual-level approaches must be based on knowledge from the disciplines of anthropology, sociology, economics, policy research, neuroscience and psychology, among others (Gell et al., 2016; Gell et al., 2014). Basic understandings and acceptance of different scientific approaches and methods, as well as interdisciplinary cooperation, are further prerequisites for providing better solutions (Miller et al., 2010; Ritter, 2006).

Improved cooperation of researchers in Europe is not only a technical requirement of the European Commission, which provides an increasingly relevant share of research grants in Europe, it is also essential for a number of other reasons. In the basic sciences, costly studies may be aided by pooling staff and financial resources. Research cooperation within the applied sciences may enhance understanding of the effects of different national approaches and help to implement best practice solutions. Improving European cross-border cooperation and networking is a third condition for improving understanding and reducing the addiction problem in Europe. The needs for systematic, comprehensive, and high quality training of young researchers to promote scientific excellence, interdisciplinary work, and European networking, could be met through individual support by senior staff members. However, this option is time-consuming and costly, especially for small research groups. Therefore, around 2005, a graduate school was founded exclusively for PhD/MD students with a specific focus on research. However, such schools were rare at that time. Today, existing programmes still focus mostly either on the needs of specialised practitioners (e.g. training on counselling and treatment interventions) or on a broader scope of topics covering research only as

one of many themes. In a recent survey 78 bachelor's, master's, and PhD-level programmes were identified in Europe, including five PhD programmes: Kings College London "Addictions"; University of Helsinki "Doctoral Programme in Population Health"; University of Stirling "Doctorate of Applied Social Research Programme: Drug and Alcohol Studies"; Charles University Prague "Addictiology"; and the European Graduate School in Addiction Research (ESADD) (Miovský et al., 2014; Miovský et al., 2015; Miovsky, M. & Pavlovsaka, A. March 2016 personal communication).ESADD represents a new means of achieving the aforementioned aims by focussing exclusively on the education of junior researchers in Europe.

In 2006/2007, the concept for the ESADD research education programme was developed in cooperation with the ESADD Scientific Advisory Board. The first course was implemented in 2008. This paper describes the theoretical background, development, evaluation, results, and experiences of ESADD based on three consecutive two-year courses (ESADD 1: 2008-2011; ESADD 2: 2011-2013; ESADD 3: 2013-2015).

Description of the European Graduate School in Addiction Research (ESADD) The School was initiated and implemented cooperatively between the Technische Universität Dresden, the Dresden International University, IMIM Hospital del Mar Medical Research Institute in Barcelona and the AMC Amsterdam Medical Centre. The programme aims to educate and support PhD/MD students striving for a research career in the field of substance use research. After completion of the School, participants receive a joint certificate by the Technische Universität Dresden und DIU Dresden International University, as well as 16 ECTS to be used as course certifications at students' home universities.

Theoretical background

The course aims to educate and support PhD/MD students striving for a research career in the field of substance use research. It is strictly research oriented, not covering counselling or therapeutic

competences for practical use. The curriculum provides state-of the art academic knowledge, training in academic skills, and supports an understanding of EU funding and networking structures. It aims to provide a broad basic knowledge of core processes and factors associated with the onset, course, and reduction/cessation of substance use behaviours and related disorders, as well as on public health-based and individual preventive and treatment interventions. It has a strong theorydriven research focus. Later iterations of the course focus on the interplay of individual vulnerabilities, social-environmental, and substance-related risk factors, to better understand aetiopathological processes involved (Bühringer et al., 2008; Gell et al., 2016). Research contributions from history, psychology, pharmacology, neuroscience, social science, and public health are considered, with the aim of facilitating the development of new forms of interdisciplinary cooperation and cross-fertilisation between the different sciences involved in substance use research.

Programme structure and organisation

An ESADD course runs for two years. During this time, participants continue to work at their home institutes but attend six weeks of a seminar. Four of the seminar weeks are hosted by the Technische Universität Dresden, one is hosted by AMC Amsterdam Medical Centre, and another is hosted by IMIM Hospital del Mar Research Institute, Barcelona. Participants also have the option of an internship in a self-chosen foreign research institute or laboratory in Europe.

The courses are supported by an online platform for academic learning (OPAL), which is the central Internet learning platform of Saxonian universities and one of the most frequently used e-learning technologies in the German speaking university environment (https://bildungsportal.sachsen.de/). OPAL offers an easy, user-friendly, and fast way to deliver all seminar documents, to stay in touch via a forum function, to discuss participants' current work, manuscripts, and posters via workflow management, to share new articles, information about conferences, workshops, and job offers, and to establish an alumni network.

Seminar topics

Seminar topics were defined in cooperation with the Scientific Advisory Board. They form the overall conceptual framework of the course, and cover a broad base of scientific areas. All major classes of psychotropic substances, as well as gambling, are covered; however, the focus of the course is on addictive behaviours in general, and less on substance-specific differences in mechanisms of action and consequences. Each of the six seminar weeks has one or two core topics (Table 1). For each scientific topic, relevant methodological approaches are presented and practiced in evening working groups (e.g. development of research designs), and further worked on using related self-study tasks between seminar weeks.

----Table 1-----

Academic skills education

Training in academic skills is the second major pillar of the programme. Exercises cover the preparation and group presentation of posters, lectures and PowerPoint[™] presentations. Study designs, paper reviews and grant proposal writing, as well as project management exercises are parts of the academic skills training embedded in the scientific topics of the seminars (Table 2).

----Table 2 ------

Methods

Selection of participants

PhD/MD students from research institutes in Europe including Russia were eligible to apply. Applicants had to hold a master's degree/diploma in psychology, medicine, public health, social science, epidemiology or an equivalent and pursue a PhD/MD and a research career in the field of substance use research. Selection into ESADD was based on an applicant's curriculum vitae, grade point average, letter of interest with a focus on research, PhD/MD concept, and a letter of reference by the PhD/MD supervisor. Submitted applications were reviewed by the Scientific Advisory Board, the ESADD Director and the Scientific Manager for (a) whether the applicant's interests and goals fit into the scope of ESADD and (b) the applicant's academic qualifications. Using a rating system, a ranking list of which participants were to be selected and admitted was developed.

Procedures

On each seminar week, the management team developed a concept with objectives, learning outcomes, and homework in preparation for and during the week, including descriptions of intended achievements. The concept defined which tools and instruments were to be used and trained for during the week (e.g. CIDI, AUDIT, DISMOD, MATE; Barendregt et al., 2003; Bush et al., 1998; Saunders et al., 1993; Schippers et al., 2010; World Health Organization, 1994). The lecturers were prepared for their duties. Along with a seminar schedule, every lecturer received a fact sheet with objectives, learning results, and topics to cover. They were also provided with basic information on the participants, including personal backgrounds, degrees, and PhD/MD thesis topics. Each participant received an ESADD course book, which covered the overall framework of ESADD and of the six seminar weeks, and the links between the seminar weeks and how the topics and tasks merged together. Each seminar week started with an overview of topics to be covered, tests, homework, and the relationship of the week's topics to the overall course framework. Additionally, the last session of each seminar week contained a preview of the next seminar week.

Course evaluation

Two evaluation approaches were used: course and lecturer evaluations, and learning outcome assessments. The course evaluations asked students to report on the goals and objectives of each seminar week, workloads, study materials, relevance and usefulness of acquired skills (e.g. poster design, presentation skills, instruments/tests learned), organisation of the week, and Internet use.

They also provided space for general questions about the seminar week, or for commenting on the most and least valued topics of the seminars weeks. The lecturer assessments included ratings of teaching performance and the relevance of topics taught. Evaluation results served as check of whether study aims were achieved, as basis for the restructuring and reorganising of the seminar weeks, for adapting and reorganising of the homework, and for dealing with organisational issues (Table 3). Most evaluation items used a four-point scale, ranging from 1 ("strongly disagree") to 4 ("strongly agree").

----- Table 3-----

Learning outcomes assessment

Learning progress was assessed using written assessments, performance tests, self-study, and observation by the lecturer (Table 4).

----- Table 4------

After seminars three and six, participants received a performance chart. In order to receive course certificates, students hat to pass the written tests and homework assignments, as well as maintain regular attendance. Additional self-study tasks were given in case in which attendance was not possible. Tests had to be repeated if participants had failed regular examinations. The learning outcome assessment strategy was developed based on Bloom's taxonomy, and covered knowledge, comprehension, application, analysis, synthesis, and evaluation (critical thinking) (Table 5; Anderson et al., 2001; Krathwohl, 2002). The learning outcomes were based on the detailed course descriptions developed by the management team, and were tailored to the needs of participants and lecturers.

----- Table 5-----

Instruments and statistics

Existing internal evaluation forms used by Dresden International University and Technische Universität Dresden were revised and adapted. Evaluation questions were administered anonymously. Each participant was given an identifier code, in order to enable comparisons between seminar weeks.

The evaluation data were exported into SPSS Statistic Version 21 for analyses. Results were controlled for age (<25 vs. >25), gender, and degree (psychology vs. non-psychology). For ESADD 2, seminar 4, the general seminar week evaluation is missing. All results are corrected in accordance with the missing data.

Feedback processes for stepwise revision and refinement of the curriculum and procedures

The scientific programme and several course procedures were revised in an iterative manner. Experiences from ESADD 1-3, including quantitative ratings on seminar and lecturer evaluations, were used to adapt and refine the content and structure of the course, in order to improve scientific comprehensiveness and practicability. After the termination of each of the three ESADD courses, evaluation results were presented to and discussed with the Scientific Advisory Board, in order to ensure inclusion of state-of-the-art scientific trends and developments, and new educational concepts, and to ensure consideration and adequate incorporation of participant's individual needs, scientific backgrounds, and research interests. The Scientific Advisory Board received evaluation results, participant' profiles, and course and seminar week descriptions beforehand. The programme director, manager, and Scientific Advisory Board used evaluation results to decide jointly about changes to the course content, new lecturers, and alterations of the teaching concepts, if these were needed.

Results

Participants

In the three ESADD courses, a total of 45 participants (ESADD 1: 15; ESADD 2: 14; ESADD 3: 16) of which 11were males and 34 were females were enrolled. Students were from 13 European countries, including Germany (17), the Netherlands (8), and Spain (5). About one-third of the students were from other countries (e.g., France, Finland, the United Kingdom, Hungary). The majority of students held a Master's degree in psychology (N=26), followed by sociology (N=6), neuroscience (N=3) and education, physician/psychiatry and health science (each N=2). Three participants left ESADD 1 (N=1) and 2 (N=2) prematurely because for personal reasons (change of position, no longer pursuing a PhD), so analyses herein are based on 42 subjects.

Evaluation Results

Objectives

Every seminar week, objectives were provided with clear conceptual links to the overall framework of ESADD. The evaluation of ESADD 1-3 showed that most participants "agreed" or "strongly agreed" with the statement that the objectives were clear and consistent (Figure 1).

----- Figure 1 ------

Relevance of the scientific topics

Participants were asked to rate the relevance of the seminar week topics to their own work. All scores ranged between "relevant" and "very relevant". There were no differences between scores obtained from the three ESADD courses. For example, the median for the topics taught in ESADD 3, seminar week 2 was M= 3 for the lectures: aetiology: aims and overview, genetics, impulsivity, parents/alcohol, and parents/smoking, and 4 for all other topics (Figure 2). In comparison, the

median for the same week in ESADD 2, seminar week 2 was M = 3 for the lectures: impulsivity, craving, sociological aspects, and M=4 for the other topics.

------ Figure 2 -----

To gain more detailed insight into the relevance of the seminar topics, and in order to interpret the data to inform curriculum development, participants were asked for their ratings on the following statement: "What I learned was value for my future". In all ESADD courses, the topics of the seminar weeks were rated valuable by n=27 participants.

Homework workload

Because participation in ESADD took place in parallel with the regular work of PhD/MD students, ratings of the additional workload were of interest for homework planning. Participants were asked to rate whether the homework required was appropriate, and whether the assignments helped them to achieve the seminar week's objectives. Thirty-six participants found the required work appropriate ("agree"; "strongly agree") and n=35 felt that the assignments helped them to achieve the seminar week's objectives.

Learning materials

In all ESADD seminars, the learning and study materials were rated clear, concise, and relevant for the course: n = 40 participants found the materials relevant and n = 38 found them clear and concise.

Organisation

Regarding the organisation of ESADD 1-3 (appropriate rooms, organisation of the week), the evaluation was consistently "agree" and "strongly agree".

Lecturer evaluations

The lecturers were consistently evaluated as "good" to "very good" for every seminar week of ESADD 1-3. An example lecturer evaluation from ESADD 3 seminar week 2 is shown in Figure 3. Together with detailed evaluations of their teaching, lecturers received ratings of the relevance of their topics, the amount and suitability of their homework, and the general rankings of the courses taught (fit with goals and objectives of the seminar week, value for the future, satisfaction with seminar quality) for their personal records.

------ Figure 3 -----

Overall satisfaction

Overall, participants were satisfied with ESADD 1-3 (n= 31; "agree" and "strongly agree"). They stated that the seminars provided them with a broad overview of knowledge in this research field (n=39; "agree" and "strongly agree") and that the conveyed content was of value to their future (n= 37; "agree" and "strongly agree").

Learning outcomes assessment

The learning outcomes assessment combined examination grades, homework requirements, seminar week tasks, and course attendance. For each participant, a detailed list of grades, assignments, and specific reasons for non-attendance (illness, other commitments, personal reasons) was composed. After seminar week 3, all participants received overviews of their performance, as well as additional homework if needed. All participants passed the examinations.

Discussion

The paper presented background information and information for the need for the European Graduate School in Addiction Research (ESADD) to promote scientific excellence, capacity building, and trans-border cooperation in Europe. Progress in these areas is crucial for better meeting the public and individual health and social challenges arising from substance and non-substance related disorders like gambling. Experiences from the ESADD two-year courses 1-3 between 2008 and 2015 confirmed the adequacy, practicality and scientific merit of the state-of-the-art of the curriculum. Forty-two of the participants finished the programme, and their evaluations of programme contents, lectures, course and seminar procedures, and of learning progress were positive to very positive. Our results are based on course and learning outcome evaluations, feedback from lecturers, doctoral supervisors, and the Scientific Advisory Board.

ESADD provides students with the expertise and training to design and develop research projects and novel individual and public health interventions. The approach described herein was deliberately chosen to offer multidisciplinarity and to allow multiple perspectives on the subject of substance use disorder research. This approach may support the transfer of multidisciplinarity into the day-to-day work of the participants and give examples of how to merge and synthesise different disciplinary findings. In the long run, such trans- and multidisciplinary approaches may enable progress within research disciplines, facilitate new knowledge gathering, and support theory development (Dumay, 2014; O'Dwyer & Unerman, 2014). ESADD was attractive to students of all disciplines and degrees. This shows that a multidisciplinary approach works and is attractive in various disciplines. Furthermore, student's assessments of the workload revealed that it is possible to offer a flexible education programme to be undertaken in addition to the regular workload of PhD/MD students. However, the workload has to be well-balanced and links to the seminar objectives and learning goals must to be made clear at the beginning of each seminar week. Knowing the desired learning outcomes at the beginning of each seminar week along with clear communication about assessment procedures made the workload predictable for the students. This, along with the attractive content of the curriculum and the opportunity to meet well-known senior researchers, might be a reason for the low course dropout rate.

However, the results herein are based only on three courses, running from 2008-2015. More time is needed to determine whether the school will foster long-term interdisciplinarity and networking between different research groups and disciplines in Europe. More courses are also needed to have a sustainable effect on junior scientists and research capacity in Europe, and to promote change. Feedback from doctoral supervisors and follow-up evaluations from participants would also be helpful to further evaluate and improve the adequacy and scientific quality of our results. Further follow-up evaluations with programme alumni might reveal long-term benefits of ESADD for personal careers and research developments. Such forms of long-term evaluation are needed to corroborate the results herein. Additionally, an alumni network would help to stabilise new contacts. Because well-known senior researchers taught the seminar topics, it is possible that seminar week evaluations were biased to contain desirable response patterns. However, the organisation team was able to keep almost all the lecturers consistent across ESADD 1-3. The lecturers and seminar weeks were thus evaluated by different participants in similar situations, and the results did not differ between courses. Furthermore, students' written feedback and personal discussions were in line with the evaluation results.

Overall, a specific school for the target group of young researchers was established. Beyond its aims to provide state of the art research education and training, as well as support cooperation and networking, it should provide a climate for pursuing individual interests and creating passion for our field. Edwards and Babor (Babor, 2000, 2012; Edwards & Babor, 2012) stressed that passion, creativity, unconventionality, and endurance are important traits for pursuing a research career. Mentors and supervisors who support their students s in word and deed are also crucial. Graduate programmes should be able to react flexibly to the needs of young researchers, inspire them, allow room for personal development, and enrich and expand personal knowledge not only through lectures, but also through discussion with fellow students from different disciplines.

ESADD is a practice proven educational programme for PhD/MD students that enriches the educational landscape in substance use research education. It can be a supplement to existing programmes and add to the discussion about education in our field.

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Conflict of Interests

There are no conflicts of interest.

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Endnotes

¹ https://ec.europa.eu/programmes/horizon2020/en/h2020-section/health-demographic-change-

and-wellbeing; 19.06.2016

Tables

Table 1: Scientific topics per seminar week of ESADD 1-3

| Seminar | Торіс |
|---------|------------------------------------------------------------------------------|
| 1 | Phenomenology, Concepts and Classifications of addictive disorders |
| 2 | Aetiology of addictive disorders |
| 3 | Epidemiology and its consequences: Individual and social burden measurements |
| 4 | Prevention and Treatment: Individual Prevention and Treatment |
| 5 | Psychopharmacological Treatment Research and Clinical Trials |
| 6 | Public health and Public policy |

Table 2: List of academic skills

- (1) Poster preparation, presentation and discussion
- (2) Lecture preparation, presentation and discussion
- (3) Manuscript writing, responding to a journal review
- (4) Research and ethics committee application
- (5) Manuscript and book review
- (6) Research application review
- (7) Literature search databases
- (8) Ethical issues
- (9) European research applications

| Торіс | Question | Rating |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Goals and objectives | Objectives provided a clear conceptual framework for the seminar week. Seminar goals and objectives were made transparent at the beginning. Lectures, discussion and activities were relevant to seminar objectives. | 4 = Strongly Agree; 3 = Agree; 2 = Disagree; 1= Strongly Disagree |
| Appropriate Workload – Homework | Work required was appropriate. Assignments helped to achieve seminar objectives. Reading (content)was suitable for this seminar Amount of required reading was reasonable How long did you need for the preparation of the homework? (not READING. | Free text |
| | but all other homework) | |
| Study material | The study materials were clear and concise. Course materials were relevant. | 4 = Strongly Agree; 3 = Agree; 2 = Disagree; 1= Strongly Disagree |
| OPAL | OPAL is helpful. I used OPAL. | |
| Organization | The rooms are appropriate for the seminar. I was satisfied with the organisation of the week. | |
| General | Overall, I was satisfied with the quality of this seminar week. The seminar provided me with a broad overview of the field of knowledge. The content was relevant to the module. What I learned is valuable for my future. I was not familiar with most of the content of the seminar before this week. | |
| | What did you find most valuable about this seminar? | Free text |
| | What did you find least valuable about this seminar? | Free text |
| General Information | Age Degree | Free text Free text |
| Academic skills | e.g. Group work: Planning a prevention/intervention study | How useful did you found practicing/learning about the following academic skills 4 = Very; 3 = A little; 2 = Not very much; 1 = Not at all |
| Lecturer evaluation | The lecturer was well organised (The lecturer was well prepared and the unit delivery reflected this) The lecturer communicated clearly (The lectures presented, and instructions given, were able to be understood and followed) The lecturer made the unit interesting and engaging (The lecturer's teaching approach motivated and encouraged me to participate and learn) The lecturer was approachable (The lecturer invited and encouraged my communication and interaction) The lecturer encouraged me to think in this unit (The lecturer led me to reflect critically on the subject matter) I am satisfied with this lecturer (The lecturer met my expectations in most ways) | 4 = Strongly Agree; 3 = Agree; 2 = Disagree; 1= Strongly Disagree |
| Topic evaluation | e.g. MODULE (4.4.) Introduction: terms and concepts of treatment research | Relevance 4 = Very; 3 = A little; 2 = Not very much; 1 = Not at all |

Table 3: Overview seminar week evaluation items used in ESADD 1-3 and rating scales

Table 4: Learning outcome assessments used in ESADD 1-3

| Assessment | Instrument |
|-----------------------------|------------------------------------------------------------------------------------------------------------------|
| Written assessments | Multiple choice and open question examination at the beginning of every seminar week covering the week before |
| Performance tests | Poster design and presentation Oral presentation |
| | Study design, presentation and design defence Book review and paper writing Grant application writing |
| Self-study | Preparatory paper reading |
| Observation by the lecturer | Observations during the seminar weeks, presentations, and discussions |

Table 5: Assessments performed based on Bloom's Taxonomy

| Bloom's Taxonomy | Assessment | ESADD seminar week - Seminar weeks 1-6 | |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--|
| Knowledge (to check learner ability to recall basic information) & Comprehension (confirm understanding) | - Written assessments | | |
| Application (use or apply knowledge) & Analysis (interpret elements, break the information into smaller parts) | Poster preparation & presentation Study planning and presentation Oral presentations | - Seminar week 1-3 - Seminar week 1-5 - Seminar week 2,3 | |
| Synthesis (create/develop plans; put pieces together to form a new whole) & Evaluation (assess, critical thinking) | Discussion about posters Redesign of the posters Discussion of the planned studies Book review writing Paper writing Grand writing | - Seminar week 1-3 - Seminar 2 - Seminar week 1-5 - Seminar week 3-6 - Seminar week 3-6 - Seminar week 3-6 | |



Item: Objectives provided a clear conceptual framework for the seminar week

* General evaluation ESADD 2 seminar week 4 missing.





Figure 3: Example lecturer evaluation: ESADD 3 seminar week 2



Participants ESADD 3 seminar week 2 N = 16