SWOT and Comparative Case Studies Methodology

Table of contents

Abstract

This document outlines the methodology for conducting SWOT analysis of national Environment Protection education segments and the comparative analysis of courses taught (to be modernized/developed) in partner universities (the EU, Armenia, Georgia) to the students of Environment Protection programmes.

The SWOT Analysis will be resulting from the expert desk study conducted on the basis of collecting regulatory materials and expert opinions

Comparative Course Study identifies a range of factors, based on which the courses will be compared and provides recommendations on performing the comparison. The most important part of the comparison is finding the correspondence between the actual content taught in counterpart courses of the two target universities. In order to perform this comparison in a meaningful way, the project needed a certain instrument enabling consistent characterisation of the content of the compared courses in terms of the subject-specific knowledge involved.

1   Introduction

    The main goal of WP1 of the project is to shape a better structured understanding of the local conditions and requirements for Environment Protection (EP) postgraduate education (by applying the SWOT analysis). On this basis the project will conduct a range of comparative case studies that will allow the consortium to understand the set and the magnitude of differences and commonalities between the ways the target set of courses is taught to the EP students in Armenia/Georgia and in EU. Equipped with this knowledge the consortium will be able to produce recommendations for modernisation of existing (creation of new) courses during WP2 of the project.

2   SWOT Analysis methodology

SWOT analysis (or **SWOT matrix**) is a strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to activities planning. It is intended to specify the objectives of the planned undertaking and identify the internal and external factors that are favorable and unfavorable to achieving those objectives. Users of a SWOT analysis often ask and answer questions to generate meaningful information for each category to make the tool useful and identify their competitive advantage. SWOT has been described as the tried-and-true tool of strategic analysis.

Strengths and weakness are frequently internally-related, while opportunities and threats commonly focus on the external environment. The name is an acronym for the four parameters the technique examines:

- *Strengths*: characteristics of the organization/system/project that give it an advantage over others.
- *Weaknesses*: characteristics of the organization/system/project that place it at a disadvantage relative to others.
- *Opportunities*: elements in the environment that the organization/system/project could exploit to its advantage.
- *Threats*: elements in the environment that could cause trouble for the organization/system/project

The use of the SWOT analysis outcomes:

SWOT ANALYSIS	Strengths 1. 2. 3. 4.	Weaknesses 1. 2. 3. 4.
Opportunities 1. 2. 3. 4.	Opportunity-Strength strategies *Use strengths to take advantage of opportunities* 1. 2.	Opportunity-Weakness strategies *Overcome weaknesses by taking advantage of opportunities* 1. 2.
Threats 1. 2. 3. 4.	Threat-Strength strategies *Use strengths to avoid threats* 1. 2.	Threat-Weakness Strategies *Minimize weaknesses and avoid threats* 1. 2.

Suggestion: we do separate SWOTs for Armenia and Georgia.
For the practical application in MENVIPRO we suggest the following factors to be analyzed:
External factors:

- **General political and socio-economic climate** in the target countries for modernization of postgraduate studies in the field of EP on the basis of the Bologna declaration. Please provide also facts & figures, e.g. information on financing of HEIs, trends and Please write ½ page on it and extract threats/opportunities
- **Regulatory frameworks** (national laws, standards, institutional regulations, etc.), their relation to the Bologna principles. How accreditation of educational programmes is regulated. Please write ½ page on it and extract threats/opportunities
- **Demand for specialists in EP with postgraduate degrees**. If possible – potential employment opportunities, employability statistics in the past, trends in the future, motivation/demotivation factors for the choice of the EP programme. If possible – with references. Please write ½ page on it and extract threats/opportunities.

Internal factors:
- **Existing baseline.** Available EP programmes/courses per partner University, short characteristics, experiences. Extract strengths/weaknesses
- **Availability of resources** in Universities for the reforms. Human resources (teaching and technical personnel, students per teacher, please provide age/gender/qualification/etc. statistics), material resources (rooms, laboratories, equipment, etc.). Extract strengths/weaknesses.
- **Sources of expertise.** Potential cooperation partners and opportunities inside the country and internationally. Extract strengths/weaknesses.

The information collection and text writing shall be done by the experts in Armenia and Georgia. The EU colleagues can advise/support/edit/etc. The collected information and the SWOT table to be included into D1.1.

3 Overall Set of Criteria for Conducting Comparative Case Studies

The information for Comparative analysis shall be collected during the visits for the EU partner Universities. Then, for each course which we plan to modernize/develop we need to present the data in the way suitable for the analysis (e.g. two columns: on one side – European example, on the other side – existing course in Armenia/Georgia or new course to be developed). After that, for each course – 3-4 bullets of recommendations using the comparison results. This goes to D1.2.

3.1 University/Program Profile

When comparing courses, it is not enough to choose courses with similar titles. The goals and the purpose of the courses should align and the focus of the courses and their roles within the overall curricula should be comparable. Even the character of the university where a course is offered can make a difference. A classic university and a university of applied sciences can have very different perspectives on what should be the key topics within a course with the same name. In a large university a professor can have much richer set of resources than in small one, at the same time, teaching a course to several hundred students puts a much bigger strain on a professor than teaching it to several dozens of them. The overall program of studies that the target course is part of is equally important for similar reasons. Therefore, the first set of criteria characterising a course profile focus on the general description of the university and the program (major) where the course is taught. These parameters include:
- **Criterion A**: University profile
    Classic or applied
    Overall number of students
    Number of Environment protection related disciplines
    Number of Environment protection students
- **Criterion B**: Program/discipline profile

Theoretical or applied
Number of students
Role/part of the selected course(s) in the study program

3.2 Course Settings

The next set of criteria describes the context of the course including all its organizational settings and characteristics not directly related to pedagogical aspects or the content. This is the course metadata that allows us to easily identify whether the two courses are comparable or not. For example, if in one university a course is taught on a MSc level and in another on a BSc level, such courses are not very comparable, because the level of presentation of the course material would differ much between them. If in one university a course costs 3 ECTS credits and in the other – 7, such courses are not the best candidates for comparison either, because the amount of work students need to invest in these two courses will be very different even if the titles of the courses are very similar (Note: sometimes, we might have to relax some of these conditions if for particular universities best matches cannot be found). The complete list of course characteristics include:

- **Criterion C**: Course type
    Bachelor or master level
    Year/semester of studies (1/2/…)
    Selective or mandatory
    Theoretical / applied
- **Criterion D**: Relations to other courses in the program
    Prerequisite courses
    Outcome courses
    If the course is a part of a group/cluster (from which it can be selected), other courses in this group
- **Criterion E**: Department teaching a course
    Non-gradiating / Graduating / Other
- **Criterion F**: Course load
    Overall number of credits according to ECTS regulations
    Number of credits associated with particular course activities (lectures / tutorials / practical work / homework / etc.)

3.3 Teaching aspects

In order to describe how the teacher organises the course, we identify three important criteria: use of any particular didactic approach (such as project-based teaching, inquiry-based teaching, blended learning, etc.), organisation of course assessment (how many tests and exams, what form they take, how they and the rest of the course activity contribute to the final grade) and the resources available to a teacher – from the help of teaching assistants to the availability of computer labs.
Teaching aspects

- **Criterion G**: Pedagogy
    Blended learning
    Flipped classroom
    MOOC
    Project-based learning
    Inquiry-based learning
    Collaborative learning
    Game-based learning
- **Criterion H**: Assessment
    Exams (how many, oral / written / test-like)
    Testing (how often)

Grade computation (contribution of each course activity to the final grade, availability of extra credits)
- **Criterion I**: Teaching resources
    Teaching hours
    Preparatory hours
    Teaching assistants (grading / tutorials)
    Labs

3.4 Use of technology

A dedicated group of criteria has been selected to characterise the level of application of the relevant technologies (e.g. geochemistry laboratory tools, GIS software, Technology-enhanced learning tools, etc.) in the target courses. There are two top-level categories of technologies that can be use to support EP learning: the instruments that help students perform essential professional activities and the tools that help them to learn the subjects. The former category includes such technological tools as e,g chemical/physical equipment or ERDAS ER Mapper. These are, essentially, the systems that a professional specialist, engineer or researcher would use in their everyday professional activity. Using them in a course helps not only to automate certain tasks but also leads to mastering these tools, which is an important professional competency on its own. The later systems are dedicated educational tools. They help students to understand concepts and acquire general subject-specific skills. In the both these categories, the number and diversity of available systems is very large. The focus of these set of criteria is to detect whether any of these systems are used and to what degree, namely what is their role in the course.
- **Criterion J**: Use of professional tools
    Name of the tool(s) used (lab devices/systems, software solutions, etc.)
    Supported activities (tutorials, home works)
    Overall role of the tool (essential instrument that must be learnt or one way to help learn the rest the material easier)
- **Criterion K**: Use of TEL-systems
    Name and type of the tool used (if any)
    Supported activity (assessment, home works, exam preparation)
    Role on the course (mandatory component / extra credit opportunity / fully optional supplementary tool)

3.5 Course statistics

Another important aspect of the course is the data collected about it over the years. It shows the historic perspective and evolution of the course, and can also provide some insights into the course difficulty and the profile of a typical student taking a course. Although by itself this information might be not as important for course comparison, combined with other criteria it can provide important insights.
- **Criterion L:** Course statistics
    Average number of students enrolled in the course
    Average percentage of students successfully finishing the course
    Average grades distribution
    Percentage of international students
    Overall student demographics (gender, age, nationality, scholarships, etc.)
    Average rating of the course by students

3.6 Course content

Finally, the most important criterion is the description of the learning material taught in the course. In order to describe the content of the analysed courses in a unified manner that would allow for meaningful comparison we needed a common frame of reference.
- **Criterion M**: Course competency profile

Outcome competencies of the course (what a students must learn in it)
Prerequisite competencies of the course (what a student must know before taking it)