

Evaluation Protocol. Guideline for evaluation.

STEM-CPD@EUni Intellectual Output 6 materials.

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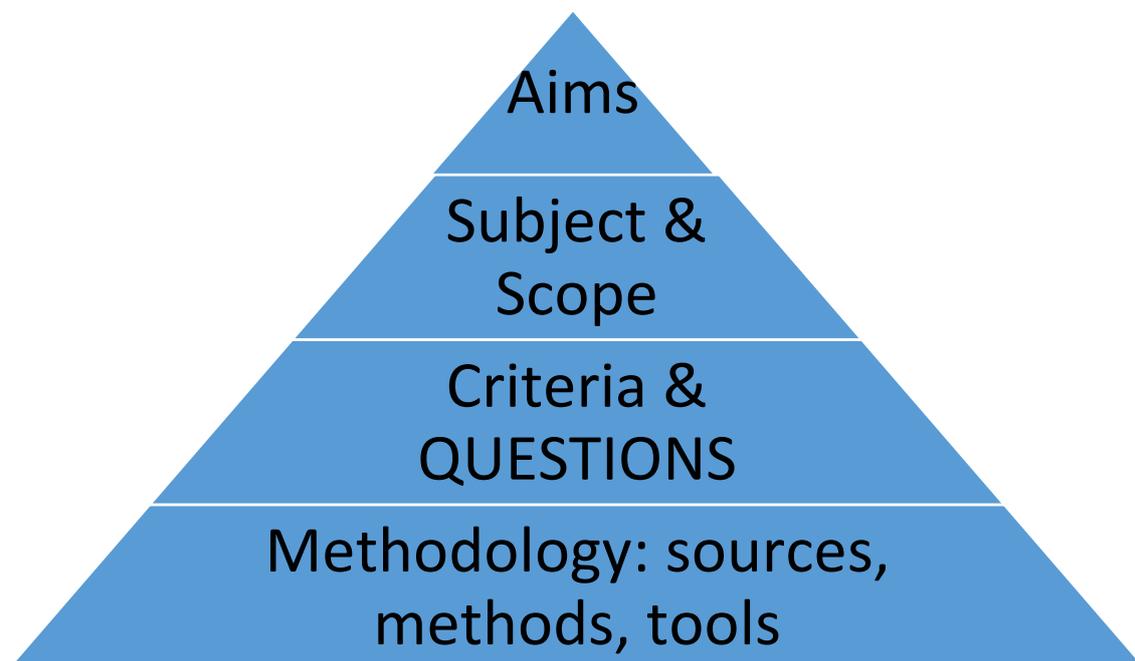
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Introduction

Evaluation is a key element in educational projects. In the STEM-CPD@EUni it enables the evidence-based development of the activities proposed in our project and provides the recommendation for similar initiatives in the area of education. The STEM-CPD@Euni project design is based on the ADDIE model for the process design. This process contains 5 steps: analysis, design, development, implementation and evaluation.¹ Hence, the evaluation planned within the project is more than a usual project effects evaluation put at the managerial level. It is part of the whole process plan and a source of feedback for this project and other similar initiatives in the area of academic teacher continuous professional development.

A series of evaluation tools will be developed and put into practice. Through the evaluation of the CPD activities we will collect data and perform analysis in order to allow a greater understanding about STEM-CPD at higher education institutions. Based on the analysis in cycle 1 (summer school 1) improvements of the outcomes will be carried out for cycle 2.



¹ Molenda, Michael. "In search of the elusive ADDIE model." *Performance improvement* 42.5 (2003): 34-37.

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To support evidence based development, we will prepare the effects measurement for partners with guidelines on how to collect data from the CPD activities in order to assure that the results are comparable. The qualitative methodology and case study method will be used. Analysis of STEM-CPD user cases and scenarios and the evaluation of Summer School will create inputs for the next iteration of the summer school, the design of the CPD activities and a list of practical recommendations.

The effect of the STEM-CPD framework developed in intellectual output 2 will be evaluated on four levels according to Kirkpatrick and Kirkpatrick (2016) approach and by using different evaluation tools or monitoring different indicators of relevance for a specific level.

The main indicators to be checked are:

1. Level of satisfaction with the STEM-CPD training materials produced expressed in the surveys taken after the summer schools.
2. Number of HE lecturers and other teaching staff involved via this project in STEM-CPD activities at universities.
3. Quality of digital OERs produced (open online modules (microMOOCs), STEM-CPD scenarios and user cases).
4. Levels of completion of activities (e.g. open online modules) with feedback from end-users.
5. Number of CPD-Ambassadors sustaining STEM-CPD at their universities.
6. Number of certifications issued to CPD-Ambassadors.
7. Efficiency of dissemination. Number of articles published; number of events organized; number of visitors to website;
8. Success of summer schools. This will give direct feedback about the quality of the produced STEM-CPD materials.

Evidence based evaluation approach as a part of the developing process of STEM-CPD at university described in intellectual output 6 is transferable to any other discipline. Criteria and instruments that will be developed on the example of Science can be

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transferred to any STEM discipline. This approach can be transferred widely to any CPD programme at any university in the world.

We expect that the evidence based evaluation on different levels in STEM-CPD@EUni project will result in:

1. effective high quality summer school that meets expectations of participants and different stakeholders
2. better understanding of elements that are needed for effective STEM-CPD at a local university context
3. recommendations on STEM-CPD at the universities European wide

Evaluation aims

The main goal for the evaluation is to provide a complete feedback on the effectiveness of continuous professional development for STEM academic teachers. We use the ADDIE model and Kirkpatrick's model of four level evaluation to provide a complete picture of the effects of CPD activities on the academic teachers, their day-by-day practice and on their institutions. Therefore, the four levels of evaluation in STEM-CPD@EUni project are oriented on our Ambassadors training programme and include:

1. **Evaluation of the experiences/satisfaction of the participants of the summer schools.**
2. **Estimation of the learning success of the summer school participants (two editions).**
3. **Estimation of the application of the gained knowledge by the CPD-Ambassadors in their local university practice.**
4. **Estimation of the impact of the CPD activities implemented by the CPD-Ambassadors on the local teaching practice.**

Audience

Different products prepared within the Evaluation in STEM-CPD would have different target audiences. The Table below presents the target audiences for particular evaluation products:

No.	Product	Target Audience(s)
1	Evaluation Protocol	Consortium Partners, NA, other CPD projects
2	Summer School Evaluation Report 1	Consortium Partners: summer school 2 organizers, other educational projects
3	Summer School Evaluation Report 2	Consortium Partners, other educational projects
4	Recommendations	NA, policy makers, universities' authorities, ECTN members

Principles for Quality Assurance for evaluation

We have indicated five principles to the evaluation process that will assure a good quality. The principles address every step of the evaluation process from designing to gathering and analysing data.

1. Carefully designed process
2. Detailed description of evaluation scope and subject
3. Duly prepared evaluation questions
4. Methods and tools choice adjust to:

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- Target group
 - Sources of information
 - Evaluation questions
5. High quality of provided tools and analysis

Evaluation areas

To provide the overview of effectiveness of CPD activities for STEM academic teachers, we decided to concentrate on the four areas. The areas of evaluation conduct within the STEM-CPD@EUni project are:

1. Experiences of participants,
2. Learning success of participants,
3. Application of knowledge,
4. Impact of CPD activities implemented by CPD-Ambassadors.

Following this approach, we will be able to provide information on how efficiently provide CPD activities, check if positive experience is followed with a learning success of participant and how it is applied by the academic teachers at their home institutions. Finally, adding the fourth area we will be able to address the recommendations to CPD Ambassadors, how act to achieve the impact at local institutions.

Timeline for evaluation

The evaluation starts almost immediately with the project and will be executed in two cycles in order to improve the quality of the outputs based on the results of the first cycle. This put all together creates **the 360 degree evaluation process** which will enable development and improvement of STEM-CPD at university. That is far more than only continuous evaluation of the project activities, as the final report will contain recommendations on STEM-CPD at European Universities pointing out the key elements

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of the CPD process, the threats and a handful of possible ways to overcome occurring difficulties in different working contexts.

Preparation of the evaluation protocol for partners on how to collect evaluation data at:

- summer schools (O5),
- user cases (O3) and scenarios (O3).

Stages and activities planned for evaluation process (O6)

STAGE 1

O6-1 Evaluation protocol

Timeline: October 2020

STAGE 2

Development of instruments needed for evaluation on four levels. Development of the survey questions and criteria for evaluation of the user cases (collected in O3)

O6-2 Survey to measure appreciation of the participants of the summer schools

Timeline: December 2020

O6-3 Template for evaluation of the user cases (collected in O3) using case study approach

Timeline: February 2021

STAGE 3

Collection of data at summer school 1. Analysis of the STEM-CPD user cases (O3) at the universities of the participants of summer school 1 (O5) (CPD-Ambassadors).

Data analysis and preparation of evaluation report cycle 1.

O6-4 Evaluation report of summer school 1 and estimation of learning success of participants based on the assessment procedure developed in O5.

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Timeline: September 2022

O6-55-10 evaluation case studies

O6-6 Recommendations for improvements of the summer school, STEM-CPD user case template and STEM-CPD scenarios

Timeline: January 2023

STAGE 4

Collection of data from summer school 2. Analysis of STEM-CPD user cases (O3) of the participants of summer school 2 (O5) (CPD-Ambassadors)

Data analysis and preparation of evaluation report cycle 2

O6-7 Evaluation report cycle 2: evaluation report of summer school 2 (O5), and estimation of learning success of participants based on assessment procedure developed in O5.

Timeline: December 2022

O6-815-20 evaluation case studies (one user case per university / CPD-Ambassador)

Timeline: March 2023

STAGE 5

Preparation of publication based on the evaluation of summer schools, measurements of performance of CPD-Ambassadors, and comparative analysis of collected evaluation case studies. Recommendations about STEM-CPD at European universities.

O6-9 Publication (open access)

Timeline: June 2023

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Detailed evaluation: summer school experience example

Detailed aims

- Development of TPACK competences of the European university STEM lecturers who intend to become CPD-Ambassadors and return to their home universities to organize STEM-CPD activities among their peers, improving the quality of the courses.
- .
- to equip them with the skills and tools for planning, promotion, organization and evaluation of CPD activities
- establishing an international Community of CPD Ambassadors (Community of Learners/Practice?)

Evaluation and detailed questions:

EVALUATION PROTOCOL: List of questions				
No.	EVALUATION QUESTION	INDICATORS	Tools	Questions asked to the respondents
1.	How efficiently was a summer school for CPD Ambassador organized? (O5 evaluation)	1. Participation (%) 2. Rate of dropout (if any 😊) 3. Participants satisfaction 4. Relevance of covered topics	Questionnaire (online ?) Lists of attendance (online / physical)	<ul style="list-style-type: none"> ● Do you feel more confident about your teaching skills? ● To what extent the summer school will affect your daily practice as an academic teacher? ● Content: to what extent was it new? Versatile? Relevant? ● How applicable is the gained knowledge to your teaching practice? ● To what extent the summer school will affect your daily practice as a member of your faculty teaching staff community? ● Do you feel prepared to be a CPD-Ambassador at your institution after the summer school? ● Did you establish any valuable contacts? ● Do you think there was enough interaction with other colleagues? ● Would you recommend your colleagues to participate in such summer school?

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				<ul style="list-style-type: none"> ● Access (depends on whether online or onsite) ● Rate the general organization of the school. ● Rate the technical organization of the school. ● Indicate your average attendance of the school. ● What is your main take-home message after attending the school?
2.	<p>What is the level of learning success of Summer school Participants ?</p> <p>(input form O1 and O5)</p>	Number of certificates	<p>IO 5 & IO 6 collected data</p> <p>Reflective diary</p> <p>Report of given actions (e.g. providing MOOC)</p>	<ul style="list-style-type: none"> ● What are the CPD activities you would like to organize at your home institution? ● Have you already developed a CPD user case and scenario to be used at your home university? ● Do you plan to work in cooperation with other colleagues? ● Do you have an idea about how to measure the impact of the CPD activities? <p>Miro: maybe real effects of the Summer School will be obvious only after a year (or more) - when the participant will be able to use his/her knowledge gained at the Summer School... i.e. benefits will be shown after application of the gained knowledge in the practice.</p>

Gathering information strategy

- Multiple response - a frequency analysis for data which includes more than one response per participant (limited number and straightforward questions) online forms to be submitted after 6-12 months from the end of the school.

The CPD-Ambassadors at the summer school will get a certificate based on the assessment of their competence in accordance with the evidence material produced during the summer school (i.e. learning outcomes of the summer school).

Audience for the results

- Participants of the project, both Os leaders and Home Teams.

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