Sustainability plan

Erasmus+ Programme

Key Action 2 Capacity Building for Higher Education

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Acknowledgments

This sustainability plan is an output of e-Learning Innovative Engineering Solutions (e-LIVES) project, co-founded by the Erasmus+ programme under the Key Action 2 Capacity Building for Higher Education, grant agreement No.: 585938-EPP-1-2017-1-FR-EPPKA2-CBHE-JP.

1. About the project/ Executive summary

The e-LIVES project aims at developing innovative solutions in e-learning for e-engineering as part of the modernization of the Southern Mediterranean countries training programs (Algeria, Jordan, Morocco and Tunisia). As a matter of fact, the number of students having access to higher education systems in South Mediterranean countries has more than doubled in 15 years. However, this positive step forward involves parallel important difficulties for universities to handle the management of this increased number of students. In Science, Technology, Engineering and Mathematics (STEM), one promising solution concerns the development of nationally accredited e-learning trainings (E-engineering trainings), e-learning being a very modern and efficient solution to integrate multiple profiles of students.

At the final stage of the project, the beneficiary partners will be 100% independent for creating and managing an e-engineering training thanks to the innovative e-engineering solutions dealing with a range of administrative, human and material obstacles to higher education institutions (HEIs) modernization.

E-Lives project has five objectives:

- Identification of best practices in order to build high-quality e-engineering trainings
- Development of reliable remote laboratory solutions with online access to practical works 24/24 and 7/7
- Development of practical open staff trainings at South Mediterranean universities
- Control and evaluate the pedagogical innovation solutions used
- Promote e-engineering within the South Mediterranean countries, mainly through National Dissemination Workshops in all the partner countries participating in the project

2. Introduction

2.1. Aim and scope

The aim of this sustainability plan is to set out the sustainability procedures for e-LIVES project. The concrete purpose is to ensure that the project results and deliverables are sustainable for the partner institutions and, more widely, for all HEIs in the concerned partner countries.

The current sustainability plan shall be updated as often as necessary. It will be revised each year during the project life in order to be validated at the Steering Committee meeting held at

each General Assembly. The plan should be enhanced mainly during the third year of the project. This is in-order to insure the sustainability just after the end of the grant duration.

2.2. Abbreviations and acronyms

Word	Abbreviations/Acronyms
e-Learning InnoVative Engineering Solutions	e-LIVES
Education, Audiovisual and Culture Executive Agency	EACEA
Project Officer	PO
National Erasmus+ Office	NEO
Project Coordinator	PC
Project Manager	PM
Lead Partner	LP
Local Coordinator	LC
Work-Package	WP
General Assembly	GA
Steering Committee	SC
Practical Works	PW
High-Quality Reference Remote Practical Work	HQRRPW
National Dissemination Workshop	NDW

3. Impact

3.1. Expected impact and target groups

The expected impact on the target groups will concern, in the first instance, the target groups of the participating organisations in the project during implementation of the project activities, and in the second instance, the target groups of all HEIs in the partner countries.

3.1.1. During the project implementation

During the project duration, different target groups from South Mediterranean countries are expected to benefit from the outputs of e-LIVES project:

National decision-makers: Rectors or university presidents, as well as ministers or, at least, national higher education responsible, mainly, through the newsletter of the project and website including the online learning/training materials. They will be also invited to be communicated the results of the quality assessment of e-LIVES training in the final GA and NDW both organised in 2020 in Jordan. It is important to convince them with the fact that e-engineering trainings offer a reliable solution that they may continue to promote, while in

parallel reducing their doubts. Their decisions will ensure a good impact of the project at local and national levels.

Local responsible people: Vice-president, head of educational department, international cooperation responsible person, mainly, through the participation in the annual GA of the project (One local responsible person by partner), the newsletter and also through the participation in NDWs. They are expected to have all the keys in order to start a nationally accredited e-engineering training within their universities and support their teaching and technical staff to improve their e-engineering skills.

Teaching and technical staff: through all the project activities, in particular, they are expected to work together in order to develop an operational remote laboratory including a HQRRPW and the associated online lectures at each partner university. To reach staff not involved in the project activities design, the project will cover the travel cost and cost of stay for 15 persons from each university to participate in each NDW[1]. Moreover, in order to improve the project dissemination at the country level, these NDWs will also be open to national colleagues from other universities in the country (without project financing in this case). Most interesting result is to reach a wide community of different teaching fields, not only in electronics, but also in other fields such as mechanics, biotechnologies, chemistry, etc.

Students from partner countries: In the first instance, a group of students (an average of 30 from each university leading to a total close to 300 students for all the partners), will be selected within each university in order to test, in real conditions, HQRRPW and the associated online lectures. These students are supposed to be involved in face-to-face trainings close to the topic of HQRRPW. Students' feedback will be analysed by the tools developed in the quality plan (e.g. surveys gathering their appreciation and comments). This will help the beneficiary partners to improve the quality of the developed tools. Moreover, one student will be invited for each planned event (GA and NDW) in order to share different points of view with the consortium members.

At the international level: the International Association of Online Engineering (IAOE)[2], through its different activities (REV conference and journals), is expected to help to disseminate, around

[1]For further information see the e-LIVES "Communication and Dissemination plan" available here: https://e-lives.eu

[2] The International Association of Online Engineering (IAOE) is an international non-profit organization with the objective of encouraging the wider development, distribution and application of Online Engineering (OE) technologies and its influence to the society. The association seeks to foster practices in education and research in universities, higher education institutions and the industry on OE.

the world, the main outputs of the project through the e-learning and remote laboratory communities and by the work of an e-LIVES dedicated SIG created during the project.

3.1.2. After the project implementation

After the end of the e-LIVES project, different target groups from South Mediterranean countries are expected to benefit from the outputs of the project:

National decision-makers: Rectors or university presidents as well as ministers or, at least, national higher education responsible people will have all the information needed to overcome their doubts in this innovative way of teaching, and then facilitate the national accreditation process in each partner country participating in the project.

Participating institutions: they will have all the keys in their hands needed for the creation of ambitious e-engineering trainings. In particular, all the administrative, human and material resources obstacles are expected to be solved. Moreover, each HEI will have an operational remote laboratory usable not only for e-engineering training, but also for face-to-face training. This will help with the problem of deleted lab sessions in the first two years of Bachelor degree due to the large number of students concerned.

Teachers and technical staffs involved in the project activities are expected to be well experienced to be part of an e-engineering training at the end of the project. Their university will then be able to create high quality e-engineering trainings. They will be trained to be future trainers. They will have all available learning/technical materials produced by the project to be used as templates to create new staff trainings and extend their know-how to their colleagues. They are, in conclusion, expected to benefit from the outputs of e-LIVES project in a sustainable way as the participating institutions will be able to manage and teach innovative high quality e-engineering trainings. In addition, an advisor will be nominated, in each university, to ensure the dissemination and the implementation of the project results into other fields of study at the same university as well as to support other universities.

Students from partner countries are expected to benefit widely from e-LIVES project results, as the participating institutions will be able to build innovative high quality e-engineering trainings suitable for different classes: students having weak economic resources or living in isolated areas or student in continuing education programmes. The number of students involved in such training in partner countries is expected to increase after e-LIVES project. E-engineering innovative solutions are crucial to tackle overcrowding at HEIs. In addition, it could be interesting to create students network to exchange information about these solutions.

3.2. Short term and long term impact indicators

To ensure that the outputs of the project become outcomes/results and then benefits, it is necessary to ensure that each temporal scale will reach the expected impact[3].

As a matter of fact, the project's impact must be divided in two temporalities: short-term and long-term impact. The short-term impact must be reached during the project duration and clearly visible at the end of the project to all target groups involved by enabling them to implement full-online accredited e-engineering trainings. Based on this and due to the sustainability process implemented (section 4), the expected long-term impact will be reached after the end of the project by producing outcomes and then benefits.

The short-term impacts are as follows:

Short term impact	Target groups/potential beneficiaries	Quantitative indicators	Qualitative indicators
Convince responsible	Ministers/Rectors/Head of departments	Number of decisions-makers receiving the newsletter or attended the NDWs	Informal or formal contact established with the project team
Improvement of e-engineering teaching skills	Teachers	Number of teachers attended the NDWs	Level of skills acquisition shown by the final staff examination and trainee practical exercises quality analysis
Improvement of e-engineering technical skills	Technicians	Number of technicians attended the NDWs	Level of skills acquisition shown by the final staff examination and trainee practical exercises quality analysis

[3] *"The project outputs (deliverables) are products or services which introduce something new (a change) which will result in an outcome, while benefits are measurable improvements resulting from an outcome. [...] Outcomes and benefits are often realised only after the project has closed."*- The PM[2] Guide - Open Edition, v.0.9, November 2016

Enlarge accessibility	Students	Number of students involved during the training sessions tests	HQRRPW ready to be used by students
Participate to the international e-engineering network actions	South Mediterranean countries	Number of South Mediterranean members joining IAOE and its SIG	Communications and publications issued by the SIG

Once the short-term impacts are reached, it is expected to reach the following long-term impacts:

Long term impact	**Target groups/potential beneficiaries**	**Quantitative indicators**	**Qualitative indicators**
Alternative solutions facing the student overcrowding in partner countries	Ministers/Rectors/ Head of departments	Increasing number of nationally accredited e-engineering training in each partner country	Full-online accredited e-engineering training valorised
Deployment of sustainable e-engineering teaching skills	Teachers	Increasing number of teachers involved in e-engineering training and development of new PW lectures	Control of staff skills acquisition possible by using the e-Lives examination produced

Deployment of sustainable e-engineering technical skills	Technicians	Increasing number of technicians involved in e-engineering training and development HQRRPW of new themes	Control of staff skills acquisition possible by using the e-Lives examination produced
Growing interest of e-engineering trainings	Students	Increasing number of students involved in a nationally accredited e-engineering training	Number of graduated students from e-engineering training

4. Sustainability

Sustainability is the capacity of the project to continue its existence beyond its end, through the exploitation and use of the project results in the long term. As a matter of fact, a project can be considered as sustainable if its outcomes or some of them continue after the end of the funding duration. In order to ensure the sustainability of the results, e-LIVES project will put in place different sustainability processes suitable for each target group.

4.1. Expected sustainability of processes and target groups

The long-term sustainability of this project will be measured by the number of e-engineering trainings created by beneficiary partners or other HEIs convinced during the project, after the end of the project, either as initial or as life-long training. By integrating these e-engineering courses in their regular course offers, they will ensure their long-term financial sustainability, and, as a consequence, the long-term exploitation of the project results and the continuity of the teaching and staff involved in it.

In accordance to e-LIVES, 100% ownership approach and learning by doing methodology, sustainable tools to train teachers and technical staff on e-engineering will be produced and disseminated as support for future trainings of trainers. The training chain will just start with e-

LIVES with high capacity to involve more and more persons in the future, first within the partner countries participating in the project, and then in all the Mediterranean Basin.

The International Association of Online Engineering (IAOE) participation is a key in terms of long-term sustainability and international impact. IAOE is an international non-profit organization aiming at foster practices on online engineering in research and education at HEIs and industry. The project will benefit from the wide network of contacts of IAOE developed over the years as a result of their activities: organization of conferences, workshops, seminars and working groups worldwide. The created Mediterranean Basin SIG will contribute to the dissemination and implementation of the best practices guidelines for the creation of e-engineering courses produced within the project that will be freely available on the project's website for, at least, 10 years after its closing. One aim of the SIG is to involve decision-makers (educational authorities, rectors and directors) getting institutional support for the creation of e-engineering courses.

4.2. Short-term and long-term sustainability indicators

As a matter of fact, the project's sustainability indicators will occur in two temporalities: short term and long-term.

The short-term indicators are as follows:

Short-term sustainability	Target groups/potential beneficiaries	Quantitative indicators	Qualitative indicators
Creating groups of training students	Students/teachers/ technical staff	Number of students and teachers, who participate in the programme	Practical works achieved
Making formation sessions for teachers	Teachers	Number of teachers, who participate in the programme	Increasing team members
Implementation of new practical works	Students/teachers	Number of PW	New PW works well

The long-term indicators are as follows:

Long-term sustainability	Target groups/potential beneficiaries	Quantitative indicators	Qualitative indicators
Creating a data-base of PWs per speciality and university	Rectors/Head of departments	Increasing number of nationally accredited e-engineering trainings in each partner country	Innovation and diversification in PWs programmes
Organising training sessions over all universities in the country	Teachers/Technicians	Increasing number of teachers involved in e-engineering training.	Harmonisation of best practises in PW examination produced

5. CONCLUSION

This project is ambitious. It proposes innovative solutions in e-learning teaching and remote PWs in particular. Its results will be more visible years after the end of the funding period of this European project. The implementation of this sustainability plan allows partners to manage time for supervising this step and to train teams to be able to implement the innovative solutions locally and nationally by transferring the knowledge, skills and tools acquired within the e-LIVES project.