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Provision of Capacity Building on Green and Entrepreneurial Learning

A TOOLBOX FOR TEACHERS AND TRAINERS



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ABBREVIATIONS AND ACRONYMS

FHJ	FH Joanneum University of Applied Sciences
GIZ	German Agency for International Cooperation
GTVET	Greening TVET
LKDF	Learning and Knowledge Development Facility
NCDIEL	National Centre for Development of Innovation and Entrepreneurial Learning
TVET	Technical and Vocational Education and Training
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNESCO- UNEVOC	International Centre for Technical and Vocational Education and Training of the United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization

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I. BACKGROUND AND CONTEXT

The International Centre for Technical and Vocational Education and Training of the United Nations Educational, Scientific and Cultural Organization (UNESCO-UNEVOC), undertakes a global initiative for strengthening the resilience of education and training stakeholders for a just and sustainable transition, which is implemented with the support of the German Agency for International Cooperation (GIZ). The project focuses on low- to lower-middle-income countries, paying special attention to countries in Africa and Small Island Developing States.

For that purpose, the United Nations Industrial Development Organization (UNIDO) through the Learning and Knowledge Development Facility (LKDF) aims to implement a series of activities to enhance the capacity of Technical and Vocational Education and Training (TVET) institutions for a just and green transition through a technical assistance package.

For this purpose, UNIDO contracted the National Centre for Development of Innovation and Entrepreneurial Learning (NCDIEL) and FH Joanneum University of Applied Sciences to develop a “Toolbox for the Provision of Capacity Building for TVET Teachers and Trainers” with a pilot intervention at the Selam Technical and Vocational College in Ethiopia, an accredited college by Addis Ababa TVET Agency.

UNIDO, through the LKDF, aims to implement a series of activities to enhance the capacity of TVET institutions for a just and green transition through a technical assistance package.



II. KNOWING THE ESSENCE OF ENTREPRENEURIAL AND GREEN RELATED EDUCATION

II.1 Goals and Methodological Background

This document presents a **toolbox for TVET teaching staff** with selected practical resources from a developed learning module on green and entrepreneurial learning. The aim of the toolbox is to promote enhancement of resilience in young people, with a focus on fostering inclusive and sustainable development.

Prior to the development of the learning materials, a needs assessment was conducted within the Selam TVET as a selected institution for pilot intervention in Ethiopia. The methodological steps that led to this toolbox and could be applied in various institutions are listed below.

1 Needs assessment

- i. Desk review on green and entrepreneurial learning
- ii. Self-assessment questionnaire for teaching staff (piloted in Selam TVET)
- iii. Meeting/interview with top management (piloted in Selam TVET)
- iv. Evaluation and recommendations for intervention

2 Development of practical resources

- i. Desk review of relevant literature and on-going courses/study programmes (focus on Selam TVET)
- ii. Learning module: Green and entrepreneurial learning
- iii. Toolbox: Practical staff development resources

The assessment highlighted the need for training and a comprehensive learning module tailored to address the requirements of the TVET teaching personnel.

will contribute to build capacities of the teaching staff, thus enabling them to foster entrepreneurial, innovative and sustainable mindset among their students.

Based on the results of the assessment, as well as the conducted desk review, several topics were identified that

II.2 Selecting Effective Practices: Workshop Findings

To gain a comprehensive understanding of the requirements of the teaching staff and determine which topics would be the most impactful, representatives of

the implementation team conducted an on-site workshop with the Selam's teaching staff.

FIGURE 1: Expert-led workshop on “Green Skills for Teachers in TVET” at Selam Technical and Vocational College, Ethiopia



FIGURE 2: Expert-led workshop on “Green Skills for Teachers in TVET” at Selam Technical and Vocational College, Ethiopia



The participants were acquainted to the identified areas for delivering green and entrepreneurial learning according to the needs assessment. Afterwards, they were divided into three groups, with each group assigned to

discuss four main topics related to those areas and their relevance for development of an effective and highly needed learning module.

During the workshop, the teachers were encouraged to share their opinions on the following suggested areas for improvement:

- **Green & Entrepreneurial knowledge and understanding**
- **Entrepreneurial and Green Competences**
- **Planning green & entrepreneurial learning environments**
- **Teaching and training methods**
- **Assessment and self-assessment**
- **Collaboration with other educators and stakeholders**

The key comments and conclusions from the workshop are presented below and structured according to the questions for discussion.

👉 Which of the proposed topics you find most useful?

Group 1: All of them are equally important.

Group 2: (1, 2) Learning about the green skills and understanding them is key for their utilisation. (3) Planning green and entrepreneurial learning environment. (4) Teaching and training methods are really needed for teachers to develop and implement high level teaching. (5) It is very important to understand the efficiency and the impact.

Group 3: (3) Planning green and entrepreneurial learning environment is very important for high quality teaching.

👉 Do you believe that some of the proposed topics should be left out? Why?

None of the participants believes that some topic is not important. Although, in group 3 it was emphasised that as teachers and educators, they already are familiar with the teaching methods.

👉 Which competences should be developed and/or strengthened for you to be able to deliver quality green & entrepreneurship education?

Group 1: The equal relevance of all topics was mentioned.

Group 2: (4) Teaching and training methods and (5) assessment and self-assessment are the most needed for teachers.

Group 3: (1, 2, 3) Teachers need more understanding in these topics to be able to teach them.

👉 Please propose up to 5 additional topics that you find useful.

In general, the proposed topics are related to: benefits and importance of TVET benefits for the learners and the society, time management, team communication, basic computer skills and life skills. This question might have been considered generally, not only for green and entrepreneurial learning.

By gathering feedback directly from the teachers, the implementation team could refine the contents of the learning module and ensure that this toolbox meets the needs of the teaching staff.

The general conclusion is that the teachers recognise the importance of green and entrepreneurial learning and are willing to expand their knowledge in these areas. They consider that all topics are highly relevant, but they need to understand better the concept of green and entrepreneurial learning and to plan the learning environment in order to effectively transfer this knowledge to their students. Therefore, this toolbox contains several practical resources that will help

teachers to upgrade their own knowledge and build their capacities. Moreover, it offers examples of key methods and tools that can be used to teach and assess green and entrepreneurial learning effectively.

By providing these resources and tools, the toolbox aims to equip teachers with the necessary knowledge and skills to integrate green and entrepreneurial learning into their teaching practices which will empower students to become responsible and environmentally conscious citizens, contributing to the growth of the economy.



III. TOOLBOX FOR DELIVERING GREEN AND ENTREPRENEURIAL LEARNING

This toolbox will help TVET teachers to understand better the concept of green and entrepreneurial learning and to implement its key elements into their teaching.

The practices presented in the toolbox have been selected according to the needs of the teaching staff at Selam TVET, but they could be applied to various range of institutions.

It is worth mentioning that this toolbox contains **only selected tasks and exercises**, and therefore it is **highly recommended that TVET teachers follow the learning module on green and entrepreneurial learning**, which has been developed to build their capacities in these areas.

By utilising the learning module in combination with this toolbox, teachers can gain a deeper understanding of the concepts and best practices related to green and entrepreneurial learning. Eventually, this will enable them to provide a higher quality of education to their students, by incorporating innovative and sustainable practices into their teaching practices.



TOOLBOX TASK 11

RANDOM WORD



Preparation

None.

- 1 Choose a word at random.
- 2 Make as many associations with that word as you are able.
- 3 Relate the associations back to your problem.

To choose the word you can use a book or a dictionary and allow them to fall open at random.

The word that you choose will usually be a noun, but need not be. It will usually be emotive, but need not be. It will certainly bring to mind a range of images and associations.

Feedback

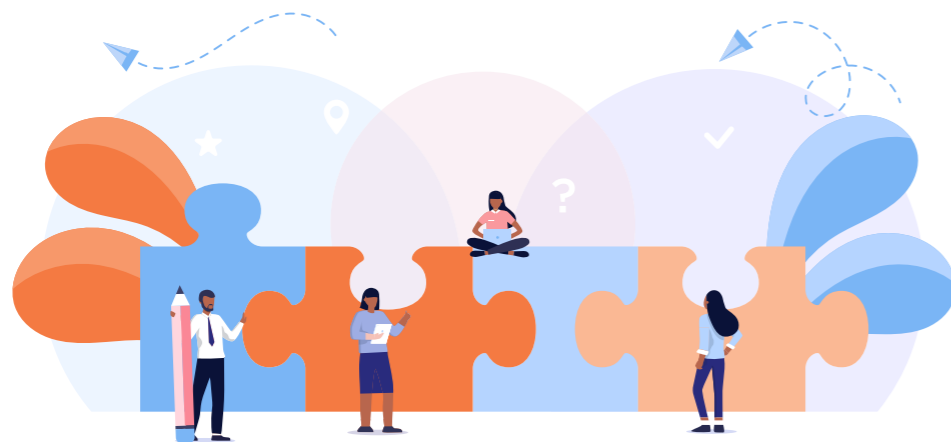
Random word becomes a favourite for a reason. It works and works well. It is easy to explain to others and we would almost always use it as an early demonstrator of a creativity technique. Some people want to choose a word that is relevant to their problem. Don't do this. Use a random word - it will turn out to be appropriate.

Outcome

You will find that alone or in groups you have no trouble engaging with this technique. It will produce results.

Variations

If working with a group you can make a show of the randomness by getting someone else to choose the word or call out a number to select from a list. An alternative source of a random word is to input word-like nonsense into a PC spell checker, then see what emerges.



TOOLBOX TASK 12

ENGAGE STUDENTS AND EXPLORE



Preparation

None.

General guideline how to conduct the exercise:

- 1 Spend a few minutes sitting outdoors observing the world (you can do it within your classroom/ learning facility or to use your breaktime).
- 2 Try to do this each day for a week at the same time.
- 3 Take a different theme each day (e.g., colour, light, noise, temperature, happy, sad, wonder).
- 4 Keep a note of what you see – both you and your students.
- 5 What entrepreneurial opportunities did you spot?
- 6 After a week, initiate discussion among students on the opportunities they have spot and which one of them they find worth taking.



TOOLBOX TASK 15 SUSTAINABLE BUILDING DESIGN



Preparation

None.

Teach students about sustainable building design and how to apply green principles in their building designs.

- 1 Introduce the concept of sustainable building design and the necessity to create eco-friendly, energy-efficient buildings.
- 2 Provide a list of sustainable building design principles to your students (e.g., using renewable energy sources, using recycled materials)
- 3 Ask students to research a building they admire and find out as much information as possible about the building (location, design, construction materials).
- 4 Instruct students to apply the sustainable building design principles they learned to that building resulting with a final drawing or model.
- 5 Ask students to calculate the estimated cost of constructing the sustainable building design they created, taking into account the cost of materials, labour, etc.
- 6 Final presentation in front of the class.

To implement this exercise, you will need:

- Access to the internet
- Drawing paper and pencils
- Ruler and calculator
- A list of sustainable building design principles

By implementing this practice, students will learn about sustainable building design principles and how to apply them in their building designs. They will also develop critical thinking and problem-solving skills by calculating the estimated cost of their designs, and will improve their communication and collaboration skills.

Modify the exercise to fit your needs and the elements of the subject(s) that you teach.

TOOLBOX TASK 16 SUSTAINABLE AGRICULTURE BUSINESS PLAN



Preparation

None.

Teach students how to develop a business plan for sustainable agriculture venture.

- 1 Introduce the concept of sustainable agriculture to your students.
- 2 Provide a list of sustainable agriculture practices to your students (e.g., water conservation, organic farming)
- 3 Ask students to research a crop they would like to grow using sustainable agriculture practices (growing requirements, potential market demand, etc.).
- 4 Instruct students to develop a business plan for their sustainable agriculture venture.
- 5 Final presentation in front of the class.

To implement this exercise, you will need:

- Access to the internet
- Drawing paper and pencils
- Ruler and calculator
- A list of sustainable agriculture practices
- A list of business plan components

By implementing this practice, students will learn about sustainable agriculture practices and how to develop a business plan for a sustainable agriculture venture. They will also develop critical thinking and problem-solving skills and will improve their communication and collaboration skills.

Modify the exercise to fit your needs and the elements of the subject(s) that you teach.

TOOLBOX TASK 20
ACT!



Preparation

Go through the fifth section of the learning module “Green and Entrepreneurial Learning: Learning module for TVET teachers” titled “Assessment practices and tools”.

Implement one new assessment approach in your teaching – either face to face or online – something you have not used before.

Reflect on the following questions:

- Which competences did you assess?
- How did you assess them?
- What worked well?
- What would you do differently next time?

Get familiar with the tools through the learning module and find the most suitable for you:

- EntreAssess tool*
- MTEE tool*
- HEInnovate tool*
- Greenovet tool*

TOOLBOX TASK 21
THINK ABOUT THIS



Preparation

None.



- 1** Take a few moments and think carefully about these questions:
 - Which of the figures best sum up the kind of feedback that happens in your classroom (A, B or C)?
 - Which do you think best suits green and entrepreneurial learning?
 - Which element is most difficult to include in the assessment? Why?
- 2** Write down your opinions and answers on the questions. Make sure that you consider the current situation in your classroom, not the desired one.
- 3** Make a brief exercise with your students and ask them to provide their opinion on the kind of feedback they receive in your classroom.
- 4** Compare your own and your students’ opinions.
- 5** Gather together with your colleagues and discuss the topic. You can get many valuable suggestions to improve your teaching, but also to share your experience with your peers.

References

- [1] “EntreCompEdu” [Online]. Available: <https://entrecompedu.eu/>
- [2] E. McCallum, R. Weicht, L. McMullan and A. Price, “EntreComp into Action: get inspired, make it happen”. Publications Office of the European Union, Luxembourg, 2018
- [3] M. Bacigalupo, P. Kampylis, Y. Punie and G. Van den Brande, “EntreComp: The Entrepreneurship Competence Framework”. Publication Office of the European Union, Luxembourg, 2016. [Online]. Available: <https://publications.jrc.ec.europa.eu/repository/handle/JRC101581>
- [4] G. Bianchi, U. Pisiotis and M. Cabrera, “GreenComp: The European sustainability competence framework”. Publications Office of the European Union, Luxembourg, 2022. [Online]. Available: <https://publications.jrc.ec.europa.eu/repository/handle/JRC128040>
- [5] A. Penaluna, K. Penaluna, E. McCallum, C. Brentnall, C. Jones, S. Brown, R. Polenakovik, D. Sutevski, I. Stankovska, L. Polenakovik, B. Jovanovski and T. Velkovski, “How to teach entrepreneurship? WHAT, WHY, WHEN and WHO”. National Centre for Development of Innovation and Entrepreneurial Learning, Skopje, 2015. Available: <http://ncdiel.mk/wp-content/uploads/2016/05/How-to-teach-entrepreneurship-MKENG-web.pdf>
- [6] United Nations, “Education For All”. [Online, accessed 01-2023]. Available: <https://www.un.org/en/academic-impact/education-all>
- [7] CEDEFOP, Terminology of European education and training policy. Luxembourg. Publications Office of the European Union, 2014
- [8] UNEVOC, “Greening Technical and Vocational Education and Training: A practical guide for institutions”. UNESCO-UNEVOC International Centre, Bonn, 2017
- [9] E. Eilam and T. Trop, “ESD Pedagogy: A Guide for the Perplexed”. The Journal of Environmental Education, pp. 43-64, 2010
- [10] M. Maxwell, R. Stobaugh and J. L. Tassell. “Real World Learning Framework for Secondary Schools: Digital Tools and Practical Strategies for Successful Implementation”. Solution Tree Pres, 2015
- [11] G. Camp, A. v. h. Kaar, H. v. d. Molen and H. Schmidt, “PBL: step by step”. Rotterdam, 2014.
- [12] “TVETipedia Glossary”. [Online]. Available: <https://unevoc.unesco.org/home/TVETipedia+Glossary&context=>
- [13] J. Knight, “High-impact instruction: A framework for great teaching”. Corwin Press, 2012
- [14] F. Sirelkhatim & Y. Gangi, “Entrepreneurship education: A systematic literature review of curricula contents and teaching methods”. Cogent Business & Management, 2015
- [15] OECD, “OECD Future of Education and Skills 2030”. [Online]. Available: <https://www.oecd.org/education/2030-project>
- [16] Government of the United Kingdom, “Skills for a green economy: A report on the evidence”. 2011. [Online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/32373/11-1315-skills-for-a-green-economy.pdf
- [17] European Commission, “Key competences for lifelong learning”. Publications Office of the European Union, Luxembourg, 2019.
- [18] “Council Recommendation on Key Competences for Lifelong Learning”. [Online]. Available: <https://education.ec.europa.eu/focus-topics/improving-quality/key-competences>
- [19] R. Vuorikari, Y. Punie, S. Carretero and L. V. d. Brande, “DigComp 2.0: The Digital Competence Framework for Citizens. Update Phase 1: The Conceptual Reference Model”. Publication Office of the European Union, Luxembourg, 2016
- [20] R. Polenakovik, T. Velkovski, B. Jovanovski, L. Polenakovik, M. Velkovska, J. Kostikj and N. S. Uzunovska, “Green Innovation in VET - Status quo and challenges”. National Centre for Development of Innovation and Entrepreneurial Learning, 2022
- [21] “What is PBL?”. [Online]. Available: <https://www.pblworks.org/what-is-pbl>
- [22] “Challenge-Based Learning Framework”. [Online]. Available: <https://www.challengebasedlearning.org/framework>
- [23] “Problem-Based Learning”. [Online]. Available: <https://teaching.cornell.edu/teaching-resources/engaging-students/problem-based-learning>
- [24] “EntreAssess Tool”. [Online]. Available: <https://s.surveyanplace.com/entreassess>
- [25] “Measurement Tool for Entrepreneurship Education”. [Online]. Available: <https://eumtee.lut.fi/>
- [26] “HEInnovate tool”. [Online]. Available: <https://www.heinnovate.eu/en/user/sign-in?destination=/en/self-assessment/create>
- [27] HEInnovate, “The Entrepreneurial and Innovative Higher Education Institution: A Review of the Concept and its Relevance Today”. 2018. [Online]. Available: https://heinnovate.eu/sites/default/files/heinnovate_concept_note.pdf
- [28] European Commission; OECD. “HEInnovate”. [Online]. Available: <https://heinnovate.eu/en>
- [29] “Greenovet”. [Online]. Available: <https://www.greenovet.eu/>
- [30] I. Falciani, “Game-Based Learning: What Is It? GBL vs Gamification: Types and Benefits”. [Online]. Available: <https://www.teacheracademy.eu/blog/game-based-learning/>
- [31] European Commission, “Green skills through games”. [Online]. Available: <https://erasmus-plus.ec.europa.eu/projects/priorities-2019-2024/european-green-deal/promoting-green-skills-through-games>
- [32] ERASMUS+ “Promoting Green Skills Through Games” project, “Promoting Green Skills Through Games: State of the art report”. 2018. [Online]. Available: <http://greenskillsgame.eu/wp-content/uploads/2020/02/SoA-Compiled-report.docx.pdf>
- [33] International Labour Organisation, “Greening TVET and skills development: a practical guidance tool”. International Labour Office, 2022.
- [34] UNESCO-UNEVOC, “TVET Country Profiles: Ethiopia” 2021. [Online]. Available: <https://unevoc.unesco.org/home/Dynamic+TVET+Country+Profiles/country=ETH>
- [35] Paryono, “The importance of TVET and its contribution to sustainable development,” 2017
- [36] MMM. Wahba, “Technical and Vocational Education and Training (TVET) Challenges and Priorities in Developing Countries”. 2012.





Vienna International Centre
Wagramerstr. 5, P.O. Box 300
A-1400 Vienna, Austria



+43 1 26026-0



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