ICT4EDU
Enhancing ICT Competencies of Early Childhood Educators at HEIs in MENA Countries

ERASMUS+ PROGRAMME
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Deliverable	**External evaluation (Curriculum Development) mid report (2024)**		
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Table of Contents

Partner Institutions

P1 -UJ University of Jordan
P2-INU Irbid National University
P3-MU Mutah University
P4 -AZHU Al-Azhar University
P5-SCU Suez Canal University
P6 –HU Heliopolis University
P7 -PTUK Palestine Technical University - Kadoorie
P8 -PTC Palestine Technical College –Deir Elbalah
P9-PASS Al-Istiqlal University
P10 -UB University of Bucharest
P11-IPP Polytechnic Institute of Porto
P12-UniPd University of Padova

Aim of the Report

This report presents the mid-term report produced by the external evaluator of the Erasmus+ Project "*Enhancing ICT Competencies of Early Childhood Educators at HEIs in MENA Countries*" (ICT4EDU) Project Number 101083078. The External Evaluation report covers the general project implementation and the results of the Work Package #3 (WP3) Curricula Development, led by University of Bucharest (UOB). The main aim of this external evaluation is to assess the structure of the course curriculum and the content of the courses in line with specific standards, principles, indicators, and certain developed rubrics. The report details the main steps, activities done during the curriculum development process. Also, it highlights the main results of the assessment of the structure of the course curriculum and the content of the courses. It is intended to draw a well-defined roadmap and clear suggestions leading to improved project's results reached up to the half of its implementation (M18).

Project Objectives and Expect Results

The main objective of the ICT4EDU project is to enhance the quality of ICT competencies of early childhood teacher's educators in nine Higher Education Institutions (HEIs) in three MENA countries (Jordan, Palestine and Egypt) in line with advance EU practices, thereby enhancing the quality of the education in preschools in the MENA countries. With ICT playing a major role in facilitating the education of children with special needs or disabilities, the ICT4EDU project seeks to ensure that recently graduated student teachers are capable of instructing using ICT and to enhance the digital literacy of both teachers and students.

Specific objectives include:

1) To Identify the student teachers' levels of digital competence when entering teacher education and compare across institutions.

2) To develop new teaching and learning methodologies and ICT support tools in classrooms, including e-learning Educational Resources, to be able to use technology, in designing, producing and using ICT-based instructional materials.

3) To identify, test and mainstream best practices and innovative methods of participation particularly in context of Early Childhood Education (ECE) and digital competences.

4) To enhance professional competences and skills of teaching staff through train of trainers workshops in contemporary pedagogical approaches, methodologies and educational technologies; learn from the experiences of colleagues from other countries in Europe.

5) To improve the integration and interaction of the different components of the system (children, practitioners, researchers, families, community).

6) To deliver new/updated ICT-based courses in psychology, pedagogy, methodology of teaching, and technology enhanced learning at the HEIs of the involved programme countries; as well as implementing the curricula through accreditation and employment of students.

7) To ensure access to the latest developments in ICT to provide physical infrastructure and technical support that will make ICT accessible and useful to students, teachers, administrators and support staff.

8) To disseminate the results obtained among Jordanian, Palestinian and Egyptian HEIs stakeholders.

Work Package 3: Curricula Development

Aims and Tasks of WP3

Duration: M7 – M36 Leader: P11: University of Bucharest (UOB) Co-Leader: P4: INU and P8: Palestine Technical College -Deir Elbalah (PTC)

WP3 is integral to the project implementation as it will deliver the major project results. It aims at updating the curricula for preschool education, developing new teaching and learning methodologies and ICT-based instructional materials and support tools in classrooms, including e-learning educational resources, preparing detailed educational materials on the basis of the surveys carried out (D3.1, D3.2 and D3.3) aligned with International Quality standards and the Bologna standards for HEIs. Therefore, syllabi for the new and updated courses will be defined, teaching material will be designed and adapted into the study plan. The WP3 is a Development WP; it includes: the selection of courses to be updated, the design of new courses, the creation of a detailed syllabus, and the development of didactic materials. Key deliverables include the design of comprehensive educational materials based on survey results, including distinguishing syllabi for new and adapted courses, developing teaching materials and integrating them into study plans in order to institute vigorous undergraduate curricula for future improvements in higher education degrees within the field.

The WP3 lasts from month 7 until month 36 of the project timeline.

The WP3 tasks are the following (as per the project proposal):

T3.1. Definitions and selection of courses to be designed / updated.

Based on the Analysis of surveys' results and elaboration of a final Report carried out in WP2 as well as the courses proposed by partners during the preparation of the proposal; the final list of courses will be approved and educational dossiers and materials will be developed and produced. All the partner institutions will be involved in this activity with a similar extension. The courses and topics to be considered by each one would have been defined The Technical Committee by the end of year 1.

T3.2. Design of new courses and restructuring of existing courses.

- An innovative outcome-oriented syllabi and modules will be created taking into account the needs identified in WP2.
- Creation of a detailed syllabus: The Technical Committee members of the Beneficiary Universities, supervised by the Project Coordinator, will work on the development of ICT-based new and updated courses. The results of the previous activities in WP2 will be used as basis for this activity. The syllabi will be developed according Bologna process requirements. The lectures will respect the principles, defined in Regional Priorities of Partner Countries. The syllabus for the new modules will include: a) number of lessons; b) a short description for each lessons; c) bibliography d) teaching and learning methods, e) assessment and evaluation method.

T3.3. Regional Workshop on Curricula Development.

The three-day National Training Workshop will be held in at Heliopolis University in Egypt in Month 24 with the attendance of (1) representative of Technical and Scientific Committee and (1) Steering Committee to review and approve as well as to carry out all the final work for the validation of the courses.

T3.4. Accreditation of the courses into study plan.

During the second year, partner universities will follow usual procedures for accreditation, submitting the pilot courses (after passing the evaluation of the ICT4EDU Quality Committee), for university authorities for approval by at latest M 24, the usual procedure at HEIs in Jordan, Palestine and Egypt is to submit the courses to –Quality Committee in Academic Department → Quality Liaison Officer →Council of Deans.

T3.5. Implementation of the courses into Curricula.

The updated and new designed courses will be officially implemented at the departments of Early Childhood Education starting from M25 (February 2023). Having the ICT labs operated by M24 allows the student to test the pilot courses in both theoretical and practical manners.

Thus, WP3 is core to the ICT4EDU project as it aims to achieve significant outcomes:

- Updating existing 40 undergraduate ICT-based courses in the nine partner institutions of higher education, based on the State of the Art Report in alignment with the Bologna process.
- Designing three mutually collaborative e-courses tailored to ICT competences, to be offered on the e-learning platform:

Course	Objectives
ICT and the 21st Century Pre-School Education	This course explores reasons for using ICT and critique the strategies for developing ICT over time and how students could become familiar with a wider range of useful tools and resources for integrating ICT in teaching materials for children. This course develops foundational knowledge and awareness of the ICT Competency Framework for Teachers, it sets foundational knowledge of how government economic and educational policy relates to the practice of teaching and learning in the classroom and provides educators with a glimpse into what's possible when ICT is used effectively to support the acquisition of 21st century skills to ensure the success of students in today's global, knowledge based economy.
ICT Skills in Practical (Project-based learning)	This course allows students to improve their ICT skills through selected videos and tutorials on best apps, how to prepare multimedia content, presentations skills, the tutorials will be selected and uploaded to the portal by EU partners based on the needs assessments recommendations. It will be designed to enhance students' understanding of computer concepts and practical skills, enabling them to evaluate and use information technology. Through practical experience, students should develop confidence in dealing with existing and emerging information technologies and understand their application and implication in work, leisure and communication. Through project work students will be encouraged to develop problem-solving, time management and planning skills.
Design and Develop Web-based Teaching Materials	This course aims at reorientation of teacher education towards the aim of Sustainable Development of Early Childhood Education. Introduction to web-based education, e-learning, perspectives of e-Learning - technological and pedagogical, organizing e-Learning material, distance education, virtual classrooms, technology and software.

- Developing one obligatory course addressing ICT for children with learning difficulties and disabilities. This course aims to enhance teaching and learning strategies tailored to special educational needs, incorporating appropriate ICT resources and instructional guidelines for

educators. It is important to underline the choice of the right technology for children with learning disabilities and the instructional guidelines for the teachers.
- Developing comprehensive syllabi and didactic materials.
- Validating, accrediting new curricula and adapting into the study plan.
- Conducting workshops on curricula updates.

Connection between WP2 (Needs analysis) and WP3 (Curricula Development)

The ICT4EDU project design connects two key work packages: WP2 Preparation: Needs analysis and WP3 Development: Curricula Development. In fact, WP2 aims at scoping the current situation of ICT utilization / integration in Early Childhood Education (ECE) in the beneficiary MENA partner universities including the extent of how the digital resources is represented in their study programmes, identifying the competences to be provided to teachers, students and other stakeholders' (namely schools and kindergarten managers), as well as verifying the facilities of partners to develop existing resources. In the preparation phase, preliminary analyses have been carried out in order to define the needs of each partner and set common objectives for the project in relation to the status of ICT in ECE curricula, the needed competences to be developed and the innovations / technologies on ICT for ECE with focus on the Sustainable Development Goals (SDGs). Relevant data from the MENA partner HEIs was collected using four questionnaires designed for this purpose. The analysis of data has revealed signification information that were employed in the design process of the curricula development, WP3 of the project. Within the WP2, an in-depth analysis was provided through the four reports for each data collection set.

a) Questionnaire on State of Art of ICT in ECE (Curriculum verification)
b) Questionnaire on Teachers and students' ICT competences
c) Questionnaire on available facilities and resources at ECE departments
d) Questionnaire for stakeholders.

The connection between the two work packages constitutes the core of the iterative curriculum development process to enhance ECE programs across MENA universities through ICT integration. The results of the scoping and needs analysis determine the most appropriate skills, practical and training content to embed in the courses during the curriculum development process. In this context, WP3 has been progressing in a way to translate the findings of the data analysis from WP2 into concrete steps for updating existing curricula and designing new educational materials, syllabi, course outlines, and didactic resources that align with Bologna standards and address specific ICT concepts and competences that are innovative and responsive to educational demands of the MENA partners. Thus, syllabi for the new and adapted courses were defined, lecture material was collected, combined and adapted into study plan. Also, the findings contributed to developing innovative ICT –based curriculum according to EU standards.

Criteria and Justification for Course Selection

A carefully designed course selection process safeguards that institutions offer a pertinent, consistent and up-to-date curriculum that meets the various students' needs. The main pillars of the selection process are: findings of WP2 (the results of the questionnaires); description provided in the project proposal and the partners' specific needs to respond to their particular situation.

The main findings of the WP2 consist of the following:

- The need of adopting practical approach (learning by doing) and integrating the competences stated in DigComp and DigCompEDU both for students and for teachers
- The existence of necessary resources (faculty expertise, technology, infrastructure) to further support of the updated course
- The need of ensuring ICT training both for students and teachers.
- The need of enhancing teachers' uses for online communication
- There is a gap in the teachers' training that could be bridged by the updating process in order to include specific topics, aiming at developing digital competences related to: a) searching, creating, editing, evaluating open educational resources, b) the use of ICT for creating / using online assessments tools, online learning environments and c) the use of ICT devices, applications, and resources.
- Strengthening students' ICT competences involving online collaboration, computer and internet use, enhancing data processing abilities with tools like presentation software, digital cameras, video cameras, programmable toys, and various other ICT resources.

Moreover, a set of criteria have been used to ensure compliance with the requirements, purpose and objectives of the project. The criteria have been developed and agreed upon with partners. The criteria were categorized into three distinct sections: mandatory prerequisites, rationales underpinning course selection, and potential areas necessitating updates.

Mandatory criteria (being mandatory to have at least one of the below checked):

- A bachelor degree courses from ECE study programs or a related field
- A bachelor degree courses from a study program training future teachers
- A continuing education course for teachers
- A course from the field of social sciences

Rationales underpinning course selection:

Beyond the mandatory criteria, partners were asked for additional information for choosing a specific discipline (general level of ICT integration in the curricula, in the targeted study program). By this, the level of current integration of ICT in curricula was investigated. The answers were covering the entire range from "not at all" to "high level". Also, the academics' level of interest in updating the curricula (team work, both process and product are important). As important actors in this process, academics must be involved in the course design that swill be agreed upon collaboratively. From the analysis of the partners' responses, it is obvious that academics are committed and engaged in the process of adopting changes in the syllabi, contributing their expertise to ensure effective implementation.

The importance of the course for the scope of the project:

This was another aspect added to the list of criteria. The answers focus around the central need of equipping future teachers with ICT competencies, which are important to modernize education delivery and assessment processes. Several courses serve as foundational pillars for instilling ICT competencies in educators, while others are considered essential for developing teaching skills and fostering student creativity. Courses that enhance engagement and interactivity, as well as those that equip students with valuable skills are considered very important. Furthermore, some courses are viewed as the initial building blocks within their respective specialties. The integration of ICT into these courses is seen as critical in preparing student-teachers for effective technology use in their future roles. Additionally, the selection of courses is influenced by accessibility and alignment with the overarching objectives of the project, ensuring that a wide-ranging spectrum of students can benefit while enhancing the skills of ECE in ICT. They are seen as foundational knowledge that can be applied in various aspects of education and project planning, ultimately enhancing the effectiveness and success of the project's outcomes.

How will updated courses help in improving the curricula for the target group (which is the novelty induced by the updates)?

The proposed updates are expected to provide students with a modern and interactive learning experience. Incorporating digital tools, online platforms, and virtual labs is crucial in today's educational landscape. The answers indicated updates that aim to enhance hands-on learning, foster interactivity, and expose students to practical applications of IT, enriching the learning experience and preparing them for real-world challenges. Additionally, the integration of modern ICT tools is considered essential in creating an engaging and effective learning environment, preparing future teachers for the digital age and advancing both the course and the program as a whole. Some courses will introduce new technology alternatives for education. Furthermore, updated courses will promote the use of ICT in teaching and learning, enhance students' ICT practical skills, promote technology knowledge, and enable students to practice active learning through ICT, concentrating on teaching and learning ECE materials.

The possible updates section is separated between ICT and non-ICT courses, with a good balance between ICT and non-ICT courses.

In relation to updates on ICT-related courses, the information was requested on three specific dimensions:

- Relevance to current technology and emerging trends; connection with labour market requests
- Need of adopting a practical approach (learning by doing)
- Integrating the competences stated in DigComp and DigCompEDU

As for updates on non-ICT courses
For the non ICT courses, a prospection on possible updates was also made, on two specific dimensions:

- The range of ICT approaches adopted within a course: in teaching, learning and evaluation
- Creating opportunities for interdisciplinary learning for a holistic approach (ICT infusion model).

Criteria	Answer with Justification
General Criteria	
A bachelor degree course, from ECE study programs or related	Yes/No
A bachelor degree course from a study programs training future teachers	Yes/No
A continuing education course for teachers	Yes/No
A course from the field of social sciences	Yes/No
Other course? (Describe why is relevant)	
The general level of ICT integration in the curricula, in the targeted study program	
Academic's level of interest in updating the curricula (team work, both process and product are important)	
The importance of the course for the scope of this project	
How will this updated course help in improving the curricula for the target group (which is the novelty induced by the updates)	
Possible updates - in the case of ICT courses	
Relevance to current technology and emerging trends; connection with labor market requests	
Need of adopting of adopting a practical approach (learning by doing)	
Integrating the competences stated in DigComp and DigCompEDU	
Possible updates - in the case of non ICT courses	
The range of ICT approaches adopted within a course: in teaching, learning and evaluation	
Creating opportunities for interdisciplinary learning for a holistic approach (ICT infusion model)	
Other updates	

Evaluation Form used for Internal Peer-Evaluation

Dr. Anisora Dumitrache (from UB, leader of WP3) has shared the evaluation form that was used for internal peer-evaluation. It includes the following:

1.	The title of the units reflects the key concepts and competences
2.	The aims, course objectives, competences and learning outcomes are clearly stated for each unit. The ICT, ESD, and SDGs components of the course are visible in the course competences and learning outcomes.
3.	The evaluation approach is clearly stated
4.	Each unit has one learning assignment and relevant bibliography
5.	The content is well structured and coherent with the course aims and objectives, competences and learning outcomes
6.	There is an overall coherence in the content, learning assignments and final evaluation
7.	The course has integrated concepts or perspectives of different related fields (interdisciplinary approach)
8.	The course includes innovative pedagogical approaches (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) enabled by ICTs
9.	The students' workload reflects the number of allocated ECTS
10.	The learning assignments are connected with real-life issues that could be elicited from SDGs
11.	The learning assignments include ESD principles and/or contextualize ESD with ICTs and vice versa
12.	The extent to which the course has been updated compared with the original one

Principles Adopted for the Update of Syllabi

After the selection of the courses that will be updated, the process continues with the agreement on specific principles to be adopted for the update of the course syllabi. Thus, the course syllabus:

- Will be in accordance with the entire study programs and in coherence with other disciplines in the study programs. The updated syllabus will clearly articulate the knowledge, skills, and competencies that students are expected to acquire by the end of the course;

- Must take into account the type of the discipline (mandatory, optional) and with the students' total workload;

- Will be in accordance with previous global level of students' knowledge. The specific learning objectives will be formulated in accordance with general competences;

- Will include, in the topics, the latest advancements and research in the field of specific discipline, incorporating new concepts, theories, and methodologies, examples and case studies. Both content and bibliography must be carefully analyzed;

- Will include relevant and applicable content to prepare students for real-world challenges and enhances their employability. In this respect, in the syllabi content, relevant topics will be included;

- Will ensure coherence between the content, learning assignments and final evaluation;

- Will take into account the diverse students' learning styles (e.g. visual, auditory, kinesthetic, reading/writing etc.) and promote engagement with the course material through diverse learning strategies;

- Will add an interdisciplinary approach by integrating concepts or perspectives of different related field. The transversal competences will be formulated in this respect;

- Will include innovative pedagogical approaches that promote active learning, student engagement, and critical thinking (experiential learning, case studies, simulation games, debates, project based learning, problem based learning, or other interactive techniques into the syllabus;

- Will include diverse assessment and evaluation methods (exams, projects, presentations, group work, portfolios) aligned with the desired learning outcomes;

- Will include selected resources and materials, in multiple formats, available and relevant to the course content: articles, multimedia materials, online resources. These materials help support students in their learning and ensure further exploration of the field;

- Whenever possible, the course objectives and content must be connected with real-life issues that could be elicited from SDGs;

- Will promote interdisciplinary collaboration to ensure that Education for Sustainable Development (ESD) principles are integrated across various academic disciplines, fostering a holistic understanding of sustainable development.

Methodological Framework Process for Evaluation of WP3

The WP3 is the main work package of the project, aiming at updating the curricula aligned with EU standards for HEIs. Course syllabi sent to the external evaluator were internally peer-reviewed by colleagues at Bucharest University, Frederick University and Padova University.

External Evaluation Process

After addressing the comments and feedback of the internal peer reviewing during the development phase of the course syllabi and modules, the external evaluation process was launched. The external evaluator attempts to go through the general principles adopted to update the syllabi and the comments by the internal reviewers to evaluate the final version of the syllabus, based on two main elements: a) the scientific content of the course syllabus and the relevance to the project main objectives, and b) the teaching methodologies used for the delivery of the course. At this stage, the main methodology used by the external evaluator is based on the review of courses in their initial format, the assessment of the progress in curriculum development as per the comments of colleagues from the University of Bucharest, Frederick University and Padova University, the review of templates and criteria shared by the WP3 leader to the project partners, as well as the review of the final updated courses uploaded on the shared folder.

Criteria for Course Evaluation

The external evaluator attended the Porto meeting (July 10-12, 2024) and presented virtually (via zoom) the main criteria based on which the developed courses will be evaluated. The Porto presentation in found in the Annex 1. The evaluation criteria emphasize the below:

- The extent to which the course content is relevant to the scope of the use of ICT in ECE
- The extent to which the course objectives are Specific, Measurable, Aligned, Realistic, and Time-bound (SMART)
- The clarity of the learning outcomes in terms of reflecting course objectives
- The extent to which different course activities are explained in details with steps of implementation and assessment techniques
- The alignment of the activities with the learning outcomes
- The extent to which course activities connect with the ESD and SDGs and the key domains of the ICT4EDU in ECE
- The suitability of the course content and number of units to the duration of the course (workload calculation based on ECTS). Student workload coverage of all educational components (attending lectures, face-to-face and/or online, seminars, reflections, work placements, projects, laboratory work, self-study and examinations)

- The course orientation towards critical thinking, problem-solving or transformative learning (not only knowledge-oriented)

- The use of case studies / activities that support pedagogically the sustainability perspective (ESD methods)

- The references and supporting reading materials (up-to-date, scientific and reliable).

Preliminary Review: Reflections and Suggestions for Improvement

During the Porto meeting, the external evaluator presented a preliminary review of the course syllabi to help course developers improve the final versions of their courses and teaching material.

- In some of the reviewed courses, there are more opportunities to explore from the perspective of course design, reading materials, course delivery and assessments to bring about more original and innovative insights.

- Some revised courses are more knowledge-oriented rather than addressing critical thinking, problem-solving or transformative learning.

- In some reviewed courses, the disciplinary concepts related to ICT, ECE, and sustainability (SDGs) are not clearly intertwined through the course work. I suggest bringing these concepts together through the use of case studies or class activities as examples of how disciplinary concepts can be combined in a pedagogically innovative approach.

- The revised courses focus more on content and are more concentrated on the discipline itself. The readings should reflect how disciplinary concepts can be combined together. A suggestion might be to make this clear in the learning outcomes and to connect the course units. The relatedness of the use of ICT in ECE has implications on various dimensions; including ethical, political, economic, social and technical dimensions. The course units should clearly show these relations- depending on the course.

- In some reviewed courses, it is not very obvious how the students will learn to apply the course concepts to the analysis of real world problems.

- Based on the revisions of some courses, there is a weak connection between the topics addressed in the course; i.e. the content seems to be not matching clearly with the course units, the activities, and the readings. However, it is difficult to comment on this issue without access to course assignments, class discussions, etc.

- The ECTS in the courses are not clearly calculated. It is not obvious to the evaluator whether the learning outcomes are achieved.

- Emphasizing the SDGs could be developed into a really more meaningful way throughout the varying aspects of some course units.

- Use various set of methodologies including case studies, debates and current readings in the ICT / ECE fields to develop students' understanding and promote transformative learning.

- In some revised courses, there is an ambiguous sense of balance in the various parts of the course, i.e. learning outcomes, methodologies used, and assignments /activities presented. This lack of coherence shows some weaknesses in that these courses do not use an integrative approach to achieve their aims and objectives. A more integrative and critical approach to the course content is needed using multi-disciplinary methodologies. The use of relevant case studies is a good way to improve this matter.

- Some revised courses involve traditional concepts in education, psychology, computer skills, social media, etc. and these concepts are obviously related to a number of areas including ECE and SDGs. While this is clearly defined at the outset, some of these aspects are only touched on in the course units. More work on the methodologies and the assessment procedures would help develop critical thinking in the students to approach the topics from an all-inclusive perspective.

Virtual Meetings with Partners

The external evaluator has conducted virtually several meetings with colleagues from the UB and from SCU to discuss the course selection, development process and final updates of the course syllabi and teaching materials. The E-learning platform, intended to offer open educational resources space for staff and students is not yet completed, so not accessible for review.

The external evaluation involves assessing all course syllabi / course units as well as the structure of the curriculum. It is based on certain standards, principles and indicators as well as rubrics, which are developed by the external evaluator and shared / agreed upon with partner institutions: University of Bucharest (leading WP3) and with Padova University (leading quality assurance). ***It is important to note that the process of improving the course syllabi is continuous. Faculty members will continue revising / updating their courses to better versions as they are implementing their teaching.***

The external evaluation is conducted in all the phases of the course curriculum development process. Course developers have presented a revised version of the course syllabi after taking into account the comments of the internal peer-reviewing process of colleagues in the University of Bucharest, Frederick University as well as Padova University. The external evaluator assessed the developed course syllabi / modules, giving comments to the course developers (during the Porto meeting in July 2024) to improve the course and follow-up through the final version of the course syllabus. Besides course curriculum assessment, the external evaluator is involved in the monitoring and quality assurance process through assessing the structure and content of the courses. Through external review, the engagement of the external evaluator contributes not only to the quality of the work, but also it can also be considered as a means of critical assessments of the courses. In this sense, external evaluation, monitoring and quality assurance constitute an integrative part of the project.

Tools used for External Evaluation

After a preliminary review of the course syllabi, the external evaluator found it necessary to develop detailed rubrics regarding the main issues to be evaluated in order to facilitate the process. The external reviewer sent information about the developed rubrics to the University of Bucharest (WP3 leader) and to Padova University (responsible for quality assurance). These include:

- Integration of the Sustainable Development Goals (SDGs) / Education for Sustainable Development (ESD) themes and principles
- Interdisciplinary Learning Approach
- ECTS Student Workload
- Learning Activities/ Projects / Games
- Innovative Pedagogy and the Integration of ICT

To ensure the design of proper course syllabi, various elements related to the main issues described above will be evaluated in this external evaluation report. These include:

(1) the integration of the Sustainable Development Goals (SDGs) / Education for Sustainable Development (ESD) themes and principles in the course syllabi, oulines and teaching materials;

(2) the use of the interdisciplinary learning approach creating opportunities for interdisciplinary learning using a holistic approach (ICT infusion model);

(3) the application of the European Credit Transfer and Accumulation System (ECTS) student workload to the course syllabus and outline to clearly show the allocation of various learning components in line with learning objectives and learning outcomes based on the workload of the average learner;

(4) the use of learning activities / projects / games to provide opportunities for the students to immediately apply new knowledge that they gained from their learning (adopting a practical approach: *learning by doing*); as well as

(5) the use of innovative pedagogies and the integration of ICT. Innovative pedagogies enabled by ICTs help foster active learning, student engagement and critical thinking ensuring creativity and innovation in the curriculum.

In order to facilitate the course revision, the external evaluator has deigned five related rubrics as suggested below.

Integration of the SDGs / ESD

Early Childhood Development (ECD) is included in Goal 4: "*Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all*." It is specifically mentioned in target 4.2: "By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education".

Education for Sustainable Development (ESD) means more than integrating sustainability issues into curricula. It refers to the competences to analyze and understand sustainability problems and to actively work on solutions. ESD aims at shaping the future of societies via active participation in terms of sustainable development. This has consequences for higher education teaching and learning approaches. For the integration of ESD into teaching, the subsequent learning principles should be considered:

- *Self-directed learning*. Competences acquired demand autonomous and constructive learning processes, in which knowledge is actively constructed in a self-directed manner, as students independently develop their own knowledge base.

- *Collaborative learning*. The acquisition of competences occurs both as an individual and as a social act, accounting for both the cognitive and the social-affective aspects associated to reflection.

- *Problem oriented learning*. Traditional learning processes focus on factual knowledge which cannot be used for action in certain situations. A problem-oriented approach is more appropriate to action-relevant procedural knowledge and skills.

Further, the course content and activities should connect to some of the 17 SDGs in connection to a course main theme. For each specific course, suggest learning activities aiming to integrate SDGs in Early Childhood Education through the use of ICT (use of games, story-telling, applications, group work, experiments, simulations, etc.) in connection to the course.

- Did the course developer use open access resources in his class? (through using an Internet searching machine, such as Google, putting the name of the SDG and the domain (ex. inclusive and equitable quality education and promote lifelong learning opportunities for all).

- Did the course developer use learning activities that integrate SDGs in ECE through ICT (use of games, story-telling, applications) in connection to the course?

- After reviewing the content, the references, the class activities/ projects and games, and the online resources, what did the course developer suggest in terms of activities for each of the SDGs in connection to each course unit?

The table below provides a clear wat to show the learning content / activities that integrate SDGs in ECE through ICT (use of games, story-telling, applications) in connection to the course. The course developer can check the various SDGs that are illustrated in the course.

SDGs		Learning content / activities that integrate SDGs in ECE through ICT (use of games, story-telling, applications) in connection to the course
1	End poverty in all its forms everywhere	
2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	
5	Achieve gender equality and empower all women and girls	
6	Ensure availability and sustainable management of water and sanitation for all	
7	Ensure access to affordable, reliable, sustainable, and modern energy for all	
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all	
9	Build resilient infrastructure, promote inclusive, and sustainable industrialization and foster innovation	
10	Reduce inequality within and among countries	
11	Make cities and human settlements inclusive, safe, resilient, and sustainable	
12	Ensure sustainable consumption and production patterns	
13	Take urgent action to combat climate change and its impacts	
14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	
15	Protect, restore, and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation, and halt biodiversity loss	
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels	
17	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	

Interdisciplinary Learning Approach

What should drive a student from one discipline like business (for instance) to select a course from education and vice versa? What should drive a student from information technology or engineering to select a course from education and vice versa? It is important to create opportunities for interdisciplinary learning using a holistic approach (ICT infusion model). Thus, the main points to consider when revising courses for interdisciplinary learning include:

- Sort out the potential courses in terms of concentration areas, such as the Early Childhood Education, ICT, etc. in relation to other disciplines.
- Reflect on course objectives and identify what is missing in light of the themes chosen in the course and the relevant disciplines that might be combined. An interdisciplinary-oriented curriculum carefully and purposely combines viewpoints from a range of disciplines to make the educational experiences more valuable to students. When curricula describe real-world problems that are multi-faceted, no particular discipline can effectively reveal the understanding of the complexity involved. An interdisciplinary learning approach is needed to analyze the issue from multiple perspectives, leading to combine the different views into a logical and real context.
- An interdisciplinary learning approach emphasizes the processes rather than the outcomes, necessitating the transition from teacher directed to more student directed learning.
- What can the course offer the ICT4EDU project in terms of achieving its main objectives? What is special about the course and how it can be used to further the goals and principles of a sustainable society in the context of the use of Information & Communication Technologies in ECE as well as interdisciplinary learning methods?

Does the course include disciplinary concepts and / or methods various relevant disciplines?	*Disciplinary insights need to show clear connection with the course objectives.*
Are disciplinary insights integrated together in a coherent way?	*The course needs to explore the topics in an integrative / holistic way, making valid connections across disciplinary or field perspectives with insights from various perspectives integrated coherently or effectively.*
Are disciplinary perspectives integrated in a balanced and coherent way to achieve the course objectives?	*Disciplinary insights are carefully balanced in an effective way in light of the purpose of the course. The integration is elegant and coherent.*
Does the integration of disciplinary insights generate improved understandings of the course main concepts? (linked to the course learning outcomes)	*The understanding of the course concepts has been advanced by the integration of disciplinary views.*
Does the student demonstrate awareness of the limitations and benefits of the integrated disciplines?	*The students are aware of the integrated disciplines used, their benefits and/or limitations in relationship to one another.*

ECTS Student Workload

The syllabus is considered a "contract" between the teacher and the students. It describes the course goals, objectives, and draws a framework to manage and evaluate the teaching and learning process. A well designed syllabus serves as a planning tool for structuring the course units, course implementation and assessment. When developing a syllabus, a list of the course units should be considered, taking into account the weekly structure of topics in the syllabus and the supported literature listed in the syllabus. Structuring the course units is a process that helps organize the weekly topics in the syllabus and align the course goals/objectives and learning outcomes to course units. A course unit can run for more than one week, depending on the topics of the course. As the weekly topics are placed in a coherent sequence, this should also be reflected in the units depending on the course. In each course unit, the readings (including mandatory bibliography, pre-recorded lectures, lecture materials and class notes, other resources), projects, research work, homework and activities should be provided in the syllabus as supporting resources. The learning activities designed for each unit should allow students to achieve leaning outcomes.

The European Credit Transfer and Accumulation System (ECTS) is a student-centred approach of describing learning by allocating credits to learning components in line with learning objectives and learning outcomes, based on the workload of the average learner. The ECTS credits represent learning based on defined learning outcomes and their associated workload. In the syllabus, each course will have a number of ECTS credit points (current university credit points can be converted in ECTS credit points). It is important to consider the following elements in the course syllabus:

Include ECTS table (see example below) with guidelines on activities
Ensure the workload calculation is based on ECTS
Learning outcomes should be written clearly to reflect course objectives
Student workload should cover all educational components (attending lectures, face-to-face and/or online, seminars, reflections, work placements, dissertations, projects, laboratory work, self-study and exams)
List up all activities involved in the course units in line with the learning outcomes in each unit
Weight each component in line with learning objectives and outcomes, in total and separately for each unit
The allocation of student workload should match up well with learning objectives, outcomes, so students learn what they intend to learn accurately
The distribution of the working hours is done appropriately between the course units
The allocation of student workload should match up well with course activities and assessments
The student workload allocation should be clearly understood and communicated to students
There should be strong evidence that the way student workload is allocated makes easier to monitor student progress and to assess whether workload is actually implemented

As an example, the table shows the workload calculation for a 10 ECTS course. The calculation method used in the table is based on the whole course and in each course unit. The workload is divided into a series of learning components, each involving an estimated number of hours of work (time factor). The total workload should match the learning hours indicated by the credit value of the course.

An Example of a 10 ECTS Workload Allocation (1 ECTS=25-30 hrs)

Learning Components	**No**	**Time Factor**	**Workload**	**Course Units**						**Workload**
				1	***2***	***3***	***4***	***5***	***6***	
Lectures (face-to-face)	10	3	30	3	3	6	6	6	6	30
Online	4	3	12	3	-	4	2	-	3	12
Lab work	6	2	12	2	4	-	2	2	2	12
Reading articles (3 pages / hour)	200	0,3	60	7	8	10	10	12	13	60
Reading book chapters (5 per/h)	150	0.2	30	4	5	6	5	5	5	30
Preparing course activities	6	15	75	11	20	14	30	-	-	75
Project work	1	20	20					5	15	20
Preparation for exam	1	50	50					20	30	50
Writing the exam	1	3	3						3	3
Total			**292**	30	40	40	55	50	77	**292**

Learning Activities / Projects / Games

Learning activities can be designed for each unit in the course. They offer opportunities for the students to immediately apply new knowledge that they gained from their learning (adopting a practical approach: *learning by doing*). One or various activities/ projects/ games might be allocated for each unit or course module. Learning activities address one or more than one learning outcomes.

For each activity, there should be an overview that refers to the content of the activity, instructions for students with detailed description of the activity and needed explanation of what must be done. Activities should be student-centred and they need to establish relevance through:

- Merging theory with practice
- Making a link to local / relevant cases in the students' lives
- Emphasising active rather than passive learning
- Underlining deep learning than surface learning
- Encouraging increased learner autonomy
- Applying ICTs in the teaching and learning processes

Problem-Based Learning (PBL) and Service Learning allow students to set some of their own learning objectives/outcomes, and be active in the learning process. It is imperative to ensure alignment between teaching, learning and curriculum. Thus, learning activities should be consistent with course goals, student learning styles, personal interests and experiences as well as the needs of society. Also, the teaching methods used and the assessment tasks should be aligned to the learning activities and their learning outcomes.

The integration of Problem-based learning and Service Learning into the course activities can be very useful, as it can give students a greater sense of personal responsibility and capacity to play an active role in society and it can encourage them to take greater individual and group responsibility in the learning process.

For class activities/ projects / games, it is very important to consider the following elements in the course syllabus:

Define Goals, Objectives and Outcomes of the Activity, Project, Game, etc. The activity should clearly define the goals and the expected learning outcomes. The connections between academic achievement and personal growth is important to support transformative learning linked to the activity goals and learning outcomes.
Merge Theory with Practice & Course Curriculum Connection. The activity should provide students with an opportunity to use existing skills, develop new ones, and use skills in a real world setting. It should provide opportunities for students to apply new knowledge and skills in a real life context and shows a strong connection to the course.
Enhance Active Student Reflection. The activity should be designed in a way to challenge students and should provide them with an opportunity to reflect upon their own learning and their role in society, leading to personal and societal transformation.
Develop Learning to Give and Share. The learning activity should provide the student with the opportunity to develop learning and help solve a real-life problem.
Make a Difference. The activity should empower students and gives them the opportunity to make a difference in the society.
Use of ICTs in designing earning activities.

Innovative pedagogical Approaches enabled by ICTs

The updated courses should consider the use of innovative pedagogies that foster active learning, student engagement, and critical thinking (experiential learning, case studies, simulation games, debates, project based learning, problem based learning), or other interactive techniques enabled by ICT tools (smarboard, PowerPoint presentation, videos, AR and VR tools, Moodle and flipped classroom, storytelling, worksheets, etc.). If ICT tools are used creatively, incorporating them in teaching and learning processes will generate innovation in the curriculum. For instance, including project-based learning encourages critical thinking and collaboration, flipping the classroom shifts the focus from passive listening to interactive discussions enabling deeper understanding and application of concepts, injecting gamification and integrating virtual reality generates excitement in the learning process and brings students to creative learning environments. Thus, innovative pedagogies do not only include the use of ICT in education but also other resourceful approaches to teaching and learning practices that go beyond the integration of technology in the aim of promoting creativity, critical thinking, collaboration, and adaptability among students.

Teaching / learning methods evolve around the teacher, the learner and the curriculum. Their choice is influenced by:

- The content of the course and the instructional objectives
- The characteristics of the learners: age, background / preconditions, interests, expectations, group atmosphere and communication
- The characteristics of the educator (flexibility and innovation)
- The resources and administrative issues (time, space, materials, personnel, other organizational aspects)

Regardless the topic / field of study, innovative pedagogies can be adopted. Examples can include:

- *Project-Based Learning* (PBL)

  Project-Based Learning utilizes in-depth and rigorous projects to facilitate learning and assess student competences. Students use technology and inquiry to investigate and solve real-world problems, collaborate together, use research skills and creativity to respond to a complex issue or problem. Students are encouraged to explore topics deeply, apply knowledge across disciplines, and develop essential skills for the 21st century. Projects vary greatly in the depth of the questions explored, the clarity of the learning goals, the content and structure of the activity, and guidance from the teacher. The learning approach focuses on student-centered inquiry and group learning with the teacher acting as a facilitator. Project-based learning places students in realistic, contextualized problem-solving environments.

- *Case-Based Learning (CBL)*

  Case-Based Learning is an important pedagogical method that provides students with the opportunity to put theory into practice. It involves examining specific situations /cases of real-

life examples. Students are presented with a story about an event (case) in their field of study that can be real or fictional. They can work individually or in groups to formulate a response (decision) and then examine its impacts for different people or groups. Much of CBL involves learners striving to resolve questions that have no single *right* answer. Learners, in their effort to reach decisions and solutions, through discussion, sort out factual data, apply analytic tools, articulate issues, reflect on their own experiences and draw conclusions they can relate to new situations. Through this process they acquire substantive knowledge on the case itself and develop analytic, collaborative and communication skills. The method is learner–centred and entails high levels of interaction and 'learning by doing' activities.

- *Interdisciplinary Learning (IL)*

  Intedisciplinary Learning integrates two or more disciplines that contribute their knowledge and methods to support and enrich the attributes of each in finding answers to common complex questions. The notion of integration across disciplines becomes more important in today's world as the interlinkages between society and environment become more apparent. Thus, interdisciplinary learning methods are required to tackle the current complex technological and socio-technological challenges facing the world, including i.e. climate change, sustainability, public health, etc. that are beyond the boundaries of individual disciplines. Another advantage of interdisciplinary learning methods is the need to equip future graduates with skills and competences to be able to work across disciplines and collaborate with other professions that 'see' things differently`.

- *Inquiry-Based Learning (IBL)*

  Inquiry-Based Learning is defined as a seeking of truth, information or knowledge through questioning. IBL engages students' curiosity to spur their own learning. They attempt to convert information into useful knowledge through formulating a question, finding the resources to answer it, interpreting the collected data and reporting the findings. Inquiry can be a complex undertaking and it therefore requires carefully designed instructional method to facilitate that students explore topics through their own questions, leading them to investigate, analyze, and draw conclusions independently, fostering a deeper understanding of the subject matter. As students investigate real situations, this method offers the opportunity to develop a range of life skills and job-skills (e.g. knowledge creation, team-working, presentation, IT, problem-solving, creativity, project management).

- *Collaborative Learning (CL)*

  Collaborative Learning encourages teamwork, communication between peers, and shared learning experiences through group work. It helps students develop teamwork and communication skills while collectively tackling complex challenges.

- *Experiential Learning (EL)*

  Experiential Learning involves hands-on experiences, field trips, simulations, and practical applications of knowledge, enabling students to grasp concepts in a meaningful context. Service learning, for example, integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities. Through service-learning, young people—from kindergarteners to university students—use knowledge learnt to solve real-life problems, they discover practical applications of their studies and develop active citizenship through the service they perform in various disciplines, such as education, public safety, environment, etc. If properly designed, experiential learning can well engage students in responsible and challenging actions for the common good.

- *Discovery learning (DL)*

  Discovery Learning is a constructivist based approach to education, through which students discover concepts on their own, interact with their environment, manipulate objects, wrestle with questions and try out hypothesis / tests. It is a type of learning strategy giving the learner the opportunity to explore and find answers. It has many advantages as it builds on the learner's prior knowledge and understanding, develops a sense of independence and autonomy, enables the development of lifelong learning skills and support active learning.

- *ICT-Enabled Learning*

  ICT-Enabled Learning encompasses a very large spectrum of information handling tools, including traditional tools like radio, television, and telephone up to the most sophisticated satellite, internet and wireless technologies whose applications are common in today's computers, and smart phones. Worldwide, over the past decade, the number of online courses in higher education has grown tremendously, especially after the Covid-19 pandemic. There are countless efforts seeking to integrate emerging Information and Communication Technologies (ICTs) (e.g. e-books, digital classes, simulations, text messaging, podcasting, wikis, blogs etc.) into the teaching, learning, and assessment processes of universities. In course design, ICTs may be introduced in either way: a) the web-facilitated course (uses web-based technology to enrich the content of what is essentially a face to face course), b) the blended /hybrid course (blends online and face to face interaction while a great part of the content is delivered online) and c) the fully online course delivers online most or all of its content with minimal or no face-to face interaction. Just like any educational intervention, an online or blended course involves course content design (based on specific objectives), course implementation, course evaluation and revision. A balance between pedagogy and technology is needed for a successful outcome.

Course Revision

List of Updated Courses

University	Course #	Faculty	Study programme	Discipline	Year	Type
Al-Azhar University	**1.**	Faculty of Humanities Studies	Humanities & Education	Basic skills in art education	I	Mandatory
	2.	Faculty of Humanities Studies	Humanities & Education	Children's Museum and Library	IV	Mandatory
	3.	Faculty of Humanities Studies	Humanities & Education	Environmental Education	II	Mandatory
	4.	Faculty of Humanities Studies	Humanities & Education	Special Needs Psychology	IV	Mandatory
	5.	Faculty of Humanities Studies	Humanities & Education	Children's stories and tales	III	Mandatory
Heliopolis University	**6.**	Business Administration and Economics	Business Administration	Computer Skills for education for sustainability	I	Mandatory
	7.	Business Administration and Economics	Business Administration	ICT and CSR for sustainability	II	Mandatory
	8.	Business Administration and Economics	Business Administration	Management Information System	III	Mandatory
	9.	Business Administration and Economics	Business Administration	Teachers as researchers	II	Mandatory
	10.	Business Administration and Economics	Business Administration	Statistical Software and data handling in teaching and learning	III	Mandatory
	11.	Business Administration and Economics	Business Administration	ICT for sustainable development	I	Mandatory

University	Course #	Faculty	Study programme	Discipline	Year	Type
Irbid National University	**12.**	Educational Sciences	Class Teachers	Teaching Design and Their Teaching Method	I	Mandatory
	13.	Educational Sciences	Class Teachers	Educational Applications in Educational Computing	III	Optional
	14.	Educational Sciences	Class Teachers	Numbers Structure and Its Teaching Methods	I	Optional
	15.	Educational Sciences	Class Teachers	Writing Skills and their Teaching Methods	II	Optional
	16.	Science and technology	BSc in Computer Science	Introduction to Information Technology	I	Mandatory
Mutah University	**17.**	Education	General Diploma of education	Educational Technology	I	Mandatory
	18.	Education	Higher diploma in Education	Educational Computer	II	Mandatory
	19.	Education	Classroom teacher	Design and production of educational aids	II/III	Mandatory
	20.	Education	Classroom teacher	Computerized children's programmes	II/III	Mandatory
	21.	Education	Higher diploma in Education	Education technology and electronic content design	III	Mandatory
Al Istiqlal University	**22.**	Faculty of Humanities	Psychology	Cognitive psychology	IV	Mandatory
	23.	Faculty of Humanities	Psychology	Computer Concepts	I	Mandatory
	24.	Faculty of Humanities	Psychology	Developmental psychology	I	Mandatory
	25.	Faculty of Humanities	Psychology	Educational Psychology	II	Mandatory
	26.	Faculty of Humanities	Psychology	Motivations and Emotions	I	Mandatory
	27.	Faculty of Humanities	Psychology	Principles of psychology	I	Mandatory

University	Course #	Faculty	Study programme	Discipline	Year	Type
Palestine Technical College	**28.**	Computer Department	Technology Education	Education Technology	III	Mandatory
	29.	Computer Department	Technology Education	Maker spaces	IV	Elective
	30.	Computer Department	Technology Education	Methods of teaching science and technology	II	Mandatory
Palestine Technical University Kadoorie (PTUK)	**31.**	Arts and Educational Sciences	English Language and Applied Linguistics	English grammar	I	Mandatory
	32.	Arts and Educational Sciences	Technology Education	Educational technology	III	Mandatory
	33.	Arts and Educational Sciences	English Language and Applied Linguistics	Introduction to Linguistics	I	Mandatory
	34.	Arts and Educational Sciences	English Language and Applied Linguistics	Introduction to Writing	I	Mandatory
	35.	Arts and Educational Sciences	Technology Education	Principles of Problem Solving	I	Mandatory
Suez Canal University	**36.**	Faculty of Education	Kindergarten Education	Education Technology and Digital Transformation	I	Mandatory
	37.	Faculty of Education	Kindergarten Education	Math and science in ECE	II	Mandatory
	38.	Faculty of Education	Kindergarten Education	Psychology of sustainability	I	Optional
	39.	Faculty of Education	Kindergarten Education	Play Psychology	III	Optional
	40.	Faculty of Education	Kindergarten Education	Kindergarten arts	II	Mandatory

University	Course #	Faculty	Study programme	Discipline	Year	Type
The University of Jordan	**41.**	Faculty of Educational Sciences	Child Education Classroom Teacher	Child Computerized Program	III	Optional
	42.	King Abdullah II school for Information Technology	Computer Information Systems	Digital skills	All years	Optional
	43.	Faculty of Educational Sciences	Bachelor	Design and using instructional materials	III	Mandatory
	44.	King Abdullah II school for Information Technology	Business Information Technology	Social Media	All years	Optional
	45.	Faculty of Educational Sciences	Child Education Classroom Teacher	Using Computer in Education	III	Optional

Scales for Evaluation

SDGs / ESD Integration Scale

Scale	Does the learning content / activities integrate SDGs and ESD in ECE through ICT (use of games, story-telling, applications, etc.) in connection to the course?	
1	Needs Improvement	Learning content / activities do not fully integrate SDGs and ESD in ECE through ICT. Only some integration is obvious in the course syllabus, outline and teaching materials. It is suggested to improve the integration of SDGs and ESD in the courses
2	Satisfactory	Learning content / activities for most course units integrate SDGs and ESD in ECE through ICT in a satisfactory way
3	Correct Formulation	Learning content / activities fully integrate SDGs and ESD in ECE through ICT within the context of sustainability in connection to the course objectives, aims and leaning outcomes

Interdisciplinary Learning Scale

Scale	Does the work include selected concepts and methods from two or more disciplinary traditions relevant to the purpose of the work?	
1	Needs Improvement	The course includes some evidence for interdisciplinary learning, with some perspectives that are missing. There are relevant disciplinary concepts and methods, but the connections between disciplinary insights can be improved in line with the course objectives
2	Satisfactory	Disciplinary insights show clear connection with the course objectives
3	Correct Formulation	Topics are explored in an integrative / holistic way, making valid connections across disciplinary perspectives

ECTS Workload Scale

Scale	Does the allocation of student workload match up well with learning objectives, outcomes, course activities and assessments- so students learn what they intend to learn?	
1	Needs Improvement	The allocation of student workload does not clearly match up with the learning objectives, course outcomes/ activities/ assessments. It is suggested to show more evidence of the appropriate distribution of the working hours between the units in the course syllabus and outline
2	Satisfactory	The distribution of the working hours is done appropriately between the course units
3	Correct Formulation	The allocation of student workload matches up well with all learning objectives, outcomes, course activities and assessments. The course syllabus and outline clearly show what the students are intended to learn

Learning Activities / Projects / Games Scale

Scale	Do class activities / projects / games define clearly the goals, purpose of the learning component and expected learning outcomes providing the students with an opportunity to use existing skills, develop new ones, and use skills in a real world setting? Do activities empower students to actively reflect on their learning experiences leading to personal and societal transformation?	
1	Needs Improvement	Few activities / projects / games define their goals /learning outcomes and the purpose of learning. It is suggested to ensure that all learning activities empower students to actively reflect on their learning experience
2	Satisfactory	The goals and learning outcomes of the activities / projects / games are clearly defined addressing academic achievement, civic engagement, and personal growth ensuring transformative learning
3	Correct Formulation	Activities/ projects/ games provide opportunities for students to apply new knowledge and skills with strong connection to the course objectives. It is obvious that students can actively reflect on their learning experience leading to personal and societal transformation, empowered to make a difference and solve real-life problems

Innovative Pedagogical Approaches enabled by ICTs Scale

Scale	Are the principles of innovative pedagogy and ICT integration used to empower students and make them active participants in the learning process, fostering engagement and critical thinking (through approaches such as project-based learning, problem based learning, case-based learning, simulation games, debates, interdisciplinary learning, inquiry-based learning, collaborative learning, experiential learning, service learning, discovery learning and ICT-enabled learning)? Are innovative pedagogies used to encourage students to critically analyse their society and enable them with skills / competences needed for societal transformation?	
1	Needs Improvement	Innovative pedagogical approaches enabled by ICTs include some methods that promote active learning, student engagement, and critical thinking, but they require improvement to effectively enable the development of skills / competences needed for societal transformation
2	Satisfactory	Principles related to innovative pedagogy and the ICT integration are effectively used to empower the learning process at a satisfactory level, fostering active learning, student engagement, and critical thinking
3	Correct Formulation	Innovative pedagogical approaches enabled by ICTs are used effectively and in creative ways that provide opportunities for students to actively engage in the learning process and to analyse society's problems by equipping them with skills / competences needed for critical thinking and societal transformation

External Evaluation of Updated Courses by Partner Institution

Al-Azhar University

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Al-Azhar University	**1**	2	2	2	3	3
	2	2	2	2	3	3
	3	3	3	2	3	3
	4	2	2	2	3	3
	5	3	3	2	3	3

General Comments

- Emphasizing the SDGs could be developed into an integrated way throughout the varying aspects of the course units. The course developers have worked on integrating SDGs and ESD principles in a satisafactory way.

- It is important to create opportunities for interdisciplinary learning using a holistic approach. The course developers can reflect on course objectives and identify what is missing in light of the themes chosen in the course and the relevant disciplines that might be combined. An interdisciplinary-oriented curriculum carefully and purposely combines viewpoints from a range of disciplines to make the educational experiences more valuable to students.

- The ECTS student workload shows that learning outcomes are achieved according to schedule. It is suggested to show the number of hours of the various learning components (lectures, projects, readings, etc.) per each course unit.

- Class activities / projects integrate ICT and promote active learning and students' engagement. Courses that have clearly included ICT in designing learning assignments and in their final evaluation: Basic skills in art education, Children's Museum and Library, Environmental Education in Kindergarten.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Al-Azhar University	1	2	2	2	3	3
	2	2	2	2	3	3
	3	3	3	2	3	3
	4	2	2	2	3	3
	5	3	3	2	3	3

General Comments

- The course about *Special Needs Psychology* addresses the problem of assistive technologies exploring their implementation benefits and challenges in supporting children with special needs, and provides examples on how to effectively integrate these tools into teaching practices.

- Innovative pedagogical approaches enabled by ICTs are adopted, including flipped classroom, gamification, peer learning, group learning, project-based learning, and reflective assignments.

- Course teaching materials are developed in Arabic with English references.

- References are well-developed for the course on special needs.

Heliopolis University

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Heliopolis University	**6**	3	3	2	3	3
	7	3	3	2	3	3
	8	3	3	2	3	3
	9	3	3	3	3	3
	10	3	3	3	3	3
	11	3	3	3	3	3

General Comments

- Course syllabi and outlines are written in a coherent way according to the project guidelines. The aims, course objectives, competences and learning outcomes are clearly stated for each unit. Each course unit has a title that reflects key concepts and competences. The ICT, ESD, and SDGs components of the course are visible in the course competences and learning outcomes. The content is well-structured and consistent with the course aims and objectives, competences, learning outcomes and assignments.

- The courses have integrated concepts or viewpoints of different related fields, as per the interdisciplinary approach, and they include innovative pedagogical approaches (case studies, open discussions, brainstorming debates, fieldwork and site visits, experiential learning, project-oriented activities, problem-based learning, and cooperative education, critical thinking) enabled by ICTs.

- As examples:

  **The course *ICT and CSR for sustainability* includes overview of sustainability, as well as the importance of ICT in educational contexts, the principles of Corporate Social Responsibility (CSR), and ethical implications of ICT.

  ** The course *Teachers as Researchers* identify clear objectives; such as: 1) enhance learners ' critical thinking and analytical skills, 2) familiarize learners with online databases and search engines, 3) gain comprehensive understanding of the research role of learners in Business Administration and Early Childhood Education, emphasizing their potential to contribute to knowledge and practice.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Heliopolis University	**6**	3	3	2	3	3
	7	3	3	2	3	3
	8	3	3	2	3	3
	9	3	3	3	3	3
	10	3	3	3	3	3
	11	3	3	3	3	3

General Comments

- The transversal and professional competences define the applied skills, knowledge and attitudes that enable students to successfully perform their learning process. They are written in specific, measurable and behavioral terms. Competences are written at a higher level than learning objectives since they require more complex levels of performance.

- The bibliography is up-to-date and relevant to the course content and teaching materials.

- To show that the learning outcomes are achieved according to schedule, the ECTS student workload needs to be calculated in a distinct way. It is suggested to show the number of hours of the various laerninc components (lectures, projects, readings, etc.) per each course unit to reflect the student efforts that is required to achieve the learning outcomes, as per the course syllabus.

Irbid National University

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Irbid National University	**12**	3	3	2	3	3
	13	3	3	2	3	2

General Comments

- The course *Teaching Design and Their Teaching Method* replaced the course named *Chemistry and Biology and Their Teaching Methods*. It provides participants with an understanding of the distinct biological and chemical attributes of disabled and gifted children, exploring categories of disabilities and tools necessary for devising tailored educational programs. It emphasizes effective collaboration and communication. The course highlights the multifaceted goals of special education, integrating preventive measures, developmental support, educational strategies, social integration, inclusivity, democratic values, ethical principles such as confidentiality in medical information, professional integrity, and community awareness.

Notes for the *Teaching Design and Their Teaching Method*:

** In relation to the SDGs, the course objectives specifically refer to SDG #2 (zero hunger), SDG #6 (clean water & sanitation) and SDG #7 (affordable and clean energy).

** As for teaching methods, they include empathy mapping, technology-enhanced learning, discussions, peer learning, group learning, reflective assignments and challenge- based learning.

** The course aims and objectives, competences and learning outcomes are aligned with the class activities to reflect SDGs, ESD and ICTs.

- The syllabus of the *Educational Applications in Educational Computing* course indicates there is an integration of concepts or perspectives of different related fields (interdisciplinary approach). It is advised to clearly explain this integration in the course outline to show how various perspectives are related. The pedagogical approaches that will be used need to be more elaborated with reference for innovative teaching approaches, such as experiential learning, case studies, simulations, games, debates, project-based learning, problem-based learning enabled by ICTs.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Irbid National University	**14**	3	2	2	3	3
	15	3	2	2	3	2

General Comments

- The course *Numbers Structure and Its Teaching Methods* has a syllabus and course outline of 4 units, and it includes 7 units in teaching materials. The content is well-structured. The course developer is recommended to clearly show the alignment between the aims / objectives, competences and learning outcomes, in a way to ensure overall coherence in the content and learning assessments using up-to-date bibliography. Activities satisfy the ICT4EDU project objectives; it is advisable to provide more details for the students to follow easily. Innovative pedagogical approaches highlight the use of interactive games and activities, real-world applications, visual representations, collaborative learning and technology integration.

- The course *Writing Skills and Their Teaching Method* shows coherence in relation to the course units in the syllabus, outline as well as in the teaching materials. The aims, course objectives, competences and learning outcomes are stated for each unit. It is recommended to ensure the alignment between course objectives and learning outcomes. The teaching methods are satisfactory although they could be more diversified to have a better version of the course. The ICT, ESD /SDGs components should be visibly highlighted in the teaching materials.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Irbid National University	**16**	3	3	2	3	3

General Comments

- The course *Introduction to Information Technology* uses inquiry-based learning and collaborative projects to enhance critical thinking, problem-solving skills and students' engagement. It highlights the use of ICT tools for data analysis, visualization and problem-solving skills. It emphasizes clear activities that reflect real-life issues derived from SDGs encouraging a multidisciplinary approach to understanding technology's role in education. It uses innovative pedagogical approaches suitable to ECE and enabled by ICTs, such as storytelling, multimedia, case studies, digital research tools, video conferencing platforms, debates, interactive group discussions, guest lectures, etc.

- In general,

** It is suggested to show the number of hours of the various laerninc components (lectures, projects, readings, etc.) per each course unit. The ECTS student workload shows that learning outcomes are achieved according to schedule.

** Emphasizing the SDGs could be developed in a more meaningful way throughout the different course units.

** It is recommended to provide some evidence on how the integration of SDGs and ICTs will be assessed.

** Interdisciplinary concepts are related to various areas including ECE and SDGs. While this is described, some of these aspects are briefly referred to in the course units, and thus can be more elaborated to have a better version of the course.

** Assignments and class activities are relevant to the ICT4EDU project and they follow the guidelines as provided. It is recommended to have more details with clear instructions for students.

Mutah University

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Mutah University	**17**	2	2	2	2	2
	18	2	2	2	2	2

General Comments

- In the course *Educational Technology*, the teaching materials are written in Arabic, the syllabus and course outline are written in English with English references. The course syllabus and outline contains 5 units, and the teaching materials are made of 10 chapters. The ECTS workload ensures that the learning outcomes can be achieved according to schedule. It is suggested to show the different learning components along time time / efforts needed by the students to complete the learning outcomes. The course syllabus highlights the relation between educational technology and several SDGs- including quality education, gender equality, reduced inequalities, quality healthcare, and partnerships for sustainable development. To improve the syllabus, it is recommended to elaborate the SDGs aspects in the course units and course assignments / activities. The course outline emphasizes that by leveraging ICTs-enabled learning solutions, digital platforms, and innovative educational approaches, stakeholders can work together to build a more inclusive, equitable and sustainable future for all. While this is clearly stated, the infusion of ICT-enabled teaching approaches is not very obvious. The innovative pedagogical approaches (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) enabled by ICTs should be emphasized. Efforts are requested to highlight how the SDGs components are visible in the course competences and learning outcomes and how the learning assignments and activities will be implemented.

- The *Educational Computer* course is designed to provide participants with a foundational understanding of the role of computers in education. It covers essential concepts, skills, and applications that educators can use to enhance teaching / learning experiences through effective integration of computer technologies. Participants will explore various educational software, tools, and strategies to create engaging and interactive learning environments. The course competences emphasize team work, online communication, use of ICT tools, flexibility and adaptability to changes in digital tools in teaching methods and activities; hoerver, it is suggested to clearly illustrate this aspect in the course content. The alignment between course aims / objectives, learning outcomes, activities, etc. should be improved. The course competences touch on the ethical and responsible use of technology, responsible digital citizenship and lifelong learning. The ESD and SDGs components should be made more visible in the activities in a coherent way with the course objectives, competences and assignments. Integrated concepts or perspectives of different related fields (interdisciplinary approach) should be enhaned. Also, the innovative pedagogical approaches enabled by ICTs can be enriched to equip students with skills / competences needed for critical thinking.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Mutah University	**19**	2	2	2	2	2

General Comments

The course *Design and Production of Educational Aids* aims to familiarize students with the fundamental principles of educational aids and media. The teaching materials are written in Arabic, the syllabus and course outline are in English with English references. The course syllabus and outline contains 4 units. The ECTS workload should illustrate how the learning outcomes can be achieved on time.

The course syllabus describes the relation between the design and production of educational aids and SDGs- including quality education, reduced inequalities, innovation and infrastructure, good health and well-being, partnerships for sustainable development, as well as climate actiom. The SDGs aspects are described in the course syllabus and they need to be developed in the course units and assignments / activities.

The ICT-enabled teaching approaches indicate the use of computer lab and software without much detail, such as the use of experiential learning, case studies, simulation, games, project-based learning, problem-based learning. It is suggested to emphaisze this aspect in a future version of the syllabus during course implementation.

Course developers are recommended to develop the content in coherence with the course aims, objectives, competences and assignments, demonstrating the integration of various concepts of different disciplines (interdisciplinary approach) through the infusion of the SDGs as it is described in the syllabus.

Course activities / learning assignments should be detailed through clearly defining their goals and expected learning outcomes providing the students with an opportunity to use existing skills and develop new ones to actively reflect on their learning experience leading to personal and societal transformation.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Mutah University	**20**	2	2	2	2	2

General Comments

The *Computerized Children's Programmes* course provides students with a comprehensive understanding of designing and implementing computerized children programs. Participants explore the principles of child development, age-appropriate content creation, interactive design, and educational value. The course content includes various topics; namely child development, learning styles, creation of engaging / interactive/ user-friendly age-appropriate content, educational value in children's programs (in terms of integrating educational goals and curriculum alignment and designing programs that support cognitive, social, and emotional development), technology and child safety, the incorporation of multimedia elements balancing entertainment with educational value, designing games to promote engagement, the use of storytelling and narratives to enhance learning experiences, as well as parental involvement in children's digital learning experiences. Issues related to cultural sensitivity, inclusivity, legal and ethical considerations are also highlighted.

As the syllabus indicates, this course has high potential to advance multiple SDGs by promoting inclusive and quality education, fostering health and well-being, addressing urban and environmental challenges, and ensuring partnerships for sustainable development to make a positive impact on children's lives and contribute to building a better world. The ESD and SDGs components should be distinctly depicted in the course activities in coherence with the course aims, objectives, competences, activities and learning assignments.

The content can obviously illustrate integrated perspectives of different related fields already described in the syllabus (interdisciplinary approach). Innovative pedagogical approaches (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) enabled by ICTs should be used meaningfully with learning outcomes that can be measured or assessed.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Mutah University	**21**	2	2	2	2	2

General Comments

The course *Education Technology and Electronic Content Design* aims to introduce students to educational technology and its applications. It provides them with the skills of designing digital content to be used in educational settings. The teaching materials are written in Arabic, the syllabus and course outline are in English with English references. The ECTS workload needs to clearly show that learning outcomes can be achieved as scheduled.

As the syllabus indicates, this course has great potential to advance multiple SDGs by promoting quality education, gender equality, health and well-being, addressing urban and environmental challenges, sustainable cities and communities, as well as ensuring partnerships for sustainable development. It is recommended to clearly develop the ESD and SDGs aspects in the course units and assignments / learning activities. The coherence between course aims, objectives, competences, activities and learning assignments is important to be more visible in the course syllabus and outline.

Given the course main theme, the content can illustrate various perspectives of different related fields, as already described in the syllabus (interdisciplinary approach) through the infusion of the SDGs. The ICT-enabled teaching approaches indicate 'E-Learning', yet more details are needed to confirm how e-learning will be used. Innovative pedagogical approaches to foster students' engagement and critical thinking; such as experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning can be enabled by ICTs given the course content and topics.

It is important to make sure that learning outcomes are designed in a way that allows measurement or assessement. It is recommended to provide more evidence on how the integration of SDGs and ICTs is assessed. Course activities / learning assignments should provide details by clearly defining their goals and expected learning outcomes providing the students with an opportunity to use existing skills and develop new ones to actively reflect on their learning experience leading to personal and societal transformation.

Al Istiqlal University

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Al Istiqlal University	**22**	3	2	2	2	3

General Comments

The course *Cognitive Psychology* aims to link the concepts of cognitive psychology with Education for Sustainable Development (ESD) and its goals (SDGs) in eradicating poverty and hunger (SDG #3), preserving the physical environment (SDG #4), and social relations (SDG #5), especially that the 21st century is characterized by speedy pace and social /digital change. The course uses EdTech for early childhood, an interactive and engaging way to enhance the development of children's skills in the 21st century, such as scanning (QR) and artificial intelligence (Al), creativity and critical thinking.

The course explicitly highlights the need to integrate ICTs into teaching methods to enhance the ECE learning experience. It emphasizes experiential education, project-based learning, outdoor education and adventure learning, field trips, simulation, role-playing, service learning, internships and cooperative education, problem-based learning, reflective exercises, team work and case studies.

The syllabus clearly points out the great potential to advance numerous SDGs, the ESD and SDGs aspects; this aspect should be distinctly represented in the course activities. The goals and expected learning outcomes of the activities / learning assignments should be clearly described to show how they can provide students with an opportunity to use existing skills and / or develop new ones to actively reflect on their learning experience leading to personal and societal transformation. The course developer should ensure coherence between course objectives, competences, activities and learning assignments through the various units. The course content can obviosuly illustrate integrated outlooks of various related fields already described in the syllabus (interdisciplinary approach). It is recommended if these outlooks could be meaningfully structured with learning outcomes to be assessed through the innovative pedagogical approaches enabled by ICTs.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Al Istiqlal University	**23**	2	2	2	2	3

General Comments

The course *Computer Concepts* is an introduction to the use of global technology, which has entered all aspects of life considering the Internet of Things, ICT, and embedded computing.

The course is comprised of 7 units. The teaching methods include lecture-based instruction, role play, technology-based learning, group learning, individual learning, working on PC using the ICT tools. The course activities comprise field visits to schools. More details are needed to prvide evidence on the goals and expected learning outcomes of these activities / learning assignments and on the assessment of the learning outcomes. Course activities should be described with specific aims and goals to allow the students to actively reflect on their learning experience.

As per the syllabus, the evaluation criteria include: the level of using scientific language (accuracy, completeness, internal consistency), the ability to explain and evaluate the phenomena and processes specific to discipline, the ability to make intra- and interdisciplinary syntheses.

The course content can illustrate integrated perspectives of various related disciplines. It is suggested to re-examine the course units in a more integrative / holistic way to allow valid connections across diverse disciplinary viewpoints. There is a need to improve the use of the principles of Education for Sustainable Development (ESD) and / or the integration of the SDGs aspects. The distribution of the working hours needs to show an appropriate allocation across the various course units.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Al Istiqlal University	**24**	3	3	2	3	3

General Comments

The course *Developmental Psychology* covers general psychological principles in the aim of understanding behavior and addressing developmental requirements at various stages of development. It equips participants with cognitive and practical skills related to the developmental stages and challenges encountered by individuals, especially children or those with special needs. It includes selected concepts / methods from various disciplines relevant to the purpose of Developmental Psychology; namely related to research methods in psychology, the nervous system, motivations and emotions, mental processes, learning, personality, behavior, etc.

The course clearly explores the intersection of psychology principles while integrating ICT tools into teaching practices linked to real-life issues that can be drawn from the SDGs.

The syllabus underlines the teachers' responsibilities / roles in the MENA region, including Palestine, to drive positive societal change through the use of technology and innovation. It integrates ESD principles with clear description of the relationships between psychology and the SDGs – such as eradicating poverty (SDG #1), working towards zero hunger (SDG #2), improving good health and well-being (SDG #3), ensuring quality education (SDG #4), improving gender equality (SDG #5), and strengthening partnerships (SDG #17).

The course uses problem-based and spatial learning including various class activities; each has a distinct title and a description of what the student is supposed to achieve. Examples include: Tech and Piaget's Stages Infographic, Digital Literacy Skills Showcase, Executive Function App Review, Digital Emotional Intelligence Journal, Building Empathy in Digital Spaces, Digital Well-being Workshop, Navigating Friendship in the Digital Landscape, Digital Research Methods Exploration, Navigating Emotional Landscapes in the Digital Sphere, etc,
The case analyses are supplemented with reflection topics and presentations, such as 'Ethics in Digital Research' that allow students to think about the ethical implications of their research in the context of SDGs, encouraging them to reflect on how their research can contribute to achieving specific SDGs while upholding ethical principles, such as respect for human rights (SDG #16: Peace, Justice, and Strong Institutions) and environmental sustainability (SDG #13: Climate Action).

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Al Istiqlal University	**25**	3	3	2	3	3

General Comments

The course *Educational Psychology* aims is to empower students with the knowledge and skills required to integrate educational psychology principles, ESD, and SDGs into modern information and ICT tools.

The syllabus clearly states: "*this holistic approach seeks to foster a deep understanding of the theoretical foundations and practical applications of educational psychology, ESD, and SDGs in the unique context of ECE. By strategically combining these components, the course prepares educators to create engaging, effective, and technology-enhanced learning environments that contribute to sustainability goals within the MENA region*".

The course objectives, competences and learning outcomes are specified in each unit. The course comprises 8 units (each requires 4 hours of lectures, 4 hours of practical work and 4 hours of self-study). The ECTS workload is calculated in a way to ensure that learning outcomes can be achieved as scheduled. It is recommended to provide more details on the kind of practical work and self-study in the various units.

The course includes innovative pedagogical approaches (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) enabled by ICTs Examples of class activities include: ICT-Infused Sustainable Solutions for ECE, Balancing Innovation and Pedagogical Integrity in ECE, AI Integration, Simulation Game on Adaptive Teaching, Debate on Ethical AI Use. Other teaching methods include: interactive workshops, research and presentations, and brainstorming sessions.

The content is coherent with the course aims and objectives, competences and learning outcomes.

There is a relevant list of relevant references in each course unit.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Al Istiqlal University	**26**	3	2	2	3	3

General Comments

The course *Motivations and Emotions* is "considered within the contemporary psychology courses, and it is a scientific and academic addition to teachers and students of ECE in the MENA countries". It clarifies the concepts, characteristics, and components of motivation and emotions that activate, move, and direct human behavior towards the desired goal to meet the needs or desires, tendencies, in addition to achieving socio-cultural motives".

To keep pace with the digital age, it is emphasized that teachers of ECE students should develop the educational process and increase students' motivation by integrating ICT tools and multimedia in educational curricula.

This course uses various teaching methods, including project-based learning, field trips, service learning, internships and cooperative education, reflective exercises and case studies.

The course is consistent with the SDGs that require the elimination of ignorance (SDG #1) and poverty (SDG #2) and the preservation of a safe environment (SDG #3) in which humans live.

The course comprises 8 units, and the objectives, competences and learning outcomes are stated in each unit. The course content is coherent with the course aims and objectives, competences and learning outcomes. There is a list of relevant references in each course unit.

Interdisciplinary concepts in this course are obviously related to various areas including ECE. While this is clearly defined, some of these aspects are only touched on in course units; thus, more effort could be done in this regards. It is recommended to provide more details on the ECTS workload calculation to ensure that learning outcomes can be achieved as scheduled in the various units.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Al Istiqlal University	**27**	3	2	2	3	3

General Comments

The course *Principles of Psychology* follows a comprehensive approach aiming to empower students with the knowledge and skills to integrate principles of psychology, ESD and the SDGs into modern information and ICT tools. This course seeks to promote a deep understanding of the importance and goals of psychology emphasizing mental processes (intelligence: memory and attention), and developmental stages, especially cognitive growth, and learning processes and theories. These goals are linked to both the science and profession of psychology - such as eliminating poverty and hunger, improving mental health and well-being, ensuring quality education, improving gender equality, developing sustainable cities and communities, building peace, as well as strengthening partnerships. Problem-based learning and spatial learning are used in the classrooms. This course stands as a vital contributor to achieving the SDGs recognizing the transformative power of early childhood education in shaping a sustainable future. The course comprises 7 units and the course content is coherent with the course aims and objectives, competences and learning outcomes. There is a list of relevant references in each course unit.

It is important to keep in mind that the objectives, competencies, and outcomes can be created to describe the learning gained by students in individual courses or for the program as a whole.

It is important to remember the following:

- ✓ The key distinction between objective or competency and a learning outcome is that a learning outcome can be measured or assessed.
- ✓ A course objective is a general statement about the larger goals of the course or program.
- ✓ A course outcome is a very specific statement that describes exactly what a student will be able to do in a measurable way.

It is recommended to provide details on the ECTS workload calculation and show that the learning outcomes can be achieved as scheduled in the various units.

The course includes relevant disciplinary concepts and methods. Connections between disciplinary insights should be made with the course objectives in a clear way.

Palestine Technical College

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Palestine Technical College	**28**	3	2	2	3	3

General Comments

***Given the war situation in Palestine, the Palestine Technical College decided to reduce the number of courses to three: Education Technology, Maker spaces, Methods of Teaching Science and Technology*.**

The course *Education Technology* deals with basic concepts in educational technology, including topics related to: e-learning, cloud computing, technological innovations such as the smart board and open learning platforms, media Interactive technology such as interactive video and augmented reality, the use of virtual classrooms, social networks to enhance learning experiences. Key aspects include: selecting age-appropriate technology that aligns with children's developmental stages; using technology to support learning goals related to literacy, numeracy, creativity, and social skills; integrating technology for playful learning through games, interactive stories, and creative applications; enhancing teacher-child interaction to improve communication.

The course outline emphasizes the integration of ESD and SDGs into the ECE curriculum using ICTs to ensure alignment with educational goals, tech-enhanced lesson planning to enhance engagement and learning outcomes, digital storytelling to convey sustainability concepts, inquiry-based learning to promote critical thinking, problem-solving skills, and digital citizenship. It is recommended to show how the SDGs will be contextualized with educational technology to support ECE.

Course objectives, competences and learning outcomes are stated for each unit. It is important to highlight the coherence between some course objectives and the various activities.

Teaching materials are written in Arabic with English references provided.

It is recommended to reconsider the following during the next phase of implementation:

- ✓ Assignments should be concrete, detailed, and connected with real-life issues that could be elicited from the SDGs.
- ✓ The evaluation approach for the learning assignments should be clearly explained.
- ✓ The course can obviously integrate concepts or perspectives of different related fields (using the interdisciplinary approach) in a meaningful way.
- ✓ More efforts could be made to explain how the innovative pedagogical approaches already described in the activities, such as case studies and group work, will be applied.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Palestine Technical College	**29**	3	2	2	3	3

General Comments

The course *Maker Spaces* introduces students to skills, technologies, principles and issues involved in managing makerspaces for emerging technologies. The course emphasizes technology leadership and management, instructional and design aspects of operating spaces. Students gain hands-on experience with digital and physical making toolkits and design maker experiences. The course is designed for undergraduate students majoring in the education technology program who are expected to be future teachers of technology for children including early childhood. Thus, it enriches ECE by offering dynamic, experiential learning opportunities that nurture various aspects of child development.

With their focus on innovation, creativity, and hands-on learning, the course Maker Spaces can play a significant role in advancing several SDGs (Quality Education (SDG #4), Gender Equality (SDG #5), Decent Work and Economic Growth (SDG #8), Industry, Innovation, and Infrastructure (SDG #9), Sustainable Cities and Communities (SDG #11), Responsible Consumption and Production (SDG #12), Partnerships for the Goals (SDG #17).

The course comprises 7 units with teaching materials and references in English.

It is recommended to reconsider the following during the next phase of implementation:

- ✓ The ECTS workload should show that learning outcomes are achieved as scheduled in the various units. It is suggested to provide details on the workload calculation and the various learning components (lectures, projects, assignments, readings, etc.) in the course units
- ✓ The use of ICT tools is reinforced through digital toolkits, physical toolkits, Arduino kit, Tinkercad, PowerPoint, Moodle and Microsoft Teams. More implications are recommended to ensure ensure interdisciplinary learning using the various innovative pedagogical approaches.
- ✓ Assignments should be detailed and connected with real-life issues that could be designed from the SDGs, already identified in the course outline.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Palestine Technical College	**30**	2	3	2	3	3

General Comments

The course *Methods of Teaching Science and Technology* aims to provide students with the necessary skills and methods for teaching science and technology in the context of STEM (Science, Technology, Engineering and Mathematics) and project-based learning. It highlights key aspects that link STEM and ECE, namely natural curiosity and exploration, play-based learning, critical thinking, problem-solving, development of spatial skills, creativity, and integration of subjects (science, technology, engineering, and mathematics) into the learning experience. Children are curious constantly investigating various aspects of their world. Their exploration and questioning are fundamental to enhance innovative and creative knowledge.

The course introduces students to online learning platforms / applications to create engaging educational experiences, while focusing on interactive learning methods, such as virtual reality and augmented reality. It emphasizes cooperative learning and teamwork through online collaborative tools and interactive platforms. It explores the use of data and data analysis in teaching science and technology, using tools allowing students to enhance their skills in using programming languages and other applications. The syllabus shows that the course integrates traditional face-to-face learning methods with technology, along with other modern teaching approaches. Practical exercises involve simulations, the use of specific software, mathematical modelling, fieldwork, teamwork, problem-solving exercises, industry-sponsored collaborative projects that are structured to simulate real-world scenarios and enhance critical thinking skills.

The course comprises 6 units written in Arabic with English references provided. Activities include exploring STEM innovations (such as robotics, renewable energy, biotechnology, or artificial intelligence, project-based learning, inquiry-based investigation, problem-solving, and collaboration), Paper Airplane Design. Robot Programming, Interactive Electronic Art Panel, Smart Garden, Interactive Science Experiment. The title of the course units and activities reflect the key concepts. The aims, course objectives, competences and learning outcomes are clearly stated for each unit. Bibliography is relevant to the teaching materials. The content is well-structured and coherent with the course aims and objectives, competences and learning outcomes. The course has integrated perspectives of various related fields (interdisciplinary approach) and this is quite visible in the course concepts and activities. Efforts should be made to ensure that innovative pedagogical approaches enabled by ICTs (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) have clear guidelines for being effectively evaluated. These approaches are used in the course activities; it is recommended to provide detailed descriptions, such as defining the activities' goals, purpose of the learning component and expected learning outcomes in the aim of empowering students to actively reflect on their learning experiences leading to personal and societal transformation.

Palestine Technical University Kadoorie (PTUK)

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Palestine Technical University Kadoorie (PTUK)	**31**	2	2	2	3	2

General Comments

The course *English Grammar* consists of 6 units. The course objective is to provide students with a comprehensive understanding of the fundamental principles of English grammar. It addresses non-native speakers and it is structured in two dimensions: the theoretical dimension aims to develop an understanding of different grammatical forms; the practical dimension intends to teach students to write without errors enabling them to communicate with clarity and precision. Course objectives, competences and learning outcomes are stated for each unit. Bibliography is relevant to the course aims. The content is well-structured and coherent with the course objectives, competences and learning outcomes.

It is recommended to emphasize how the SDGs components and the ESD principles are reflected in the course competences and learning outcomes. Thus, it is suggested to focus on including aspects of the ESD principles and on integrating the SDGs in the various units. Despite being a general course in English Grammar, the course developer can integrate perspectives of related fields (interdisciplinary approach) through the various course concepts and activities. It is proposed to develop this aspect further as such a course can have implications in various fields (social, economic, environmental, educational). Efforts should be made to ensure that the assignments and activities are connected with real-life issues that could be elicited from SDGs. Since it is a general course, various sustainability topics can be infused; such as gender equality; poverty, employment issues, economic growth, industrial development, environmental issues that are related to global challenges, but are also prominent in the MENA region (such as ecosystem change, climate action, loss of biodiversity, water scarcity, etc.). Activities need to be provide more details regarding their goals and expected learning outcomes. The course developer can enhace the use of innovative pedagogical approaches (such as experiential learning, case studies, simulation, games, project-based learning, problem-based learning) enabled by ICTs. Teaching methods should be used effectively with guidelines on the evaluation criteria. The approaches used in the activities (Moodle (H5P Interactive Content), applications and websites (prezi, e-maze, genially, etc.), role-playing, flipped classrooms, debates and discussions) are good examples, but they should be elaborated in detail for better course implementation. An example is developed in the learning assignments, mainly to conduct a pair debate and discussion about a current topic such as using solar power at the university. It is suggested to provide details on the ECTS workload calculation in order to confirm that the learning outcomes can be achieved as scheduled.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Palestine Technical University Kadoorie (PTUK)	**32**	3	3	2	3	3

General Comments

The course *Educational Technology* deals with teaching methods and modern strategies applied in teaching the technology curriculum. It emphasizes the active role of the learner and the use of meaningful methods in the learning process. The course highlights the use of technology tools, namely apps and software to prepare students for teaching in schools. It investigates several empirical studies to examine the implementation of innovative teaching methods for technology education. The course underlines the creation of educational aids for different class levels, including early childhood to engage young learners. The course is structured in two dimensions: the theoretical dimension conceptualizes teaching aids (its history, aims and benefits); and the practical dimension aims to design physical and electronic teaching aids.

The course shows connections with SDG#4 (importance of educational technology in achieving SDG 4: 'affordable, reliable, and context-sensitive digital education, can promote equal opportunities for girls and boys, and reduce inequalities by ensuring every child has access to high-quality content'). Some other SDGs are also implied (eradication of poverty; ensuring quality education, gender equality, decent work and economic growth; reducing inequalities, etc.), but they need to be elaborated clearly. The course can infuse viewpoints of related fields (using the interdisciplinary approach) through the various course units and activities. It is suggested to develop these dimensions illustrating the potential implications (social, economic, environmental, educational, etc.). ESD contributes to developing the knowledge, skills, values and competences of the learners to address interrelated global challenges including climate change, loss of biodiversity, unsustainable use of resources, and inequality. ESD, a lifelong learning process and an integral part of quality education, empowers learners to make informed decisions and take action to transform their societies and protect the environment. It is suggested to contextualize ESD principles with ICTs and vice versa in the learning assignments, focusing on the 'inequality' and 'quality education' aspects. Efforts should be made to ensure that assignments and activities are connected with real-life issues that could be elicited from SDGs. Various sustainability topics can be infused; such as gender equality; poverty, employment issues, economic growth, industrial development, environmental issues. In unit 4 of the course, the learning assignment is a good example of focusing on the environment ("How we must reduce waste generation with prevention, reduction, recycling, and reuse while using physical teaching aids? How to make the physical teaching aid that you will design to help the planet to be clean?"). It is suggested to provide details on the ECTS workload calculation in order to show how the learning outcomes can be achieved as scheduled.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Palestine Technical University Kadoorie (PTUK)	**33**	2	2	2	3	3

General Comments

The course *Introduction to Linguistics* comprises 11 units; the title of each reflects key concepts and competences. The aims, course objectives, competences and learning outcomes are clearly stated for each unit. Each course unit comprises learning assignments and relevant references. The content is well structured and coherent with the course aims and objectives, competences and learning outcomes. Introduction to Linguistics is a fundamental course that explores the scientific examination of language, comprehending its complex functions and its different elements. Students explore a journey of examining the basic principles, theories, and methods used in analyzing linguistics. The course has 2 dimentsions: a theoretical dimension that aims to conceptualize linguistics, its history, aims, goals, and benefits; as well as a practical dimension that aims to design aids to understand languages. There is an overall coherence in the content, learning assignments and evaluation.

The course can enhance the integration of concepts or perspectives of different related fields (interdisciplinary approach). This aspect should be more developed especially that the subject can have pertinent significant implications in various disciplines (social, economic, etc.). Interdisciplinary concepts are obviously related to diverse areas including ECE and SDGs / ESD. While this is clearly defined, some of these aspects can be eloborated in the course units and learning outcomes. The competences, for instance, include students' social responsibility towards their peers and their teacher through better communication and interaction in a collaborative manner. Also, students' understanding of the important implications and connections among language, business, gender, and social life is included. The learning assignments can better contextualize ESD with ICTs, while connecting with real-life issues elicited from SDGs (no poverty, quality education, gender equality, decent work and economic growth, reduced inequalities). Concrete / clear instructions in the learning assignments are important to enhance critical thinking and prepare students to handle intricate linguistic problems and make valuable contributions to the field. The innovative pedagogical approaches (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) enabled by ICTs should be made more visible. Activities are described for each unit: Moodle (H5P Interactive Content – Multiple Choice Game, Space Game), individual and group-presentation by using different applications and websites (prezi, e-maze, genially, etc.), forum discussions (You-tube videos, slide show presentations, etc.); it is important to define the activities' goals and expected learning outcomes to allow active students' participation. It is suggested to provide details on the ECTS workload to confirm that the learning outcomes can be achieved as scheduled.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Palestine Technical University Kadoorie (PTUK)	**34**	3	3	2	3	3

General Comments

The course *Introduction to Writing* aims at introducing students to the process of writing paragraphs and essays. Students learn how to produce well-organized paragraphs and essays. A theoretical dimension of this course aims to develop an understanding of different writing strategies to create well-organized paragraphs and essays using proper writing techniques. A practical dimension aims to write error-free sentences and well-organized essays.

The course outline comprises 4 units. It is is recommended to indicate the time allocated for each unit and to provide details on the ECTS workload calculation in order to show that the learning outcomes can be achieved as per the proposed timetable. The course is a general course and it can integrate the SDGs aspects - including quality education, reduced inequality, innovation and infrastructure, good health and well-being, partnerships for sustainable development, as well as climate change and other global interconnected environmental challenges. These aspects are referred to in the learning assignments / activities. For instance: Forum Discussion (watching You-tube videos, slide show presentations, etc.), Moodle (HP Interactive Content). Thus, each student will choose a specific SDG and resarch its key components, challenges, and the current state of progress globally, then write a paragraph about it. Course developers are recommended to enhance the integration of various concepts of different disciplines (interdisciplinary approach) through the infusion of the SDGs in line with the course objectives. The course has integrated some concepts or perspectives of different related fields, but these could be further elaborated to include various implications related to the social and economic dimensions.

As for the course activities and learning assignments, they need to provide more details related to their goals and expected learning outcomes in order to enhance active students' participation and provide them with an opportunity to use existing skills and develop new ones to critically reflect on their learning experience leading to personal and societal transformation. The learning assignments can be straightforwardly connected with real-life issues that could be elicited from the SDGs. The course encompasses innovative pedagogical approaches enabled by ICTs that contribute to empowering students and fostering active engagement and critical thinking (through discussions, games, project-based learning, case-based learning, debates, interdisciplinary learning, inquiry-based learning, collaborative learning, etc.).

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Palestine Technical University Kadoorie (PTUK)	**35**	3	3	2	3	3

General Comments

The course *Principles of Problem Solving* aims to introduce the fundamentals of computer programming and guide students in applying computer skills to address real-world challenges effectively. Students will learn analyze complex issues, devise carefully planned solutions, select appropriate tools, brainstorm potential answers, conduct thorough evaluations, and collaborate in teams. The focus is to foster problem-solving abilities through the use of algorithms. Additionally, students will gain insights into competitive programming, its platforms, and ethical problem-solving techniques. Also, they will learn to recognize the types of problems and practical approaches to solving them.

The course comprises 5 units. The title of the units reflects the key concepts and competences. The aims, course objectives, competences and learning outcomes are clearly stated. The content is well structured and coherent with the course aims and objectives, competences and learning outcomes. Each unit has one learning assignment and a relevant bibliography list. It is recommended to indicate the time allocated for each unit and to provide details on the ECTS workload calculation in order to show that the learning outcomes can be achieved as per the proposed timetable. The evaluation approach is well-defined. There is an overall coherence in the content, learning assignments and final evaluation.

The ICT, ESD, and SDGs components of the course are visible in the course competences, learning outcomes, and assessments. In course unit 2, for instance, students will use Moodle (HP Interactive Content), prepare a Kahoot game and share it with the rest of the class, or conduct a quiz using ICT Tool. There is a clear emphasis on how to engage in problem-solving using ICTs and help the planet to be clean? Connections with other SDGs are implied within the various units, namely: quality education; gender equality; reduced inequalities, etc. The learning assignments are connected with real-life issues that could be elicited from SDGs. The course has integrated few concepts or perspectives of different related fields (interdisciplinary approach), but this aspect can be elaborated. The learning assignments include ESD principles and/or contextualize ESD with ICTs and vice versa, empowering learners to make informed decisions and take individual and collective action to change society and care for the planet. ESD is a lifelong learning process and an integral part of quality education, and the theme of the course is very suitable to reflect such principles. The course includes innovative pedagogical approaches enabled by ICTs (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning).

Suez Canal University (SCU)

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Suez Canal University (SCU)	36	3	3	2	3	3
	37	3	2	2	3	3
	38	3	3	2	3	3
	39	3	3	2	3	3
	40	3	2	2	3	3

General Comments

- The SDGs/ ESD integration is clearly visible in most course syllabi and outlines in Suez Canal University. Efforts can be made to develop this integration into a more meaningful way throughout the varying aspects of some course units providing clearer evidence on how the integration of SDGs and ICTs is assessed.

- The courses developed by Suez Canal University involve traditional concepts mainly in education and psychology. Interdisciplinary concepts in such disciplines are obviously related to various areas including ECE and SDGs. While this is clearly defined in the course syllabi and outlines, some of these aspects are only touched on in course units and teaching materials. More work could be done to ensure the infusion of the interdisciplinary learning approach in the various courses.

- It is recommended to specify the time allocated for each course unit and to provide details on the ECTS workload calculation in order to show that the learning outcomes can be achieved as per the proposed timetable in the syllabus.

- Class activities, projects and learning assignments are developed in the various courses. Concrete / clear instructions in the learning assignments are important as they facilitate students' learning and enhance their critical thinking to make valuable contributions to their field of study.

- All courses include diverse innovative pedagogical approaches enabled by ICTs (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning). These can be made more visible and elaborated in the course syllabi and outlines.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Suez Canal University (SCU)	**36**	3	3	2	3	3
	37	3	2	2	3	3
	38	3	3	2	3	3
	39	3	3	2	3	3
	40	3	2	2	3	3

General Comments

- Course objectives should be SMART ensuring the correct use of verbs for course objectives and course learning outcomes. For instance, the course *Educational Technology and Digital Transformation* comprises 65 course objectives. The course *Math and science in ECE* comprises 40 course objectives. The formulation of course objectives, competences and outcomes needs to be revisited, making sure to follow the below:

  - ✓ Objectives, competencies, and outcomes can be created to describe the learning gained by students in individual courses or for the program as a whole. The key distinction between objective or competency and a learning outcome is that a learning outcome can be measured or assessed.

  - ✓ A course objective is a general statement about the larger goals of the course or program. A course outcome is a very specific statement that describes exactly what a student will be able to do in a measurable way. Learning outcomes are the basis for assessment of students' learning and they focus on what students can do either upon completion of a course (course outcomes) or upon graduation from a program (programmatic outcomes).

  - ✓ A competency may have several specific learning outcomes. Thus, a course typically contains more outcomes than competencies. An outcome is "what" you expect students to achieve, whereas a competency demonstrates "how" your students can achieve that outcome. Think of an outcome as an end and a competency as a means to that end.

The University of Jordan

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
The University of Jordan	**41**	3	3	3	3	3

General Comments

The course *Child Computerized Program* introduces students to the role of the computer and its importance as an educational and recreational tool for children. It examines the impact of computerized programs on the child's good health and well-being and the development of children's various skills (SDG 3) and emphasizes the importance of implementing computerized educational programs that insure inclusive and equitable quality education (SDG 4). It also highlights the uses of computerized educational programs in promoting inclusive societies and education for sustainable development. (SDG 5 & SDG 16) as well as equality learning experiences (SDG 10) among other SDGs.

The course comprises 8 units. The title of the course units reflects the key concepts and competences. The aims, course objectives, competences and learning outcomes are explicitly described. The content is well structured and coherent with the course aims /objectives, competences and learning outcomes. Each unit has learning assignments and relevant references to the teaching materials. The evaluation approach is clear. There is an overall coherence in the content, learning assignments and final evaluation.

The ESD, SDGs and ICT components are visible in the course competences and learning outcomes. ESD prinicples are infused in the competences of the course; such as experiencing global citizenship skills: tolerance, openness, respect for diversity, intercultural understanding, and cultural expression and intercultural, and social and civic competence (SDG 4 Quality Education and SDG 16). Other competences that infuse ESD principles: promote lifelong learning opportunities for all (SDG 4). The course has integrated concepts or perspectives of different related fields (interdisciplinary approach), namely physical education and health topics, psychology, special education, math and science, music and art, etc. The course includes innovative pedagogical approaches (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) enabled by ICTs; namely Microsoft Teams, Moodle (MLS), Sharing videos, Padlet (Interactive Wall), PowerPoint, Digital Storytelling, Participatory Video (PV).

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
The University of Jordan	**42**	3	3	3	3	3
	43	3	3	3	3	3

General Comments

- The course *Digital Skills* (Digital Literacy) is an elective course offered by the Computer Information Systems program. It aims to enhance students' digital knowledge / skills using Artificial Intelligence (AI) and cutting-edge technologies. It allows participants to learn the foundations of the digital world and enable them to better utilize technology to advance their careers. The course comprises 13 units with titles that reflect key concepts and competences. The aims, competences and learning outcomes are clearly stated. The content is well-structured and coherent with the course objectives, competences and learning outcomes. Each unit has learning assignments with a clear evaluation approach. There is a coherence in the content, learning assignments, evaluation and bibliography. The course is aligned with ESD principles and SDGs inspiring responsibility for inclusive and sustainable practices in the emerging digital technologies. One of the course objectives states: 'To analyze the sustainability impact of digital technologies and propose responsible strategies'. Emphasizing the SDGs can be developed into a more meaningful way throughout the varying aspects of the course units. The course has integrated concepts of related fields (interdisciplinary approach), such as AI, ergonomics, health, data analytics, environmental impact of digital sustainability practices, etc. It includes innovative pedagogical approaches enabled by ICTs (case studies, simulation, project-based learning, problem-based learning). Class activities should have clear goals and learning outcomes providing students with an opportunity to use skills in a real world setting.

- The course *Design and Using Instructional Materials* deals with audio, visual, audio-visual, and interactive instructional materials; and the relationship between instructional technology in the learning process and educational communication theory. The course focuses on instructional media/aids and the impact of perception and communication on the design of instructional materials. It comprises 9 units with titles that reflect key concepts and competences. The objectives, competences and learning outcomes are clearly identified. The content is coherent and aligned with ESD principles and SDGs, emphasizing the importance of design and using instructional materials in ensuring inclusive and equitable quality education (SDG4), promoting peaceful and inclusive societies for sustainable development (SDG 16), creating inclusive societies (SDG 5), promoting equality learning experiences (SDG 10). The course has integrated perspectives of related fields (interdisciplinary approach), such as instructional technology, communication, education, environmental awareness, child health, etc. It includes innovative pedagogical approaches enabled by ICTs (case studies, simulation, games, puppets, dramatic play, project-based learning). Class activities / projects infuse sustainability concepts, such as environmental sustainability and recycling empowering students to reflect on their learning experiences leading to personal and societal transformation.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
The University of Jordan	**44**	2	3	2	3	3

General Comments

The course *Social Media* introduces students to basic concepts related to well-known social networks (including X (Twitter) and LinkedIn) and their applications. Also, it introduces Gephi application that helps in exploring social networks and discover communities, as well as other applications utilized as social media networks such as electronic marketing, public relations management, job search. In addition to covering the Jordanian information security laws, the course topics comprise: electronic advertising, foundations of Google search, Google Drive, Google Forms, ChatGPT, and website planning.

As per the syllabus and outline, the course comprises 8 units with key concepts, competences and learning outcomes.

The ESD and SDGs components should be made more visible in the course competences, activities and learning outcomes. Efforts should be made to ensure that class activities are connected with real-life issues that could be elicited from SDGs and infused in the course content and learning assignments. It is suggested to design projects and learning assignments that infuse the SDGs aspects / ESD principles empowering students to make informed decisions and take individual and collective action to transform their societies and protect the environment. ESD components should be contextualized with ICTs and vice versa in the learning assignments.

The course has integrated concepts of related disciplines (interdisciplinary approach), such as E-marketing, public relations management, job search using social networks, communication, E-Learning, Learning Management Systems, public relations, digital marketing, advertising, public relations and sales.

It is recommended to specify the time allocated for each course unit and provide details on the ECTS workload calculation in order to ensure that the learning outcomes can be achieved as per the proposed schedule as stated in the syllabus.

The course includes innovative pedagogical approaches, namely case studies and simulation. Other approaches enabled by ICTs (experiential learning, games, debates, project-based learning, problem-based learning) could be used to enhance active students' engagement and critical thinking.

Partner Univ	Course #	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
The University of Jordan	**45**	3	3	2	3	3

General Comments

The course *Using Computer in Education* aims to examine the role of computer use in the learning and teaching process and to design educational / training materials. It also deals with evaluating ready-made computer and educational programs, training students to use devices and educational programs in the learning process. Introducing students to the role of the computer, its importance, and its various uses ensures inclusive and equitable quality education, lifelong learning opportunities for all (SDG4), global citizenship skills, peaceful and inclusive societies (SDG 16). It also aims to reduce inequality and promote sustainable economic growth, employment and decent work for all (SDG 10). The course comprises 10 units with teaching materials and relevant bibliography. The title of the course units and activities reflects the key concepts and competences. The course objectives, competences and learning outcomes are clearly stated.

The ESD and SDGs components are identified in the competences and learning outcomes. The learning assignments can be associated with real-life issues that could be elicited from SDGs. It is recommended to contextualize ESD principles and SDGs with ICTs and vice versa with clear evidence on how the integration of SDGs and ICTs will be assessed. As for the use of the interdisciplinary approach, the course has already integrated concepts or perspectives of different related fields. This aspect could be better elaborated in the context of such a general course that can be linked to several dimensions (e.g. scientific, economic, social, ecological...). In the activity of unit 3, for instance, the concepts are being developed and connected with psychology in aspects related to: learning as communication, behaviourist perspective, cognitivist perspective, constructivist perspective, cognitive styles, learning styles, and intelligence. The activity should be concrete and detailed enough to assess how the interdisciplinary approach will be used and assessed. It is important to clearly define the goals and expected learning outcomes of the activities / assignments to enhance students' learning and provide them with an opportunity to use existing skills and develop new ones to actively reflect on their learning experience. Also, it is suggested to ensure that the learning outcomes are designed in a way they can be measured.

It is recommended to specify the time allocated for each course unit and provide details on the ECTS workload calculation in order to ensure that the learning outcomes can be achieved as per the proposed schedule as stated in the syllabus.

The course includes pedagogical approaches: Microsoft Teams, Moodle (MLS), sharing videos. Other innovative pedagogical approaches enabled by ICTs (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) could be used to enhance active engagement and critical thinking.

List of New Courses

As explained earlier, the solid connection between WP2 (Preparation: Needs Analysis) and WP3 (Curricula Development) is an important aspect of the project. WP2 provided an in-depth analysis of the current state of ICT integration in ECE programs, examining digital resource availability, teacher and student competencies, and stakeholder needs. This phase revealed the existing gaps requiring improvement in ICT education. Building on these insights, WP3 translated the findings from WP2 into actionable steps for curriculum development. By leveraging the identified needs, challenges, and competencies uncovered in WP2, WP3 involves the development of new innovative courses that are flexible and responsive to the educational demands of the target group. This phase focused on creating detailed educational materials, defining new syllabi, and compiling lecture content, all aligned with Bologna standards for HEIs. The smooth transition from WP2 to WP3 ensures that the curriculum updates are directly informed by the needs analysis, making the educational materials relevant to the partner institutions and ensuring that the curriculum updates are data-driven, appropriate, and impactful.

New Course	**MENA university**
1) ICT AND THE 21ST CENTURY PRESCHOOL EDUCATION / ICT in ECE **EU supporting university: IPP**	Mutah University
	Suez Canal University
2) ICT SKILLS IN PRACTICAL (Project-based learning) **EU supporting university: UB**	University of Jordan
	Palestine Technical University - Kadoorie
3) DESIGN AND DEVELOP WEB-BASED TEACHING MATERIALS /CREATING EDUCATIONAL RESOURCES IN EARLY CHILDHOOD EDUCATION **EU supporting university: FU**	Heliopolis University
	Al Azhar University
	Palestine Technical College
4) ICT FOR CHILDREN WITH LEARNING DIFFICULTIES AND DISABILITIES **EU supporting university: UNIPD**	Irbid National University
	Al Istiqlal University

External Evaluation of New Courses

In addition to updating 45 exisiting courses (the project proposal indicated the update of 40 courses), WP3 consists of designing 4 new courses; including the creation of detailed syllabi and the development of teaching materials and integrating them into study plans for future improvements in higher education degrees within the field. The syllabi are developed according Bologna process requirements. The lectures follow the principles defined in Regional Priorities of Partner Countries. The innovative outcome-oriented syllabi are created taking into account the needs identified in WP2.

The syllabi for the courses include:

- Number of lessons
- Short description for each lesson
- Bibliography
- Teaching and learning methods
- Assessment and evaluation methods

Four new courses are designed by MENA partner Higher Education Institutions and peer-reviewed by European Universities. The syllabi can be found in Annex 2.

The courses are:

- Course 1. ICT and The 21st Century Preschool Education
- Course 2. ICT Skills in Practical
- Course 3. Creating Educational Resources for Early Childhood Education
- Course 4. ICT for Children with Special Educational Needs

Using the same rubrics and scales, the four newly-designed courses are evaluated based on the following:

- Integration of the Sustainable Development Goals (SDGs) / Education for Sustainable Development (ESD) themes and principles
- Interdisciplinary Learning Approach
- ECTS Student Workload
- Class Activities/ Projects / Games
- Innovative pedagogy and the integration of ICT

Course 1	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
ICT and The 21st Century Preschool Education	3	3	2	3	3

General Comments

The course *ICT and The 21st Century Preschool Education* focuses on ICT in Preschool Education (PE), emphasizing the strategic use of technology to enhance learning experiences and fostering children development. It encompasses an in-depth exploration of various ICT concepts, their applications and implications within the educational landscape. The course investigates the intersection of technology and pedagogy, emphasizing the role of ICT in shaping children's development while addressing challenges and opportunities in digital learning environments. The aim is to empower future educators from PE with the knowledge, skills, and competences necessary to proficiently incorporate ICT tools and strategies to optimize learning experiences for young children, fostering a comprehensive understanding of technological applications and their implications for pedagogical practices.

The course comprises 10 units: Unit 1 to 5 were developed by Mutah University, units 6 to 10 were the responsibility of SCU. The title of the course units reflects the key concepts and competences. The course objectives, competences and learning outcomes are well-described. The course syllabus is developed in a coherent way according to the project guidelines. The competences are specific, measurable and written in behavioral terms at a higher level than learning objectives since they require more complex levels of performance. The bibliography is up-to-date and relevant to the course content and teaching materials. There is an overall coherence in the content, learning assignments and final evaluation.

The ICT, ESD components of the course are visible in the course competences and learning outcomes. The course integrates concepts or viewpoints of different related fields, as per the interdisciplinary approach, and it includes innovative pedagogical approaches enabled by ICTs (gamification, Game Based Learning, Flipped Classroom, Virtual and/ or Augmented (VR / AR), Project-Based Learning (PBL), digital storytelling, mind mapping). The SDGs are infused in the interactive activities and learning assignments.

The course has integrated perspectives of various related fields (interdisciplinary approach) such as those related to cybersecurity, policies for children's safety online, wellbeing in using ICT, children health, role of schools and educational institutions. Course activities / learning assignments are clearly described in relation to the goals, purpose of the learning component and expected learning outcomes in the aim of empowering students to actively reflect on their learning experience leading to personal and societal transformation. The ECTS student workload shows the number of hours per each unit to ensure that the learning outcomes can be achieved according to schedule.

Course 2	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
ICT Skills in Practical	2	2	2	3	3

General Comments

The course *ICT Skills in Practical* provides an overview of the use of ICT in ECE. It explores the different types of ICT tools and resources that are available for use in the ECE setting, and discusses the selection criteria and suitability of these tools for young children. The course covers the use of ICT for teaching, evaluation, and creating visual and graphical materials, offering also tools for designing educational materials, educational games, online tests, and the management of virtual classrooms. The process of designing and implementing digital educational resources is explored to find how technology can be used effectively to enhance learning experiences while addressing the unique needs and developmental stages of young children. By fostering digital literacy and hands-on practice, the course equips future educators with comprehensive competencies essential for employing ICT tools in preschool educational settings.

The course comprises 10 units developed by UJ and PTKU and structured to develop several competences in two dimensions:

- A theoretical dimension aims to clarify the knowledge related to the use of ICT in ECE such as Open Educational Resources, selection criteria and suitability of ICT tools, the process of designing and implementing digital educational resources, educational software and apps, audio and video files, visual and graphical materials, game apps and puzzles, authoring tools, ICT tools for managing virtual classrooms, social media, and designing and developing innovative pedagogies practices.
- A practical dimension aims to implement the ICT tools in ECE environment such as Open Educational Resources, audio and video, visual and graphical materials, game apps and puzzles, authoring tools, virtual classrooms, and social media

The syllabus has a great potential to advance numerous SDGs aspects and the ESD principles, especially in the course activities. The goals and expected learning outcomes of the activities are described to show how they can provide students with an opportunity to lead to personal and societal transformation. The course content can evidently show integrated outlooks of various related fields already described in the syllabus (interdisciplinary approach). It is recommended if these outlooks could be meaningfully structured with learning outcomes to be assessed through the innovative pedagogical approaches enabled by ICTs already available in the course content. The ECTS student workload is suggested to show the number of hours per each unit.

Course 3	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
Creating Educational Resources for Early Childhood Education	3	3	2	3	3

General Comments

The course *Creating Educational Resources for Early Childhood Education* offers a guide in developing educational resources and introduces ICT enhanced basics of ESD. Students learn about various digital tools and platforms that can be used to create engaging and interactive learning experiences that foster understanding of sustainability concepts.

This course examines how ICT can be used to enhance ESD and the integration of the SDGs into ECE curriculum. It offers resources to develop proficiency in creating engaging digital resources, employing game-based learning, digital storytelling, and adaptive tools to promote sustainability in early childhood. The course offers a comprehensive exploration encompassing classroom integration, the parents' role and ways of communication, addressing diverse learning needs, ethical considerations, and innovative assessment methodologies tailored for the unique characteristics of young learners in the pursuit of sustainable education.

The course comprises 8 units developed by Heliopolis University, Al Azhar University, and Palestine Technical College. The course development process is supported by Frederick University. This course is an interactive course. It emphasizes the SDGs that are infused in an integrated way throughout the course units and activities.

The course creates opportunities for interdisciplinary learning. The interdisciplinary-oriented approach carefully combines viewpoints from various disciplines to make the educational experiences more valuable to students. The course includes ICT in designing learning assignments and evaluation. Class activities are interactive and they integrate ICT to ensure active learning and students' engagement. Innovative pedagogical approaches enabled by ICTs are adopted, including game-based learning, digital storytelling, play-based activities, digital tools, educational software, apps, etc. References are available for each course unit. It is suggested to show the ECTS student workload per each course unit.

Course 4	SDGs/ ESD Integration	Interdisciplinary Learning	ECTS Student Workload	Class activities/ Projects / Games	Innovative Pedagogical Approaches Enabled by ICTs
ICT for Children with Special Educational Needs	3	2	2	3	3

General Comments

The course *ICT for Children with Special Educational Needs* aims to provide students with a comprehensive understanding of Assistive Technology (AT) in the context of Special Educational Needs (SEN). The objectives of the course are:

- To offer knowledge about the framework of the social-educational policies of the School for All in order to raise awareness and assumption of its values
- To offer in-depth knowledge and understanding of AT principles, applications, and ethical considerations in the context of SEN.
- To foster a collaborative and inclusive approach to AT integration, communication, and advocacy, ensuring equitable access and support for all students with SEN.
- To familiarize students with assistive technologies and the integration of AT into teaching and learning in order to facilitate inclusion in education and society for various categories of children with SEN.

The course empowers students with knowledge and skills required to seamlessly integrate children with learning disabilities and difficulties . The course infuses ESD principles and SDGs into modern Information and Communication Technology (ICT) tools. This holistic approach seeks to foster a deep understanding of the theoretical foundations and practical applications of educational psychology, ESD, and SDGs in the unique context of early childhood education. By strategically combining these components, the course prepares educators to create engaging, effective, and technology-enhanced learning environments that contribute to sustainability goals within the MENA region by providing comprehensive insights into the transformative power of Assistive Technology (AT) within inclusive education. Through in-depth exploration of AT principles, applications, and ethical considerations, students acquire the knowledge to identify, select, and implement appropriate AT solutions tailored to the students' diverse needs. The course emphasizes collaborative practices and advocacy to ensure equitable access to AT, fostering inclusive learning environments where all students can thrive and reach their full potential.

The course comprises 7 units that are developed by Irbid National University and Al Istiqlal University, and supported by UNIPD.

Final Conclusions

Key Remarks

- The external review of the updated exisiting courses (45 courses) as well as the four new courses shows that the ICT4EDU project has exceeded the target set number of updated courses in the project proposal (40 courses). The existing courses updated within the framework of the project surpassed fourty courses, as stated in the project objectives.

- The quality and review tools for course selction and design have been carefully developped and effectively used.

- The peer-review conducted since the start of the course development workpackage was an iterative process. Each course has been internally peer-reviewed and feedback was provided at least twice by European partners before it went to the external evaluation.

- The collaborative knowledge exchange and sharing of best practices from the EU partners involved to the recipients from Jordan, Egypt and Palestine is certainly very effective to develop appropriate course syllabi, outlines and teaching materials. This cooperation with partners and follow-up to finalize an improved version of the curriculum before course implementation is extremely valuable.

- Obviously, curriculum development is an on-going process that will continue throughout the course implementation phase and even beyond.

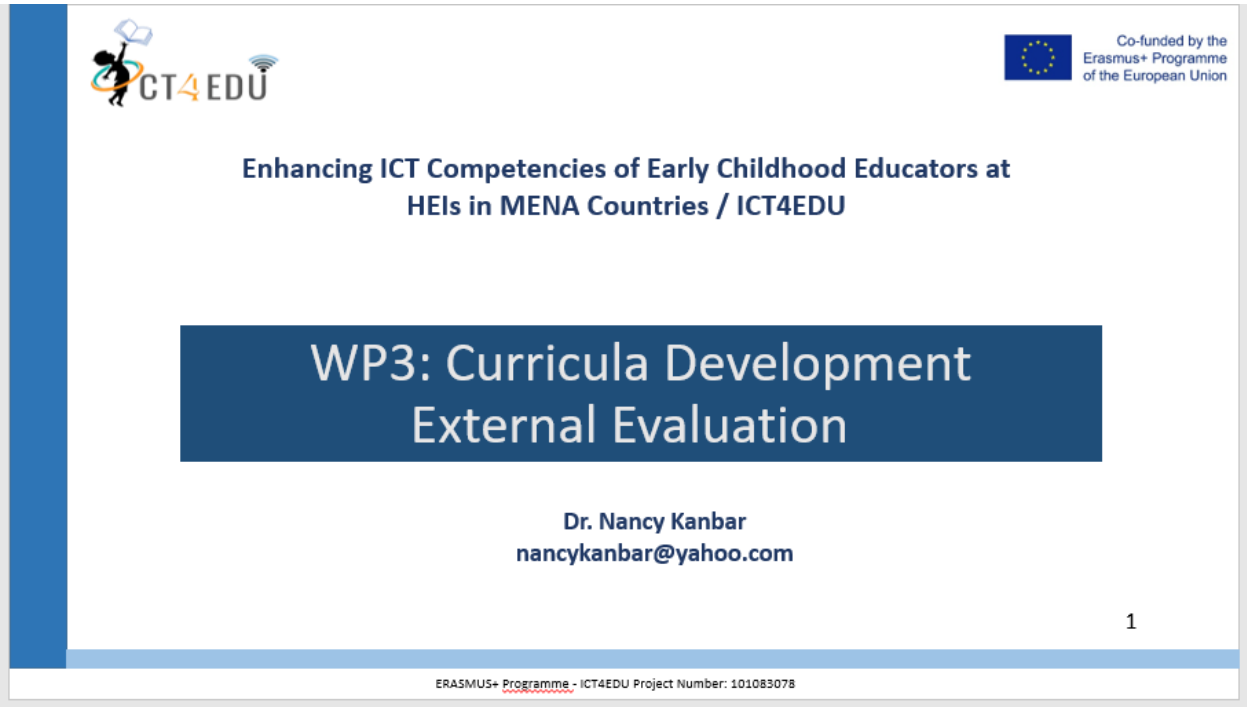
- At this stage, the external evaluator considers it trustworthy to kick off the course implementation with the current versions of the developed course syllabi, outlines and teaching materials.

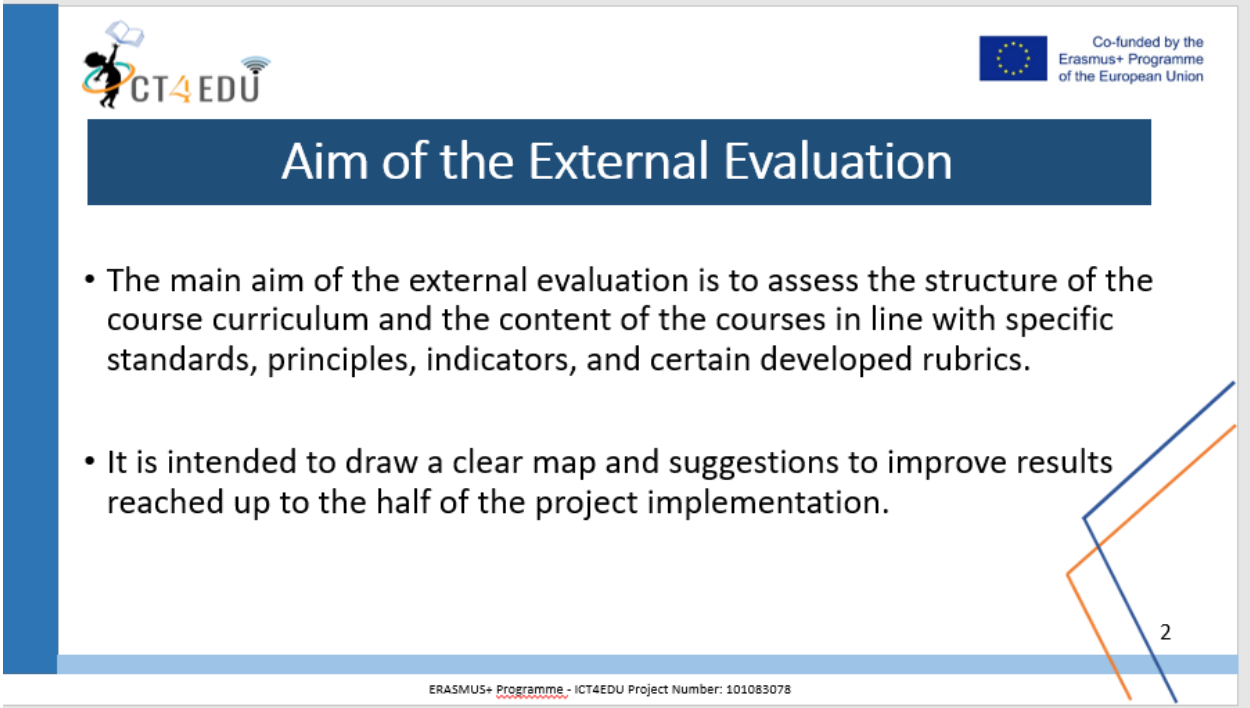
Recommendations

The below suggestions are offered for MENA partners to consider during course implementation:

Emphasize *critical thinking, problem-solving or transformative learning* (not only knowledge-oriented teaching approaches).
Match the course content with the course activities, readings, projects, games etc.
Integrate *SDGs in ECE through the use of ICT* (activities, projects, games, story-telling, applications). Even though courses involve traditional concepts in education, psychology, business etc., make sure to relate these concepts from a sustainability perspective, i.e. in the context of society, the environment, and the economy. The range of concepts and methods *cannot be presented in a detached or fragmented way*. A critical thinking approach to connect topics from an *all-inclusive* perspective is important to foster deep learning, while emphasizing *the values and societal aspect of the course.* Do not ignore the attitudes / values. Attempt to bring about *attitudinal change* as the integration of SDGs in education is at the forefront of *values and transformative learning.*
Ensure that the course content / number of units is suitable to the course duration (workload calculation based on ECTS). Student workload coverage of educational coponents (lectures, face-to-face and/or online, seminars, reflections, work placements, projects, laboratory work, self-study and examinations) should match up well with the learning objectives, outcomes and assessments. The course syllabus and outline should *reflect the workload per each unit* to ensure that students will learn what they need to as per the schedule.
Bring together the disciplinary concepts through the course work. The integration of the different disciplinary insights should lead to a meaningful application of the course concepts to the *analysis of real world problems.* From a sustainability perspective, disciplinary concepts should be combined in a pedagogical approach. The use of *case studies / class activities* help support problem-solving / critical thinking in dealing with complex real world issues that need to be tackled using an interdisciplinary approach. Assign *readings that reflect how disciplinary concepts can be blended* in a meaningful and holistic way to ensure in-depth understanding. Reading materials or *references* should be up-to-date, scientific and reliable.
Use various set of methodologies and innovative pedagogical teaching approaches enabled by ICTs to develop students' understanding and *promote deep learning*. A *multi-disciplinary methodology* helps examine challenges related to the use of ICT in ECE and helps *link theory and practice. The clear association of theoretical learning to practical and ongoing personal and professional practice* can ensure that all interrelated disciplines are examined and evaluated as knowledge and research, but also can contribute to policy and decision-making.

Annex 1: Presentation Porto meeting (July 10-12, 2024)





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MY ROLE: External Reviewer

- Review course syllabi
- Provide feedback and revise – until reaching an improved version of the ICT4EDU courses: by enhancing the content and teaching methods

3

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MY ROLE: External Reviewer

The WP3 is the core of the project, aiming at updating the curricula for preschool education, together with preparing detailed educational materials on the basis of the surveys carried out (D3.1, D3.2 and D3.3), aligned with Bologna standards for HEIs.

I am collecting final versions of syllabi for the new and adapted courses, lecture materials, etc.

Please make sure to upload final versions on shared folder.

4

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Current Status (Dr. Anisora Dumitrache)

- 45 updated courses (PASS – 6, HU -6, INU – 5, PTC – 3, PTUK – 5, SCU – 5, UJ – 5, AZH – 5, MU – 5).
- Most of the courses (syllabus and outline) are final versions, except:
  - In some cases, the first version of the course syllabus template was used
  - Formatting issues need to be addressed
- Teaching materials:
  - For those developed in Arabic, need for EN resources
  - Titles should be consistent as I need to check the uploaded files in the shared folder

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Evaluation Process

Course syllabi sent to the external evaluator were internally peer-reviewed by colleagues at Bucharest University.

After addressing the comments and feedback of the internal reviewers, the external evaluator will go through the comments and evaluate the final version of the syllabus, based on two main elements:

- The scientific content
- Teaching methodologies

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The evaluation will emphasize the below

- Extent to which the course content is relevant to the scope of the project: use of ICT in ECE
- Extent to which the course objectives are SMART (specific, measurable, aligned, realistic, time-bound)
- Clarity of the learning outcomes in terms of reflecting course objectives
- Alignment of the activities with the learning outcomes
- Extent to which activities are explained in detail with implementation steps & assessment techniques
- Extent to which course activities connect with the SDGs in key domains related to ICT in ECE
- Suitability of course content and number of units to the duration of the course (workload based on ECTS)
- Orientation towards critical thinking, problem-solving or transformative learning (not only knowledge)
- The use of case studies / activities that support pedagogically the sustainability perspective (ESD methods)
- The references and supporting reading materials (up-to-date, scientific and reliable)

7

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EVALUATION FORM (Dr. Anisora Dumitrache)

1.	The title of the units reflects the key concepts and competences
2.	The aims, course objectives, competences and learning outcomes are clearly stated for each unit. The ICT, ESD, and SDGs components of the course are visible in the course competences and learning outcomes.
3.	The evaluation approach is clearly stated
4.	Each unit has one learning assignment and relevant bibliography
5.	The content is well structured and coherent with the course aims and objectives, competences and learning outcomes
6.	There is an overall coherence in the content, learning assignments and final evaluation
7.	The course has integrated concepts or perspectives of different related fields (interdisciplinary approach)
8.	The course includes innovative pedagogical approaches (experiential learning, case studies, simulation, games, debates, project-based learning, problem-based learning) enabled by ICTs
9.	The students' workload reflects the number of allocated ECTS
10.	The learning assignments are connected with real-life issues that could be elicited from SDGs
11.	The learning assignments include ESD principles and/or contextualize ESD with ICTs and vice versa
12.	The extent to which the course has been updated compared with the original one

8

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Preliminary Syllabi Revision
Reflections and Suggestions for Improvement

- In some courses, there are opportunities to improve from the perspective of course design, readings, teaching methods and assessments to bring about more innovative insights.
- Some revised courses are more knowledge-oriented rather than addressing critical thinking, problem-solving or transformative learning.
- In some courses, the disciplinary concepts related to ICT, ECE, and sustainability are not clearly intertwined through course work. It is suggested to bring these concepts together through the use of case studies or class activities in a pedagogically innovative approach.
- Emphasizing the SDGs should be developed in a meaningful way.
- ECTS in the courses are not clearly calculated. It is not obvious to the evaluator to assess whether the learning outcomes are achieved.

9

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Preliminary Syllabi Revision
Reflections and Suggestions for Improvement

- Some courses focus on content & are concentrated on the discipline itself. Readings should reflect how disciplinary concepts can be combined. A suggestion might be to make this clear in the learning outcomes and to connect the course units. E.g. The relatedness of the use of ICT in ECE has implications on various dimensions: ethical, political, economic, social and technical. The course units should clearly show these relations- depending on the course topic.
- It is not very obvious how students will learn to apply course concepts to the analysis of real world problems.
- In some courses, there is a weak connection between the topics; i.e. the content seems to be not matching clearly with course units, activities, and readings. However, it is difficult to comment without access to course assignments, projects, discussions, etc.

10

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Preliminary Syllabi Revision
Reflections and Suggestions for Improvement

- It is suggested to use various set of methodologies in the ICT / ECE fields to promote transformative learning.
- In some revised courses, there is an ambiguous sense of balance in various parts of the course, i.e. learning outcomes, methodologies used, assignments /activities. This shows absence of an integrative approach and a lack of coherence. A more integrative and critical approach is needed using multi-disciplinary methodologies. The use of relevant case studies, projects, games, etc. is a good way to improve.
- Some revised courses involve traditional concepts in education, psychology, computer skills, social media, etc. and these concepts are obviously related to a number of areas including ECE and SDGs. While this is clearly defined at the outset, some of these aspects are only touched on in the course units. Improvement of methodologies and assessment procedures is needed.

11

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Checklists to improve the syllabi

- Integration of the SDGs
- Interdisciplinary Learning Approach
- Class Activities/ Projects / Games
- ECTS Student Workload
- Other general suggestions

12

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SDGs Integration

- ECD is included in Goal 4: "**Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**." It is specifically mentioned in target 4.2: "***By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education***"

- **Course activities should connect the 17 SDGs** in connection to a course unit. For each specific course, suggest learning activities that aim to integrate SDGs in ECE through the use of ICT (games, story-telling, applications) in connection to the main course topics.

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SDGs Integration

Course developers may include this table at the end of the syllabus listing ativities that integrate SDGs

	SDGs	learning activities integrate SDGs in ECE through ICT
1	End poverty in all its forms everywhere	
2	End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	
3	Ensure healthy lives and promote well-being for all at all ages	
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	
5	Achieve gender equality and empower all women and girls	
6	Ensure availability and sustainable management of water and sanitation for all	
7	Ensure access to affordable, reliable, sustainable, and modern energy for all	
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all	
9	Build resilient infrastructure, promote inclusive, and sustainable industrialization and foster innovation	
10	Reduce inequality within and among countries	
11	Make cities and human settlements inclusive, safe, resilient, and sustainable	
12	Ensure sustainable consumption and production patterns	
13	Take urgent action to combat climate change and its impacts	
14	Conserve and sustainably use the oceans, seas, and marine resources for sustainable development	
15	Protect, restore, and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation, and halt biodiversity loss	
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable, and inclusive institutions at all levels	
17	Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	

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Interdisciplinary Learning Approach

Food for Thought	
Does the course include disciplinary concepts and / or methods various relevant disciplines?	*Disciplinary insights need to show clear connection with the course objectives*
Are disciplinary insights integrated together in a coherent way?	*Topics should be explored in an integrative / holistic way, making valid connections across disciplinary perspectives*
Does the integration of disciplinary insights generate improved understandings of course main concepts? (linked to course learning outcomes)	*The understanding of the course concepts has been advanced by the integration of disciplinary views*
Do students demonstrate awareness of the limitations / benefits of the integrated disciplines?	*The students are aware of the integrated disciplines used, their benefits and/or limitations in relationship to one another*

15

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Class Activities / Projects / Games

1) *Define Goals, Objectives and Outcomes of the activity, project, game, etc.*
The activity should clearly define the goals and the expected learning outcomes. The connections between academic achievement and personal growth is critical to support transformative learning linked to the activity goals and learning outcomes.

2) *Merge Theory with Practice & Course Curriculum Connection*
The activity should provide students with an opportunity to use existing skills, develop new ones, and use skills in a real world setting. It should provide them with opportunities to apply new knowledge and skills in a real life context.

3) *Enhance Active Student Reflection*
The activity should be designed in a way to challenge students and should provide them with an opportunity to reflect upon their own learning and their role in society, leading to personal and societal transformation.

4) *Make a Difference*
The activity should empower students and give them the opportunity to make a difference in the society / help solve a real-life problem.

16

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ECTS Student Workload

- Reaching the learning outcomes of a course is directly linked to the *workload* (based on ECTS).
- **Workload:** Expected time an average student might need to complete the required learning outcomes.
- **ECTS**: student-centered approach of describing learning by allocating credits to learning components in line with learning objectives and outcomes, based on the workload of the average learner.

17

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ECTS Student Workload

- Calculating workload is critical to understand real learning achievements.
- To ensure students that are in track of their learning, it is important to list all activities involved in the course units in line with the learning outcomes in each unit.
- It is essential to identify the learning components that a course consists of and to weight each component in line with the learning objectives and outcomes, in total and separately for each course unit.

18

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ECTS Student Workload

The calculation method is based on the whole course and in each course unit.

The workload is divided into a series of learning components, each involving an estimated number of work hours (time factor).

The total workload should match the learning hours indicated by the credit value of the course and be consistent with the rubric.

An Example of a 10 ECTS Workload Allocation (1 ECTS=25-30 hrs)

Learning Components	No	Time Factor	Workload	Course Units						Workload
				1	2	3	4	5	6	
Lectures (face-to-face)	10	3	30	3	3	6	6	6	6	30
Online	4	3	12	3	-	4	2	-	3	12
Lab work	6	2	12	2	4	-	2	2	2	12
Reading articles (3 pages / hour)	200	0,3	60	7	8	10	10	12	13	60
Reading book chapters (5 per/h)	150	0.2	30	4	5	6	5	5	5	30
Preparing course activities	6	15	75	11	20	14	30	-	-	75
Project work	1	20	20					5	15	20
Preparation for exam	1	50	50					20	30	50
Writing the exam	1	3	3						3	3
Total			**292**	30	40	40	55	50	77	**292**

19

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ECTS Student Workload

1) Include ECTS table (see example) with guidelines on activities
2) Ensure the workload calculation is based on ECTS
3) Learning outcomes should be written clearly to reflect course objectives
4) Student workload should cover all educational components (face-to-face and/or online lectures, seminars, work placements, dissertations, projects, lab work, self-study and examinations)
5) List up all activities involved in the course units in line with the learning outcomes in each unit
6) Weight each component in line with learning objectives /outcomes, in total &separately for each unit
7) The allocation of workload should match up with learning objectives, outcomes, activities & assessments
8) The distribution of the working hours is done appropriately between course units
9) The student workload allocation should be clearly understood and communicated to students
10) There should be strong evidence that the way student workload is allocated makes easier to monitor student progress and to assess whether workload is actually implemented

20

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General suggestions you can consider

1) Courses should be oriented towards **critical thinking, problem-solving and transformative learning** (not only knowledge-oriented)

2) Course content should be covered in depth at the competences, skills, and knowledge levels. Course developers should not ignore the attitudes / values. They should bring about **attitudinal change** as the SDGs integration in education is at the forefront of **values and transformative learning**

3) Integrate **SDGs in ECE through the use of ICT** (games, story-telling, applications)

4) Bring together the disciplinary concepts through the course work. Use **case studies / class activities** that support problem-solving / critical thinking. From a sustainability perspective, disciplinary concepts should be combined in a pedagogical approach

5) Use **various set of methodologies** / **multi-disciplinary methodologies** to examine challenges related to the use of ICT in ECE and help **link theory and practice**. The clear **association of theoretical learning to practical and ongoing personal and professional practice** can ensure that all interrelated disciplines are examined

21

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General suggestions you can consider

6) The assigned **readings** should reflect how disciplinary concepts can be blended in a meaningful and holistic way to ensure an in-depth understanding of the use of ICT in ECE

7) Reading materials or **references** should be up-to-date, scientific and reliable references

8) Make sure to **match the course content** with the course activities, reading lists, projects, etc.

9) The integration of the different disciplinary insights should lead to a meaningful application of the course concepts to the **analysis of real world problems**

10) Even though courses involve traditional concepts in education, psychology, business etc., make sure to relate these concepts from a sustainability perspective, i.e. in the context of society, the environment, and the economy. The range of concepts and methods **cannot be presented in a fragmented way**. A critical thinking approach to connect course topics from an **all-inclusive** perspective is a must, while emphasizing on **the values and societal aspects of the course**. This will foster **deeper learning based on critical thinking**

22

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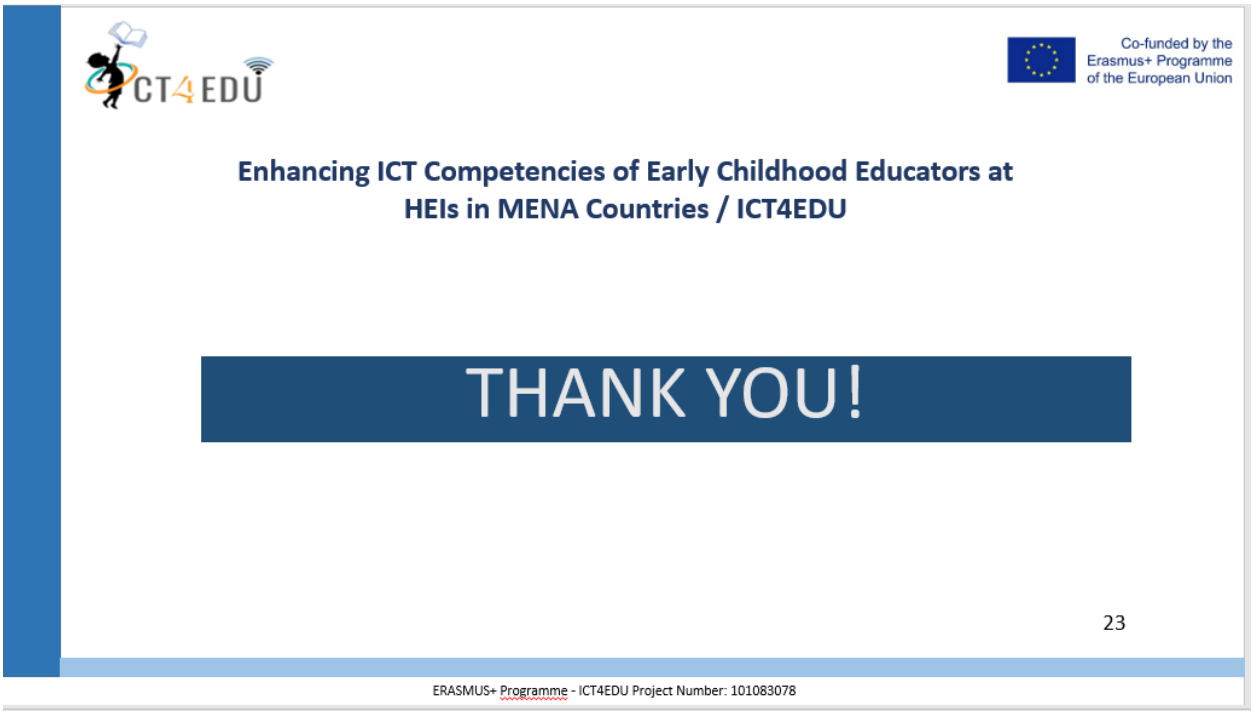
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Annex 2: Syllabi for the New Courses

Course 1. ICT and The 21st Century Preschool Education

1. COURSE DESCRIPTION

This course focuses on integrating Information and Communication Technology (ICT) into Preschool Education (PE), emphasizing the strategic use of technology to enhance learning experiences and fostering children development. It encompasses an in-depth exploration of various ICT concepts, their applications, and implications within the educational landscape. The course investigates the intersection of technology and pedagogy, emphasizing the role of ICT in shaping children's development while addressing challenges and opportunities in digital learning environments.

2. COURSE AIM AND OBJECTIVES

The aim of this course is to empower future educators from preschool education with the knowledge, skills, and competences necessary to proficiently incorporate ICT tools and strategies to optimize learning experiences for young children, fostering a comprehensive understanding of technological applications and their implications for pedagogical practices.
The main course objectives are:

- Enhance preschool learning through ICT Integration: apply fundamental ICT concepts in preschool education to enrich child development while effectively implementing diverse ICT tools to optimize learning experiences.
- Empower Educators for proactive ICT Implementation: Cultivate digital competency among pre-service teachers, enabling seamless integration of ICT tools and proactive adaptation to emerging technological trends.
- Establish safe, engaging ICT Environments: Implement safety-focused online practices for young learners in preschool education and design stimulating teaching methodologies using appropriate ICT tools to ensure secure and developmentally suitable learning experiences.

3. COMPETENCES

Transversal competences

1. Cultivate adaptable strategies to integrate diverse ICT tools within educational settings, demonstrating flexibility in adapting to evolving technological advancements and varied learning environments.
2. Critical analysis and policy implementation, developing critical thinking abilities to assess and apply educational policies in technology integration, enabling informed decisions and proactive adaptation to emerging trends across diverse educational landscapes.

3. Fostering a safety-centric mindset in designing learning environments, incorporating ergonomic practices and online safety measures adaptable to different educational contexts, prioritizing secure and conducive learning atmospheres.
4. Adapting to changing circumstances, embracing new technologies and teaching approaches.
5. Cultivate cultural sensitivity, recognizing and respecting the diversity of their students' backgrounds, experiences, and beliefs.

Professional competences

1. Developing a comprehensive understanding of ICT principles, terminology, and applications, including the different types of ICT tools, their functions, and how they can be integrated into preschool education.
2. Applying key ICT concepts—Computer Aided Instruction, eLearning, Mobile Learning—within early childhood education, identifying their role in fostering children's development while understanding associated risks and benefits.
3. Integrating diverse ICT tools into tailored teaching methodologies for pre service teachers, enhancing child development and fostering interactive learning experiences.
4. Cultivate digital competency among pre service teachers, enabling confident utilization of ICT tools and effective adaptation to technological advancements.
5. Design and implement developmentally suitable teaching methodologies using appropriate ICT tools, creating engaging and contextually relevant learning experiences for early childhood learners.
6. Introducing basic problem-solving strategies inspired by computational thinking, understanding its stages and implementing activities that foster computational thinking in early childhood learning.
7. Collaborate with peers and educational communities, sharing best practices and resources for enriched ICT integration in a collaborative learning environment.
8. Understanding the importance of ergonomic practices in ICT environments, preventing health issues, promoting well-being in educational settings, and managing screen time for children in a balanced manner.
9. Developing assessment strategies to evaluate the effectiveness of ICT integration, facilitating informed decisions and continuous improvement in teaching practices.
10. Adapting teaching approaches, integrating emerging ICT trends to foster a dynamic and innovative learning environment for young learners in preschool education.

TOPICS

Topics and subtopics	Contributor
1. Definition of ICT concepts: ICT, Computer Aided Instruction, eLearning, Web based learning, Mobile learning, Blended & Hybrid learning, Distance education, Ubiquitous learning	Mutah
2. Introduction of ICT in ECE (Early Childhood Education) and PE (Preschool Education): - defining ECE and PE - the role of ICT and children's development and growth. Risks and benefits. - particularities in the educational process for ECE &PE - digital literacy in early years	Mutah
3. Educational policies in the field of ICT: - European Policies: Overview of European guidelines, such as Key Competences for Lifelong Learning, DigComp, and DigCompEDU, influencing ICT integration in education. - Regional and National Policies: Examination of policies at regional and national levels shaping ICT implementatioin educational settings. - Pandemic Context and Educational Transformations: Understanding the impact of the pandemic on education and the resultant transformations in teaching methodologies and policies.	Mutah
4. Professional development through ICT - Teachers' training in ICT: Identification of minimum digital competency requirements and strategies for training educators in ICT. - Community of practice (CoP) in Early Childhood ICT: Exploring CoPs, their types, criteria for membership, responsibilities, and best practices in academic communities focused on early childhood ICT. - Online learning in professional development: Utilization of online platforms for continuous professional growth and skill development among educators.	Mutah

5. Innovative pedagogies - Gamification: is the integration of gaming elements into the learning process which can increase motivation and engagement. By incorporating elements like points, badges, leaderboards, and challenges, teaching and learning become more competitive and interactive. - Game Based Learning: using digital games to incorporate learning activities through games to refresh old concepts or solidify new ones. Also the process of digital games creation is a process that enhance students' digital competences and creativity. - Flipped Classroom where students access learning content (e.g., pre-recorded lectures or reading materials) outside of class, allowing in-class time to be utilized for interactive activities, discussions, and problem-solving. - Virtual and/ or Augmented (VR / AR): for immersive learning experiences by using virtual environments and augmenting real-world scenarios (role playing, virtual visits, experiments). Related to experiential learning. - Project-Based Learning (PBL): real-world problems, situations with group work creating contexts for research, analyze, and find solutions collaboratively. The projects are developed by students, the tasks and coordination distributed among them. - Digital storytelling: storytelling can be integrated in various learning context to foster the educational experiences. The use of video stories is broad, from enhancing understanding of notions and concepts to forming real world skills, cultural and global awareness. Video stories can be used in teaching & learning and also for reflection and assessment. - Mind Mapping: use to represent ideas, concepts, and relationships. This visual tool helps students organize information, enhance their memory and comprehension, connect different concepts, and ideas.	SCU
6. Computational thinking in ECE and PE: introduction to basic problem-solving strategies inspired by computational thinking for early childhood learning. - What is computational thinking - The stages of computational thinking - Examples of activities to develop computational thinking	SCU

7. Online learning environments: here will be explored subjects such as: educational platforms, MOOC's a. Educational platforms: - Introduction to various educational platforms used for teaching and learning purposes, such as learning management systems (LMS), content management systems, and collaborative tools. - Explanation of how these platforms facilitate content delivery, assessment, collaboration, and communication among educators and students. b. Massive Open Online Courses (MOOCs): - Overview of MOOCs as online courses open to unlimited participation and accessible through the internet. - Explanation of their structure, diverse course offerings, interactive elements, and their potential impact on lifelong learning and professional development for educators. c. Understanding and evaluating online learning environments: - Evaluation criteria such as usability, accessibility, interactivity, adaptability, and relevance for educational purposes. - Guidance on selecting appropriate environments for specific learning objectives, considering students' needs and educational contexts.	SCU
8. Emerging trends in educational technology: brief introduction to emerging technologies such as augmented reality, artificial intelligence, and 3D printing in educational contexts. - Augmented reality and virtual reality - Artificial intelligence - Internet of Things - 3D printing - Robots	SCU
9. Internet and online safety: - Cybersecurity: Measures and practices to safeguard digital systems, networks, and data from online threats and unauthorized access. - Policies for Children's Safety Online: Formulation and implementation of policies ensuring children's safety and protection in the online environment. - Cyberbullying, Online Identity, and Privacy: Understanding and addressing issues related to cyberbullying, protecting online identities, and ensuring online privacy. - Netiquette: Etiquette guidelines for online communication and behavior.	SCU

10. Ergonomics and wellbeing in using ICT - The classroom setting: importance of ergonomic practices, ergonomic-friendly ICT environments - Preventing common health issues like eyestrain, repetitive strain injuries (RSI), and back pain. - The role of schools and educational institutions in promoting well-being through policies, support systems, and resources. - Children wellbeing and the screen-time management. Balance between online and offline activities	SCU

Books

1. Isenberg, D. J., & Jacobs, J. (2003). Early childhood technology and digital literacy: Bridging the gap. Taylor & Francis.
2. Greenhow, C. A., & Gleason, K. J. (2012). Digital literacies for young children: Nurturing a 21st-century skill set. Routledge.
3. Moyles, J. K., Adams, J., & Kishimoto, S. (2015). Using technology with young children: Applying the digital age to early learning. Routledge.
4. Wright, D. J., & Mandinach, S. R. (2011). Transforming early childhood education with technology. Pearson Education.

Websites

1. Coursera: www.coursera.org
2. International Society for Technology in Education (ISTE): https://iste.org/
3. National Association for the Education of Young Children (NAEYC): https://www.naeyc.org/
4. Google for Education: https://edu.google.com/
5. Microsoft Education: https://www.microsoft.com/en-us/education
6. Khan Academy: https://www.khanacademy.org/

Course 2. ICT Skills in Practical

Course description

This course provides an overview of the use of ICT (Information and Communication Technology) in Early Childhood Education (ECE). It explores the different types of ICT tools and resources that are available for use in the ECE setting, and discusses the selection criteria and suitability of these tools for young children. The course also covers the use of ICT for teaching, evaluation, and creating visual and graphical materials, offering also tools for designing educational materials educational games, online tests, and the management of virtual classrooms. The process of designing and implementing digital educational resources is explored to find how technology can be used effectively to enhance learning experiences while addressing the unique needs and developmental stages of young children. By fostering digital literacy and hands-on practice, the course equips future educators with comprehensive competencies essential for employing ICT tools in preschool educational settings.

Within this course examples of educational software and apps are provided. Even though these are suitable for early childhood education, the list can be updated and/or changed according to each partner previous experience in the field.

COURSE OBJECTIVES

1. Equip future teachers with the knowledge and skills to select and effectively use ICT tools in early childhood education.
2. Explore a wide range of ICT tools and their applications in the classroom, with hand on activities that will enhance practical skills.
3. Categorize and classify ICT tools for better integration into teaching practices.
4. Offer nuances of designing and implementing digital educational resources for early childhood education, focusing on instructional design, user experience, personalization.

TRANSVERSAL COMPETENCES

1. Enhancing critical thinking skills by the evaluation and selection of ICT tools for educational purposes, ensuring effective integration in different educational contexts.
2. Adapting to emerging educational technologies and pedagogical approaches, fostering a responsive and flexible teaching environment, and collaborative environments.
3. Collaborative problem-solving, teamwork and cooperation for evaluating, comparing, and discussing the suitability of various ICT tools for educational purposes.

PROFESSIONAL COMPETENCES

1. Integrating Open Educational Resources (OERs) and digital educational resources into early childhood education curriculum, aligning content with learning objectives and developmental stages.
2. Assessing, selecting, and implementing suitable ICT tools for early childhood education based on criteria like accessibility, educational value, and user-friendliness.
3. Creating and using digital educational resources while understanding their advantages and limitations in enhancing preschool education.
4. Ability to apply diverse criteria effectively for selecting ICT tools, emphasizing user-friendliness, inclusiveness, educational value, and safety.
5. Using various educational software, apps, audio, and video tools, incorporating them effectively for teaching, evaluation, and content creation.
6. Designing visual and graphical materials, utilizing diverse tools to enhance educational content within preschool settings.
7. Using authoring tools effectively for creating digital lessons and educational content suitable for preschool education.
8. Managing virtual classrooms using Learning Management Systems (LMS).
9. Identifying different communication tools, interactive whiteboards to facilitate robust interaction within virtual learning environments.
10. Ability to adapt instructional design methodologies and pedagogical strategies to suit the developmental needs, cognitive abilities, and learning characteristics of preschool children.
11. Planning user-friendly interfaces and intuitive navigation systems tailored explicitly for preschool children

TOPICS

Topics and subtopics	**Contributor**
1. Open Educational Resources for Early Childhood Education a. Digital educational resources and Open Educational Resources: definition, classification, the "five R" of OER. b. Teacher as creator or user of digital educational resources: using existing digital educational resources: advantages and limits; creating digital educational resources: advantages and limits c. Open educational practices d. Open Educational Licenses (Creative Commons)	**Dr. Hamad (UJ)**

2. Selection criteria and suitability of ICT tools for early childhood education Example of criteria that should be used in selection process a. Popularity: based on other teacher preferences, b. Rating: is visible to user and is based on previous experiences of other users. c. User friendly interface: the tool should have a user-friendly interface that is easy for both educators and students to navigate. Minimal training to use the tool is ensured d. Accessibility and inclusiveness: the tool should be accessible to all students, including those with disabilities. e. Relevance and alignment with learning objectives: Age-appropriate, suitable for the grade level and developmental stage of the learners, support and align with the learning objectives, it is relevant to the subject matter or content being taught. f. Educational Value: a clear educational purpose and provide opportunities for skill development, such as literacy, numeracy, problem-solving, and critical thinking. g. Interactive and Engaging Design: the tool features interactive elements, engaging visuals / animations / video and audio h. Safe and child friendly environment: data privacy and security, ensuring compliance with privacy laws and data protection regulations; Ads and pop-up free, no external unappropriated content *The list above can be transformed into a matrix. Hands on activity on evaluating and comparing different ICT tools*	**Nashaat Jallad (ptuk)**
3. The process of designing and implementing digital educational resources ● Instructional design models and adapting instructional design principles for early childhood tailoring instructional design methodologies to suit the cognitive abilities and learning characteristics of young children. ● User Experience (UX) design for Early Childhood digital resources to design user-friendly interfaces and intuitive navigation systems in digital resources: age-appropriate interface design, minimizing complexity, maximizing engagement through interactive elements while considering children's motor skills and attention spans. ● Personalization and differentiation in learning in digital environment: strategies to personalize digital resources to accommodate diverse learning styles and abilities, adaptive learning technologies, content customization based on individual progress, scaffolding techniques to support varying levels of comprehension.	**Nashaat Jallad (ptuk)**

• Types of feedbacks for Early Childhood using digital resources, suitable assessment methods and feedback mechanisms within digital resources, integrating formative assessments into games or interactive activities, providing immediate feedback, and using data analytics to track children's progress while ensuring the assessment methods align with developmental stages.	
4. **Educational Software and Apps** • Introduction to educational software and apps. • General presentation of ICT tools for teaching and evaluation: - creating, editing and dissemination of audio and video files - creating visual and graphical materials - game apps and puzzles - online tests - authoring tools	**Nashaat Jallad**
5. Audio and video files a. Introduction to audio and video creation: importance in education, selection criteria, applicability, type of activities. b. Digital storytelling in education c. Exploring tools for video/audio creation[1] (hands on activities): Audacity: (https://www.audacityteam.org/); Online voice recorder (https://online-voice-recorder.com/); Online Screen Recording: (https://screenapp.io/#); Screencastify: (https://www.screencastify.com/); Animoto: (https://animoto.com/); FILMORA: (https://filmora.wondershare.net/); FILMIGO: (https://play.google.com/store/apps/details?id=com.funcamerastudio.videomaker&hl=en&gl=US); MS Photos (from MS Office); Power Point (exporting slides in video format, or screen recording function)	**Yousef Arouri (UJ)**
6. Visual and graphical materials a. Introduction to visual and graphical materials: added value for education, selection criteria, applicability, type of activities b. Exploring tools visual and graphical materials: (hands on activities): Canva (www.canva.com); Desygner (https://desygner.com/); Vista Create: (https://crello.com/home/); Piktochart (http://www.piktochart.com/); Picsart (https://picsart.com/); Venngage (https://venngage.com/); Lucid: (https://lucid.app/documents#/dashboard); Microsoft Word (chart and diagram function) MS Excel (charts and diagram function).	**Nashaat Jallad**

[1] This list of tools is a suggestion, can be updated and/or changed according to each partner previous experience in the field. The tools proposed above are free of charge or have a free of charge version

7. Game apps and puzzles a. Introduction to educational game apps and puzzles: added value for education, selection criteria, applicability, type of activities. b. Game based learning and gamification. c. Exploring game apps and puzzles: Gamilab (https://gamilab.com/), Scratch (https://scratch.mit.edu/); Blockly (https://developers.google.com/blockly); Genially (https://genial.ly/); I'm a puzzle**:** **(**https://im-a-puzzle.com/); Jigsaw puzzle (https://www.jigsawplanet.com/)	**Diala Hamaidi (UJ)**
8. Online tests/assignments a. Introduction in online evaluation: added value for education, selection criteria, applicability b. Exploring online tests tools: Google Forms: (forms.google.com); Microsoft forms: (polls.https://forms.office.com); Quizzez (https://quizizz.com/); Wordwall (https://wordwall.net/); Educaplay (https://www.educaplay.com/); EdPuzzle: (https://edpuzzle.com/); Kahoot (kahoot.com); Quizlet Live (https://quizlet.com/live); Gimkit (gimkit.com); Liveworksheets (https://www.liveworksheets.com/)	**Yousef Arouri (UJ)**
9. Authoring tools a. Digital lessons added value for education, selection criteria, applicability b. Exploring authoring tools: UDUTU (https://www.udutu.com/); Livresq (https://livresq.com/ro/)	**Nashaat Jallad (ptuk)**
10. ICT tools for managing virtual classrooms a. Learning Management System: defining LMS, features and tools included. Examples of LMS (Moodle, Blackboard, Sakai etc) b. Tools for classroom management: features and tools. Examples of tools: Google Classroom, MS Teams c. Synchronous communication: video conference tools, chat d. Asynchronous communication: email, discussion formums e. Interactive whiteboards	**Dr. Hamad (UJ)**
11. Social media in education a. Social media and their influence in constructing knowledge. Online communities b. Example of social media platforms: Facebook, Wiki, Blogs	**Diala Hamaidi (UJ)**
12. Designing and developing innovative pedagogies practices. Building educational resources for: a. Gamification b. Game Based Learning	**Nashaat Jallad (ptuk)**

c. Flipped Classroom d. Virtual and/ or Augmented (VR / AR) e. Project-Based Learning (PBL) f. Digital storytelling g. Mind Mapping	

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Desygner (https://desygner.com/)
Educaplay (https://www.educaplay.com/);
EdPuzzle: (https://edpuzzle.com/)
FILMORA: (https://filmora.wondershare.net/);
FILMIGO:
(https://play.google.com/store/apps/details?id=com.funcamerastudio.videomaker&hl=en&gl=US);
Gamilab (https://gamilab.com/)
Genially (https://genial.ly/)
Google Forms: (forms.google.com)
Gimkit (gimkit.com);
I'm a puzzle**:** **(**https://im-a-puzzle.com/)
Jigsaw puzzle (https://www.jigsawplanet.com/);
Kahoot (kahoot.com)
Liveworksheets (https://www.liveworksheets.com/)
Lucid: (https://lucid.app/documents#/dashboard)
Online voice recorder (https://online-voice-recorder.com/);
Online Screen Recording: (https://screenapp.io/#);
Microsoft forms: (polls.https://forms.office.com)
Moodle: https://moodle.org/
MS Teams: https://www.microsoft.com/en-us/microsoft-teams/
Piktochart (http://www.piktochart.com/)
Picsart (https://picsart.com/)
Quizzez (https://quizizz.com/)
Quizlet Live (https://quizlet.com/live);
Screencastify: (https://www.screencastify.com/);
Scratch (https://scratch.mit.edu/)
Vista Create: (https://crello.com/home/)
Venngage (https://venngage.com/)
Wordwall (https://wordwall.net/)

Course 3. Creating Educational Resources for Early Childhood Education

COURSE DESCRIPTION

The aim of this course is to offer a guide in developing educational resources and to introduce ICT enhanced basics of education for sustainable development. Students will learn about various digital tools and platforms that can be used to create engaging and interactive learning experiences that foster understanding of sustainability concepts. This course examines how ICT can be used to enhance education for sustainable development (ESD) and the integration of Sustainable Development Goals (SDGs) into early childhood education curriculum. It offers resources to develop proficiency in creating engaging digital resources, employing game-based learning, digital storytelling, and adaptive tools to promote sustainability in early childhood education. The course offers a comprehensive exploration encompassing classroom integration, the parents' role and ways of communication, addressing diverse learning needs, ethical considerations, and innovative assessment methodologies tailored for the unique characteristics of young learners in the pursuit of sustainable education.

TRANSVERSAL COMPETENCES

1. Initiating and facilitating students' access to knowledge and raising awareness in the field education for sustainable development
2. Effective communication skills for engaging with young children, collaborating with educators and parents, and conveying sustainable development concepts using digital tools.
3. Cultivating adaptability in using various digital tools and educational resources for early childhood education.
4. Participating in one's own professional development and promoting innovations in educational practice

PROFESSIONAL COMPETENCES

1. Ability to integrate Sustainable Development Goals (SDGs) effectively into early childhood education curriculum, aligning content with learning objectives and developmental needs.
2. Implementing innovative teaching methods, such as game-based learning, digital storytelling, and play-based activities to foster sustainable development awareness among young learners.
3. Evaluating various digital tools, educational software, and apps tailored for early childhood education to enhance learning experiences.
4. Adapting teaching approaches and materials to accommodate diverse learning styles, abilities, and cultural backgrounds while promoting sustainability.
5. Creating different digital educational resources and interactive learning activities centered on sustainable development goals.
6. Developing age-appropriate assessment strategies and the use of digital tools for evaluating children's progress in understanding and practicing sustainability concepts.
7. Collaboration and communication with parents, educators, and the community, fostering partnerships for promoting sustainable practices in early childhood education through digital communication tools.

8. Addressing diverse learning needs within a sustainable context, promoting inclusivity, and adapting materials to support children with varying abilities and backgrounds.
9. Reflecting on teaching practices, evaluating the effectiveness of digital resources in promoting sustainable development education, and implementing improvements based on assessment outcomes and feedback.

TOPICS

Topics and subtopics	Contributor
1. **Introduction to ICT enhanced Early Childhood Education and education for sustainable development** o Overview of the course objectives and structure. o Understanding the learning needs and characteristics of children. o Introduction of Education for Sustainable Development (ESD) o Sustainable Development Goals (SDG) o Role of ECE in sustainable development awareness by exploring the impact of early childhood education on sustainable development and how young children can contribute to sustainability.	**HU**
2. **Digital tools for Early Childhood Education** o ICT Tools for environmental monitoring: Explore digital tools that enable children to monitor and collect data on environmental factors, fostering a hands-on approach to understanding sustainability.	**PTC**
3. **Creating digital educational resources** o Pedagogical approaches for ICT in education. Designing and integration of digital educational resources to promote ESD in early childhood education. o Teaching creatively by using digital resources: introduction to digital educational resources and their role in teaching, learning and evaluation. o Game based learning, gamification and video storytelling: basics of creating educational videos with a focus on sustainability, use of digital storytelling tools and platforms for sustainable education. o Creating worksheets, flashcards, and other resources for learning	**AZH**
4. **ICT - enhanced ESD and SDGs in ECE curriculum**: Integrating the ESD and SDGs into the early childhood curriculum and create learning experiences that promote sustainability through: o Game based learning and gamification activities o Use of digital interactive learning games and activities o Incorporating play-based learning in learning activities o Storytelling for young learners in a sustainable context o Understanding the importance of storytelling in sustainable early childhood education.	**AZH**

5. **Classroom Integration and Lesson Planning** o Integrating SDGs and ICT into the early childhood curriculum to create learning experiences that promote sustainability. o Adapting materials to different learning styles and abilities. o Use of digital tools in lesson planning.	**HU**
6. **Effective Communication with Parents** o The role of parents in early childhood education. o Use of digital communication tools for sustainable parent-teacher interactions. o The importance of community and parental involvement in ESD, facilitated by digital communication tools.	**HU**
7. **Special topics in Early Childhood Education** o Addressing diverse learning needs in a sustainable manner. o Inclusive education in a sustainable early childhood context. o Ethics and best practices in sustainable early childhood education.	**HU**
8. **Assessment and evaluation in Early Childhood Education** o Understanding the unique needs and characteristics of young learners and various assessment methodologies in early childhood education o Designing appropriate assessment strategies for ESD in ECE. o Introduction to digital tools and platforms for assessments	**AZH**

Examples of Learning Assignments & Practical Activities that could be added:

ICT Tool Evaluation and Comparison:

- **Assignment:** Evaluate and compare two or more educational apps for early childhood education, emphasizing sustainability features.
- **Practical Activity:** Use platforms like Canva or Microsoft Word to create a visually appealing comparative analysis, highlighting key features, usability, and sustainability alignment.

Digital Mindfulness and Sustainability Workshop:

- **Assignment:** Develop a workshop integrating digital mindfulness practices with sustainability concepts for young learners.
- **Practical Activity:** Create a presentation using Google Slides or Microsoft PowerPoint, outlining mindfulness techniques and their role in promoting sustainable awareness among children.

Virtual Museum Exhibition on SDGs:

- **Assignment:** Create a virtual museum exhibition featuring artworks or projects related to Sustainable Development Goals.
- **Practical Activity:** Use platforms like Canva to design a virtual exhibition space, incorporating images, descriptions, and interactive elements to educate visitors about SDGs.

BIBLIOGRAPHY

Course 4. ICT for Children with Special Educational Needs

COURSE DESCRIPTION

Educational Needs (SEN), providing comprehensive insights into the transformative power of Assistive Technology (AT) within inclusive education. Through in-depth exploration of AT principles, applications, and ethical considerations, students acquire the knowledge to identify, select, and implement appropriate AT solutions tailored to their students' diverse needs. The course emphasizes collaborative practices and advocacy to ensure equitable access to AT, fostering inclusive learning environments where all students can thrive and reach their full potential. It also aims to empower future educators to create environments where every student, irrespective of their abilities, thrives and realizes their fullest potential in a supportive and inclusive educational landscape.

OBJECTIVES OF THE COURSE

This course aims to provide students with a comprehensive understanding of assistive technology (AT) in the context of special educational needs (SEN). The objectives of the course are:

- To offer knowledge about the framework of the social-educational policies of the School for All in order to raise awareness and assumption of its values
- To offer in-depth knowledge and understanding of AT principles, applications, and ethical considerations in the context of SEN.
- To foster a collaborative and inclusive approach to AT integration, communication, and advocacy, ensuring equitable access and support for all students with SEN.
- To familiarize students with assistive technologies and the integration of AT into teaching and learning in order to facilitate inclusion in education and society for various categories of children with special educational needs (SEN)

TRANSVERSAL COMPETENCES

1. Critical analysis of the concepts of inclusive education, barriers to learning, and the role of AT in overcoming these barriers and the evaluation of the impact and effectiveness of various AT tools for different disabilities
2. Demonstrate effective problem-solving skills to identify and address challenges in AT assessment, selection, implementation, and collaboration.
3. Understanding the diverse needs of individuals with disabilities and applying AT to address these needs and the evaluation of tools for specific disabilities and their application in different contexts.

4. Embrace and respect diverse cultural backgrounds and perspectives in applying AT to support the learning and well-being of students with SEN from various cultural backgrounds.

PROFESSIONAL COMPETENCES

1. Developing a comprehensive understanding of the principles and practices of assistive technology (AT) in the context of special educational needs (SEN).
2. Understanding the evolution of inclusive education from the Salamanca Declaration to the Index for Inclusion and comprehending the barriers to learning lays the foundation for implementing inclusive education practices using AT effectively.
3. Articulate the biopsychosocial model of disability and its significance in assessing and intervening with students with SEN using AT.
4. Understand and apply Universal Design for Learning (UDL) principles to incorporate AT into curriculum design and instruction.
5. Implement AAC strategies and tools to support communication and engagement for students with communication difficulties.
6. Familiarity with a wide array of AT tools for different disabilities, such as alternative keyboards, speech synthesizers, Braille displays, and more, equips students with technical proficiency to select and implement suitable technologies based on individual needs.
7. Collaborate with teachers, parents, and other professionals to implement AT solutions in a collaborative and cohesive manner.
8. Communication and Collaboration with educators, learners, and communities for the effective use of assistive technologies in educational and everyday life scenarios, including to articulate complex details about assistive technology tools and strategies in a clear and comprehensible manner.
9. Document AT interventions, their outcomes, and the progress of students with SEN to facilitate ongoing assessment and improvement.
10. Exploring AT applications beyond the classroom to facilitate access to economic, social, and cultural life for individuals with disabilities nurtures a competence in community engagement and advocacy for accessibility.

TOPICS

Topics and subtopic	Contribution
1. Assistive technology (AT) and School for all – 2h - `School for all` approach – from Salamanca Declaration (1994) to Index for Inclusion (2011). - European policies regarding the special educational needs (European Disability Strategy 2021-2030, which aims to ensure the full participation of people with disabilities, emphasizing the use of AT in education and employment for an inclusive Lifelong Learning, highlighting the importance of digital competence, which includes the use of AT, as a ve society; European Framework for Key Competences for fundamental skill for learners, including those with special educational needs). - Special educational needs spectrum (OECD, 2020) - Inclusive schools and barriers in learning and participation - AT role for inclusion – accessibility in school and in classrooms	**AL Istiqlal University** **Amer Shehadeh** A presentation about disability and the rights of the disabled (Power Point). It is possible to host a disabled person who is successful in his work to talk about difficulties and challenges and how to overcome them. Working groups to discuss European Union policies for disabled rights, and then present the groups' findings for general discussion. Showing films about the successes of people with disabilities. Showing films about qualified schools for people with special needs. Organizing workshops for various samples of society in order to talk about the importance of education for all.
2. Disability in the context of biopsychosocial model – 2h - The role of functional profile and of environmental factors. AT as learning facilitator - The International Classification of Functioning, Disability and Health (ICF) - Evaluation of special educational needs. Tools for assessment	**AL Istiqlal University** **Dr Anwar**

3. AT and Universal Design for Learning (UDL) -2h - UDL approach (principles and practices) and curricular adaptation - AT specific for UDL – for teachers (curricular design) especially to: create content, share it as learning tasks with students or as best practices, interact and manage/organize online instruction, provide more options for students to learn information and demonstrate what they know; - AT specific for UDL – for learners especially for: learning using digital resources (textbooks, websites, online programs, etc.), carrying out activities using software and applications that increase the efficiency of learning, receiving and sending assignments, interacting with colleagues and with teachers, to use assistive technologies for learning.	
4. AT in everyday life **AT and learning difficulties. Augmentative and** , hearing disabilities, physical disabilities, **alternative communication (AAC)`s tools. -6h** - AT specific for children with visual disabilitiescommunication difficulties, with specific learning disorders; - AT Specific for Different Disabilities: ***a.*** *Visual Disabilities:* Screen readers (e.g., JAWS, NVDA) Braille displays/keyboards Magnification software/hardware Optical character recognition (OCR) software ***b.*** *Hearing Disabilities:* Hearing aids Personal FM listening systems Captioning and transcription tools ***c.*** *Physical Disabilities:* Alternative keyboards/mi *Difficulties* Switches and pointing devices Eye control/gaze technologies ***d.*** *Communication:* Augmentative and alternative communication (AAC) systems Augmentative and alternative communication platforms (ARASAAC) Symbolization software Speech synthesis software ***e.*** *Specific Learning Disorders:*	

Text-to-speech software Speech recognition software Graphic organizers/outlining tools ***f.*** *Additional Assistive Technologies:* Alternative input devices (e.g., sip-and-puff devices-SNP) Portable word processors Electronic math worksheets Variable speed tape recorders Writing aids (e.g., word prediction software) Interactive educational software and apps tailored for disabilities Closed-captioned and audio-described educational videos Cognitive aids (e.g., memory aids, organizational software)	
5. Assistive Technology for Students with Autism Spectrum Disorders (ASD): Focus specifically on the application of assistive technology to support the unique learning and communication needs of students with ASD.	
6. AT in everyday life - Inclusive community and access to economic, social and cultural life and leisure for people with special needs	**AL Istiqlal University** **IBRAHIM SHOLI**
7. Assistive Technology for Transition to Higher Education and Employment: - Explore how assistive technology can facilitate the transition of students with special needs from school to higher education and employment.	**AL Istiqlal University** **DR. FOUZIA.MARMASH**

Examples of learning assignments & practical activities that could be added:

AT Case Studies:

- **Assignment:** Analyze real-life case studies where assistive technology was implemented successfully or faced challenges.
- **Practical Activity:** Discuss and present findings, exploring alternative solutions and recommendations.

AT Toolkit Creation:

- **Assignment:** Create a toolkit of various assistive technology tools, categorizing them based on disability types and learning needs.
- **Practical Activity:** Collaborate to compile a comprehensive list and test select tools.

AT User Training Module:

- **Assignment:** Create an example for educators on using a specific assistive technology.
- **Practical Activity:** Conduct a training session for peers using the example.

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