



WP 3.1. EVALUATION OF ACTIVITIES GUIDELINE



**Enhancing Practices and Strengthening Core Competencies
in Disaster Nursing through the Learning HUB (ECoDN-HUB)**

2024-1-TR01-KA220-HED-000245267

Cooperation partnerships in higher education (KA220-HED)

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Evaluation of Activities Guideline Content

EVALUATION OF ACTIVITIES
▪ Transnational Project Meetings (TPMs) evaluation
▪ Training for scenario writing and AR/VR tools development evaluation
▪ Guideline of scenario writing and AR/VR development
▪ Animation about disaster nursing awareness evaluation
▪ AR/VR videos evaluation
QUALITY AND SUCCESS INDICATORS OF WPs
▪ Quality and success indicators for WP 1
▪ Quality and success indicators for WP 2
▪ Quality and success indicators for WP 3
▪ Quality and success indicators for WP 4

Evaluation and Validation Guideline content includes the Evaluation of activities in the project, Transnational Project Meetings (TPMs) evaluation, Training for scenario writing and AR/VR tools development, Animation about disaster nursing awareness evaluation, AR/VR videos evaluation, Quality and success indicators for all work packages.

EVALUATION OF ACTIVITIES

Evaluate all training processes in the development of knowledge, skills and competencies for disaster nursing and determining whether the training provided and the prepared guide and handbook meet the expected standards. Within the scope of the Evaluation of Activities, Transnational Project Meetings (TPMs) evaluation, Training for scenario writing and AR/VR tools development, Animation about disaster nursing awareness evaluation, AR/VR videos evaluation, Quality and success indicators for WP 1, Quality and success indicators for WP 2, Quality and success indicators for WP 3, and Quality and success indicators for WP 4 were done.

TRANSNATIONAL PROJECT MEETINGS (TPMS) EVALUATION

Transnational Project Meetings (TPMs) satisfaction surveys were created separately for online and face-to-face TPMs. The TPM online satisfaction questionnaire consists of 9 items, and the TPM face-to-face satisfaction questionnaire consists of 10 questions. The survey questions were about the communication and attitude of the project team, opportunity to reach the team, resolution of problems, information about procedures for the meeting, meeting platform or location, meeting agenda, and time management. The questionnaire consisted of four Likert-type “Strongly Disagree”, “Disagree”, “Agree”, and “Strongly Agree” questions. The following are the questionnaire forms applied for face-to-face and online TPMs.

TPM SATISFACTION QUESTIONNAIRE (ONLINE)

Date:

Place:

Name/institution:

No	Your level of participation in the following expression (x) mark	Strongly Disagree	Disagree	Agree	Strongly Agree
1	The communication and attitude of the project team were appropriate.				
2	There was an opportunity to reach the project team				
3	My requests were fulfilled on time.				
4	Problems could be solved quickly.				
5	I have been adequately informed about the procedures.				
6	The online meeting platform was suitable for the meeting				
7	Before the meeting information was enough.				
8	The agenda of the meeting was appropriate.				
9	Time management of meetings was appropriate.				

TPM SATISFACTION QUESTIONNAIRE (FACE TO FACE)

Date:

Place:

Name/institution:

No	Your level of participation in the following expression (x) mark	Strongly Disagree	Disagree	Agree	Strongly Agree
1	The communication and attitude of the project team were appropriate.				
2	There was an opportunity to reach the project team				
3	My requests were fulfilled on time.				
4	Problems could be solved quickly.				
5	I have been adequately informed about the procedures.				
6	Meeting environment was favorable enough.				
7	Meeting environment was sufficient in terms of technological equipment.				
8	Before the meeting information was enough.				
9	Agenda of meeting were appropriate.				
10	Time management of meeting was appropriate.				

The training for Scenario writing and development of AR/VR tools was held in Romania on March 3-7, 2025. During the training, various measurement tools were used to evaluate the efficiency and effectiveness of the training.

Pre-test: The pre-test questions included questions about participant background such as gender, age, country, years of work, experience. All participants were asked to answer the questions about the frequency of use of the listed technology on a five-point Likert scale: “I’m not sure what it is”, “I haven’t used it”, “I’ve used it once”, “I’ve used it occasionally” and “I’ve used it often”. Participants were also asked to mark their opinions about VR/AR and thoughts on training for scenario writing for VR/AR videos in disaster nursing on a 10-point Likert-type scale. Two open-ended questions included expectations for scenario writing training and concerns about the use of VR/AR technology in nurse education for disaster preparedness.

Post test: The post-test included the evaluation of the opinions about the scenario writing training for VR/AR videos in disaster nursing on a 10-point Likert-type scale from “I definitely disagree (1)” to “I definitely agree (10)”. In addition, two open-ended questions in the post-test; the most useful aspect of the scripting training was that there was something unexpected that you learned in the home study that could influence future VR/AR videos.

The General Evaluation: The General Evaluation and Training Satisfaction Questionnaire consisted of 15 items, “Strongly Disagree” “Disagree” “Agree” “Strongly Agree” four Likert type questions and three open-ended questions; the most valuable aspect of the training, improvements that suggest for future training sessions, any additional comments or suggestions.

PRE-TEST ECoDN-HUB

ID NUMBER PARTICIPANT (name):_____

Background Questions

Gender: _____

Age: _____

Country/University/Native language : _____

Current position: _____

How long have you been working in this position? Please circle

- 0-10 years
- 11-20 years
- 21-30 years
- More than 31 years

Your experience with technology, please circle

Have you previously used VR/AR? Yes No

Have you previously participated in VR/AR training for nursing? Yes No

Attitude questions

In the past year, please check how often you have used the technology listed here:

	I'm not sure what it is	I haven't used it	I've used it once	I've used it occasionally	I've used it often
Smart speakers such as Google Home, Amazon Echo, etc.					
Watches, rings, etc. that measure health/sleep through biometric data.					
Home robots, e.g., vacuum cleaner, lawn mower.					
VR equipment.					
Entertainment robots, e.g., robotic dog, cat.					
Voice assistant in computer/watch/phone (e.g., Google Assistant, Siri, etc.).					

Health monitoring applications (measuring e.g., sleep, weight, diet).					
AI that generates text, e.g., ChatGPT, Gemini, or Co-Pilot.					
AI that generates images, e.g., Dall-E or MidJourney					

What are your thoughts on VR/AR? Please mark your response on the scale.

I believe VR/AR will improve my life.
 I definitely disagree 0 1 2 3 4 5 6 7 8 9 I definitely agree 10

I believe VR/AR will improve my work.
 I definitely disagree 0 1 2 3 4 5 6 7 8 9 I definitely agree 10

I believe I will use VR/AR technology in the future.
 I definitely disagree 0 1 2 3 4 5 6 7 8 9 I definitely agree 10

I believe VR/AR technology is positive for humanity.
 I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

What are your thoughts on training for scenario writing for VR/AR videos in disaster nursing? Please mark your response on the scale.

I believe VR/AR technology can effectively enhance disaster training for nurses.
 I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I believe VR/AR technology can provide better insight into the nursing procedures required during disaster situations compared to traditional methods.
 I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I believe VR/AR technology can provide realistic and useful disaster scenarios for nurse training.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I think VR/AR can help improve the decision-making and reaction skills of nurses during disaster situations.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I believe that nurses are better prepared to handle disaster situations after undergoing VR/AR-based training.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I am confident in using VR/AR technology for disaster response nurse training.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

Open questions

What are your expectations for the scenario writing training?

What are your concerns (if any) about using VR/AR technology in nurse training for disaster preparedness?

POST-TEST ECoDN-HUB

ID NUMBER PARTICIPANT(name?)_____

What are your thoughts on training for scenario writing for VR/AR videos in disaster nursing? Please mark your response on the scale.

I believe VR/AR technology significantly can enhance disaster response for nurses.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I believe VR/AR technology can provide better insight into the nursing procedures required during disaster situations compared to traditional methods.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I found that VR/AR technology provided realistic and useful disaster scenarios for training.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I think VR/AR can help improve the decision-making and reaction skills of nurses during disaster situations.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I believe that nurses are better prepared to handle disaster situations after undergoing VR/AR-based training.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

I feel confident in using VR/AR technology for disaster response scenario writing training in the future.

I definitely disagree 1 2 3 4 5 6 7 8 9 I definitely agree 10

Open questions

What did you find to be the most beneficial aspect of scenario writing training ?

Was there anything unexpected that you learned from in training that could influence future VR/AR videos?

GENERAL EVALUATION and TRAINING SATISFACTION QUESTIONNAIRE

Participant Information (Optional)

Name (optional): _____ Professional background: ____ Years of experience in disaster nursing: _____

No	Your level of participation in the following expression (x) mark	Strongly Disagree	Disagree	Agree	Strongly Agree
1	The communication and attitude were appropriate.				
2	There was an opportunity to reach the organization				
3	I have been adequately informed about the procedures.				
4	The meeting environment was favorable enough.				
5	The meeting environment was sufficient in terms of technological equipment.				
6	The program of training was appropriate.				
7	Time management of meetings was appropriate.				
8	Clarity and organization of the training content				
9	Effectiveness of VR technology in enhancing learning				
10	Realism and accuracy of the VR scenarios				
11	Relevance of the training to disaster nursing practice				
12	Interaction and engagement during the training sessions				
13	Support and guidance provided by the instructors/facilitators				
14	Opportunities for hands-on practice and skill application				
15	The overall satisfaction of the training program				

Open-Ended Feedback

1. What was the most valuable aspect of the training for you?
2. What improvements would you suggest for future training sessions?
3. Do you have any additional comments or suggestions?

GUIDELINE OF SCENARIO WRITING AND AR/VR DEVELOPMENT

We used the Lawshe Technique, developed by Lawshe in 1975, is a widely used method for determining the content validity ratio and analyzing content validity based on the agreement among expert opinions. In this technique, each item is evaluated by experts as “Essential (3 points),” “Useful, but not essential (2 points),” or “not necessary (1 point)” and additional suggestions may also be provided (<https://rameliaz.github.io/files/kuliah/matrikulasi-mapsi/ayrescally.pdf>). The Lawshe technique evaluation is presented in Table 1.

Table 1. Evaluation items presented to experts for each item

Option	Description
3	Essential
2	Useful, but not essential
1	Not necessary

The Content Validity Ratio (CVR) of the Lawshe technique is calculated using the following formula:

$$CVR = (Ne - N/2) - 1$$

Ne: The number of experts who evaluated the relevant item as 'Appropriate'

N: The total number of experts.

The Content Validity Ratio ranges between -1 (absolute rejection) and +1 (absolute acceptance), where a value of +1 means that all experts found the item appropriate. If fewer than half of the experts mark an item as “appropriate,” the result becomes negative. Items with negative signs are excluded. The Content Validity Index (CVI) of the entire test/questionnaire is calculated by taking the average of the CVR values of all remaining items after removing the necessary ones. If $CVI \geq CVR$, it is accepted that the final form of the items has statistically significant content validity (Lawshe, 1975; Ayre & Scally, 2014). In the application stages of this method, the first step is to determine the group of experts to be consulted. In the next step, the draft form is created, and the opinions of the experts are received. Then the Content Validity Ratio (CVR) and Content Validity Index (CVI) calculations are performed. Finally, according to the results of the Content Validity Ratio (CVR) and Content Validity Index (CVI) calculations, it is decided whether each item should be included in the questionnaire (Lawshe, 1975; Ayre & Scally, 2014).

ANIMATION ABOUT DISASTER NURSING AWARENESS EVALUATION

We used the Patient Education Materials Assessment Tool (PEMAT) to evaluate the disaster nursing awareness animation video. PEMAT was produced under contract to the Agency for Healthcare Research and Quality to improve education materials “Shoemaker SJ, Wolf MS, Brach C. The Patient Education Materials Assessment Tool (PEMAT) and User’s Guide. (Prepared by Abt Associates, Inc. under Contract No. HHSA290200900012I, TO 4). Rockville, MD: Agency for Healthcare Research and Quality; November 2013. AHRQ Publication No. 14-0002-EF). There are two versions of the The Patient Education Materials Assessment Tool 1. PEMAT-P for printable materials (e.g., brochures, pamphlets, PDFs), consisting of 17 items measuring understandability and 7 items measuring actionability. 2. PEMAT-A/V for audiovisual materials (e.g., videos, multimedia materials), consisting of 13 items measuring understandability and 4 items measuring actionability. PEMAT is a systematic method to evaluate and compare the understandability and actionability of patient education materials. **Understandability:** Patient education materials are understandable when consumers of diverse backgrounds and varying levels of health literacy can process and explain key messages. **Actionability:** Patient education materials are actionable when consumers of diverse backgrounds and varying levels of health literacy can identify what they can do based on the information presented.

While most items are relevant to both printable and audiovisual materials, some items are applicable to only one type of materials. This Guide reviews all 19 items that measure understandability and 7 items that assess actionability. Items are marked (P) to indicate a characteristic pertaining to printable materials and (A/V) to indicate a characteristic pertaining to audiovisual materials. The numbering of the items in the PEMAT-P and PEMAT-A/V are not consecutive because each version skips items that are not relevant. The PEMAT-P includes items 1–12 and 15–19 for understandability and items 20–26 for actionability. The PEMAT-A/V includes items 1, 3–5, 8–14, and 18–19 for understandability and 20–22 and 25 for actionability.

All items will have the answer options “Disagree” or “Agree.” Some—but not all—items will also have a “Not Applicable” answer option. Go one by one through each of the items, 24 for printable materials and 17 for audiovisual materials, and indicate if you agree or disagree that the material is meeting a specific criterion. Or, when appropriate, select the “Not Applicable” option.

The PEMAT provides two scores for each material—one for understandability and a separate score for actionability. Make sure you have rated the material on every item, including indicating which items are Not Applicable (N/A). Except for Not Applicable (N/A) items, you will have given each item either 1 point (Agree), or 0 points (Disagree).

To score the material, do the following: **Sum the total points** for the material on the understandability items only. **Divide the sum by the total possible points**, that is, the number of items on which the material was rated, excluding the items that were scored Not Applicable (N/A). **Multiply the result by 100** and you will get a percentage (%). This percentage score is the understandability score on the PEMAT.

The higher the score, the more understandable or actionable the material. For example, a material that receives an understandability score of 90% is more understandable than a material that receives an understandability score of 60%, and the same goes for actionability. If you use the PEMAT to rate the understandability and actionability of many materials, you may get a sense of what score indicates exceptionally good or exceptionally poor materials.

Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V)

UNDERSTANDABILITY

Item #	Item	Response Options		
		Agree=1	Disagree=0	N/A
Topic: Content				
1	The material makes its purpose completely evident.			-
Topic: Word Choice & Style				
3	The material uses common, everyday language.			-
4	Medical terms are used only to familiarize audience with the terms. When used, medical terms are defined.			-
5	The material uses the active voice.			-
Topic: Organization				
8	The material breaks or “chunks” information into short sections.			
9	The material’s sections have informative headers.			
10	The material presents information in a logical sequence.			
11	The material provides a summary.			
Topic: Layout & Design				
12	The material uses visual cues (e.g., arrows, boxes, bullets, bold, larger font, highlighting) to draw attention to key points.			
13	Text on the screen is easy to read.			
14	The material allows the user to hear the words clearly (e.g., not too fast, not garbled).			
18	The material uses illustrations and photographs that are clear and uncluttered.			
19	The material uses simple tables with short and clear row and column headings.			

¹ A very short audiovisual material is defined as a video or multimedia presentation that is under 1 minute, or a multimedia material that has 6 or fewer slides or screenshots.

Total Points:
 Total Possible Points:
 Understandability Score (%):.....
 (Total Points / Total Possible Points)

ACTIONABILITY

Item #	Item	Response Options		Rating
		Agree=1	Disagree=0	N/A
20	The material clearly identifies at least one action the user can take.			
21	The material addresses the user directly when describing actions.			
22	The material breaks down any action into manageable, explicit steps.			
25	The material explains how to use the charts, graphs, tables, or diagrams to take actions.			

Total Points: _____

Total Possible Points: _____

Actionability Score (%): _____

(Total Points / Total Possible Points)

AR/VR VIDEOS EVALUATION

This questionnaire was developed to systematically evaluate the effectiveness, usability, and educational quality of virtual reality (VR)-based first aid training. Structured as a five-point Likert-type scale, the instrument enables a multidimensional assessment of participants' perceptions of the VR content. The items included in the form cover key aspects such as the consistency of the content with current, evidence-based first aid practices, the correct and standard-compliant sequencing of procedures, the appropriateness of the training duration for learning, the alignment between content and learning objectives, the extent to which the scenario reflects clinical reality, the level of immersion experienced by the user, the suitability in terms of cognitive load, the potential for skill acquisition, the technical reliability and usability of the system, and the transferability of acquired knowledge and skills to real-life situations. Participants rate each statement on a scale ranging from "strongly disagree" to "strongly agree," thereby providing structured and reliable feedback on the strengths and areas for improvement of the VR-based training.

VR VIDEOS EVALUATION FORM

1 = Strongly Disagree 2= Disagree 3= Neither / Nor 4= Agree 5 = Strongly Agree

Evaluation Item	1	2	3	4	5
1. The VR content is consistent with current, evidence-based first aid practices.	☐	☐	☐	☐	☐
2. First aid procedures are presented in the correct sequence and in accordance with established standards.	☐	☐	☐	☐	☐
3. The duration of the VR training is appropriate for effective learning of the content.	☐	☐	☐	☐	☐
4. The content is clearly aligned with the defined learning objectives.	☐	☐	☐	☐	☐
5. The VR scenario accurately reflects clinical reality.	☐	☐	☐	☐	☐
6. The VR environment helps the user feel immersed in the situation.	☐	☐	☐	☐	☐
7. VR training supports learning without creating unnecessary cognitive load.	☐	☐	☐	☐	☐
8. The VR experience supports the acquisition of first aid skills.	☐	☐	☐	☐	☐
9. The system is technically reliable and easy to use.	☐	☐	☐	☐	☐
10. The knowledge and skills gained can be applied to real-life emergency situations.	☐	☐	☐	☐	☐

Short Open-Ended Feedback Section

Strengths: _____

Areas for Improvement: _____

MULTIPLIER EVENT (M1) EVALUATION QUESTIONNAIRE

This questionnaire was developed to evaluate the impact of the Multiplier Event (M1) on participants. Structured as a three-point Likert-type scale, the instrument enables the assessment of participants' overall satisfaction with the event, the clarity and comprehensibility of the content presented, their knowledge gains in the field of disaster nursing, and the adequacy of the project outputs (such as AR/VR applications, guidelines, etc.). In addition, the questionnaire measures the extent to which the event increased participants' interest in innovative learning methods, as well as its adequacy in terms of organization and duration, its overall usefulness, and participants' willingness to attend similar events in the future. Participants evaluate each statement using the options "disagree," "neutral," and "agree," thereby providing structured feedback on the strengths of the event and areas that may need improvement.

Question	1 (Disagree)	2 (Neutral)	3 (Agree)
1. I am generally satisfied with my participation in the event.			
2. The content presented at the event was clear and understandable.			
3. The event increased my level of knowledge about disaster nursing.			
4. The project outputs (AR/VR applications, guidelines, etc.) were sufficiently explanatory.			
5. The event increased my interest in new learning methods.			
6. The duration and organization of the event were adequate.			
7. The event was generally beneficial.			
8. I would like to participate in similar events again.			

W.P.1 Project Management Quality and success indicators

1. The target number of participants will be reached, the satisfaction rate of participants on scenario writing and AR/VR tools development must be at least 90% after the training.
2. Implementation of AR/VR pilot case studies for students, nurses, and educators to have a knowledge level above 90% after the training (will be evaluated according to the post-test)
3. Compliance rate with the prepared project scenarios should be 90% (to be done according to the checklist)
4. Students and nurses must have a pilot application satisfaction rate of at least 90% of AR/VR videos.
5. The five activities in the project management work package will contribute to monitoring the progress, quality, and success of project activities.
6. By the quality strategy, the coordinator institution will monitor the quality strategy to ensure that the project progresses according to the determined timetable and in achieving the targets.
7. It is expected from the partners to spend Erasmus+ appropriate budget, to comply with the project roadmap, to comply with the project management process, to comply with quality indicators in work packages, to submit project reports on time and properly and to comply communication rules in the project.
8. During Online TPM in Türkiye, the timetable will be reviewed with partners and updates will be made if necessary. TPMs and online meetings will prevent possible risks in project processes.
9. A practical guide for effective collaboration (PGEC), will be prepared and shared with the project partners at the first TPM.
10. The Project Management Committee (PMC), including one representative from each partner organization, will be established at the first TPM to monitor the quality of the results and carry out evaluations of the project activities. PMC will meet every 3 months.

W.P.2.Creation and development of an innovative training platform through Learning Hub

Quality and success indicators

1. A satisfaction survey to write scenarios and develop AR/VR tools for the training goals.
2. About the scenario writing and AR/VR development guide, the opinions on the usability of the guide.
3. After AR/VR scenarios and developing AR/VR videos, feedback from the partners regarding their suitability in TPM.
4. AR/VR videos will be tested for students, nurses and educators. Evaluations will be carried out with quantitative and qualitative questions with pre-test and post-test surveys afterwards. Additionally, a satisfaction survey will be applied to evaluate the level of achievement of training goals for AR/VR-based training.
5. Expert opinion and the opinions of the teachers who provide the curriculum will be taken to evaluate the reliability and information quality of the handbook developed for core skills related to disaster nursing. In addition, the opinions of people who use the handbook will be asked.
6. Other indicators will include TPMs and, the number of participants in pilot studies.

W.P.3.Evaluation and validation of the training Quality and success indicators

1. After the training, a satisfaction survey will be administered to the participants in the project to write scenarios and develop AR/VR tools, regarding the level of achievement of the training goals.
2. After developing the guide, which includes critical information about scenario writing and AR/VR development, participants will be asked for their opinions on the usability of the guide.
3. After creating AR/VR scenarios for core skills and developing AR/VR videos, feedback will be received from the project partners regarding their suitability in TPM.
4. AR/VR videos will be piloted for students, nurses and educators. Evaluations will be carried out with quantitative and qualitative questions with a pre-test before the training and a post-test afterwards. Additionally, a satisfaction survey will be applied to evaluate the level of achievement of training goals for AR/VR-based training.
5. Expert opinion and the opinions of the teachers who provide the curriculum will be taken to evaluate the reliability and information quality of the handbook developed for core skills related to disaster nursing. In addition, the opinions of people who use the handbook will be asked.
6. Other indicators will include TPMs and post-training meeting reports, the number of participants in pilot studies, and the analysis results of pre-post-test surveys.

W.P.4.Dissemination and sustainability

Quality and success indicators

1. Feedback and Surveys: Feedback will be collected from stakeholders, including participants in dissemination activities, partners and target audiences.
2. Stakeholder Engagement: Active participation of stakeholders in dissemination activities and collaborative initiatives will be evaluated.

Quantitative Indicators

1. Reach, audience Metrics and Website Analytics: Website traffic, social media participation, number of people reached through dissemination channels will be measured and website analyzes will be conducted including details of page views.
2. Engagement Metrics: Metrics such as click-through rates, download rates, and session duration will be tracked to assess the level of engagement in dissemination materials and resources. Followers, likes, shares, and comments will be monitored to measure the impact of social media dissemination efforts.
3. Survey Responses: Survey responses and feedback from participants will be received to measure satisfaction levels, understandability and quality of dissemination efforts.
4. Impact on Knowledge and Behavior Change: Pre-test post-test evaluations will be conducted to measure changes in knowledge, skills and behaviors related to disaster nursing education.