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Digital Lab for Education in Dietetics combining Experiential Learning and Community Service

E+DIETing_LAB

PILOT Implementation Plan (for result 1-2)



1. Introduction

In order to perform his/her learning paths and real experiences, the learner will have access to some digital tools as a virtual patient and a digital clinic.

In order to improve practical trainings in Dietetics Education and promote of a community/service-learning approach related to nutrition, the learning process is organized logically, from producing practical scenarios of EXPERIENTIAL LEARNING around a virtual patient (chatbot, R1), to create a digital environment for a synchronous interview with a patient, in a controlled environment (Digital Clinic, R2). In details, two main results:

1. **RESULT 1 (R1)** A virtual patient for dietetic assessment tool or a diet generator, the target is to teach future professionals acting as community dietitians.

The digital tool, on the basis of Diet Care Process (DCP) and the different scenarios he/she will find, will generate different challenges to the students in order to evaluate the user's performance.

During this phase, specified cases are tested in a controlled environment.

The Output of R1 are 5 different BOTs in 5 different languages. The BOT teaches the nutrition and dietetics student to take an anamnesis in an online/interactive manner. The 5 different BOTs provide 5 different cases:

1. Gastroenterology (developed by partner UNEAT)
2. Diabetes mellitus type 1 (developed by partner AP)
3. Cardiovascular diseases and diabetes (developed by partner St. Pölten)
4. Obesity (developed by partner UJK)
5. Renal diseases (developed by partner UPORTO)

The student will be able to chat with the BOT in 5 different languages: english, dutch, spanish, german and polish.



2. RESULT 2 (R2) A Digital Clinic: prospective dietitians chat with potential patients (receives the case in advance) to improve their anamnesis skills focused on the Nutrition Care Process (NCP – see Figure 1). Students should generate nutritional guidelines to be given to the supervising teacher and after the supervision of the supervising teacher, to the patient. It is about nutritional recommendations, but without carrying out a complete nutritional treatment as they are students who have not yet completed their training. Output of result 2 will be a Digital Lab for Education in Dietetics. This will be a trainer’s tool focused on the DCP related to a Community Dietitian. In the lab, the learner will be able to interact with individuals (potential patients) in a supervised mode due to the teaching staff.

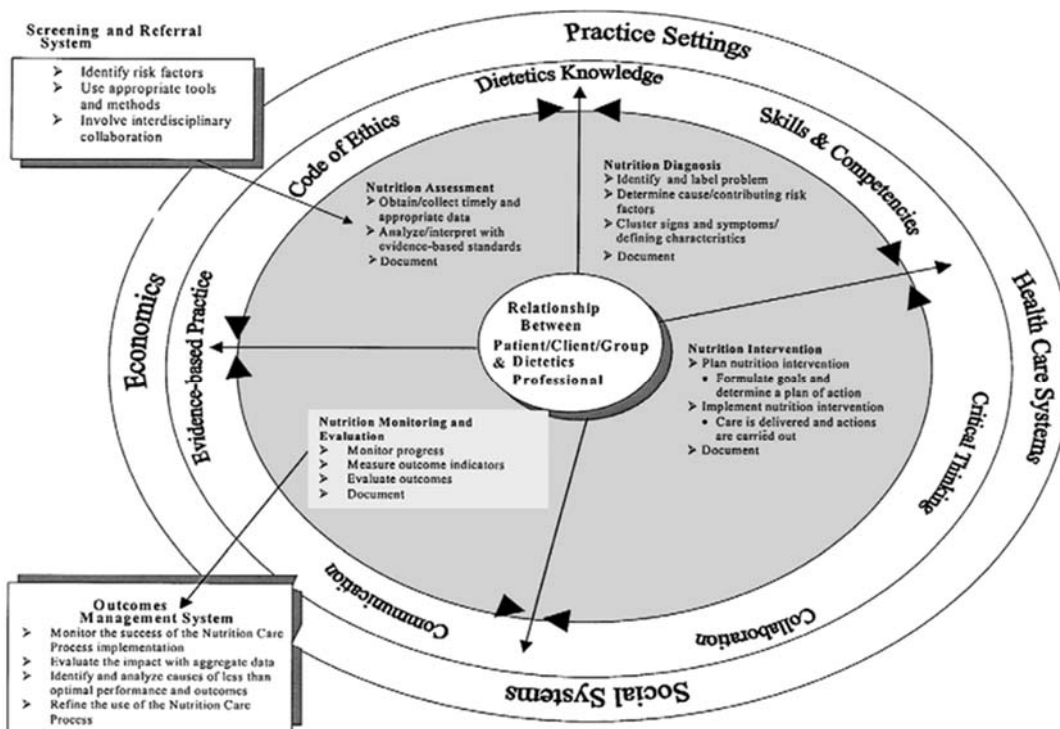


Figure 1. 2003 Academy Nutrition Care Process and Model. Reprinted from Lacey and Pritchett¹

Figure 1: Nutrition Care Process

The student will be able to talk with the potential patient, during 30 minutes. Before and after the interaction, a satisfaction survey will be shared with the students to assess their experience.



Checklist: Components and subcategories of Dietetic Assessment.

(Source: Fhstp.ac.at. [cited 2023 Nov 14]. Available from: <https://impecd.fhstp.ac.at/wp-content/uploads/sites/2/2018/11/Components-Dietetic-Assessment-Jan-2018.pdf>)

1. Client History	
Personal History	Current and past information related to personal, family and social history General client information such as age, gender, race/ethnicity, language, education, and role of family, tobacco use, physical disability, mobility Client socioeconomic status, housing situation, medical care support and involvement in social groups
Medical/Health History of Client Family	Client or family disease states, conditions, and illnesses that may have nutritional impact Referral: Documented medical or surgical treatments, complementary and alternative medicine that may impact nutritional status of the client Pregnancy
2. Diet History	
Meal and snack pattern	Type, amount and pattern of intake of foods and food groups, indices of diet quality intake of fluids, preferences and aversions
Fluid Intake	Type, amount, and pattern of intake of beverages; oral fluids, food derived fluids, liquid meal replacement, preferences and aversions
Fluid balance	Fluid Intake in comparison to requirements
Energy intake	total energy intake from all sources, including food, beverages, supplements, or enteral and parenteral nutrition
Energy expenditure	Energy balance defined as changes in energy balance Amount of energy oxidized by a person under resting or physically active conditions.
Energy balance	Energy intake vs energy expenditure
Food and Nutrient balance	Food and Nutrient intake in comparison to nutrient requirements Composition and adequacy of food and nutrient intake, and meal and snack pattern
Food and Nutrient Administration:	Diet order, diet experience, enteral and parenteral nutrition administration, current and previous diets and or food modifications



	Description of food and drink regularly provided or consumed, past diets followed or prescribed and counselling received
Medication including over the counter medication and supplements	Prescription and over-the counter medications, including herbal preparations and complementary medicine products used
3. Behavioral-Environmental	
Food and nutrition knowledge Beliefs and attitudes Behavior	Understanding of nutrition-related concepts and conviction of the truth and feelings/emotions towards some nutrition-related statement or phenomenon, along with readiness to change nutrition-related behaviors client activities and actions, which influence achievement of nutrition related goals
Behavioral factors, willingness to change and potential for changing behavior	eating environment including diet habits
Factors Affecting Access to Food and Food/Nutrition-Related Supplies	economic information factors that affect intake and availability of a sufficient quantity of safe, healthful food as well as food/nutrition-related supplies
Physical Activity and function: nutrition related activities of daily living	physical activity, cognitive and physical ability to engage in specific tasks
Quality of life	how people participate or are involved in their daily life situation
4. Clinical Status	
Anthropometric data	Measurement of height, weight; calculation of BMI, waist circumference, waist hip ratio; skin fold measurements
Body composition	Estimation of different body compartments
Biochemical data, medical tests and procedures	Metabolism parameter, clinical chemistry, vital signs, procedures outcome
Nutrition-focused physical findings	Findings from an evaluation of body systems, muscle and subcutaneous for wasting, oral health, suck/ swallow/ breathe ability, appetite, and affect



2. Targets

ORGANIZATION	TARGET CATEGORY	NUMBER TO REACH
UNEAT	STUDENT	130
	DIETETITIAN (FUNIBER)	640
	HE TEACHERS	3
	COMMUNITY	168
UPORTO	STUDENT	350
	DIETETITIAN	85
	HE TEACHERS	3
	COMMUNITY	168
UJK	STUDENT	200
	HE TEACHERS	3
	COMMUNITY	168
PÖL	STUDENT	110
	HE TEACHERS	3
	COMMUNITY	168
AP	STUDENT	302
	HE TEACHERS	3
	COMMUNITY	168



<u>STUDENTS (+400 registrations)</u>	<u>STUDENTS (210 final surveys)</u>
<ul style="list-style-type: none"> - 70 UNEAT (R1 and R2) - 70 UPORTO (R1 and R2) - 70 AP (R1 and R2) - 70 UJK (R1 and R2) - 70 PÖL (R1 and R2) - 70 ONLINE (R1 and R2) 	<ul style="list-style-type: none"> - 35 UNEAT (R1 and R2) - 35 UPORTO (R1 and R2) - 35 AP (R1 and R2) - 35 UJK (R1 and R2) - 35 PÖL (R1 and R2) - 35 ONLINE (R1 and R2)

<u>DIETITIANS (registrations 180)</u>	<u>DIETITIANS (90 final surveys)</u>
<ul style="list-style-type: none"> - 18 UPORTO (R1 and R2) - 162 FUNIBER (R1 and R2) 	<ul style="list-style-type: none"> - 11 UPORTO (R1 and R2) - 79 FUNIBER (R1 and R2)

<u>HIGHER EDUCATION (15 registrations and final survey)</u>
<ul style="list-style-type: none"> - 15 ALL THE PARTNERS (R1 and R2)



<u>COMMUNITY (registrations 840)</u>	<u>COMMUNITY (210 final surveys)</u>
- 168 UNEAT (R2)	- 42 UNEAT (R2)
- 168 UPORTO (R2)	- 42 UPORTO (R2)
- 168 UJK (R2)	- 42 UJK (R2)
- 168 PÖL (R2)	- 42 PÖL (R2)
- 168 AP (R2)	- 42 AP (R2)

3. General instructions

R1 and R2 are tested in parallel.

The implementation of **R1** testing happens in 2 phases.

FIRST SEMESTER (From September to December)

- **Phase 1.1 (week 1):** The R1s are tested in native language and English by an internal team composed of 5 professionals/students from each university, during one week.
- **Phase 1.2 (week 2):** R1s are corrected in dialogflow in native language and English.

SECOND SEMESTER (From February to April)

- **Phase 2.1 (first fortnight):** R1 is tested by the target group, for 15 days, the bots in their native language and in English.



- **Phase 2.2 (second fortnight):** R1 is corrected in dialogflow in native language and in English.

The implementation of **R2** testing happens in 2 phases.

SECOND SEMESTER (From February to April)

Phase 1. Interaction students with community supervised by a teacher.

Phase 2. Validated the interaction to transform it into a new virtual patient.

During this phase, each university connects students with real patients in the community. The patients. The patient can be interpreted by different people:

- Persons from the university community
- Friends and relatives of nutrition students
- Selection of patients through social networks
- Physical activity practitioners

These people are allowed to be themselves (if they are in the main themes of obesity, overweight or physical activity practitioner) or, if necessary, are sent a case in advance, so they have a guideline to fully empathize with the role they have to play.

A development of a validation protocol is done, based on the selection of report indicators for R1 and R2. The research team is developing 2 main questionnaires, in order to know the user experience. These 2 questionnaires will be available online, thanks to a google form design, facilitating the data collection for the last adjustment and results of the pilot.



3.1 How to reach participants

Selecting students can be different between universities. For example: the researcher can place a call on the university's (online) platform, students can be chosen in discussion with teach communication techniques/anamnesis techniques in the 2nd year, Other ways are possible. These are motivated students who can formulate constructive feedback. Thank them by awarding an incentive. For example: going through the bot counts as hours of international professionalization, internship hours, preparation tasks,

The teacher may be teacher of choice who teaches within the nutrition and dietetics program.

The clinical dietitians may be dietitians of choice, this may also be teachers working as a clinical dietitian.

Choosing potential patients may vary within different universities. Students can play patient, practicing empathy and sensitivity. Teachers can also play potential patients but other, voluntary individuals, (possibly known from participation in other projects) can also be recruited as potential patients.

Going through the trainer's tool takes a maximum of one hour. This includes the explanation, going through the trainer's tool and giving feedback.

For a concrete assignment/introduction, roadmap and tools that participants need to complete the trainer's tool: see appendix 4,5 and 6.



4. Tasks and milestones for pilot implementation

R1

3.4.	Development of pilot training activities R1					
Result	<ul style="list-style-type: none"> Result 3.2d: Development of learning activities with pilot students and potential patients Result 3.1d: Availability of digital tool (RE3) that facilitates students to be involved in a community service in dietetics 					
Quality objectives	Development of Pilot experience around R1 with target group participation					
Participants	All					
Leader	UVA + UNEAT. (K. tutusaus)					
	Step	Owner	Intermediate Deliverable	Quality Obj.	Checks	Due Date
Process steps	1.		Communication with partners: agenda and welcome letter for the pilot	General organization of pilot: Dates and goals	Review	October 2023
	2.	S	Pilot global plan: goals definition, schedule of pilot development, selection of the venue, materials.	General organization of pilot: Dates and goals	Review	October 2023
	3.		Development of pilot implementation guide	Develop a clear document about the pilot	Review	October 2023
	4.		A Data base of for pilot participant is defined	Each partner has a clear data base for the pilot implementation		October 2023
	5.		R1 is tested by internal team	A report from each		October 2023



			composed by the professional from the dieting-lab team and 5 colleagues from each university	partner is defined		
	6.		Chatbots technical adjustment			October 2023
	7.		R1 is tested by target group			November , 2023
	8.		Chatbots technical adjustment			November 2023
	9.		R1 is tested by target group			February-April , 2024, 30
	10.		Chatbots technical adjustment			February-April 2023-2024

R2

3.4.	Development of pilot training activities R2					
Result	<ul style="list-style-type: none"> Result 3.2d: Development of learning activities with pilot students and potential patients Result 3.1d: Availability of digital tool (RE3) that facilitates students to be involved in a community service in dietetics 					
Quality objectives	Development of Pilot experience around R2 with target group participation					
Participants						
Leader						
	Step	Owner	Intermediate Deliverable	Quality Obj.	Checks	Due Date
Process steps	1.		Communication with partners: agenda and welcome letter for the pilot	General organization of pilot: Dates and goals	Review	September 2023



	2.	S	Pilot global plan: goals definition, schedule of pilot development, selection of the venue, materials.	General organization of pilot: Dates and goals	Review	September 2023
	3.		Development of pilot implementation guide	Develop a clear document about the pilot	Review	September 2023
	4.		A Data base of for pilot participant is defined	Each partner has a clear data base for the pilot implementation		September 2023
	5.		R2 is tested by internal team composed by the professional from the dieting-lab team and 5 colleagues from each university	A report from each partner is defined		October 2023, 30
	6.		A calendar for live session is defined in each clinic	Each partner has a calendar with the session implementation		October 2023, 30
	7.		R2 is tested by target group	See point "2. Targets"		April, 2024, 15
	8.		Technical adjustment			April 2024, 30



R1 and R2

3.5	Assessment of pilot training activities and update of tool for trainers.					
Results	<ul style="list-style-type: none"> Result 3.3d: Assessment of learning activities including the progress of participants and satisfaction of pilot patients Result 2.2d: Report on learning activities and assessments with pilot students and dietitians. Result 3.4d: Availability of processed data 					
Quality objectives	2 questionnaires related to the user experience are designed (for RE1 and RE2) and we met the targets					
Participants						
Leader						
	Step	Owner	Intermediate Deliverable	Quality Obj.	Checks	Due Date
Process steps	1.		Data analysis of the interactions of R1 and R2.	The results are clear and available online	Review	March 2024
	2.		Scientific leaders met and discuss the results			March 2024
	3.		Report on pilot activities and assessments with pilot students and dietitians.			April 2024



5. Calendar

Table A: detailed planning for implementation plan R1 pilot

Pilot implementation plan																			
WP	DESCRIPTION	Owner	2023																
			J	A	S	Sept	Sept	Sept	Oct	Oct	Oct	Oct	Nov	Nov	N	Nov	Dec	Dec	Dec
			July	Aug	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3	W4	W1	W2	W3
R1	R1. DIGITAL LAB FOR EDUCATION IN DIETETICS (SELF-LEARNING TOOL)	UVA																	
3.5.	Evaluation of the self-learning tool and update of the tool (3.4. Development of pilot training activities R1)																		
	Communication with partners : agenda and welcome letter for the pilot	UNE AT																	
	Pilot global plan: goals definition, s chedule of pilot development, s election of the venue, materials .	UNE AT																	
	Development of pilot implementation guide	UNE AT/ AP																	
	AData base of for pilot participant is defined	ALL																	
	Chatbots DEVELOPMENT	UNE AT																	
	DEFNING CORE OF QUESTIONS	ALL																	
	EACH PARTNER WORK ON the responses in the own case (excel template) ADDING THE SPECIFIC QUESTIONS in english in in the local language	ALL																	
	technical revie from technical team	UNE AT								6									
	-TECHNICAL TEAM IS UPLQADING the excole in dialog flow	UNE AT								11									
	technical team is testng the bots	UNE AT																	
	R1 is tested by internal team composed by the professional from the dieting-lab team and 5 colleagues from each university	ALL																	
	VALIDATION: BOT approval for pibing	ALL										03-nov							
	Translation	UNE AT											03-nov						
	R1 is tested by target group	ALL																	
	Chatbots TRAINING adjustment	ALL																	



Table B: detailed planning for implementation plan R2 pilot

R2	R2. DIGITAL LAB FOR EDUCATION IN DIETETICS (SERVICE-LEARNING AND TRAINER'S TOOL)	UNEAT																		
3.3.	Development and technical validation of a prototype.	UNEAT																		
	1.Review the proposal	UNEAT																		
	2.Check other projects	UNEAT																		
	3.Team meeting with projects Local coordinators	UNEAT																		
	4.Validation Protocol with report indicators for R1	UJK																		
	5.Aquestionnaire is designed for R1 assesment byparticipants including targets	UJK																		
	6.Google form including the defined questionnaire	UJK																		
	7.Validation Protocol with report indicators for R2 including targets	UJK																		
	8.Aquestionnaire is designed for R2 assesment byparticipants	UJK																		
	9. Google form including the defined questionnaire	UJK																		
3.4.	Development of pilot training activities.	UNEAT																		
	Communication with partners: agenda and welcome letter for the pilot	UNEAT																		
	Pilot global plan: goals definition, schedule of pilot development, selection of the venue, materials.	UNEAT																		
	Development of pilot implementation guide: for the clinic administrator	AP																		
	AData base of for pilot participant is defined	ALL																		
	R2 is tested by internal team composed by the professional from the dieting lab team and 5 colleagues /5 students from each university	ALL																		
	Acalendar for live session is defined in each clinic	ALL																		
	R2 is tested by target group	ALL																		
	Technical adjustment	UNEAT																		
3.5.	Assessment of pilot training activities and update of tool for trainers.	UJK																		
	Google form results	UJK																		
	Scientific leaders met and discuss the results	UJK																		
	Report on pilot activities and assessments with pilot students and dietitians	UJK																		



6. Appendix 3: additional feedback template (Optional)

<p>Feedback about obtaining data about dietary habits via an online platform:</p>	
<p>Feedback about the content processed in the online environment:</p>	
<p>Feedback on how you can use your own anamnesis techniques through an online platform:</p>	
<p>Additional feedback:</p>	



7. Appendix 4: manual for testing trainers' tool (R1-Virtual Patient)– student version

CAUTION: The document below is a guideline. Depending on how you reach the students, it may (not) apply and should be modified.

<p>GENERAL TASK</p>	<p>Your task consists of going through one or more trainer's tools. Prospective dietitians talk with potential patients in an controlled environment to improve their anamnesis skills. After you complete the talk,</p> <p>The 5 different cases are listed below</p> <ol style="list-style-type: none"> 1. Gastroenterology (developed by partner UNEAT) 2. Diabetes mellitus type 1 (developed by partner AP) 3. Cardiovascular diseases and diabetes (developed by partner St. Pölten) 4. Obesity (developed by partner UJK) 5. Renal diseases (developed by partner UPORTO) 		
<p>FEATURES</p>	<p>Individual with a potential patient</p>	<p>Online</p>	<p>Max. of one hour (includes going through this manual and giving feedback)</p>
	<p>Material</p>	<ul style="list-style-type: none"> - Laptop with internet - Manual for testing trainer's tool - When extra feedback: write it down in the template provided 	
	<p>Researchers</p>	<p>E+ DIETing Lab project</p>	
<p>GOALS</p>	<ul style="list-style-type: none"> - The trainer's tool teaches you to test your anamnesis techniques in an online/interactive manner. 		
<p>SPECIFIC TASK/ROADMAP</p>	<p>Step 1: Find a quiet place with little distractions and a stable internet connection on your laptop.</p>		



Step 2: Go through the manual for testing the trainer's tool.

Step 3: The researchers give the case to the potential patient 1 week in advance. You (the future dietitian) are given the subject of the case 1 week in advance. Open the website of the trainer's tool you need to go through.

- Case 1
- Case 2
- Case 3
- Case 4:
- Case 5:

Step 4: Fill the survey to evaluate your knowledge about bots.

Step 5: You talk with the potential patient as if you were taking a real anamnesis. Do this thoroughly. Start on your anamnesis as you learn this in class. Ask as many questions as you can about dietary habits.

Step 6: At the end of the talk, verify that you have obtained enough data to make a dietetic diagnosis and to create a treatment plan.

Step 7: Be sure to fill in the feedback questionnaire integrated in the trainer's tool.

Step 8: Additional feedback can be provided using the additional document forwarded to the researcher (per mail).

Step 9: After you complete the talk, finish the second survey and the self-evaluation.

FEEDBACK

- Feedback for the researcher should be given using the feedback questionnaire after the chatbot and using the additional document.



8. Appendix 5: manual for testing trainers' tool (R2-Digital Clinic) – potential patient version

CAUTION: The document below is a guideline. Depending on how you reach the students, it may (not) apply and should be modified.

<p>GENERAL TASK</p>	<p>Your task consists of going through one or more trainer's tools as a potential patient.</p> <p>Digital Clinic: prospective dietitians chat with potential patients (receives the case in advance) to improve their anamnesis skills focused on the Nutrition Care Process.</p> <p>Students should generate nutritional guidelines to be given to the supervising teacher and after the supervision of the supervising teacher, to the patient.</p> <p>It is about nutritional recommendations, but without carrying out a complete nutritional treatment as they are students who have not yet completed their training.</p> <p>Output of result 2 will be a Digital Lab for Education in Dietetics.</p> <p>This will be a trainer's tool focused on the DCP related to a Community Dietitian.</p> <p>In the lab, the learner will be able to interact with individuals (potential patients) in a supervised mode due to the teaching staff.</p>
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<p>FEATURES</p>	<p>Individual with a future dietitian</p>	<p>Online</p>	<p>Max. of one hour (includes going through this manual and giving feedback)</p>
	<p>Material</p>	<ul style="list-style-type: none"> - Laptop with internet - Manual for testing trainer's tool - When extra feedback: write it down in the template provided 	
	<p>Researchers</p>	<p>E+ DIETing Lab project</p>	



GOALS	- Obtaining a critical view from a potential patient on a new, online platform
SPECIFIC TASK/ROADMAP	<p>Step 1: Find a quiet place with little distractions and a stable internet connection on your laptop.</p> <p>Step 2: Go through the manual for testing the trainer's tool.</p> <p>Step 3: You talk with the future dietitian as you would talk to a dietitian in real life. Do this thoroughly, with great empathy.</p>