

Case study 4 toolkit

For educators



The case of Luuk Altorf

Increasing physical activity | Enhancing diet | Adhering to medication |
Monitoring and managing symptoms

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Introduction

This case study is part of the Train4Health educational products, which aim to improve health care and other students' competencies for behaviour change to effectively support self-care in chronic diseases. The present document intends to aid educators in this mission.

Case studies are an instructional method that engages students in the discussion of specific situations, typically real-world examples, providing context and allowing students to learn in a controlled environment. Case studies are a learner-centred method; they promote reflection about real-world practice and decision making whilst fostering the interaction between students. This approach focuses on the building of knowledge, and group work is a privileged form to examine the case. The educator's role is facilitating decision making and group work; students collaboratively address questions that have no single right answer (Thistlethwaite et al., 2012). Despite different approaches that may be followed by educators, we suggest using case studies for small group work, as students have reported preference for these groups, as opposed to larger groups or working on their own (Dupuis & Persky, 2008).

The development of Train4Health case studies is underpinned by the following principles:

- *Anonymity*: despite being realistic, each profile is not descriptive of any existing person and should not be attributed to anyone.
- *Diversity*: overall, the persons' profiles offer diversity, in terms of gender, age, ethnicity, sexual orientation and both social and functional status.
- *Authenticity*: each profile relates to real life and was assessed by persons living with chronic disease to ensure a faithful account of their perspectives.
- *Unjudgmental*: each case study is worded on a factual basis, without opinions or depreciative remarks on the person.
- *Multidisciplinary*: each case study draws on the expertise of different professions, such as nursing, pharmacy and sport sciences.
- *Evidence-based*: resources provided are grounded on the best possible evidence.
- *Health-related*: each case study was developed focusing on overall health-related behaviour interventions and not interventions that are specifically acknowledged as medical acts.
- *Continuous improvement*: there is an ongoing effort to improve each case study throughout the project lifecycle, based on internal peer-review and tests with stakeholders.

Presenting the toolkit

This case study toolkit is composed of three components that work together, intending to provide the best teaching/learning experience:

- Person’s profile.
- Learning outcomes and related resources.
- Guidance for educators.

Person’s profile

The person’s profile presents the story of a person with chronic disease, unravelling health behaviour change problems prone to exploration. The story is organised into different sections, depicted in the next page; these sections provide context and information to aid decision making in the case study and similar situations.

Each person’s profile was primarily designed to support change in selected target behaviours; case study 2 addresses **physical activity, diet, medication taken and/or symptoms monitoring and management.**

Person	Luuk Altorf
Chronic diseases	Obesity Hypertension Heart Failure
Target behaviours	Physical activity Diet Medication adherence Monitoring and managing symptoms



Name: Luuk de Vries
Age: 72 years old
Life course: Retired person
Need: Chronic conditions/complex needs
Connectivity: broadband, smart phone

Country: Netherlands
Gender: Male

ICT skills
 Internet usage - excellent
 Mobile device skills – excellent
 Affinity to new tech - good
 Digital health literacy - good

Luuk is a 72-year-old retired baker who lives with his wife, Marije, in a nice residential surrounding of Utrecht. They have one son, Kjeld de Vries, and one grandson, who is 23 years old and has just started his PhD grant in Lisbon University. Luuk has always been active both at work, where he needs to be always standing and going back and forth in the line of duty, and in his social activities and commuting, because he used to ride his bicycle all the time. Since he retired, his son runs the bakery business, but Luuk wants to control the products quality to continue to have the best pastry in the region. After Luuk got married, he started developing overweight. Ten years ago, he was diagnosed with obesity. In the following years both cholesterol and blood pressure climbed up and he started pharmacological therapy and had strong warnings from his healthcare professionals. Five years ago, Luuk had a myocardial infarction, which impacted a considerable portion of the cardiac muscle and left him with heart failure. Luuk used to ride his single speed "oma's fiets" (Dutch bike) every day and, ever since he developed heart failure, he does not feel capable of doing that anymore. Luuk gets fatigued very quickly and now he must sit very often in simple activities such as taking a bath or short walks.

What's important to Luuk

- Helping his son running the bakery business.
- Being able to help and care of his wife.
- Riding his bike and enjoying nice moments with friends and family outdoors.
- Visit his grandson in Lisbon a couple of time per year.

Daily living

- Luuk has a strict routine. During the morning, he helps his wife with household activities such as preparing meals.
- After lunch, he goes to the bakery to help his son and supervise the work of his employers.
- At least 3 times a week, he meets with his friends to discuss football games and for his enjoyment, Luuk drinks a couple of beers. Luuk is a staunch supporter of FC Utrecht.

Events, issues & personal concerns

- One year ago, Luuk's wife had a stroke which affects her mobility. Luuk helps her with daily living activities such as cooking and cleaning the house. However, he has to stop many times during the tasks to rest due to fatigue.
- Despite warnings from his healthcare professionals, Luuk tends to overeat. He also takes the remaining goodies home from the bakery at the end of the day because he doesn't like to spoil food and throw it away.
- Luuk believes that his antihypertensive medicines are not working; he tends to not take them. Luuk's general practitioner (GP) recommends self-monitoring of his blood pressure, but Luuk struggles in using the equipment.
- Luuk is very proud of his grandson, but he also misses him and, together with all his health concerns, this is having a heavy negative effect on his mood and energy.

Own resources & assets/support

- Luuk and his wife have a good income and no difficulties in accessing healthcare aid.
- Considering the difficulties that Luuk and his wife are having due to health problems, they are considering hiring a home-based care service.

Health concerns

- Heart failure, hypertension and obesity.
- Luuk feels fatigued very often and this is having a detrimental effect on his physical activity and overall lifestyle.
- His blood pressure is uncontrolled.
- Luuk has a high intake of saturated fat, salt and sugars due to goodies from bakery. He used to say: "it's the only thing that gives me pleasure".

Health tests

Luuk attends to a multidisciplinary care team on a regular basis for monitoring his health condition, covered by his pension fund and the National Health System:

- Laboratory blood tests;
- Thorax X-Ray;
- Electrocardiogram (ECG);
- Echocardiogram.

Treatment: medications, therapies, etc.

- Polypharmacy addressing his chronic conditions. Luuk takes medicines at different times of the day.

Care professional concerns

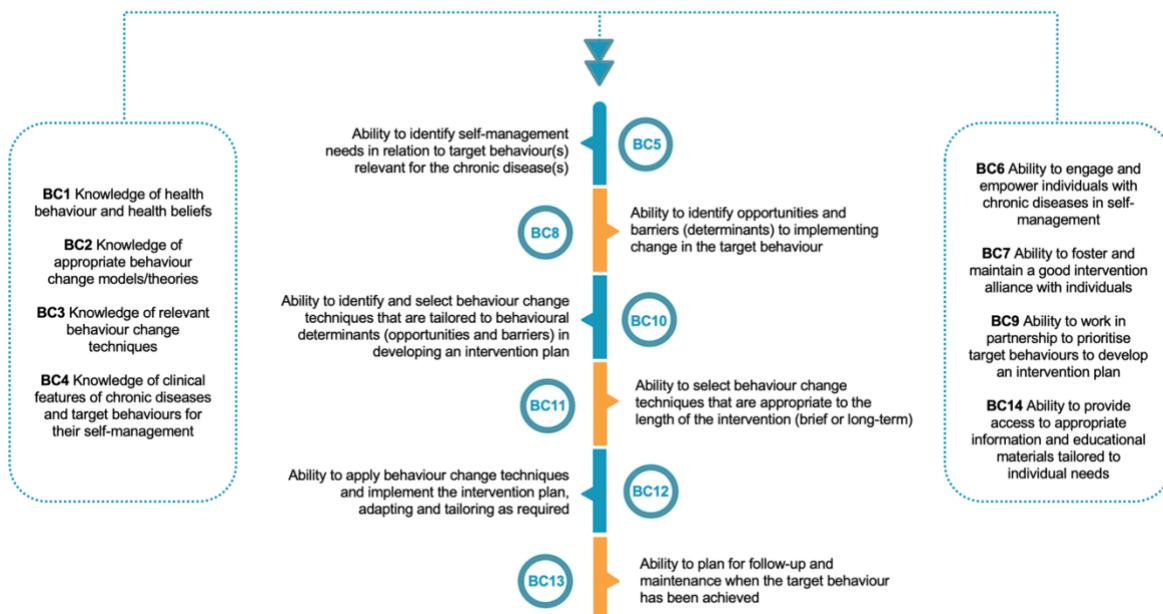
- He sometimes misses some appointments with the healthcare team due to his responsibilities.
- Luuk's adherence to his treatment is not optimal due to his beliefs about medicines.
- Luuk has difficulty in management his weight.

Unmet needs | Luuk is uncomfortable with his lifestyle. Luuk may need support in planning for the future such as hiring a home-based care service to help him and his wife management their chronic conditions. A food provision service for Luuk and household help services would be helpful due to the progression of Luuk's chronic condition. Luuk also feels the need to learn more about and how to cope better with his condition, due to the increase level of tiredness. Furthermore, he is also overstressed, making mistakes with medicines such as duplicate the doses or change the medication taking time.

Learning outcomes and related resources

In addition to the person's profile, case study 4 includes a set of resources to aid educators in the teaching/learning process.

Learning outcomes aligned with the Train4Health competency framework on behaviour change support in chronic diseases have been derived. The numbering of each learning outcome is linked to competency statements BC5 to BC14 (Guerreiro et al., 2021), depicted in the figure below. The central vertical line in this figure complies with how health and other professions are trained to deliver interventions (assessment □ plan □ intervention □ follow-up).



As detailed in the next pages, each learning outcome is, in turn, linked with content topics, open-ended questions and suggested accompanying reading. Educators may choose questions that move students logically from assessment (learning outcomes related to BC5 and BC8), planning (learning outcomes related to BC10 and BC11) and intervention (learning outcomes related to BC12) to follow-up (learning outcomes related to BC13).



Competency statement	Associated learning outcome	Bloom's taxonomy Level	Proposed content	Suggested reflection question	Suggested accompanying readings
Ability to:					
BC5. Identify self-management needs in relation to target behaviour(s) relevant for the chronic disease(s)	BC5.1 Assess the person's behaviour in self-management using appropriate measures	Cognitive 5: synthesis	<ul style="list-style-type: none"> Common measures to assess target behaviours in the self-management of chronic diseases and interpretation of results (e.g., medication adherence questionnaires, physical activity questionnaires, dietary questionnaires, wearables data). Key strategies in clinical interview. Assessing the person's target behaviour using common measures: examples. 	<ul style="list-style-type: none"> How would you assess physical activity? How would you assess diet and eating habits? How would you assess medication adherence? How would you assess Luuk's behaviour related to symptoms monitoring and managing? 	E-book section X /Y
	BC5.2 Compare actual versus desirable health behaviours to identify self-management needs, based on assessment data	Cognitive 3: application	<ul style="list-style-type: none"> Actual behaviour, based on assessment data, versus desirable behaviour: examples. 	<ul style="list-style-type: none"> Which behaviour(s) are potential target(s) for the BC intervention? What do you think would be the desirable goals for the selected behaviour(s)? 	
BC6. Engage and empower individuals with chronic diseases in self-management	BC6.1 Generate with the person opportunities for behavioural change	Cognitive 5: synthesis	<ul style="list-style-type: none"> Strategies in person-centered communication Structure of a behaviour change intervention (e.g., in repeated sessions, offer at the start of each session a review of prior work and at the end a summary covering the main points of the interventions). Communication strategies for starting and closing each behaviour change 	<ul style="list-style-type: none"> What communication strategies would you choose for opening and closing a BC intervention with Luuk? Considering Luuk's profile, what strategies for time management would you suggest? If Luuk will engage in a long behaviour change intervention for adapting and increasing his physical activity, list key 	



Competency statement	Associated learning outcome	Bloom's taxonomy Level	Proposed content	Suggested reflection question	Suggested accompanying readings
			<p>session Time management in behaviour change interventions (e.g., consider factors such as time available, the person's characteristics).</p>	<p>points for structuring each session, from a communication standpoint.</p> <ul style="list-style-type: none"> ● If Luuk will engage in a long behaviour change intervention for enhancing his diet, list key points for structuring each session, from a communication standpoint. ● If Luuk will engage in a long behaviour change intervention for enhancing his medication adherence, list key points for structuring each session, from a communication standpoint. ● If Luuk will engage in a long behaviour change intervention for enhancing monitoring and management of his symptoms, list key points for structuring each session, from a communication standpoint. ● Identify two person-centered communication strategies to implement in Luuk's behaviour change intervention. 	
	<p>BC6.2 Assess the extent to which the person wishes and is able to become co-manager of his/her chronic disease</p>	<p>Cognitive 6: evaluation</p>	<ul style="list-style-type: none"> ● Shared decision making in health care. ● Applying strategies to create an environment conducive of open and effective communication (e.g., cordial attitude developing rapport and trust, adapting personal style). ● Applying active listening strategies. 	<ul style="list-style-type: none"> ● Which details of Luuk's profile may indicate he wishes and/or is able to become actively involved in increasing his physical activity? ● Which details of Luuk's profile may indicate he wishes and/or is able to enhance his diet? 	



Competency statement	Associated learning outcome	Bloom's taxonomy Level	Proposed content	Suggested reflection question	Suggested accompanying readings
				<ul style="list-style-type: none"> • Which details of Luuk's profile may indicate he wishes and/or is able to become actively medication compliant? • Which details of Luuk's profile may indicate he wishes and/or is able to monitor and manage his symptoms? • Explain the role of active listening in assessing the extent to which a person is able/willing to actively participate in the self-management of chronic diseases. • Please detail an example of strategies for creating an open and positive environment for communication. 	
	<p>BC6.3 Demonstrate how to promote self-confidence, self-esteem and coping skills to manage the physical, emotional and social impacts of chronic disease in everyday life</p>	<p>Cognitive 3: application</p>	<ul style="list-style-type: none"> • Concepts of self-confidence, self-esteem, and coping skills. • Relevance of self-confidence, self-esteem, and coping skills for behaviour change. • Applying strategies to promote self-confidence, self-esteem, and coping skills in behaviour change interventions. 		
	<p>BC6.4 Assist the person to become co-manager of his/her chronic disease in partnership with health professionals</p>	<p>Affective 2: responding</p>	<ul style="list-style-type: none"> • Shared decision making in behaviour change interventions. • Applying shared decision making in behaviour change interventions. 	<ul style="list-style-type: none"> • How would you implement shared decision-making strategies for Luuk's behaviour change? 	



Competency statement	Associated learning outcome	Bloom's taxonomy Level	Proposed content	Suggested reflection question	Suggested accompanying readings
				<ul style="list-style-type: none"> Present which strategies would you implement to assist the persons' readiness for behaviour change. 	
BC7. Foster and maintain a good intervention alliance with individuals	BC7.1 Apply strategies to support the co-operative working relationship between the person and a health care provider	Affective 2: responding	<ul style="list-style-type: none"> Applying strategies to promote a good relationship between the professional and the person (e.g., adapting the structure of the session to the person's needs, avoiding negative interpersonal behaviours, such as impatience, overcoming relational obstacles, such as talking too much or too little, using person's summaries to ascertain understanding instead of "teach and tell", orientation towards solutions in face of challenges). Applying strategies to agree on an agenda with the person, regarding what to do and how it will be done (e.g., BCTs) Common traps in behaviour change interventions (judging, teaching, controlling, patronising). 	<ul style="list-style-type: none"> List two positive communication and support strategies to help building a good and co-operative working relationship with Luuk. Identify one relational obstacle in general and suggest strategies to overcome it. Identify two common traps you want to avoid in BC interventions. What strategy would you implement to overcome "teaching", a common behaviour change intervention trap? 	
	BC7.2 Demonstrate active listening of the person's concerns and difficulties in the self-management of chronic disease	Affective 5: characterization	<ul style="list-style-type: none"> Active listening in practice (e.g., taking into account statements made by the person, considering the person's emotional reactions). 	<ul style="list-style-type: none"> List active listening strategies for BC practice. 	



Competency statement	Associated learning outcome	Bloom's taxonomy Level	Proposed content	Suggested reflection question	Suggested accompanying readings
BC8. Identify opportunities and barriers (determinants) to implementing change in the target behaviour	BC8.1 Demonstrate the importance of collecting holistic information about the person to tailor the behaviour intervention	Affective 4: organisation	<ul style="list-style-type: none"> Tailoring behaviour change intervention to each person: examples. 	<ul style="list-style-type: none"> Demonstrate how collecting holistic information about Luuk can inform/support decision making regarding tailoring BC intervention. 	
	BC8.2 Relate the person's daily living, support, concerns and treatment through structured questionnaires, interview and other approaches	Affective 3: valuing	<ul style="list-style-type: none"> Measures to assess determinants in the self-management of chronic diseases and interpretation of results (e.g., Bartel index for activities of daily living, Beliefs about medicines questionnaire). Key strategies in clinical interview. Assessing the person's daily living, support, concerns and treatment: application. 	<ul style="list-style-type: none"> List Luuk's daily living details, support and concerns relevant for BC. 	
	BC8.3 Discuss opportunities and barriers that influence target behaviours in a person-centred fashion	Cognitive 5: synthesis	<ul style="list-style-type: none"> Strategies to elicit a frank discussion with the person (e.g., avoiding negative interpersonal behaviours, such as impatience, overcoming relational obstacles, such as talking too much or too little, using person's summaries to ascertain understanding instead of "teach and tell"). Adopting a person-centred language and avoiding stigma. Avoiding common traps in behaviour change interventions 	<ul style="list-style-type: none"> Identify opportunities and barriers that influence Luuk's sedentary behaviour, step count and overall physical activity. Identify opportunities and barriers that influence Luuk's healthy eating. Identify opportunities and barriers that influence Luuk's medication adherence. Identify opportunities and barriers that influence Luuk's symptom monitor and management. 	



Competency statement	Associated learning outcome	Bloom's taxonomy Level	Proposed content	Suggested reflection question	Suggested accompanying readings
			(judging, teaching, controlling, patronising).		
BC9. Work in partnership to prioritise target behaviours to develop an intervention plan	BC9.1 Recognise the person's views and experiential knowledge and skills, developed through their illness experience, to aid periodization of target behaviours	Affective 5: characterization	<ul style="list-style-type: none"> Prioritising target behaviours based on the person's views and experiential knowledge and skills: examples. 	<ul style="list-style-type: none"> Explain how the person's views and experiential knowledge can be important for an intervention periodization. Demonstrate how the behaviour change intervention can benefit by prioritizing target behaviours based on the person's views and experiential knowledge. 	
BC10. Identify and select behaviour change techniques that are tailored to behavioural determinants (opportunities and barriers) in developing an intervention plan	BC10.1 Discuss BCTs addressing behaviour determinants (opportunities and barriers) with the person	Cognitive 5: synthesis	<ul style="list-style-type: none"> BCTs addressing behavioural determinants (opportunities and barriers) for the person: examples. 	<ul style="list-style-type: none"> Select one BCT addressing behavioural determinants (opportunities and barriers) for each target behaviour, in Luuk's case. 	
	BC10.2 Among BCTs addressing behavioural determinants, decide on which can included in the intervention plan, according to the person's views and resources	Cognitive 6: evaluation	<ul style="list-style-type: none"> Components of the intervention plan; selecting BCTs for the intervention plan according to the person's views and resources: examples. 	<ul style="list-style-type: none"> Justify why the previously selected BCTs best suit Luuk's views and resources. 	
BC11. Select behaviour change techniques that are appropriate for the length of the intervention (brief or long-term)	BC11.1 Demonstrate critical understanding of BCTs appropriate for brief or long-term behaviour interventions	Cognitive 3: application	<ul style="list-style-type: none"> Distinction between brief and long-term behavioural interventions. Examples of the application of different Behaviour Change Techniques according to the length of the behavioural intervention. 	<ul style="list-style-type: none"> Explain whether the previously selected BCT is appropriate for a brief behaviour change intervention. 	



Competency statement	Associated learning outcome	Bloom's taxonomy Level	Proposed content	Suggested reflection question	Suggested accompanying readings
BC12. Apply behaviour change techniques and implement the intervention plan, adapting and tailoring as require	BC12.1 Apply behaviour change techniques according to the intervention plan	Cognitive 3: application	<ul style="list-style-type: none"> Applying core BCTs as part of an intervention plan: examples. 	<ul style="list-style-type: none"> Describe the practical application of the selected BCTs, in either a brief or long-term BC intervention. 	
	BC12.2 Assess the person's target behaviour regularly using appropriate data collection approaches	Cognitive 3: application	<ul style="list-style-type: none"> Regular assessment of the person's target behaviour: examples (e.g., medication adherence questionnaires, physical activity questionnaires, dietary questionnaires, wearables data, interview). 	<ul style="list-style-type: none"> Describe how would you assess Luuk's target behaviour(s) over time. 	
	BC12.3 Demonstrate how to monitor the implementation of BCTs as part of the intervention plan	Cognitive 3: application	<ul style="list-style-type: none"> Reviewing target behaviours and BCTs implementation as part of the intervention plan: examples. 	<ul style="list-style-type: none"> Describe how would you assess the effectiveness of the selected BCTs, as part of the BC intervention. 	
	BC12.4 Demonstrate how to redefine the intervention plan as appropriate	Cognitive 3: application	<ul style="list-style-type: none"> Changing the plan building on the experience gained when the intervention is not working. 	<ul style="list-style-type: none"> Describe how would you adjust the BC intervention to address each long-term intervention event described in the case study. 	
BC13. Plan for follow-up and maintenance when the target behaviour has been achieved	BC13.1 Plan the end of the intervention and the use of BCTs and resources beyond its end to promote maintenance of the target behaviour	Cognitive 5: synthesis	<ul style="list-style-type: none"> Strategies for signalling termination at a near point in time and for dealing with concerns. Evidence on BCTs for maintenance of behaviours. Examples of potentially usual resources (e.g., gym membership). 	<ul style="list-style-type: none"> Select two BCTs to take effect on Luuk's behaviour maintenance plan, beyond the timeframe of the BC intervention. Explain why and how the selected BCTs are suitable and sustainable for Luuk's maintenance plan. 	



Competency statement	Associated learning outcome	Bloom's taxonomy Level	Proposed content	Suggested reflection question	Suggested accompanying readings
BC14. Provide access to appropriate information and educational materials tailored to individual needs	BC14.1 Select information and adequate educational materials according to individual factors (e.g. knowledge gaps, health literacy level and preferences)	Cognitive 3: application	<ul style="list-style-type: none"> • Examples of available educational resources (e.g., websites). • Tailoring educational resources to individual factors: examples. 	<ul style="list-style-type: none"> • Select available information and adequate educational resources (e.g., websites) that better match Luuk's profile and target behaviour(s). 	

Guidance for educators

Using the case study in the selected target behaviours

This case study was conceived primarily to achieve learning outcomes in behaviour change related to increasing physical activity. We suggest key steps to be followed before, during and after class, using **group work**.

Before class: preparing

1. **Select the learning outcomes and questions:** based on learning priorities and time available, prioritise learning outcomes and select related questions. Bear in mind that the same case study can be used in consecutive sessions, covering different questions, moving from “problem identification” to “solution”. The same case study can also be matched to different study levels.



Tips

- It takes time for students to settle down and focus on proposed tasks, to move at a reasonable pace and avoid frustration plan for less rather than more questions.
- Our experience suggests that 3 to 4 questions can be explored in a 100-minute session for students working in groups of 4 to 5 persons.
- The first question should get students engaged in thoughtful talk: prefer a question that all students should be able to answer readily.

2. **Provide some context to the intervention setting that fits the specificity of your discipline and country, if necessary:** in order to guide the students and clarify the activities, it may be useful to give additional context to the envisaged intervention, particularly regarding the intervention setting and how the professional meets the person. For example:
 - a. Maria José may go to the pharmacy to meet her community pharmacist.
 - b. Maria José may have an exercise physiologist coming to her office, as ordered by her company, to promote the work force physical activity and health as part of a corporate work-site health promotion program.
3. **Draft an answer for each question:** based on the suggested accompanying reading (and potentially other resources), draft an answer for each question, which may encompass possible nuances.

4. **Ascertain what do students already know that applies to the case:** if needed, pair in-class work with a pre-class reading assignment that introduces or recaps concepts (e.g., “Suggested accompanying reading”).
5. **Decide how the case discussion will be conducted:** choose how groups will share the outputs of their group (e.g., pitch presentations of each group’s work or, for each question, one group shares the answer and others comment). Moreover, decide whether you will ask a person in each group to present the group’s answer and reasoning or whether groups will be allowed to choose a facilitator or record keeper, who will report on behalf of the group.



Tips

- Calling on different students ensures diversity in the discussion and wider participation.
- To keep the class on track and moving at a reasonable pace it may be helpful to have groups reporting on questions consecutively at agreed time intervals, as opposed to sharing group outputs in bulk towards the end.

6. **Decide if participation is graded:** assessing students can motivate them to complete pre-class reading as well as stimulating in-class attentiveness. Grading can be based on the quantity and especially quality of the case discussion (e.g., check, check-plus, check-minus or zero), and involving as many students as possible.
7. **Plan a way to organise groups’ outputs that shows accomplishment and summarises points:** this could take the form of a blackboard plan (e.g., organising information according to learning outcomes and questions) or powerpoint slides with information that can be completed based on groups’ outputs.
8. **Decide whether follow-up assignment is due:** for example, writing-up a summary of learnings in relation to proposed learning outcomes or presenting answers revised considering class discussion can be useful to strengthen in-class work.



Tips

- To make workload more manageable to educators and students follow-up assignments may be asked for half or a third of the in-class work during a term.

In-class: leading the case discussion

- 1. Introduce the case:** provide the “Person’s profile” to students and allow them time to get familiar with its content; an alternative is asking students to read the case ahead of class. Ensure that students have a clear understanding about the information conveyed in the person’s profile (e.g., ask students to summarize key points).
- 2. Provide directions regarding what students are supposed to do and accomplish:** divide students into groups or convene pre-formed groups, explain the ground rules and signpost time for discussion.
- 3. Facilitate group work and monitor time:** circulate among groups, if needed clarify doubts.



Tips

- If the room allows a U-shaped seating arrangement for each group works best than circles. The open part of the U should face the blackboard. This arrangement allows all students to see one another and, once discussion is convened, to see the instructor and the blackboard.

- 4. Facilitate the case discussion:** listen and respond to students who are sharing the groups’ outputs or who jump into the discussion and connect their ideas; extract key points as previously planned (e.g., blackboard, powerpoint).



Tips

- Calling on different students can be done by random selection or by calling on students showing “intention movements” (leaning forward, nodding their head, frowning, opening their mouths as if beginning to speak).
- To avoid having the same person repeatedly dominating the discussion, use questions such as “Does anyone have a different answer?” or “Anne, what do you think of this proposal?”.
- Paraphrasing can be useful to connect students’ ideas (e.g., “John just mentioned X, and this squares with Anne’s answer on behalf of her group”)

After class activities

1. **Managing follow-up assignments, if required.**
2. **Reviewing the teaching experience for improvement purposes:** this exercise can be done individually or together with other instructors of the same module, and will predictably lead to.

Other approaches to case-based learning include discussing the case as the whole class or role-play. For example, a student or a simulated patient can role-play Luuk Altorf, following the person's profile as a script while another student is briefed to perform tasks related to assessment, plan, delivering the behaviour change intervention or follow-up (learning outcomes related to BC5, BC8, BC10, BC11, BC12 e BC13). Creating a checklist may render feedback more informative.

Expanding the use of this case study

This case study was conceived primarily to achieve learning outcomes in behaviour change related to smoking cessation. Nonetheless, it may be used in different ways, depending on the needs and purposes of educators. This involves changing the person's profile, adding extra information or exploring different questions. Examples are:

- **Exploring other target behaviour(s)** (e.g., sleeping habits, adherence to regular health check-up and other).
- **Develop short descriptions depicting other diagnosed disease(s)** (e.g., type 2 diabetes, ischemic heart disease, chronic obstructive pulmonary disease or other) **or events** (e.g., worsening or ameliorating of symptoms; myocardial infraction or a stroke, recent hospitalization, medical condition of family member and others).

The latter changes may render the case study useful for pursuing learning outcomes in other topics unrelated with behaviour change, facilitating a holistic case-based learning.

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