COP4HL

COP STUDY MODULES

COMMUNITIES OF PRACTICE FOR HEALTHY LIFESTYLE

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Index

Summary (EN)

Lifestyle related health problems demand a shift towards prevention with both impact-driven structures and professionals, who are specifically educated to guide this process. So far, efforts to improve the delivery of evidence-based care have largely focused on provider knowledge and decision support. However, systematic reviews suggest that educational or knowledge-based interventions targeting individual providers to improve quality of care have been largely unsuccessful.

Therefore, the main objective of this learning module is to coordinate the development, piloting, publishing and promotion of new open access learning resources for the development of innovative education for and through Healthy Ageing, Healthy Lifestyle and community-based interventions. In the light of the project Community of Practice for a Healthy Lifestyle it was planned and logical to develop courses on: a) what is Healthy Lifestyle and b) what is community-based intervention and how to assess. However, in the course of the project period it emerged and became clear that the role of citizens is a very important stakeholder which is often set aside or forgotten. This despite the fact that citizens are of main importance throughout the whole knowledge development and social innovation chain. Therefore, a third course on the topic of citizen science for health was developed. So, the following three modules were developed:

1. What is Healthy Lifestyle, Healthy Ageing?
2. What is a community-based intervention and how to assess it?
3. Citizen Science for Health

All modules can be offered stand alone for extracurrilar purposes as well as for being integrated and exploited in health or related bachelor programs (EQF 6). Each module has a study load of 1-2 credits (approximately 40 hours). Each module describes the content, competences and learning outcomes, a generic setup of each module is included with guidelines and recommendations.

Samenvatting (NL)

Leefstijlgerelateerde gezondheidsproblemen vragen om een verschuiving naar preventie met zowel impactgedreven structuren als professionals, die specifiek zijn opgeleid om dit proces te begeleiden. Tot dusver waren de inspanningen om de levering van evidence-based zorg te verbeteren grotendeels gericht op kennis van zorgverleners en ondersteuning van beslissingen. Systematische reviews suggereren echter dat educatieve of op kennis gebaseerde interventies gericht op individuele zorgverleners om de kwaliteit van zorg te verbeteren grotendeels mislukt zijn.

Daarom is het hoofddoel van deze leermodule het coördineren van de ontwikkeling, proefneming, publicatie en promotie van nieuwe open access leermiddelen voor de ontwikkeling van innovatief onderwijs voor en door middel van Healthy Ageing, Healthy Lifestyle en community-based interventies. In het licht van het project Community of Practice for a Healthy Lifestyle was het gepland en logisch om cursussen te ontwikkelen over: a) wat is een gezonde levensstijl en b) wat community-based interventie is en hoe te beoordelen. In de loop van de projectperiode kwam en werd echter duidelijk dat de rol van de burger een zeer belangrijke stakeholder is die vaak terzijde wordt geschoven of vergeten. Dit ondanks het feit dat de burger centraal staat in de hele keten van kennisontwikkeling en sociale innovatie. Daarom werd een derde cursus over het onderwerp burgerwetenschap voor gezondheid ontwikkeld. Daarom zijn de volgende drie modules ontwikkeld:

1. Wat is een gezonde levensstijl, gezond ouder worden?
2. Wat is een gemeenschapsgerichte interventie en hoe moet deze worden beoordeeld?
3. Burgerwetenschap voor gezondheid

Alle modules kunnen op zichzelf worden aangeboden voor buitenschoolse doeleinden, maar ook om te worden geïntegreerd en benut in gezondheids- of aanverwante bachelorprogramma's (EQF 6). Elke module heeft een studielast van 1-2 studiepunten (circa 40 uur). Elke module beschrijft de inhoud, competenties en leerresultaten, een generieke opzet van elke module is opgenomen met richtlijnen en aanbevelingen.

Resumé (DK)

Livsstilsrelaterede sundhedsproblemer kræver et skift mod forebyggelse med både påvirkningsstyrede strukturer og fagfolk, der er specielt uddannet til at styre denne proces. Indtil videre har bestræbelser på at forbedre leveringen af evidensbaseret pleje i vid udstrækning fokuseret på udbyderens viden og beslutningsstøtte. Systematiske gennemgange antyder imidlertid, at uddannelsesmæssige eller videnbaserede interventioner rettet mod individuelle udbydere for at forbedre kvaliteten af plejen stort set har været mislykkede.

Derfor er hovedformålet med dette læringsmodul at koordinere udvikling, pilotering, offentliggørelse og promovering af nye open access læringsressourcer til udvikling af innovativ uddannelse til og gennem sund aldring, sund livsstil og samfundsbaserede interventioner. På baggrund af projektet Community of Practice for a Healthy Lifestyle var det planlagt og logisk at udvikle kurser om: a) hvad er Healthy Lifestyle og b) hvad der er samfundsbaseret intervention og hvordan man vurderer. I løbet af projektperioden kom det imidlertid frem og blev klart, at borgernes rolle er en meget vigtig interessent, som ofte er afsat eller glemt. Dette til trods for at borgerne er af største betydning i hele kæden for videnudvikling og social innovation. Derfor blev der udviklet et tredje kursus om emnet borgervidenskab for sundhed. Så følgende tre moduler blev udviklet:

1. Hvad er sund livsstil, sund aldring?
2. Hvad er en samfundsbaseret intervention, og hvordan vurderes den?
3. Citizen Science for Health

Alle moduler kan tilbydes enkeltstående til ekstraordinære formål samt til at blive integreret og udnyttet i sundhed eller relaterede bacheloruddannelser (EQF 6). Hvert modul har en studiebelastning på 1-2 point (ca. 40 timer). Hvert modul beskriver indholdet, kompetencer og læringsresultater, en generisk opsætning af hvert modul er inkluderet med retningslinjer og anbefalinger.

Santrauka (LT)

Su gyvenimo būdu susijusios sveikatos problemos reikalauja pereiti prie prevencijos pasitelkiant poveikį darančias struktūras ir specialistus, kurie yra specialiai mokomi vadovauti šiam procesui. Iki šiol pastangos gerinti įrodymais pagrįstos priežiūros teikimą daugiausia buvo sutelktos į paslaugų teikėjų žinias ir sprendimų palaikymą. Tačiau sistemingos apžvalgos rodo, kad švietimo ar žiniomis grindžiamos intervencijos, skirtos atskiriems paslaugų teikėjams, siekiant pagerinti sveikatos priežiūros kokybę, iš esmės buvo nesėkmingos.

Todėl pagrindinis šio mokymosi modulio tikslas yra koordinuoti naujų atviros prieigos mokymosi išteklių kūrimą, bandymą, leidybą ir skatinimą, siekiant plėtoti novatorišką švietimą, skirtą sveikam senėjimui, sveikai gyvensenai ir bendruomenėje vykdomoms intervencijoms. Atsižvelgiant į projektą „Sveikos gyvensenos praktikos bendruomenė“, buvo planuojama ir logiška parengti kursus apie: a) kas yra sveika gyvensena ir b) kas yra bendruomeninė intervencija ir kaip ją įvertinti. Tačiau projekto metu paaiškėjo ir paaiškėjo, kad piliečių vaidmuo yra labai svarbus suinteresuotas asmuo, kuris dažnai yra atidedamas arba pamirštamas. Nepaisant to, kad piliečiai yra svarbiausi visoje žinių plėtros ir socialinių inovacijų grandinėje. Todėl buvo sukurtas trečiasis kursas piliečių mokslo tema sveikatai. Taigi buvo sukurti šie trys moduliai:

1. Kas yra sveika gyvensena, sveikas senėjimas?
2. Kas yra bendruomeninė intervencija ir kaip ją įvertinti?
3. Piliečių mokslas sveikatai

Visi moduliai gali būti siūlomi atskirai papildomiems tikslams, taip pat integravimui ir naudojimui sveikatos ar susijusiose bakalauro programose (EKS 6). Kiekvieno modulio studijų apimtis yra 1-2 kreditai (maždaug 40 valandų). Kiekviename modulyje aprašomas turinys, kompetencijos ir mokymosi rezultatai, kartu su gairėmis ir rekomendacijomis pateikiama bendra kiekvieno modulio sąranka.

Resumen (ES)

Los problemas de salud relacionados con el estilo de vida exigen un cambio hacia la prevención con estructuras y profesionales impulsados por el impacto, que estén específicamente capacitados para guiar este proceso. Hasta ahora, los esfuerzos para mejorar la prestación de atención basada en la evidencia se han centrado en gran medida en el conocimiento del proveedor y el apoyo a la toma de decisiones. Sin embargo, las revisiones sistemáticas sugieren que las intervenciones educativas o basadas en el conocimiento dirigidas a proveedores individuales para mejorar la calidad de la atención no han tenido éxito en gran medida.

Por lo tanto, el objetivo principal de este módulo de aprendizaje es coordinar el desarrollo, la puesta a prueba, la publicación y la promoción de nuevos recursos de aprendizaje de acceso abierto para el desarrollo de una educación innovadora para y a través del Envejecimiento Saludable, Estilo de Vida Saludable e intervenciones comunitarias. A la luz del proyecto Comunidad de práctica para un estilo de vida saludable, se planificó y lógico desarrollar cursos sobre: a) qué es un estilo de vida saludable yb) qué es la intervención comunitaria y cómo evaluar. Sin embargo, en el transcurso del período del proyecto surgió y quedó claro que el papel de los ciudadanos es un actor muy importante que a menudo se deja de lado o se olvida. Esto a pesar de que los ciudadanos tienen una importancia fundamental en toda la cadena de desarrollo del conocimiento e innovación social. Por ello, se desarrolló un tercer curso sobre el tema de ciencia ciudadana para la salud. Entonces, se desarrollaron los siguientes tres módulos:

1. ¿Qué es estilo de vida saludable, envejecimiento saludable?
2. ¿Qué es una intervención comunitaria y cómo evaluarla?
3. Ciencia ciudadana para la salud

Todos los módulos pueden ofrecerse de forma independiente para fines extracurrilares, así como para ser integrados y explotados en programas de licenciatura relacionados con la salud o relacionados (EQF 6). Cada módulo tiene una carga de estudio de 1-2 créditos (aproximadamente 40 horas). Cada módulo describe el contenido, las competencias y los resultados del aprendizaje; se incluye una configuración genérica de cada módulo con directrices y recomendaciones.

Resumo (PT)

Os problemas de saúde relacionados ao estilo de vida exigem uma mudança para a prevenção com estruturas e profissionais orientados para o impacto, que são treinados especificamente para orientar esse processo. Até agora, os esforços para melhorar a prestação de cuidados baseados em evidências têm se concentrado amplamente no conhecimento do provedor e no apoio à decisão. No entanto, as revisões sistemáticas sugerem que as intervenções educacionais ou baseadas no conhecimento que visam os provedores individuais para melhorar a qualidade do atendimento não tiveram muito sucesso.

Portanto, o principal objetivo deste módulo de aprendizagem é coordenar o desenvolvimento, pilotagem, publicação e promoção de novos recursos de aprendizagem de acesso aberto para o desenvolvimento de uma educação inovadora para e por meio do Envelhecimento Saudável, Estilo de Vida Saudável e intervenções baseadas na comunidade. À luz do projeto Comunidade de Prática para um Estilo de Vida Saudável foi planejado e lógico desenvolver cursos sobre: a) o que é Estilo de Vida Saudável eb) o que é intervenção de base comunitária e como avaliar. No entanto, no decurso do período do projeto, emergiu e tornou-se claro que o papel dos cidadãos é uma parte interessada muito importante que muitas vezes é deixada de lado ou esquecida. Isto apesar do facto de os cidadãos terem uma importância primordial em toda a cadeia de desenvolvimento do conhecimento e inovação social. Para tanto, foi desenvolvido um terceiro curso sobre o tema ciência cidadã para a saúde. Assim, os três módulos a seguir foram desenvolvidos:

1. O que é estilo de vida saudável, envelhecimento saudável?
2. O que é uma intervenção de base comunitária e como avaliá-la?
3. Ciência Cidadã para a Saúde

Todos os módulos podem ser oferecidos isoladamente para fins extracurrilares, bem como para serem integrados e explorados em programas de bacharelado em saúde ou relacionados (EQF 6). Cada módulo tem uma carga horária de estudo de 1-2 créditos (aproximadamente 40 horas). Cada módulo descreve o conteúdo, competências e resultados de aprendizagem, uma configuração genérica de cada módulo é incluída com orientações e recomendações.

Introduction

The *WP8 – Development of a European COP Support Lab: Education and Learning Approach* aims at coordinating the development, piloting, publishing and promotion of a new open access learning resources for the development of innovative education for and through Active & Healthy Lifestyle Community Based Interventions (CBI).

In the following description, deliveries related to activity 1) development of education; 2) development of recommendations for study elements including workshops etc.; 3) recommencations for competences for students will be elaborated.

During the project meeting in Odense, Denmark in the beginning of 2019, a "World Café" was held having all project partners participating in a mutual brainstorm on which elements that, based on their COP experiences from their local COP development processes, are important when running such processes. Based on these input from the overall project description and from the World Café, it was clear that:

1. We should not aim for complete modules to be produced, but rather module components of approximately 1-2 ECTS to be incorporated/exploited into already existing curricular, where the thought behind Community Based Interventions are applicable.
2. We should aim at producing module components primairily aiming at the University Bachelors level (EQF level 6). Thereby, teachers from both the vocational setting and university setting can adjust the components related to the given topic, they are teaching.
3. The overall learning approach should be related to Problem Based Learning to ensure a respectful and empowering culture in which the diversity of knowledge and backgrounds are fully appreciated and effectuated.
4. The module components and the WP in general should be related to *WP6 – Development of a European COP Support Lab: Management and Facilitation* and *WP7 – Development of a European COP Support Lab: Entrepreneurship Promotion.*
5. Via 4) it was later decided to develop 3 modules in WP6, WP7 and WP8 combined with each WP producing one module, respectively.

The following table presents components identified as important parameters in a learning approach related to the Education and Learning Approach in the Development of a European COP Support Lab.

Modules	Estimated ECTS	Focus
Module 1: What is Healthy Lifestyle, Healthy Ageing?	1-2	• Paradigms of Health • Professional identity of change agents • Components of Healthy Lifestyle, Health Issues, Integration Health into Policy • Co-creation with end-users • Real-world examples – do's and don't's
Module 2: How can Community Based Interventions (CBI) contribute to Healthy Lifestyle?	1-2	• How can CBI contribute to Healthy Lifestyle • System approach • Different levels, different actors/sectors
Module 3: Citizen Science as driver for end user engagement in Community Based Interventions	1-2	• What is Citizen Science in general • What is Citizen Science in the context of Healty Lifestyle • Levels of Citizen Science • Citizen and stakeholders engagement

Module 1: What is Healthy Lifestyle?

Unit Outline	
Please start with a short introduction related to this module	***Healthy Ageing, Healthy Lifestyle as an alternative for new health systems*** ***The professionals are to transition!*** A swift change in how we perceive, position and manage health in our societies is on its way. The meaning of health from a person's perspective to a societal perspective is quickly (re) conceptualised. A fast growing knowledge in how to, and not to, manage health serves as a foundation for this change. However in reality we are struggling to deliver on these promises. To value health and employ the full potential of health for individuals and society at large. This module focuses on how to stimulate the change that is necessary. The more because the current societal position of the health domain is unsustainable in the (near) future. Currently health is still dominated by health systems largely unfit for the desired and changed models of health. Not surprisingly, health systems are under tremendous cummulative costs. Policies to structurally change this undesired and unsustainable situation doesn't expedite these reforms. Optimizing the current health systems does not suffice. This module argues we need to build up an alternative health system and phase out the current system without loosing the great accomplishments it delivered. In fact, we have to take out health out of the current disease orientated system and give it back to where people live, play and work. Health professions should play a significant role in this transition. In these sectors the professionals form the majority of the workforce, being able to leverage a more adequate perspective on health towards both the end-users (of which patients) and managers/ decisionmakers. They can then also contribute towards the innovation and ultimately transition of health services. However this demands fundamental shifts in the knowledge perception, the perception of change and the competence to contribute towards this transition. This module will address the necessary changes as a true transition towards an alternative position of, care for, health. In order to distinguish firmly from current health systems we call this Healthy Ageing, Healthy Lifestyle.

Total Workload	40 hours (contact hours + self study hours)
ECTS Credits	1-2 credits (ECTS)
EQF Level	6
Basic Knowledge Requirements and Prerequisites	• A completed bachelor's degree and demonstrable affinity and experience in the context of Healthy Ageing, Healthy Lifestyle; • A professional level of development where there is demonstrable initiative (daring to take a stand, taking things forward, trying to exert influence in a targeted manner, wanting to make an active contribution) in combination with a problem-solving, entrepreneurial and innovative orientation. • Motivation for the training, which is apparent from a detailed issue (innovation assignment) with which you want to get started. You will have to demonstrate a demonstrable awareness of and interest in developments in the domain of sport, health and well-being at micro, meso and macro level and your own development needs as a change agent; • Relevant workplace/intership: you work on assignments in practice.
Component relevance	For working in the field of Healthy Lifestyle and Healthy Ageing it is important to know and acknowledge the current paradigm status and what is projected for the future regarding the urgent transition. Therefore this module describes recent paradigms of (public) health and stimulates the students to work with this paradigms in a practice oriented way. So, including multiple levels, different stakeholders etc.
Component Description	As professional, you have learned a trade and are focused on promoting people's health. However, you realize that today's society demands more. About people who look beyond their field, who want to collaborate and who look for new solutions. People who want to collaborate interprofessionally and think further about prevention, participation, sport and exercise. In this module, you are introduced in the world of the change agent. A change agent you is concerned with positioning and organizing health differently in a changing society. Participating in this society and extracting positive value from it is central to this. You focus on the health of people of all ages. This starts where people live, work and enjoy themselves every day. This concerns a broad definition of health aimed at utilizing one's own capacity and resilience.

Competences & Learning Outcomes (LO's) and	Competences • Gaining knowledge • Recognising • Comparing • Combining • Developing • Communicating & Presenting By the end of this module professionals/students should be able to: 1. Motivate and describe their professional identity as change agent founded in their key professional competences; 2. Identify basic theories of behavioural change and health promotion; 3. Identify different levels of intervention (individual, focused on selected target groups, focused on communities) and possible strategies; 4. Have a well-founded opinion on the strong and weak aspects of different theoretical approaches towards health, prevention and amplition.
Recommended Literature	1. Beenen, P.C. et.al. (2018) Healthy Ageing as an alternative for our inadequate health systems-The professionals are to transition! (In review-not published) 2. Cohn S, Clinch M, Bunn C, Stronge P. Entangled complexity: why complex interventions are just not complicated enough. J Health Serv Res Policy. 2013;18(1):40–3. 13. 3. Kickbush, I., Gleicher, D. (2014) Smart governance for health and well-being: the evidence, WHO, Geneve. 4. Mazzucato, M. (2018). Mission-Oriented in the European Union. European Commission, http://doi.org/10.2777/36546 5. Tuomi, I. (2015). Epistemic Literacy or a Clash of Clans? A Capability-based View on the Future of Learning and Education. European Journal of Education, 50(1). 6. Wenger E. ea (2011) . Promoting and assessing value creation in communities and networks : a conceptual framework, Ruud de Moore Centrum, Open Universiteit.

	7. Wenger-Trayner E., Fenton-O'Creevy M., Hutchinson S., Kubiak C., Wenger-Trayner B. (2015) Learning in landscapes of practice : boundaries, identity, and knowledgeability in practice-based learning, Routledge.
Recommended Teaching Methods	• Lectures and action learning activities with lecturers from the fields of relevance for healthy lifestyle and practical examples • Lectures (classroom based learning) • Group discussion (practice oriented learning) • Workshops • Student presentations of articles, individual study work (reading and presenting) • Policy simulation game: In such simulations student's act as real "change agents" of relevance to the core case (e.g. politicians, civil servants, key organizational players from both the public-, private- and NGO sector)
Recommended Assessments	Game simulation in which the student/candidate together with his/her team have to communicate the "Healthy Lifestyle" challenge in their community/neigborhood to the policy makers. Central aim of this presentation is to addres the Healthy Lifestyle on the agenda of the politicians. Information of at least local Health/Healthy Lifestyle status, relevant stakeholders, cooperation between sector and personal tasks and roles of the change agent should be described in the Healthy Lifestyle memo.

Suggested Schedule of Activities module 1: What is Healthy Lifestyle?			
#	**Topics (and sub-topics)**	**Readings**	**Activities and Assignments**
1	What is Healthy Ageing, Healthy Lifestyle? (Paradigms of Health)	2, 3	Lecture + student work Introduction to the course in general and what is expected for the simulation game with “policy maker”.
2	Components of Healthy Lifestyle, Health Issues, Integration Health into Policy	5	Lecture + student work. After studying + lecture, students discuss in small groups how health is situated in local/regional policies. Students need to collect and gather information on the local/regional health status and major policy developments. Think local and concrete in order to make it (context) specific.
3	Preparing the simulation game: Healthy Lifestyle talk between the Change Agent and the local Policymaker		Based on the synthesis of topic 2, students prepare their first version of the background memo on Healthy Lifestyle and Healthy Ageing and a first presentation. The other student provide feedback on the memo as well as the presentation.
4	Simulation game: presenting Healthy Lifestyle challenge for politicians		Based on the input and feedback of topic 3, the student adapts its background memo on Healthy Lifestyle and Healthy Ageing and the presentation. During the simulation game, the student present its viewpoint and future advices based on local and regional, context specific background information on Healthy Lifestyle and Healthy Ageing in combination with relevant local/regional Health agendas.

Apendix learning module 1.

Handouts lecture 1.

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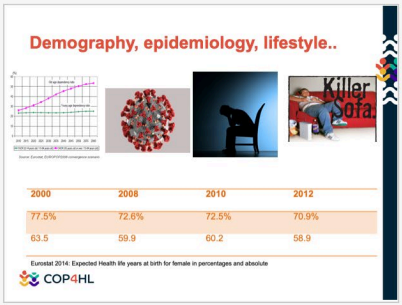

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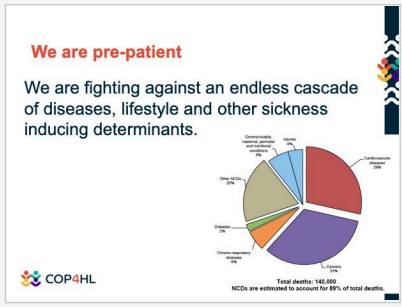

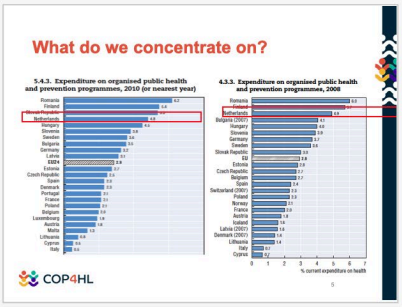

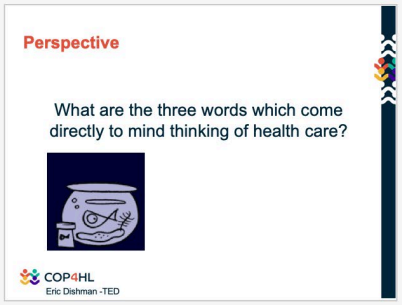

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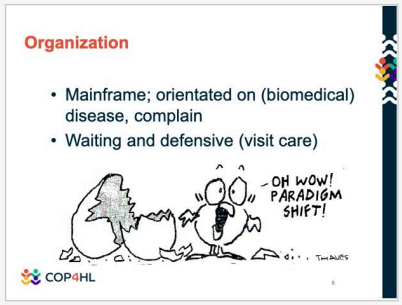

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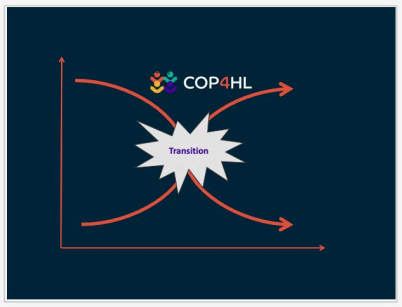

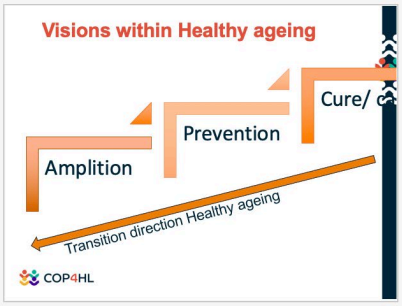

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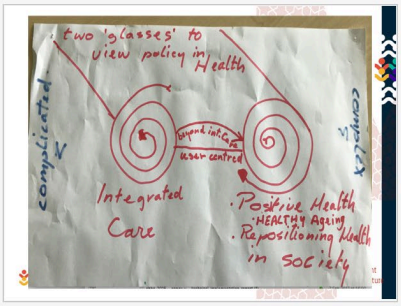

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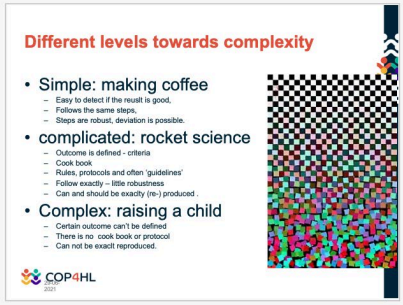

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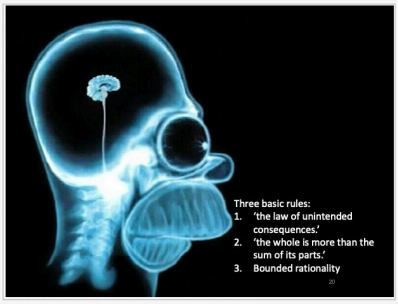

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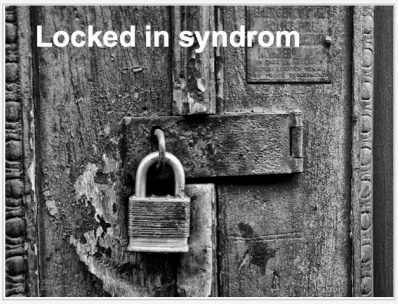

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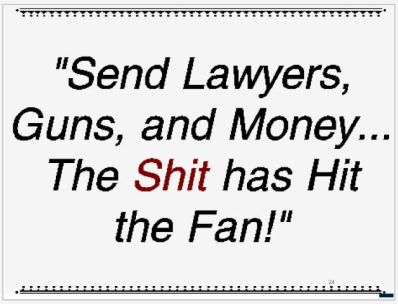

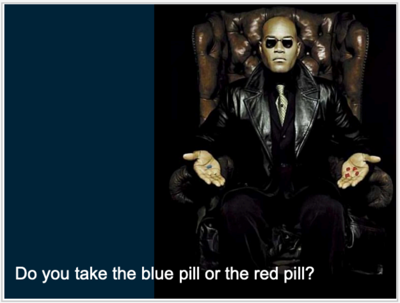

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Some Literature

- Greenhalgh, T., & Papoutsi, C. (2018). Studying complexity in health services research: Desperately seeking an overdue paradigm shift. *BMC Medicine*, *16*(1), 4–9. http://doi.org/10.1186/s12916-018-1089-4
- Greenhalgh T, Papoutsi C. Understanding complexity in health systems: international perspectives 2017. https://bmcmedicine.biomedcentral.com/articles/collections/complexity
- Braithwaite J, Churruca K, Long JC, Ellis LA, Herkes J. When complexity science meets implementation science: a theoretical and empirical analysis of systems change. BMC Med. 2018;16:63
- Long KM, McDermott F, Meadows GN. Being pragmatic about healthcare complexity: our experiences applying complexity theory and pragmatism to health services research. BMC Med. 2018; https://doi.org/10.1186/s12916-018-1087-6.10.
- Rutter H, Savona N, Glonti K, Bibby J, Cummins S, Finegood DT, Greaves F, Harper L, Hawe P, Moore L, et al. The need for a complex systems model of evidence for public health. Lancet. 2017;390(10112):2602–4
- Lanham HJ, Leykum LK, Taylor BS, McCannon CJ, Lindberg C, Lester RT. How complexity science can inform scale-up and spread in health care:

p.c.beenen@pl.hanze.nl

27


Mazzucato, M. (2018). Mission-Oriented in the European Union. European Commission, http://doi.org/10.2777/36546

Kickbush, I., Gleicher, D. (2014) Smart governance for health and well-being: the evidence, WHO, Geneve.

Tuomi, I. (2015). Epistemic Literacy or a Clash of Clans? A Capability-based View on the Future of Learning and Education. European Journal of Education, 50(1).

Wenger-Trayner E., Fenton-O'Creevy M., Hutchinson S., Kubiak C., Wenger-Trayner B. (2015) Learning in landscapes of practice : boundaries, identity, and knowledgeability in practice-based learning, Routledge.

Wenger E. ea (2011) . Promoting and assessing value creation in communities and networks : a conceptual framework, Ruud de Moore Centrum, Open Universiteit.

Van Gunsteren H. (1994) *Culturen van besturen*, Boom , Amsterdam

Avelino, F., & Wittmayer, J. M. (2015). Shifting Power Relations in Sustainability Transitions : A Multi-actor Perspective. Submitted to the Journal of Environmental Policy & Planning, 7200(Dec), 1–23. http://doi.org/10.1080/1523908X.2015.1112259

Kimbell L. (2014) The service innovation handbook, Understanding impact, Amsterdam: Bis publishers Amsterdam.

Conklin, J. (2003) Dialog Mapping: An Approach for Wicked Problems, CogNexus Institute, http://cognexus.org/dmforwp2.pdf.

Beenen,P.C. et.al. (2018) Healthy Ageing as an alternative for our inadequate health systems-The professionals are to transition! (In review-not published)

Loorbach, D., Frantzeskaki, N., & Avelino, F. (2017). Sustainability Transitions Research : Transforming Science and Practice for Societal Change, (June), 1–28.

Cohn S, Clinch M, Bunn C, Stronge P. Entangled complexity: why complex interventions are just not complicated enough. J Health Serv Res Policy. 2013;18(1):40–3. 13.

Paper on Healthy Ageing by Paul Beenen (work under construction)

Healthy Ageing as an alternative for our inadequate health systems
The professionals are to transition!

Introduction

A swift change in how we perceive, position and manage health in our societies is on its way. The meaning of health from a person's perspective to a societal perspective is quickly (re) conceptualised. A fast growing knowledge in how to, and not to, manage health serves as a foundation for this change. However in reality we are struggling to deliver on these promises. To value health and employ the full potential of health for individuals and society at large this article assert that a fundamental change is necessary. The more because the current societal position health get is unsustainable towards the near future. Currently health is still hijacked by health systems largely unfit for the desired and changed models of health. Not surprising health systems are under tremendous pressure of being unable to deliver the necessary services at still steeply increasing costs. Policies to structurally change this undesired and unsustainable situation doesn't expedite these reforms. Optimizing the current health systems does not suffice. This article argues we need to build up an alternative health system and phase out the current system without loosing the great accomplishments it delivered. In fact, we have to take out health out of the current disease orientated system and give it back to where people live, play and work.

This article argues that especially health professions should play a significant role in this transition. It will argue that this is in sharp contrast to their current largely unconscious locked in role of conserving the failing health systems. In these sectors the professionals form the majority of the workforce, being able to leverage a more adequate perspective on health towards both the end-users (of which patients) and managers/ decisionmakers. They can then also contribute towards the innovation and ultimately transition of health services. However this demands fundamental shifts in the knowledge perception, the perception of change and the competence to contribute towards this transition. This article will define the necessary changes as a true transition towards an alternative position of, care for, health. In order to distinguish firmly from current health systems we call this Healthy Ageing. The article finishes with a first attempt to describe the necessary capabilities and thus for the agenda of the continuous professional development of its professionals[1].

[1] When we refer to the health professions, we include professionals focusing on the broad perspective of health as is drawn in this article. This can includes social professionals, sport professionals but also HRM-professionals or landscape architects working on healthy environments.

An alternative health perspective

The idea of health as an intrinsic value, integrating health into well being and the capacity to participate in a meaningful life has been of little focus in dealing systematically with the care for our health over the last century. This so called 'positive health perspective' opens the challenge to capitalize more the capabilities and resilience of people and communities to be healthy and to adapt and anticipate to (future) health challenges (Huber 2012, Christiansen, Waldeck and Fogg , 2017 B). Letting go the dichotomy between health and disease/sickness, one can have many health problems or disabilities but still feels well and able to participate. This offers a positive focus on what people can do, regardless the existence of limitations, instead of the current orientation on the problems and what they can't do. Health then should been seen as the lifelong process of developing and maintaining the capabilities that enables well-being and participation throughout all phases of life (ageing). This idea of 'healthy ageing' is inherent multi-level and cross-sectoral as health is then no longer the 'product' of a health system, but stays integrated and focused on the contexts where people live, work and play.

Picture of multilevel health perspective/ ook healthy ageing

This conceptualisation of health can function both as a goal but also as a mean to work towards change in the current health systems.

Failing health systems

Current health systems are world wide struggling to change fundamentally in the face of critical challenges arising (Matheson 2013, WHO 2014). These challenges are fuelled by demographic, epidemiological and technological trends that changed the health status of the population completely (WHO 2015). In short: People get older, but live an increasing part of their lives with health problems. One of the main drivers in the increased health expectancy is the enormous success of first public health and then the development of health care. This Successfully diminished the influence of infectious diseases. A professional health system was built offering a service in which most health problems can be diagnosed and treated. Health became an individual right, ultimately solidified in a definition. "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO 1948). Health became the norm, expressing what a decent life is and a good society should be caring for, meaning taking care of health problems when they arised (Rolies, 1986). This success gave rise to new challenges. Because of the increased life expectancy, but also the changes in life style, coming with more welfare, a steep increase of chronic diseases and non-communicable diseases is

visible. By now around 90% of the people in Europe die from these NCD's (WHO, 2014). As these diseases slowly creep in, it also accounts for decreased quality of life for increasing longer periods in life.

The nature of these chronic and non-communicable diseases is that they only offer explicit physical complaints in a later stage of the disease after a slow and steady development. These diseases come seldom alone, showing a steep increase in comorbidity and multi-morbidity (Oostrom ea 2012, WHO 2016). Comorbidities are also directly related, reciprocally re-enforcing each other, with quickly growing societal problems like loneliness, depression and burnout syndrome (Ubido & Scott-Samuel, 2014).

Health systems are inadequately anticipating this kind of problems. Only when people are sick enough to complain they enter the system, often after years of deterioration and showing more advanced stages of their health problems. One has to be a patient in order to receive care. This is generally too late for solving the problem causally and the only thing left is to help coping with a life influenced negatively by the problems. The consequences on macro level are best shown by the decrease of healthy years in society. Meaning that all though we get older, the amount of healthy years we live decreases significantly.

2000	2008	2010	2012
77.5%	72.6%	72.5%	70.9%
63.5	59.9	60.2	58.9

Eurostat 2014: Expected Health life years at birth for female in percentages and absolute

On this background the costs are rising steeply for health care. Estimated is that, if nothing is changed, the costs of health care in the Netherlands will increase from 13% of GDP now to 24% in the next 20 years. (Pomp, 2017). However others are estimating it to be much higher (CBP, 2013). The central point is that the costs of health care are increasing much faster then our income grows, the majority of the countries in the OECD show similar trends (Darzi et al., 2012).

Towards a transition in Health services

Many health systems are reaching the end of their capacity and put, due to their increasing costs, to much pressure on societies. Then they also fail in delivering high quality services in a rapidly changing demand for health services. As Christensen, Waldeck and Fogg put it: 'The system has largely missed the true nature of the problem—the fundamental disconnect between what patients need in order to maximize their health and what they actually get as consumers: more services and treatments that generate revenue' (Christensen, Waldeck and Fogg, 2017A).

Prevention is a troubled solution.

The quick fix is often to emphasize the necessity of prevention of health problems. This however proved to be challenging. The concept of prevention is now based on changing behaviour based on the threat of getting health problems in the future. Financing of prevention is a big challenge as people perceive prevention as a classic, albeit future, health problem and thus to be a part of the health system. This would mean in the current diagnose – intervention model an uncontrolled consumption. The attempts to develop alternative business models are also hampered because often the revenues of investments are distributed over other parties then the direct investors. These revenues have a long time frame and are notorious difficult to measure. The logical alternative to treat prevention as a common good is daunting for governments for the same reasons. This is illustrated in the minimum investment of public health and prevention programmes in Europe compared to total health care expenditure.

Investment of prevention – European commission

The concept of positive health offers another, complementing, angle. We call this 'amplition' from the verb 'to amplify'. The focus in amplition is the building of a society in which healthy ageing is paramount in the individual and societal idea of health. Healthy ageing being central to all policies in the creation of both physical and social systems, from building a healthy city to the company responsibility for the health of their employers. Amplition is aligned with the more generically formulated public health goal of Health in All Policies in order to reach Global development goals (WHO,2017). The effect of amplition will be, from the perspective of healthy ageing an almost collateral, preventive benefit.

Another feature of amplition is the orientation on the wishes and direct involvement of the end user and the visibility of the results in the local context. Another benefit then is the attractiveness for other business models as people are more willing to invest in these direct often tangible results and real ownership.

Amplition are necessarily small scaled initiatives because of the sought after for ownership in the local context and because of the transparency in investments and outcomes. This is in contrast and with the current (public) health systems. They are either supply led health care provisions or large scale population based policies orientated on abstract epidemiology and ditto outcomes.

Unfortunately contemporary thinking in health policy still strives to incorporate promising healthy ageing initiatives in the current diagnose-intervention based health systems. This is shown in for example lifestyle coaches fighting to be paid out of health insurance or in the problem based orientation of quickly increasing and unattended health problems like burnout syndrome or loneliness.

Most attempts to innovate seem to be inside the current health system, putting more and more effort and money in optimizing a system not fit for our societies.

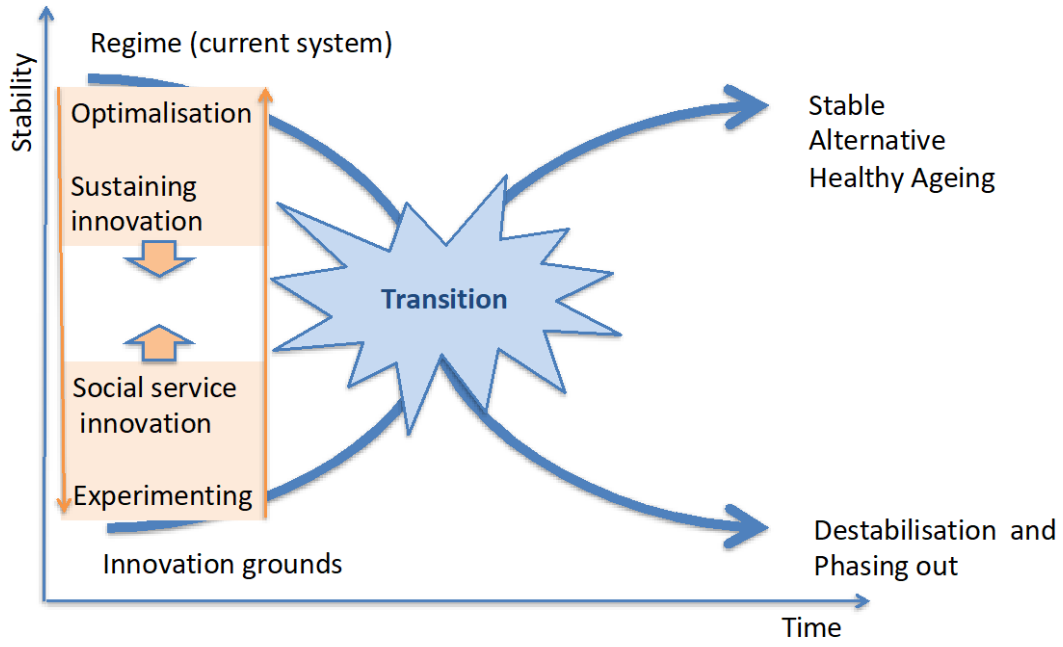
To transition!

These reflections urges a fundamental rethinking and innovation of our management of health. We need to move towards a vision of large scale and often disruptive innovations that, on the long term, shapes an alternative system for the current health services. Society has a task to better understand and priorize the necessity of this fundamental transition to keep offering good health services and should contribute actively in this transition process (Raworth,2018; Scharmer ,2018).

This transition can be described as a purposive, large scale, long term and non-linear societal change (Loorbach, 2014; Loorbach, 2017; Geels, 2011). It will necessarily change the way we think, organize and act on health from the individual perspective (civilian, patient, client, professional etc.), from the perspective of services and organisations and from a societal perspective. In order to manage this multilevel transition the question is how we influence, coordinate and bring together actors and their activities so that they reinforce each other to such

an extent that they can compete with the current failing but dominant health care practices (Loorbach and Rotmans, 2010; Matheson et. al., 2013).

Transition dynamics for the change agent



Free from Loorbach 2017

This transition we call 'healthy Ageing'. It explicates the playing field and offers a mission orientation. Offering a clear direction for the agendas for innovation and research policies. It offers framework for developing, aligning and assessing strategies over time (Mazzucato 2018). This conceptualization is necessary as transitions are thought to be long, non-linear processes of 20-50 years with now explicit outcome measures. This is often at odds with the short term ' project' thinking in policies and innovations. Mazzucato describes this nicely as creating moonshots.

Health services and their professionals have built for decades strong systems and are still optimizing them with an ingrained culture of quality management and sustaining innovation. However (as shown in figure 3), this 'health transition' assumes a more disruptive innovation towards the purpose of creating health services that are sustainable and keep up with the future demands (Miller, 2015).

Beside policy development on organisational en regional level an important role should be given to professionals. Because of the knowledge intensive nature of health and social care and the specificity of the questions the majority of the paid workforce exists out of professionals. This alone could make them the ideal ambassadors and catalysts in the described transition. A critical reflection on this role and the consequences for professional development is a requirement. In the remaining of this article we will focus on this critical reflection.

Innovation of health services

Ideal the role of health professionals is to innovate their services for individuals and groups. The goal is find novel solutions which accrues to society and are more effective, efficient, sustainable, or just than the current solutions. The starting point for innovation is the capacity to develop new or modified services in co-creation of value by actors combining and exchanging resources. It involves recombining capacities and actors into new innovation systems (Kimball, 2013; Preskill, Beer, 2012). We call this social service innovation.

This process of co-creation is pushing professionals from knowledge translation towards producing knowledge. Intersectoral collaboration, power sharing and the idea that the implementation starts from day one of the project are key elements for success (Greenhalgh, Jackson, Shaw and Janamian, 2016). The general focus on outcome evaluation of health professions should, by embracing the uncertainty and lack of outcome measures, be complemented by process evaluation such as developmental evaluation or contribution mapping (Preskill, Gopal and Cook, 2015; Kok and Schuit 2012).

Scaling Social service innovations toward the transition

The health professionals are then toalign their role towards the bigger mission of healthy ageing and take a helicopter perspective, reflecting on how their innovations (can) add (further) value to the governance of health in their societies. This so called ‘meta-governance’ has roughly two challenges going hand in hand as described by the Kickbush and Gleicher: One is health governance described as: ‘ the governance of the health system and health systems strengthening’. The other is governance of health described as ‘ the joint action of health and non-health sectors, the public, private sector and citizens in common’ (Kickbush and Gleicher, 2014). “Governance for health is the attempts of government or other actors to steer communities, countries or groups of countries to perceive health as being integral to well-being and a key feature

of a successful society and vibrant 21st century economy (WHO Regional Office for Europe, 2011)".

In both challenges the health professional plays an important role. Within health governance it is the professionals understanding of, the necessity for, transition and the consequent mobilisation as (a) pressure group(s) in the power struggles characteristic for transitions (Avelino, 2016).

In governance for health, professionals can inititate the necessary action through innovations in their daily practice. This multilevel thinking towards a transition based on new perspective of health and grounded in their own ecosystems makes them changes agents.

Change agent healthy ageing

De change agent initiates and facilitates mission orientated innovation and research towards sustainability transition in healthy ageing (Loorbach, 2017). A change agent can be characterized as:

- The change agent works towards an alternative for contemporary societal systems deemed to be unsustainable. (In this context the social en health care systems). The change agent is therefor a strongly mission-orientated and normative professional.
- The change agent works towards change from inside or outside the system. However always focussing on the support of the formulated alternative system, thus avoiding optimisation and sustaining innovation of the contemporary system. His actions are orientated to increase the capability to transition. This can include critical induced destabilisation and the phasing out of this contemporary system but also facilitating an innovative climate characterized by collaboration, creativity and shared goalsetting.
- The challenges the change agent is working on are by default wicked and viewed from the perspective of a worldview based on complex adaptive systems. This is shown by sophisticated epistemic and consistent scientific beliefs and a typical action orientated attitude from inside the specific context of the challenges (in this project the local contexts with the mission for an active healthy lifestyle). For support, the change agent develops a multi –actor network in which (local) shareholders collaborate and co-create towards the desired transition.

Transition theory conceptualizes change from a multi level perspective (Geels, 2011) and a multi-actor approach (Avelino and Wittmayer, 2015). This means that change agents should challenge and accompany (manage) the transition in health on different levels. This is especially challenging

for professionals in the health sector as they are educated within separate sectors and separate disciplines for increasingly specialized roles. This 'siloed' position is reinforced by the dominance of a reductionist paradigm based on problems analysed in causal, linear way, resulting in a diagnosis, followed by an, preferably, evidence based intervention (Ahn, Tewari Poon Phillips, 2006; Greenhalgh, Howick and Maskrey, 2014).

Locked-in position professionals

In order to be able to give the professional the role of change agent it is vital to realize this 'locked in' position health professions are, by nature of the classic health systems. Limiting them to really work towards 'joint action" and transition. This nature is comparable in the majority of health professions and can be characterized 'diagnose and intervention thinking'. This lead to a still growing wildfire of specialities and professions who base their existence on deterministically derived new diagnoses (groups), interventions for often specified target groups. For the Netherlands this turned out to be more then 2400 different health related professions alone in 2012 (van der Velden, Putter, Lee, Hassel and Batenburg, 2012). All these specialisations create their own language and, preferable based on reductionist evidence, models of practice to build identity and position, thus claiming their own territory. The current health system facilitates this process by acclaiming and allocating resources to this overshooting specialization. Meanwhile a lot of effort is put in integrating these specializations by accumulation, Failing to the socially embedded complex health issue to amplify the capacity to be and stay healthy.

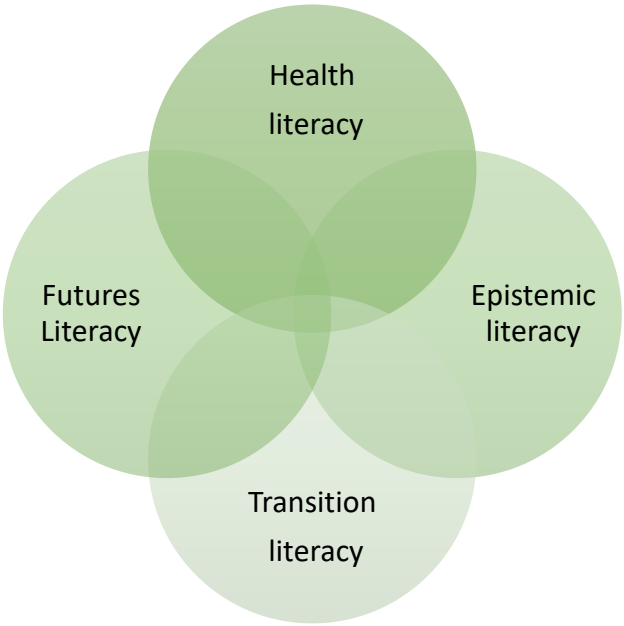
Professionals, by virtue of their disciplinary brackets, have an inherent difficulty to accept this social embedness of their knowledge (Kickbush and Gleicher, 2014; Beenen andCastro-Caldas, 2017A). Their education, continuous professional development and career opportunities are based and managed on the same principles of specialisation and reductionism, leaving little space for systems thinking and its inherent acceptance of uncertainty, ambiguity and complexity (Sturmberg &Martin 2013). Leaving professionals more and more locked in their professions with great difficulty to cross their professional borders and to think in a multi-level perspective and work together in rich practices on innovation and transition in health services.

Unlocking professionals and understanding the current status of care for health and a (re)positioning of health and their own role in this transition demands a reframe of their professional identity. We understand professional identity as the "attitudes, beliefs and standards which support the practitioner role and the development of an identity as a member of the profession with a clear understanding of the responsibilities of being a professional" (Higgs 2013)

To just try to influence the identity with the transfer new skills, knowledge and attitudes would be trying to solve the problem in the same way it is created. And turns out to be little effective (Dall´Alba 2006). The professionals' way of understanding their practice forms and organizes their knowledge and skills into a particular form of professional skill. When practice is understood in a certain way, knowledge and skills will be developed accordingly (Dall´Alba 2009). Continuous Professional development we view as a constant becoming in a changing practice. Becoming is both an individual and collective responsibility from the professions and the system there are embedded in. It demands constant socialisation and dialogue and actively looking for boundary crossing and encounters within and beyond their own ecosystems in order to optimize their 'fit for purpose' and create knowledge landscapes (Akkerman 2011). To be able to unlock professionals and develop towards constant becoming necessitates new ways to view the world and develop capacities accordingly. We describe this as forms of literacy which professionals living in this era need.

Literacy

Below we describe briefly four entwined forms of literacy which can guide the whole process of continuous professional development and the role of change agents in the transition.



Healthy Literacy

Earlier described summarized as a Positive health perspective translated in a human centred capability approach in complex adaptive systems.

Epistemic literacy

Tuomi describes epistemic literacy as (Tuomi, 2015):

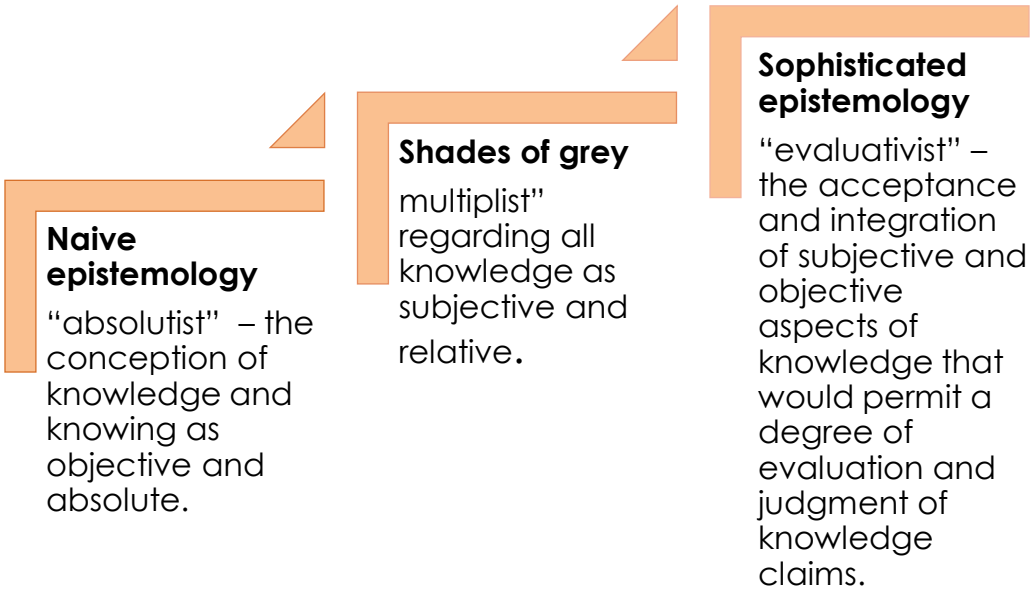
> *"Learning to know requires a capability to understand how knowledge organises individual and social lives. Beyond the skills to access existing knowledge, we need an active capacity to create knowledge and make sense of the world. We could call this skill epistemic literacy. Epistemic literacy helps us to cope with heterogeneous and dynamic knowledge landscapes. It means that we understand how knowledge is created and what constitutes the social basis for learning and education"*

Within the health related sectors, expert knowledge is thought to be 'translated' into the explicit and rational decision making of professionals. This view has been widely contested for neglecting the complexity of daily practice (Greenhalgh and Wieringa, 2011; Marks, 2002) and the slow, costly and often ineffective efforts to translate this knowledge into practice (RVS, 2017; Greenhalgh, Howick and Maskrey, 2014; Kessler and Glasgow, 2011). In an alternative view, evidence is always a situation-based, negotiated product (Contandriopoulos et al, 2010)..

Evidence based practice is considered to be a dominant model of practice in health and social care and frames the understanding of knowledge and how to get to knowledge, also know as epistemic view. Epistemic view explains the beliefs of what professionals consider adequate knowledge and how they get this knowledge are important factors (Beenen & Castro-Caldas, 2016). Epistemic beliefs can be considered as a lens of how professionals create meaning in their daily practice, what their strategy are to select knowledge, what is relevant for decision making and how this affects continuous learning in the accumulation of experiences within individual professionals and within the professional community.

A professional can roughly and very simplified be expressed in developmental line starts with a view of knowledge as certain, unambiguous, and dichotomous. Knowledge is either true or not true and is learned from an authority. This objectivist view is challenged when someone is recognizing shades of grey and different authorities, meaning different perspectives of trues. Knowledge is then viewed as highly subjective; a multiplistic stance. This subjectivity is challenged by the notion that some points of view are better than others and that evidence plays a role in

supporting one's position. In the final stage people have a critical stand towards knowledge and knowing is coordinated with justification of knowledge (Hofer, 2001).



The epistemic beliefs supporting the evidence based movement is predominantly naïve. A professional benefits from a sophisticated epistemic belief. Described as the acceptance and integration of subjective and objective aspects of knowledge that would permit a degree of evaluation and judgment of knowledge claims in specific situations. The professional then can understand their practice as largely complex. This puts evidence-based practice right back into the mess of daily practice where decision making is a very local and temporal process.

In the uncertainty and constant change of complexity a collective sensemaking of knowledge is paramount (Weick, 1995). 'Van de Ven and Johnson name this engaged scholarship: 'a collaborative form of inquiry in which academics and practitioners leverage their different perspectives and competencies to coproduce knowledge about a complex problem or phenomenon that exists under conditions of uncertainty found in the world'. (Ven der Ven and Johnson, 2006) The coproduction of knowledge in daily decision making and applied research is then the base for innovation on all levels of health service systems. This innovation needs to be inspired by what is possible, what is necessary and what is desirable for a future (Miller, 2015; Cundill, Fabricius, and Marti, 2005).

Knowledge creation.

Research paradigms

Transition literacy

The role of the professional need to be critically relate towards the assumptions of the transition and the contribution towards the transition. This especially important considering the long term timeframe sustainability transitions are thought to have (20-50 Years).

Vertical literacy

Vertical literacy

Scharmer (https://www.huffingtonpost.com/entry/education-is-the-kindling-of-a-flame-how-to-reinvent_us_5a4ffec5e4b0ee59d41c0a9f?guccounter=2)

Addressing the Knowing-Doing Gap

The difficulties we have in meeting today's global challenges, such as implementing the 17 Sustainable Development Goals (SDGs) worldwide, are not caused by a knowledge gap. We have all the knowledge we need. **The problem is a knowing-doing gap**: a disconnect between our collective consciousness and our collective actions. In most societal systems we collectively create results that (almost) nobody wants. Examples: the ecological divide (the self-nature disconnect), the social divide (the self-other disconnect), and the spiritual divide (the self-self disconnect—that is, the disconnect between my current and my emerging future self).

Transition is grounded in systems thinking.

One of the assumptions is that the outcome of this transition is largely unknown. This makes the transition by definition a complex aim one instead of complicated. Most problems in the current health systems are framed as a complicated problem based on a more naïve epistemic belief, where an outcome is clear and a guideline of cookbook can be used to reach this outcome step by step. To accept this complex

world that can be described by the acronym of VUCA: Volatility; the nature and dynamics of change, and the nature and speed of change forces and change catalysts. Uncertainty; the lack of predictability; the prospects for surprise, and the sense of awareness and understanding of issues and events. Complexity; the multiplex of forces, the confounding of issues and the chaos and confusion that surround organizations. Ambiguity; the haziness of reality, the potential for

misreads, and the mixed meanings of conditions (Johansen, 2009). This (world) view is widely accepted and converges with the development of complexity science and complexity theories representing different types of ideas and theories to address the nonlinearity and dynamics of the real world systems, often known as Complex Adaptive Systems (Sturmberg & Martin, 2013).

Transition demands collaboration

The largely unknown outcome and the social character of transitions desires the involvement and ownership of all actors. Knowledge need to be adapted in local ecosystems and cant be adopted.

Transition likely reshuffles the power distribution

Transition requires new business models

Futures literacy

Health professionals are predominantly focused on optimizing their services, often managed by a rigorous audit culture, focusing on what has been done in the past and predominantly thinking in frames of set (outcome) indicators. This quality management put the weight on showing evidence of improvement towards others and reduces creativity and innovation (Kimball, 2014). In order to innovate for a, largely unknown, alternative care system the health professional need go beyond this optimizing and sustaining innovation and anticipate towards threats and opportunities that shape the future (Christiansen, Waldeck and Fogg, 2017A). These, so called, contingencies are manifold. It could be, for example, the financial unsustainability as a threat or the opportunity or possible threat of the fourth revolution (Micklethwait and Wooldridge, 2014).

Because of the earlier discussed orientation towards specialisation, it is challenging for health professions to follow and anticipate trends and scenarios outside their fields of expertise. Given the uncertainty and unpredictability of the complex systems we live in, just forecasting will not be enough. Innovation towards a transition demands the exploration and discovery of a future we can imagine (Miller, 2011). This foresighting is defined as a: refined sensitivity for detecting and disclosing invisible, inarticulate or unconscious societal motives, aspirations, and preferences and of articulating them in such a way as to create novel opportunities (Chia, 2004). Here the professional needs to embrace locally situated and tacit knowledge in their engaged scholarship. Miller describes this capability as futures literacy:

“ (FL) is a capability built on an understanding of the nature and attributes of anticipatory systems and processes. A Futures Literate person has the ability to select and deploy different anticipatory systems and processes, depending on aims and context. This skill can assist in overcoming some of the confusion and ignorance that arise when the future is reduced to a discoverable target for the purposes of preparation and /or planning” (Miller, 2015)

In conclusion

Given that the majority of actors in health and social services are highly educated professionals their role in the necessary systemic innovation is quintessential. Innovation in this era needs to be disruptive towards a transition. For professionals this starts with a continuous professional development based on a variety of new literacies to go beyond the knowledge-to-action approach and the established sustaining or optimizing culture. Social service innovation is therefore an instrument offering more human centred and value based services instead of fee-for-service (Christiansen Waldeck and Fogg, 2017A), Reis, 2017). The introduction of social services innovation and towards integrated positive health policies, interventions and fitting business models seem to be a promising opportunity for health professions (Kickbush and Gleicher, 2014; Christiansen, Waldeck and Fogg, 2017 B). for this the continuous education of these professionals needs firm reconsideration, not to say a educational transition, towards ‘becoming professionals’ gifted with the described literacies. Ultimately to work towards the sustainability transition into healthy ageing society.

References

Christensen, B. C., Waldeck, A., & Fogg, R. (2017A). How Disruptive Innovation Can Finally Revolutionize

Healthcare, 1–28.

Christensen, B. C., Waldeck, A., & Fogg, R. (2017B). The Innovation Health Care Really Needs: Help People Manage Their Own Health, HBR, November

Avelino, F. (2016). Power in Sustainability Transitions. Analysing Power and (Dis)Empowerment in Transformative Change towards Environmental and Social Sustainability, (May), 1–20.

Loorbach, D., Frantzeskaki, N., & Avelino, F. (2017). Sustainability Transitions Research : Transforming Science and Practice for Societal Change, (June), 1–28.

Miller, R. (2015). Learning, the Future, and Complexity. An Essay on the Emergence of Futures Literacy. European Journal of Education, 50(4), 513–523. http://doi.org/10.1111/ejed.12157

Miller, R. (2011). Futures Literacy — Embracing Complexity and Using the Future. Ethos, (10), 23–28.

Avelino, F., & Wittmayer, J. M. (2015). Shifting Power Relations in Sustainability Transitions : A Multi-actor Perspective. Submitted to the Journal of Environmental Policy & Planning, 7200(December), 1–23. http://doi.org/10.1080/1523908X.2015.1112259

Ahn AC, Tewari M, Poon C-S, Phillips RS (2006) The Clinical Applications of a Systems Approach. PLoS Med 3(7): e209. https://doi.org/10.1371/journal.pmed.0030209

Beenen, P.C., & Castro-caldas, A. (2017). Synthesising knowledge for physiotherapy practice. Key steps towards review methodology, IJTR, 24(5).

Greenhalgh, T., Howick, J., & Maskrey, N. (2014). Evidence based medicine: a movement in crisis? BMJ (Clinical Research Ed.), 348(June), g3725. http://doi.org/10.1136/bmj.g3725

Greenhalgh, T., & Wieringa, S. (2011). Is it time to drop the "knowledge translation" metaphor? A critical literature review. Journal of the Royal Society of Medicine, 104(12), 501–9. http://doi.org/10.1258/jrsm.2011.110285

Greenhalgh, T., Jackson, C., Shaw, S., & Janamian, T. (2016). Achieving Research Impact Through Co-creation in Community-Based Health Services: Literature Review and Case Study. The Milbank Quarterly, 94(2), 392–429. http://doi.org/10.1111/1468-0009.12197

Kimball L. (2014) The service innovation handbook, Understanding impact, Amsterdam: Bis publishers Amsterdam.

Ries, E. (2017). The start up way, Penguin press, NY

Chia R (2004). Re-educating attention: what is foresight and how is it cultivated? In: Tsoukas H, Shepard J, eds. Managing the future: foresight in the knowledge economy. Malden, MA, Blackwell:21–37.

Marks DF. Perspectives on evidence-based practice, Health Development Agency Public Health Evidence Steering Group. 2002;(02),1–53.

Darzi A et al. (2012) The five bad habits of healthcare: how new thinking about behaviour could reduce health spending. Geneva, Imperial College London and World Economic Forum

Sturmberg, J., & Martin, C. (2013). Complexity in Health: An Introduction. Handbook of systems and complexity in health, 171–192. http://doi.org/10.1007/978-1-4614-4998-0

Velden LFJ van der, Putter ID de, Lee I van der, Hassel DTP van, Batenburg RS. Quick scan Beroepen &

Opleidingen in de zorg, welzijn en kinderopvang. Utrecht: NIVEL, 2012 (Met 2 aparte bijlagen).

Cundill, G. N. R., Fabricius, C., & Marti, N. (2005). Foghorns to the Future : Using Knowledge and Transdisciplinarity to Navigate Complex Systems, 10(2).

Rutter, H., Savona, N., Glonti, K., Bibby, J., Cummins, S., Finegood, D. T., … White, M. (2017). Viewpoint The need for a complex systems model of evidence for public health. The Lancet, 6736(17), 9–11. http://doi.org/10.1016/S0140-6736(17)31267-9

Loorbach, D., & Rotmans, J. (2010). The practice of transition management: Examples and lessons from four distinct cases. Futures, 42(3), 237–246. http://doi.org/10.1016/j.futures.2009.11.009

Loorbach, D. (2014). To Transition! Governance Panarchy in the New Transformation, Erasmus University Rotterdam.

Geels, F. W. (2011). The multi-level perspective on sustainability transitions: Responses to seven criticisms. Environmental Innovation and Societal Transitions, 1(1), 24–40. http://doi.org/10.1016/j.eist.2011.02.002

Kickbusch I., Gleicher D. (2014). Smart Governance for Health and Well-being: the evidence. Copenhagen, WHO, Regional Office for Europe.

WHO Regional Office for Europe (2011). Governance for health in the 21st century: a study conducted for the WHO Regional Office for Europe. Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/__data/assets/pdf_fi)

Kessler, R., & Glasgow, R. E. (2011). A proposal to speed translation of healthcare research into practice: dramatic change is needed. American Journal of Preventive Medicine, 40(6), 637–44. http://doi.org/10.1016/j.amepre.2011.02.023

Contandriopoulos D, Lemire M, Denis JL, Tremblay E (2010) Knowledge Exchange Processes in Organizations and Policy Arenas: A Narrative Systematic Review of the Literature. Milbank quarterly 88: 444–483.

Weick, K.E. (1995). Sensemaking in Organizations. Thousand Oaks, CA: Sage

Van De Ven, A. H., & Johnson, P. E. (2006). Knowledge for theory and practice. Academy of Management Review, 31(4), 802–821. doi:10.5465/AMR.2006.22527385

Preskill, H., Gopal, S., Mack, K., & Cook, J. (2015). Evaluating Complexity: Propositions for Improving Practice. Fsg, 1–37. Retrieved from papers://a160a322-7748-499f-b1e5-c793de7b7813/Paper/p15933

Kok, M. O., & Schuit, A. J. (2012). Contribution mapping : a method for mapping the contribution of research to enhance its impact. Health Research Policy and Systems, 10(1), 1. http://doi.org/10.1186/1478-4505-10-21

Akkerman, S. F., & Bakker, a. (2011). Boundary Crossing and Boundary Objects. Review of Educational Research, 81(2), 132–169. http://doi.org/10.3102/0034654311404435

Naidoo, R. (2015). Beyond the academic ' s dilemma : Transdisciplinary and existential perspectives of re-enchantment, The Journal for Transdisciplinary Research in Southern Africa, 11 (November, special edition), 1–12.

Matheson, G. O., Klügl, M., Engebretsen, L., Bendiksen, F., Blair, S. N., Börjesson, M., … Ljungqvist, A. (2013). Prevention and management of consensus statement , Lausanne 2013

Prevention and management of non-communicable disease : the IOC consensus statement , Lausanne 2013. http://doi.org/10.1136/bjsports-2013-093034

RVS (2017) Zonder context geen bewijs. Over de illusie van evidence-based practice in de zorg. Advies, nummer 17-05, juni.

Beenen, P. C., Filiputti, D., Meyer, E. R., Maria, P., Almeida, D. De, Lopes, A. A., … Lidwina, J. (2017). Epistemic beliefs as a determinant in evidence- based practice in physiotherapy – a Multi-Country (Europe) Cross-Sectional Online Survey Study. European Journal of Physiotherapy, 0(0), 1–7. http://doi.org/10.1080/21679169.2017.1374454

Micklethwait J. and Wooldridge A. (2014) THE FOURTH REVOLUTION, The Global Race to Reinvent the State, The Penguin Press, NY.

Pomp. (2017, augustus 24). Wordt de zorg echt onbetaalbaar? Retrieved Februari 11, 2018, from http://www.mejudice.nl/artikelen/detail/wordt-de-zorg-echt-onbetaalbaar

WHO (2017), Leaflet - Highlights from the Health Evidence Network synthesis report 5, downloaded 15-10-2018. http://www.euro.who.int/en/health-topics/health-determinants/social-determinants/publications/2017/leaflet-highlights-from-the-health-evidence-network-synthesis-report-51.

Dall'Alba, G., & Sandberg, J. (2006). Unveiling Professional Development: A Critical Review of Stage Models. Review of Educational Research, 76(3), 383–412. http://doi.org/10.3102/00346543076003383

Dall'Alba, G. (2009). Learning Professional Ways of Being: Ambiguities of becoming. Educational Philosophy and Theory, 41(1), 34–45. http://doi.org/10.1111/j.1469-5812.2008.00475.x

Tuomi, I. (2015). Epistemic Literacy or a Clash of Clans? A Capability-based View on the Future of Learning and Education. European Journal of Education, 50(1), 21–24. http://doi.org/10.1111/ejed.12101

Module 2: What is Community Based Interventions (CBI), and how to assess it?

Unit Outline	
Please start with a short introduction related to this module	Traditional health care approaches are limited by their scope. In contrast, a more efficient and effective approach to Healthy Lifestyle and Healthy Ageing is based on the premise that an individual's behaviour is shaped by a dynamic interaction with the environment, incl. influences at the interpersonal, organizational, community, and policy levels. This system perspective with multiple levels of influence aiming at improving a Healthy Lifestyle and Healthy Ageing, applied in municipalities and communities is called community-based interventions. Ultimately, to enhance health impact on public level, multilevel intervention strategies at the micro, meso, and macro levels must be applied to allow for sustainable socio-economic health impact. Promoting Healthy Ageing must involve active participation of a broad variety of public and private stakeholders from different disciplines like education, health, sport, and wellbeing sectors. This module describes what community-based interventions are and how to assess them regarding process and effect on general level.
Total Workload	40 hours (contact hours + self study hours)
ECTS Credits	1-2 credits (ECTS)
EQF Level	6
Basic Knowledge Requirements and Prerequisites	• A completed bachelor's degree and demonstrable affinity and experience in the context of Healthy Ageing, Healthy Lifestyle; • A professional level of development where there is demonstrable initiative (daring to take a stand, taking things forward, trying to exert

	influence in a targeted manner, wanting to make an active contribution) in combination with a problem-solving, entrepreneurial and innovative orientation; • Motivation for the training, which is apparent from a detailed issue (innovation assignment) with which you want to get started. You will have to demonstrate a demonstrable awareness of and interest in developments in the domain of sport, health and well-being at micro, meso and macro level and your own development needs as a change agent; • Relevant workplace or internship: you work on assignments in practice.Knowledge related to the field of health/physical activity promotion/healthy lifestyle is required to participate in this module. This module serves as an add-on and "a way to do things" and is of relevance for studies circulating the area of health promotion and physical activity in society in general.
Component relevance	This component is relevant because of the challenges we are facing within the field of healthy lifestyle all over the world, e.g. diabetes, cardiovascular diseases, cancer, obesity, etc. The applied approach is characterized by the involvement of several stakeholders in the broader sense – citizens, universities, businesses and public authorities from both the health, sport, education, and wellness areas (quadruple helix). There is generally a great interest in increasing and engaging community participation in scientific projects, in order to derive research, societal, educational, social benefits etc. This component can be integrated to an existing curriculum or offered extracurricular and it enables the students to learn and understand what Community Based Interventions (CBI) are and how to create impact and conduct evaluation. Thereby, students will be able to recognise and seek these communities and to strengthen their further work.
Component Description	Community Based Interventions

It is an innovative approach to the challenges we are facing within the field of Healthy Lifestyle all over the world. The approach use each stakeholder's experience as a resource for innovative learning to facilitate Healthy Lifestyle and Healthy Ageing, and allow joining forces in addressing challenges faced individually or collectively. It's a new model for connecting in the spirit of learning and knowledge sharing towards Healthy Lifestyle and Healthy Ageing. With it, the level of key competences and skills and the quality and efficiency of education in the field improves.

There is generally a great interest in increasing community participation in scientific projects, in order to derive the research and educational benefits. In terms of community participation, a synthesised framework for analysing citizen science projects has been developed. This scale includes four categories of participation (Lawrence 2016):

- Consultative: where citizens collect data for scientists or decision makers;
- Functional: where citizens are engaged through training to collect data for scientists or decision makers;
- Collaborative: where scientists (or decision makers) and citizens work together in project design and implementation; and
- Transformative: where citizens lead project design and implementation.

The aim of this component is to introduce the thoughts and ideas behind CBI to the students in order for them to realise the benefits of the approaches, at what time which level is sufficient, and discuss wether CBI is always the golden way to go. Further, it will provide a way to asses it.

The two overall subjects: a) What is CBI and b) How to assess a CBI? will be elaborated in the following:

a) What is CBI:

To teach the students this approach, the module presented in figure 1 below will be used as a tool to understand which must be present for a CBI to succeed. To support this model, the literature, which the model is based upon, will be used throughout the module. This will enable the students to learn and understand what a CBI is. The students will through the module gain competences to create their own model, as showed below. This will enable an visualisation of their understanding, and thereby of which competences the students have gained throughout the course, and also what they see as important elements for a CBI.

Figure 1 Overview model

Furthermore, the students will gain competences to analyse the CBI's limitations and advantages, which will give them a better understanding of when to use a CBI- approach or not. This enables the students to asses if and when they, in their further work, should use the approach.

b) How to asses a CBI:

To asses a CBI, the framework RE-AIM, created by Glasgow, Vogt and Bole (1999), will be presented. This is due to its validated ability to evaluate health

interventions. This framework will be combined with an evaluation model created by Richard, et al., (2014).

The students will be introduced to the RE-AIM framework, because it will enable the students to reflect on the processes before, during and after the CBI. The framework evaluates on five different dimensions: 1) Reach, 2) Efficacy, 3) Adoption, 4) Implementation 5) Maintenance. These dimensions enable a deeper understanding of a community's work, how well it is performed on short and long term.

The students will further be introduced to the Evaluation Model, because they need to understand how the inputs to a community (individual, group and resources), and the organisational factors affect the results of the established community. This will also enable the students to gain a deeper understanding of a community's work. Furthermore, it enables focal points for an evaluation of how the participants experiences the use of the approach, and their own participation in the project.

By combing the two assessment tools (RE-AIM and the Evaluation Model), it allows a deeper understanding of a community's work and its results. In the model below, the combination of the two tools is visualized (figure 2).

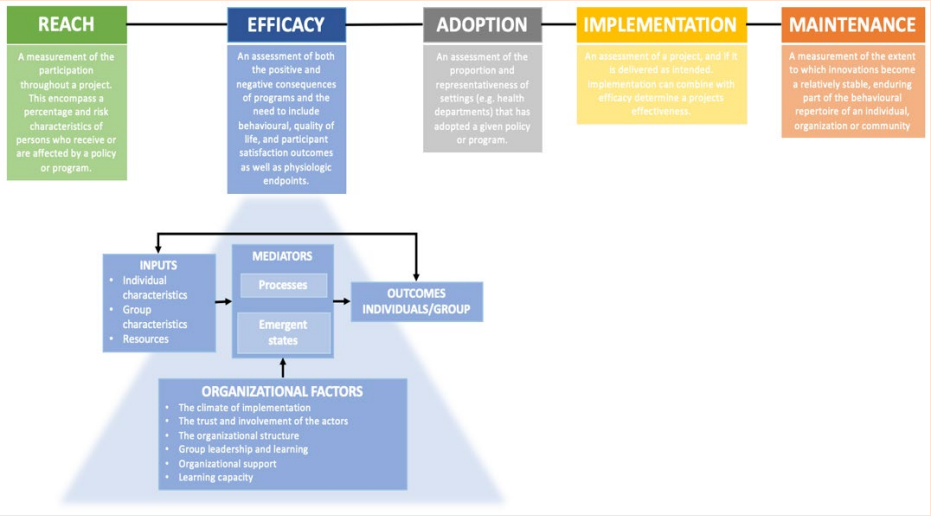


Figure 1 an evaluation model for CBI

Competences & Learning Outcomes (LO's)	Competences • Gaining knowledge • Analysing • Recognising • Comparing • Combining • Developing By the end of this component, students should be able to: 1. Identify areas in which CBI's are appropriate; 2. Know what defines a great example of an CBI; 3. Know what CBI's can contribute with in a project; 4. Assess the environment of a given project/case in order to identify areas in which CBI can contribute to improve the project outcome; 5. Assess and evaluate the given CBI in terms of maintenance and sustainability.
Recommended Literature	**A2) What is a CBI:** • Wenger, E., McDermott, R., & Snyder, W. M. (2002): Cultivating Communities of Practice. Boston: Harvard Business School Press. • Wenger, E. (16. February 2020). Communities of practice a brief introduction. Retrieved from University of Oregon: https://scholarsbank.uoregon.edu/xmlui/handle/1794/11736 • Lawrence A. (2006): 'No personal motive?' Volunteers, biodiversity, and the false dichotomies of participation. Ethics, Place and Environment, 9(3): 279–298. • Dörfler, V., Pyrko, I., & Eden, C. (2016). Thinking together: What makes Communities of Practice work? Human relations, s. 389-409. • Probst, G., & Borzillo, S. (2008). Why communities of practice succeed and why they fail. European Management Journal, s. 335-347. • Roberts, J. (May 2006). Limits to Communities of Practice. Journal of Management Studies, s. 623-639.

	• McLeroy, K.R, Norton, B.L., Kegler, M.C., Burdine, J.N., Sumaya, C.V. Community-based intervention. American Journal of Public Health 2003, 93(4), 529-533. Further readings: • Wenger E. (1999): Communities of Practice - Learning, Meaning, and Identity. The Journal of Mathematics Teacher Education **b1) Assessing CBI's:** • Richard, L., Chiocchio, F., Essiembre, H., Tremblay, M.-C., Lamy, G., Champagne, F., & Beaudet, N. (February 2014). Communities of Practice as a Professional and Organizational Development Strategy in Local Public Health Organizations in Quebec, Canada: An Evaluation Model. Healthcare Policy. • Israel, B. A., Schulz, A. J., Parker, E. A., & Becker, A. B. (1998). Review of Community-based research: Assessing Partnership Approaches to Improve Public Health. Public Health, s. 173-202. • Glasgow, R. E., Vogt, T. M., & Boles, S. M. (September 1999). Evaluating the Public Health Impact of Health Promotion Interventions: The RE-AIM Framework. American Journal of Public Health, s. 1322-1327. • Olsson J.R. & Attrup M.L. (2015): Power in Projects, Programs and Portfolios. Djøf Publicising, ISBN 9788757434095. • Bertone M. P. et al. (2013): Assessing communities of practice in health policy: a conceptual framework as a first step towards empirical research. Health Research Policy and Systems, 20 October 2013.
Recommended Teaching Methods	Problem-/practisebased learning: Students should identify and intervene in a real-world case as the focal point for their learning. Lectures and action learning activities with professors from the fields of relevance for CBI methods and practical examples. Students will work in teams of 3-4 to develop their own CBI project under the supervision of a lecturer.

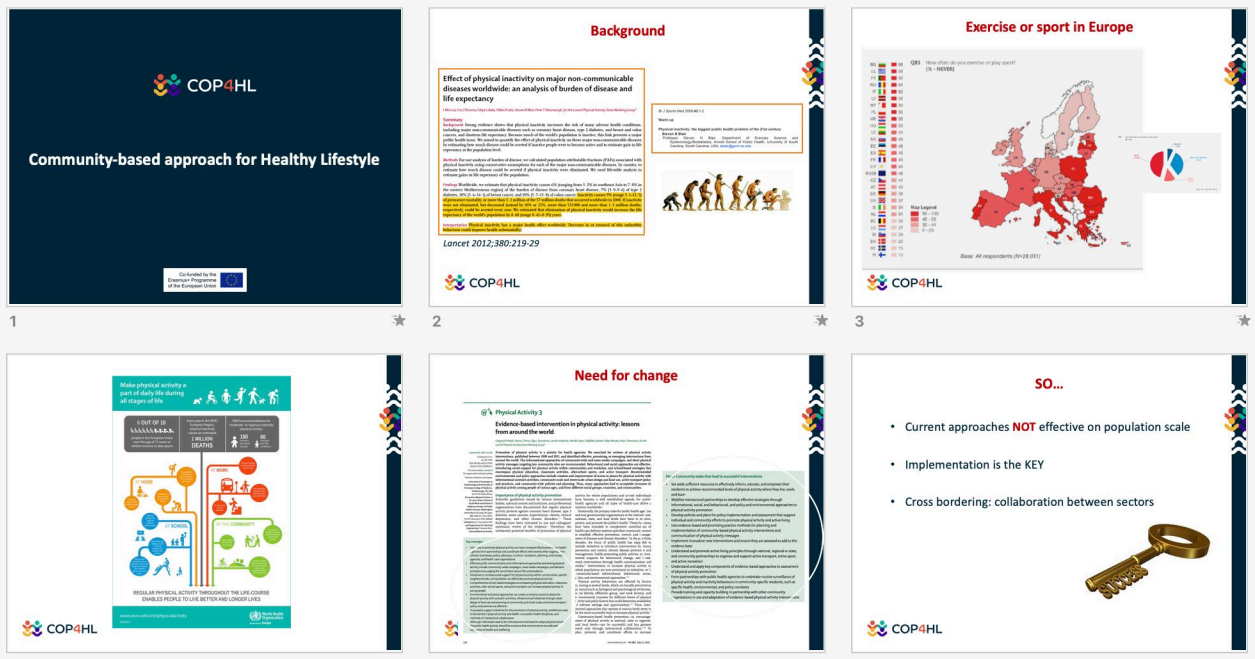
	Students will be invited to group coaching sessions with an experienced lecturer to establish teambased and individual learning goals and track the development development.
Recommended Assessments	Connect the given topic with a case where CBI should be incorporated. • Why is it CBI and not just regular science? • What is the difference? • Why is it usable for research and for the community?

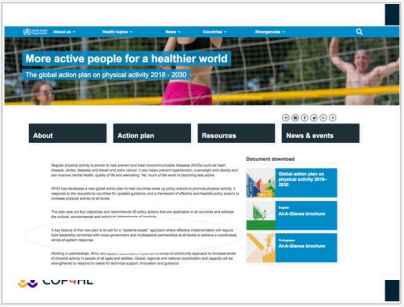
Suggested Schedule of Activities			
#	**Topics (and sub-topics)**	**Readings**	**Activities and Assignments**
1	What is CBI?	*A1* *A2*	Lecture/workshop/seminar on CBI components and specifics. Students work in groups of 3-4 to define a relevant healthy lifestyle issue of relevance for the surounding society to work with – related to CBI. For the best output, the abovementioned activities should be performed closely linked to each other for an improved learning outcome. Link the theory of the field to the practice of the students projects.
2	How to assess the CBI/CS intervention/program/project?	*B1*	Lecture/workshop/seminar on assessment of CBI. Students work in groups of 3-4 on their healthy lifestyle issue of relevance for the sorunding society to work with – taking into consideration how to asses wether the project will have an actual influence and evaluate wether it will work. For the best output, the two abovementioned activities should be

			performed closely linked to each other for an improved learning outcome. Link the theory of the field to the practice of the students projects.
3	Applying the theory: Project development seminar and supervision in close collaboration with the sourounding society.	*A1* *A2*	Field-work withclose supervision from the professor/lecturer. The students work on their project in close collaboration with a supervisor – and in close collaboration with the relevant stakeholders in the given project. A seminar of presenting the project and how it related to the methods of CBI in the field is strongly recommended to be organized.
4	Applying the theory: Assesing the CBI project.	*B1*	Assignment-form with supervision from lecturers: As a final focal-point, the students are asked to assess their projects to be presented to the target-group and as a closure of the module. The presentations can be performed as another seminar day that all students attend.

Apendix learning module 2.

Handouts learning module 2





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Future direction

- Socio-ecological approaches
- Multi-level
- Multi-sectoral
- Human centred
- Community-based intervention/ approach (CBI)

COP4HL

8

Hanze University of Applied Sciences Groningen

Community of Practise for Healthy Lifestyle (COP4HL, 2017-2019)

Erasmus+ Knowledge Alliances

COP4HL

9

EU Knowledge Alliance/KA2

Aim call:

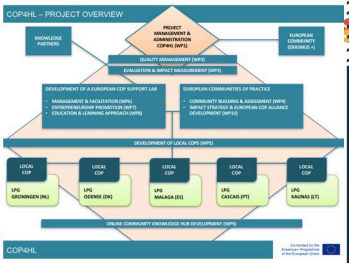
*Knowledge Alliances are **transnational**, structured and result-driven projects, notably between **higher education** and **business**. Knowledge Alliances are open to any discipline, sector and to cross-sectoral cooperation. The partners share **common goals** and work together towards mutually beneficial results and outcomes.*

Aim project

- Healthy Ageing→ Healthy Lifestyle
- Multi sectoral approach (Sport - Health- Well-being)
- Development CoPs

COP4HL

Structure of COP4HL



COP4HL

Definition of Community of Practice

among people who find it useful to learn from and with each other about a They use each other's as a . And they join forces in making sense of and addressing challenges they face individually or collectively.

General definition of a Community of Practice Wenger 2011, 2015

COP4HL

Main deliverables

- Guiding principles for CoPs
- Development EU CoP
- Knowledge support lab
- Education & learning material
- Development impact methodology

COP4HL

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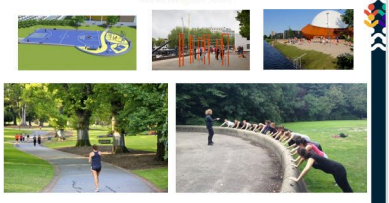

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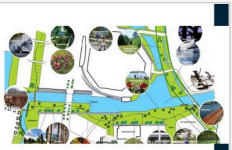
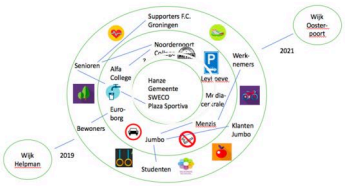
Example



COP4HL

Groningen COP eco-system



COP4HL

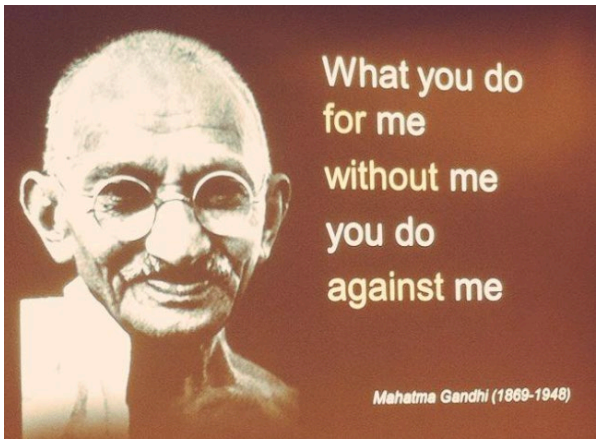
Healthy Lifestyle options

- Noorderpoort Campus 2.000 students, smoke free area, active transport
- Leyhoeve (55+, active lifestyle through environment)
- Companies (activation through active parking)
- Healthy lifestyle in FC Groningen supporters
- .....

COP4HL

Module 3: Citizen Science as driver for end user engagement in CBI

The necessary transition from health care & cure to prevention & healthy lifestyle and behavior is one of the biggest socio-economic challenges the EU faces right now. The current Covid-19 pandemic underlines the importance of promoting an active and healthy lifestyle for enhancement of public health in all its dimensions (physical, mental and social). To effectuate this urgent transition, a major shift in thinking, acting and policy making is needed since the current initiatives did not lead to a breakthrough and impact on public health. Important barrier for this is that scientists, policymakers and businesses are used to develop health products and services from their own expertise and background and (mostly) without engaging citizens. To change this for the better, scientists, policy makers and businesses should not talk about citizens but give them a voice and collaborate and co-create with citizens.



Thus, citizen engagement is an important component for accelerating and scaling up this transition. It turns out to be a challenge to fully and sustainably engage citizens and create ownership. Citizen science can be a useful aim and mean to stimulate this process.

CS can be described as a form of research collaboration and co-creation involving the public in scientific research to address real-world problems (Bonney et al., 2009), that requires non-professional contributors to be collaborators in scientific research. More generally, Den Broeder (2018) refers to CS as citizen engagement in knowledge development, emphasizing the learning process emergent from this approach. This type of participatory research therefore minimally implies a mutual recognition of each party's expertise, as well as mutual trust, but ideally a redefining of the relation between participants towards more democratic decision making.

Responsible research and innovation agenda and strategies for engaging the public as co-researchers are not new to science: the novelty of CS today lies mainly in the scope and scale of involvement by non-professionals, and that CS, in addition to early-adopting fields like ecology and astronomy, is now being embraced by health and behaviour research.

Module 3: Citizen Science Outline	
Introduction of module	In general Citizen Science can be described as a form of research collaboration involving the public in scientific research to address real-world problems (Bonney et al. 2009), that requires non-professional contributors to be collaborators in scientific research. In the context of health promotion, Den Broeder (2018) refers to Citizen Science as citizen engagement in knowledge development, emphasizing the learning process emergent from this approach. This type of participatory research therefore minimally implies a mutual recognition of each party's expertise, as well as mutual trust (Smaling, 2011),

	but ideally a redefining of the relation between participants towards more democratic decision making (Van Pelt et al. 2020). Strategies for engaging the public as co-researchers are not new to science: the novelty of Citizen Science today lies mainly in the scope and scale of involvement by non-professionals, and that Ctizen Science, in addition to early-adopting fields like ecology and astronomy, is now being embraced by health and behaviour research. This modules introduces the candidate in the background, basic principles and practical translation of the principle in the context of communities based intervention/communities of practice for the enhancement of public health.
Total Workload	40 hours (contact hours + self study hours)
ECTS Credits	1-2 credits
EQF Level	6
Basic Knowledge Requirements and Prerequisites	• A completed bachelor's degree and demonstrable affinity and experience in the context of Healthy Aging, Healthy Lifestyle; • A professional level of development where there is demonstrable initiative (daring to take a stand, taking things forward, trying to exert influence in a targeted manner, wanting to make an active contribution) in combination with a problem-solving, entrepreneurial and innovative orientation; • Motivation for the training, which is apparent from a detailed issue (innovation assignment) with which you want to get started. You will have to demonstrate a demonstrable awareness of and interest in developments in the domain of sport, health and well-being at micro, meso and macro level and your own development needs as a change agent; • Relevant workplace or internship: you work on assignments in practice. Knowledge related to the field of health/physical activity promotion/healthy lifestyle is required to participate in this module.
Component relevance	Literature shows that being involved and enabled to actively participate in innovation projects in all stages promotes a sense of belonging, engagement,

	and ownership within local communities (Ministry of Health and Care Services, Oslo: 2012- 2013). For that reason, Fosse (2012) argues that top-down approaches should be combined with bottom-up approaches. The complexity of health promotion actions underscores this as well (Mittelmark et al. 2012). They emphasize robust democracy, open debates, participation, and advocacy at all societal levels when working with health promotion and healthy lifestyle. In order to follow these suggestions and adopt approaches that meet today's health challenges with responsible research and innovation initiatives that emerge from systemic collaboration, i.e. that are instigated and shaped in collaboration and co-creation with all stakeholders within a community. The role of the citizens as actors and often end-users is under-represented in these initiatives. Simultaneously, these approaches should allow for the emergence of a learning process free from predefined outcomes. For these reasons, Citizen Science as a methodology but also as a way to engage citizen can act as an enabler/accelerator for the urgent transition towards Healthy Lifestyle, Healthy Ageing.
Component Description	Citizen science is a research methodology that involves participation by the community/the citizens, who are not necessarily scientists, in scientific projects. It is an innovative approach to the challenges we are facing within the field of Healthy Lifestyle all over the world. The approach use each stakeholder's experience as a resource for innovative learning to facilitate Healthy Living, and allow joining forces in addressing challenges faced individually or collectively. It's a new model for connecting in the spirit of learning and knowledge sharing towards Healthy Living. With it, the level of key competences and skills and the quality and efficiency of education in the field improves. There is generally a great interest in increasing community participation in scientific projects, in order to derive the research and educational benefits. In terms of community participation, a synthesised framework for analysing citizen science projects has been developed. This scale includes four categories of participation (Lawrence 2016):

	• Consultative: where citizens collect data for scientists or decision makers; • Functional: where citizens are engaged through training to collect data for scientists or decision makers; • Collaborative: where scientists (or decision makers) and citizens work together in project design and implementation; and • Transformative: where citizens lead project design and implementation. The aim of this component is to introduce the thoughts and ideas behind CS as way to engage citizen in research and innovation processes.
Competences & Learning Outcomes (LO's)	Competences • Gaining knowledge • Analysing • Communication (verbal) • Comparing • Combining • Developing • Observing By the end of this component, students should be able to: • Know what the basics are of citizen science for health; • Understand what citizen science is as a method and a way of engaging citizens; • Recruit citizens in a relevant, ethical and reliable way; • Experiment with different ways of data collection by citizens; • Ideate ideas/prototypes with citizens; • Different stakeholders perspectives (Hats of Bono).
Recommended Literature	1. Bonney, R., Cooper C.B., Dickinson J., Kelling S., Philips T., Rosenberg K.V., Shirk J. (2009). Citizen Science: A Developing Tool for Expanding Science Knowledge and Scientific Literacy. *BioScience*, Volume 59, Issue 11, December 2009, Pages 977-984, https://doi.org/10.1525/bio.2009.59.11.9

	2. Den Broeder, L., Devilee, J., Van Oers, H., Schuit, A.j., & Wagemaker, A. (2018). Citizen Science for public health. Health promotion international, 33(3), 5-5-514. 3. Fosse, E. (2012). National objectives–local practice: implementation of health promotion policies, in: Wold, B. and Samdal, O. (eds). An ecological perspective on health promotion systems, settings and social processes. Bergen: University of Bergen. 4. Hecker et al. (2018): Citizen Science – Innovation in Open Science, Society and Policy. UCL Press. https://doi.org/10.14324/111.9781787352339. 5. Lawrence A. (2006): *'No personal motive?' Volunteers, biodiversity, and the false dichotomies of participation.* Ethics, Place and Environment, 9(3): 279–298. 6. Lewinstein, B.W. (2004): What does citizen science accomplish?, Cornell University. 7. Ministry of Health and Care Services. White paper no. 34. Public Health Report. Good health-a common responsibility. Oslo: 2012- 2013. 8. Mittelmark MB, Wold B, Samdal O. The ecology of health promotion. In: Wold B and Samdal O, eds. An ecological perspective on health promotion systems, settings and social processes. Bergen: University of Bergen; 2012. pp 85-9. 9. Mueller et al. (2017): Citizen Design Science: A strategy for crowd-creative urban design. Cities 72 (2018) 181–188. https://doi.org/10.1016/j.cities.2017.08.018. 10. Qaurooni et al. (2016): Citizens for Science and Science for Citizens:The View from Participatory Design. Citizenry and the Sciences: Design as Inquiry and Participation. DOI: http://dx.doi.org/10.1145/2858036.2858575
Recommended Teaching Methods	• Problem-/practisebased learning: Students should identify and intervene in a real-world case as the focal point for their learning. • Lectures and action learning activities with professionals from the fields of relevance for citizen science and practical examples.

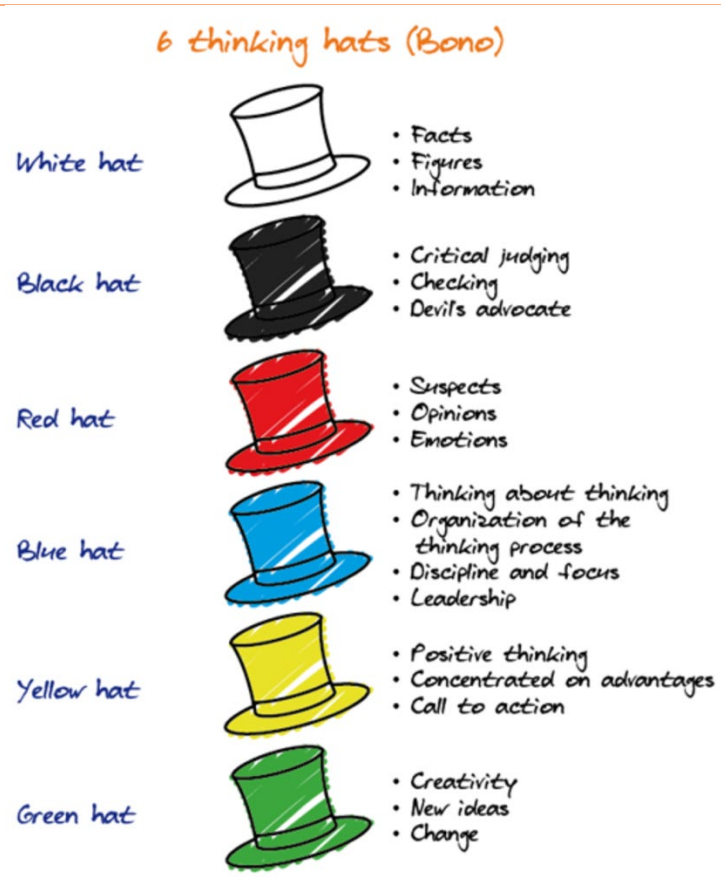
	• Practical workshop regarding citizen science.

Recommended Assessments	• Development and presentation of citizen science for health plan.
	• Criteria to be incorporated in the citizen science for health plan are:
	  ○ Where to recruit citizens;
	  ○ How to recruit citizens;
	  ○ How to collect data, how to create ideas (ideate) with citizen based on the collected data;
	  ○ Multi perspective overview;
	  ○ Prototypes for enhancement of local public health challenge.
	• Presentation of the final plan to the other students plus discussion

Suggested Schedule of Activities			
#	**Topics (and sub-topics)**	**Readings**	**Activities and Assignments**
1	What is Citizen Science in general and how to apply	1, 2, 3	Intake based on www.menti.com

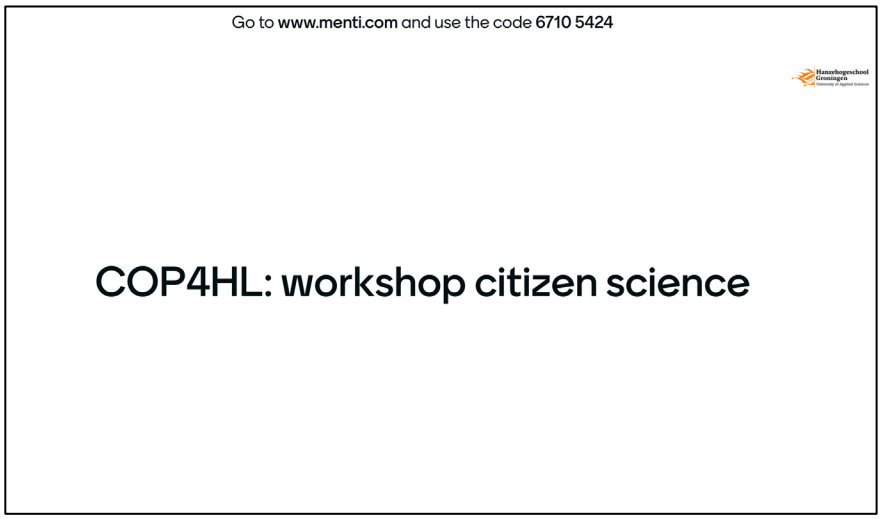
	this in public health domain?		Lecture (online or offline)  https://youtu.be/8MDZDkBBB5k Lecture/workshop/seminars on Citizen Science – differences and similarities. Students work in groups of 3-4 to define a relevant healthy lifestyle issue of relevance for the surounding society to work with – related to CBI/CS methods. For the best output, the two abovementioned activities should be performed closely linked to each other for an improved learning outcome. Link the theory of the field to the practice of the students projects.
2	Initiating and facilitating citizen science (1)	9, 10	Students dive into initiating and facilitating citizen science in community-based interventions and social innovations. Students understand that there is not one way to initiate citizen science, but that there are several ways to do so. They know that there are available tools to initiate citizen science. This sessions consists of a lecture with accompanying teaching methods and assignments. Themes covered are: • How to approach and recruit citizens • How do I adapt my approach to the right target group (e.g., elderly, children, low-literate, socio-economic status etc.) • How do I communicate?

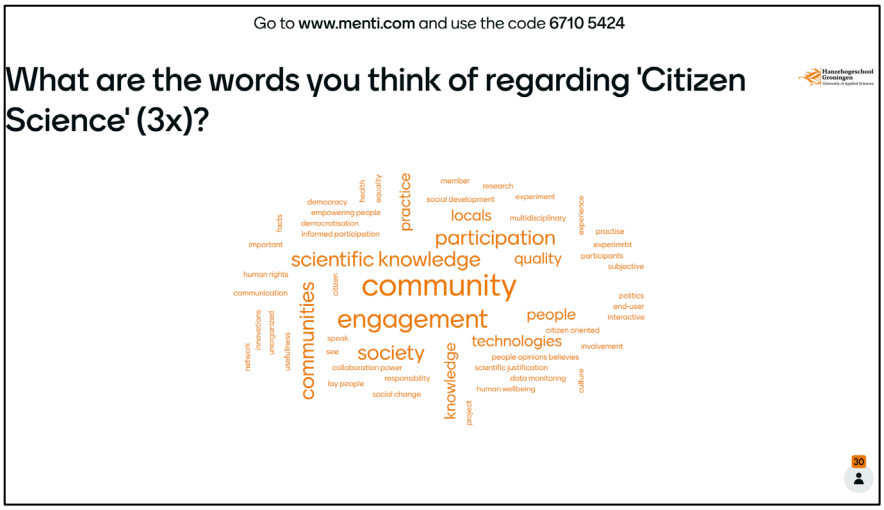
			Tools • "Kitchen table" conversations do's & don'ts • Our voice discovery tool app https://med.stanford.edu/ourvoice/the-our-voice-model-page-2.html
3	Initiating and facilitating citizen science (2)	9, 10	Co-creation sessions • How to facilitate? • How to I create a safe (learning) climate? • Design thinking  • Different perspectives based on the "Hats of Bono"

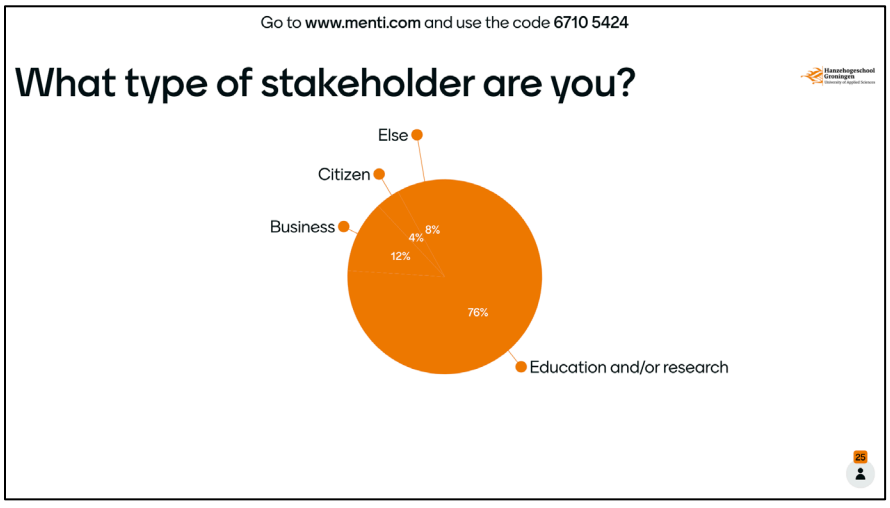
			 https://mgrush.com/blog/debono-six-thinking-hats/
4	Presentation of citizen science for healt plan		The students present their citizen science for healt plan. Important criteria to be integrated are: • What was the Healthy Lifestyle and Healthy Ageing challenge? • How were the citizen recruited? • What was the role of the citizens? • How was the data collection taking place? • How was the ideate phase? • What were the protypes • How to continue?

Apendix learning module 3.

Mentimeter Citizen Science intake questions

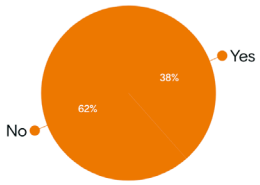






Go to **www.menti.com** and use the code **6710 5424**

Have you already included citizens in your local COP?



26

Go to **www.menti.com** and use the code **6710 5424**

Statements about citizen science in the field of health & wellbeing

26

Go to **www.menti.com** and use the code **6710 5424**

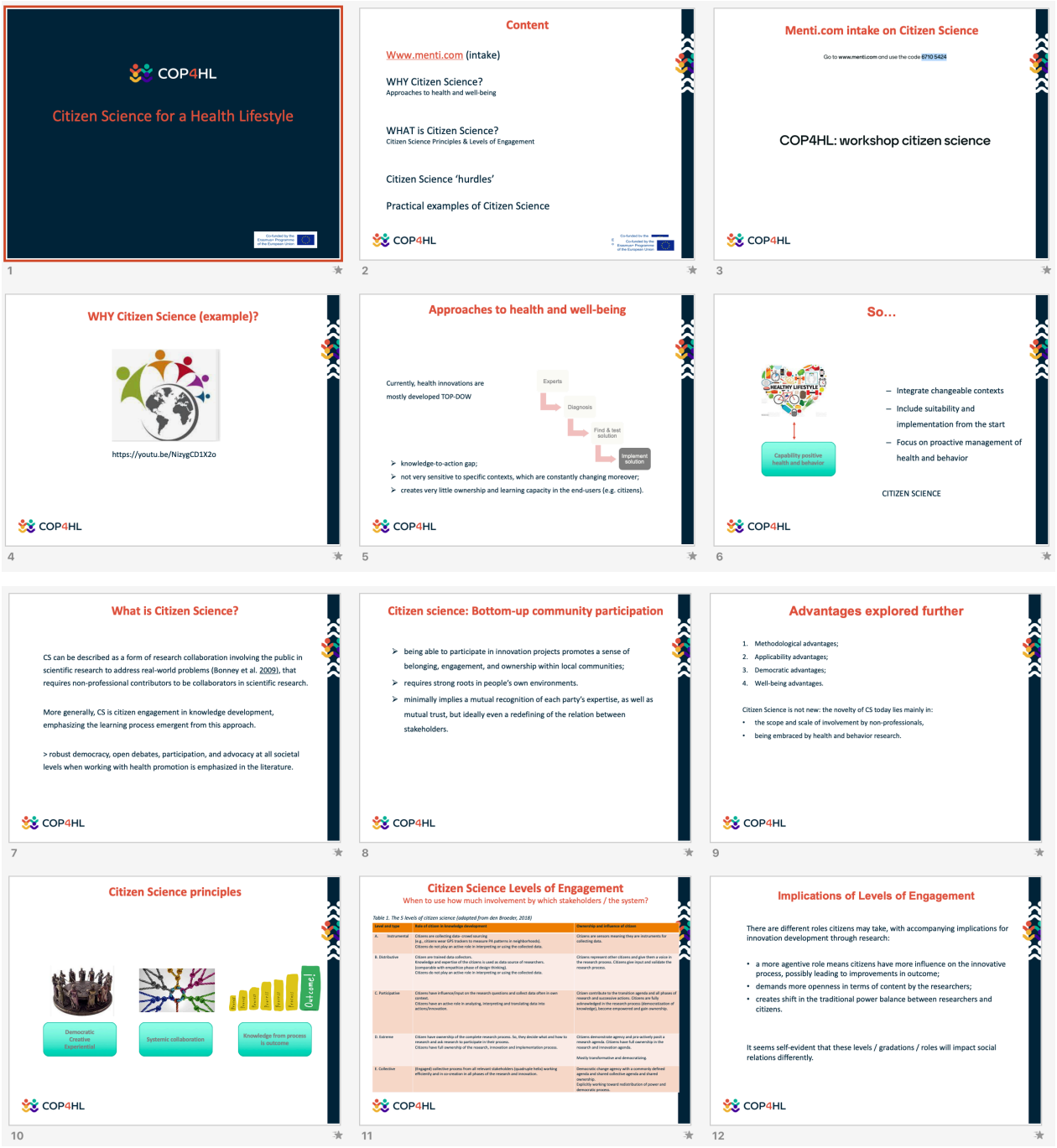
What are your expectations this Citizen Science workshop?

- Get to no more about cs and how to use it during the project and in other circumstances as well.
- Evaluation of current state and ideas in the cop
- Learn how to include the
- To learn about it and how to use it on regular basis
- learn more
- Difficult cases - examples and solvings
- Improve services
- Educate people raise awareness about including citizens in cop
- Some ideas for our COP development and result evaluations

Press ENTER to pause scroll

27

Powerpoint slides Citizen Science workshop



Citizen Science Engagement 'hurdles'

- Citizen doesn't know what s/he doesn't know: do you have faith in your citizens as partners?
- Citizens are non-professionals: how do you increase capacity / scientific literacy, how do you shape collaboration?
- Longer term effects questionable: how do you create long term commitment?
- Lower SES still difficult to reach/engage
- Politics & Funding, 'management'
- Etc.

COP4HL

13

Agendasetting and creating ecosystem

- Being present in the ecosystem
- Facilitate socialization process
- 1 on 1 conversations and group meetings to direct the process
- Organize a kick-off or stakeholder meeting
- Set up meetings, planning, communication channels
- Ensure diversity in the core group

COP4HL

14

Agendasetting and creating ecosystem

- Get to know the context and stakeholders and build the relationship
- Questioning the wishes, needs and challenges of end users
- Draw the ecosystem

COP4HL

15

Exploration through synthesis and analysis

- Collect resources
- Balance between debate/dialogue and get lost
- Making implicit beliefs of core group members explicit
- Giving space to the ecosytem and core group
- Develop moonshot
- Needs- and capacity conversations
- Give the end user a voice

COP4HL

16

Exploration through synthesis and analysis

Citizen science

- Panel of children
- Children map the environment themselves
- Children inform the parents
- Children formulate questions, collect data
- Children evaluate

COP4HL

17

Exploration through synthesis and analysis

Citizen science

- Formulating questions together
- Children interview classmates
- Discuss results togehter
- Evaluation with timeline method

Diary of children

COP4HL

18

Exploration through synthesis and anlysis

Citizen science

- Research walks (our voice discovery tool)
- Phone calls
- Door-to-door conversations
- Kitchen table conversations
- "Drinking a lot of coffee"

COP4HL

19

Prototyping through creation and evaluation

- Process of prototyping
- End-users take the lead
- Setting up evaluation process
- Qualitative methods

COP4HL

20

Prototyping through creation and evaluation

- Group meetings, theme sessions, analyse and interpretation
- Evaluation
- Distinction between individual and collective learning outcomes

COP4HL

21

Sustainability and generalization

- Committing stakeholders by deploying manpower and resources
- Scaling up to similar contexts
- Indicate dominant guiding principles
- Embedding it in the systems
- Working groups of residents

COP4HL

22

Positioning Paper Citizen Science for Health: research and innovation

Rhoda Schuling, Paul Beenen, Nikki Jepkema & Johan de Jong

The Hanze University of Applied Sciences (HANZE) is an engaged university that aims at creating value and impact in the Northern Netherlands through education, research and innovation. In the strategy of the Centre of Expertise Healthy Ageing (CoE HA), the focus is on three themes: 1) health equity & participation; 2) healthy lifestyle and environment and 3) vulnerability & suitable care.
***Citizen Science for Health**, as research & innovation strategy as well as process for engaging citizens will be central to accelerating and enabling processes with respect to the three themes. Therefore, the CoE HA will primarily aim at the **participative, extreme and collective** levels (C, D & E) of Citizen Science. These levels go beyond "passively" including citizens in research and innovation designed by researchers and/or professionals. Our stance is that scientists, innovators, public and private parties reframe their position in the overall research/innovation process and engage and integrate citizens in these processes. In this way, citizens have influence/input on the overall research/innovation process (research question, data collection, analysing, implementing), integrate their own knowledge and context, develop ownership, be(come) scientifically literate and empowered, and develop agency. Based on this engaged definition and application of Citizen Science, the CoE HA seeks co-creation with citizens in the Northern Netherlands and beyond to make vast improvements in public health.*

Introduction

This positioning statement is written for the Centre of Expertise Healthy Ageing (CoE HA) and allied schools within the Hanze University of Applied Sciences. As focus for the coming years, the CoE HA has identified three themes, as well as three so-called 'enablers', i.e. approaches, methods and tools through which the themes can be developed concretely and implemented practically (Figure 1).

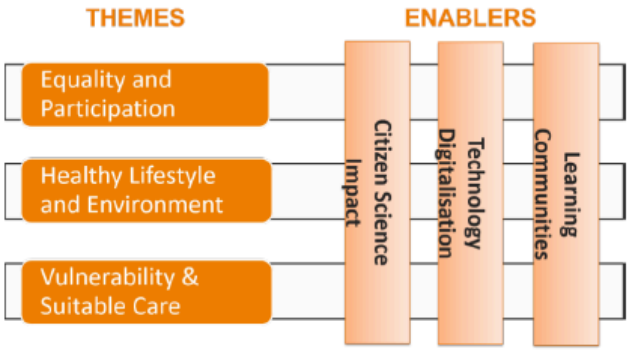


***Figure 1.** CoEHA themes and enablers in the coming years*

The foundational idea of Healthy Ageing (HA) is to expand the governance of health in society to include, besides the diagnose-intervention approach of health problems, a focus on capability. Within the Hanze University, this is seen as an expansion to amplition and 'liveability': to amplify people's ability to be and stay healthy within the environments that they live, work and play in every day and to stimulate people's participation in this goal.

This concept of liveability, which necessarily requires strong roots in people's own environments, is at odds with how health innovations are generally developed, which is top-down: the outcomes of research projects are described up-front by a group of experts, who define the problem (diagnosis), identify and test a solution (intervention) and are then tasked with applying the solution in practice (implementation), which often runs into problems due to the classic 'knowledge-to-action-gap'. By nature, this linear approach is not very sensitive to specific contexts, which are constantly changing moreover, and creates very little ownership and learning capacity in the end-users (i.e. citizens themselves). Consequently, this approach seems to be minimally effective in improving healthy lifestyles (Cohn et al., 2013; Greenhalgh & Papoutsi, 2018; WHO, 2014), which are strongly linked to capability in (positive) health and behaviour.

Literature shows that being involved and enabled to actively participate in innovation projects in all stages promotes a sense of belonging, engagement, and ownership within local communities (Ministry of Health and Care Services, Oslo: 2012- 2013). For that reason, Fosse (2012) argues that top-down approaches should be combined with bottom-up approaches. The complexity of health promotion actions underscores this as well (Mittelmark et al., 2012). They emphasize robust democracy, open debates, participation, and advocacy at all societal levels when working with health promotion.
It is the CoE HA's view that to develop the three themes portrayed in figure 1, we need to follow these suggestions and adopt approaches that meet today's health challenges with responsible research and innovation initiatives that emerge from systemic collaboration, i.e. that are instigated and shaped in collaboration and co-creation with all stakeholders within a community. The role of the citizens as actors and often end-users is under-represented in these initiatives. Simultaneously, these approaches should allow for the emergence of a learning process free from predefined outcomes. For this reason, the enabler Citizen Science / Impact (CS; cf. fig. 1) is the focus of this positioning statement.

Citizen Science

CS can be described as a form of research collaboration and co-creation involving the public in scientific research to address real-world problems (Bonney et al., 2009), that requires non-professional contributors to be collaborators in scientific research. More generally, Den Broeder (2018) refers to CS as citizen engagement in knowledge development, emphasizing the learning process emergent from this approach. This type of participatory research therefore minimally implies a mutual recognition of each party's expertise, as well as mutual trust (Smaling, 2011), but ideally a redefining of the relation between participants towards more democratic decision making (Van Pelt et al., 2020).
Responsible research and innovation agenda and strategies for engaging the public as co-researchers are not new to science: the novelty of CS today lies mainly in the scope and scale of involvement by non-professionals, and that CS, in addition to early-adopting fields like ecology and astronomy, is now being embraced by health and behaviour research. Since 2019, the CoE HA has adopted a CS approach to several community focused research and innovation projects and Living Labs in the Northern region of the Netherlands and beyond, in order to create impact on Healthy Ageing using the three themes. This is very much in line with the Hanze University's strategic course towards being an engaged university that strives for regional impact.
Though valuable experience is thus being gained by several schools linked to the CoE HA, there is no unified vision or ambition for the application of Citizen Science within the CoE HA nor the Hanze

University at large. Therefore, this positioning statement aims to identify the why, for whom, what and how of Citizen Science.

1. The Why

One of the most attractive aspects of CS for the CoE HA is that it very concretely gives shape and content to the Hanze's research framework, which is practice-oriented. As mentioned above, to improve health in practice in society, a transition is needed from thinking in terms of cure and care of the disease to the proactive management of health and behaviour. For this transition, new interventions and research methods are needed with a focus on whole systems, which necessarily entails the involvement of citizens. CS looks very promising in facilitating this transition.

For example, the Our Voice CS movement aims to improve health and reduce inequality in health by enabling citizens to realize change in their local environment (Hinckson et al., 2017; Tuckett et al., 2018). This movement has proven successful in stimulating and realizing citizen involvement and empowerment, in honouring citizens' needs and wishes, and in realizing a movement-friendly environment as determinant of health. A case study by our own team (Community of Practice for Healthy Lifestyle; COP4HL) describes the search for a way to increase awareness of and innovations for healthy lifestyle in an urban neighbourhood. By choosing an adaptive and responsive approach to the social innovation that was needed, predictability of outcome was reduced, and citizens were enabled to increase both agency as well as learning capacity. As one municipality worker put it: "Those two students got the dialogue with the citizens in the neighbourhood going. As municipality, we've never been very successful at that". It seems the efforts of a change agent, such as a Healthy Ageing professional, was considered crucial to jumpstart the innovation and make it sustainable.

In a report published by the Dutch Ministry for Health (2020), it is concluded that CS may yield specific advantages:

1. Democratic advantages: by not involving the perspectives of (vulnerable) target groups of social innovations, it remains unavoidable that the dominant majority, i.e. politicians, journalists, researchers etc., enforce certain definitions of reality as self-evident and make these vulnerable groups adhere to them. From a democratic perspective, it is problematic to exclude citizens who are subject of debate from this debate (De Winter & Noom, 2003). In Dutch society, there are high expectations for citizen participation, i.e. for citizens to solve and prevent societal issues. Amplified responsibility in this regard should go hand in hand with amplified competence and influence, in both policy and research. According to the Rathenau Institute, including citizens is of utmost importance in a knowledge-driven democracy, especially since history has taught us, that crises can only be solved permanently when people have a chance to think along as well as test different measures and remedies. Public participation quickly sounds like a time-consuming luxury in times of need, and our reflex is to put experts at the wheel. However, crises affect everyone's lives, and it is paramount to mobilize the brainpower and commitment of citizens from all walks of life, and to put their struggles, wants and ideas at the heart of the matter.
2. Well-being advantages: Den Broeder (2017) describes very specific positive outcomes related to the CS approach that participants indicated: 1) they gained more understanding of social determinants of health; 2) they gained new knowledge on healthy lifestyle and how this knowledge related to their current habits; 3) they changed behavior to enhance health; 4) they indicated to have developed new social skills and to feel increased self-confidence; 5) they expanded their social network, breaking through cultural barriers even; and 6) they indicated the project had led them to take joint action to make the community healthier.

3. Methodological advantages: research quality is determined for a large part by the quality of data collected. Citizens may be much better suited to define the questions that matter in practice, as well as interpret the answers given to these questions. They may also be more sensitive to underrepresented target groups and areas of interest (Den Broeder, 2017);
4. Applicability advantages: by involving citizens early on, they get a say in what issues should be addressed which increases the chance the issues addressed match the environment they live in. Being able to have a say early on also increases the chance of developing an innovation that is truly suitable for and supported by the community it is meant for ('t Hart, 2003; Postma 2016; Smaling, 2011). As such, CS emphasizes ownership by the community, which is likely to pre-empt a knowledge-to-action gap (Greenhalgh & Wieringa, 2011);
5. Learning advantages; involving citizens or, moreover, involving all relevant stakeholders in the research and innovation process opens the door for an increased and improved collective learning culture. This will offer a more judicious weighing of the different perspectives/resources in decision making processes, a better insight into the need of capacity building in the community and better anticipation of emergent situations in the context.

In sum, CS may be viewed as a research and innovation strategy which enables enhancing the competence and empowerment of citizens, as well as a strategy to connect parties involved and to stimulate and more effectively implement healthy behaviour. This strategy may thus lead to effective approaches that significantly enhance the possibility of impact on the three CoE HA themes.

2. The Who

The CoE HA functions as the forerunner of CS. For research impact, we will preferably collaborate with and within local systems, aiming for practical, social innovation in local and regional communities. Knowledge for input like best and rich practices and outcomes of other research, can be sourced internationally of course.

As a first step, we will involve our existing collaborative network surrounding the five schools connected to our centre, with an initial emphasis on the introduction of and building capacity in CS based on needs and assets. All stakeholders in these networks, i.e. educators, researchers and students, as well as students from collaborating educational partners such as the Alfa-College and Noorderpoort and AJSPH, may benefit from CS in educational projects and programmes. In the second phase the focus might shift towards tailor-made capacity building of all the stakeholders participating in CS. As we gain more experience and expertise, we aim to broaden our educational scope to anyone, nationally and internationally, who may wish to learn more about the CS approach for application in their own endeavours. To this end, we are part of a national platform in CS and are maintaining contacts with an international consortium.

3. The What

In time, we aim for the CoE HA to develop a Citizen Science for Healthy Lifestyle consortium, which will serve as a knowledge centre on CS as a mean to enhance the three themes of the CoE HA. Central to the consortium will be a research group that is developing expertise in practice-oriented research on CS in Healthy Lifestyle. In collaboration with citizens/end-users, public and private institutions, and knowledge centres, this expertise will be developed further.

We aim to put this expertise to use in the development of community agency with an emphasis on the role of the citizen with the end-goal of ethically enhancing participation, prevention and amplition in health innovations. Core enterprises will therefore be a) agenda setting: making sure CS is on the agenda of health education and supports (responsible) research and innovation, specifically in

community-focused social innovation (Tassone et al., 2018), b) capacity building: making sure all parties involved are able to collaborate in the CS approach, c) support system building: making sure we have the infrastructure in place for facilitating and evaluating CS processes and outcomes, and d) emphasize the scaling process and valorisation process of the developed strategies, services and products.
Additionally, it's not just in research that the CS approach seems suitable: we believe it will be feasible to disseminate and incorporate the knowledge and lessons learned from cases where CS was used in educational programmes and learning communities, and in fact to use the CS approach itself in shaping educational programmes. We envision this for all levels, i.e. Bachelor, Master and Doctorate (PD, PhD) as well as for informal and non-formal (life-long) learning.

4. The How - Working principles & Levels of engagement

Greenhalgh et al. (2016) describes three working principles for CS in creating community-based health services:

1. Adopt a systems' perspective, assuming emergence, local adaptation and non-linearity;
2. Adopt a research frame that is at its core a creative enterprise consisting of human experiences;
3. Adopt focus on process and knowledge production coming out of the process, as the result.

It is our aim to embed CS in a systems' perspective geared towards social innovation for health. Social innovations present a solution to social problems that are more effective, efficient, sustainable or just, than current solutions, by using co-creation by actors from all parts of the system (Kimbell, 2014). In both Greenhalgh's literature review and the case study, co-creation failures could often be tracked back to abandoning (or never adopting) the three principles above. When the principles were followed, and an adaptive and developmental research process was allowed for, outputs were more likely to be fit for purpose, acceptable, valuable, and enduring.
At the same time, the process impacts on social relations (Van Pelt, 2020). This last impact may in fact also be a fourth working principle: to adopt a focus that stimulates a shift in social relations or at the very least allows for this. Related to this the question may arise of when to use how much involvement by the entire system, or all societal levels as Mittelmark et al. put it (2012). Gradations of CS may vary from citizens only collecting predetermined data to extreme CS whereby citizens are involved in or even coordinate the whole process and all stages of the research (i.e. social innovation development) (Den Broeder, 2018).

Table 1. *The 5 levels of citizen science (adapted from den Broeder, 2018)*

Level and type	Role of citizen in knowledge development	Ownership and influence of citizen
A. Instrumental	Citizens are collecting data- crowd sourcing (e.g., citizens wear GPS trackers to measure PA patterns in neighborhoods). Citizens do not play an active role in interpreting or using the collected data.	Citizens are sensors meaning they are instruments for collecting data.
B. Distributive	Citizen are trained data collectors. Knowledge and expertise of the citizens is used as data source of researchers. (comparable with empathize phase of design thinking). Citizens do not play an active role in interpreting or using the collected data.	Citizens represent other citizens and give them a voice in the research process. Citizens give input and validate the research process.

C. Participative	Citizens have influence/input on the research questions and collect data often in own context. Citizens have an active role in analyzing, interpreting and translating data into actions/innovation.	Citizen contribute to the transition agenda and all phases of research and successive actions. Citizens are fully acknowledged in the research process (democratization of knowledge), become empowered and gain ownership.
D. Extreme	Citizen have ownership of the complete research process. So, they decide what and how to research and ask research to participate in their process. Citizens have full ownership of the research, innovation and implementation process.	Citizens demonstrate agency and pro-actively posit a research agenda. Citizens have full ownership in the research and innovation agenda. Mostly transformative and democratizing.
E. Collective	(Engaged) collective process from all relevant stakeholders (quadruple helix) working efficiently and in co-creation in all phases of the research and innovation.	Democratic change agency with a commonly defined agenda and shared collective agenda and shared ownership. Explicitly working toward redistribution of power and democratic process.

It seems self-evident that these gradations will impact social relations differently: we do not expect them to change significantly by citizens collecting data for research that was otherwise designed entirely by professional experts. If we want to achieve truly impactful social innovation through CS, as well as a change in citizen agency, we will have to use a wider or more extreme gradation of CS. King et al. (2016) describe this as 'for', 'with' and 'by' citizens. A 'higher' role means citizens have more influence on the innovative process, which in turn demand more openness in terms of content by the researchers and an upending of the traditional power balance between researchers and citizens. Gradations of CS may be thus shaped by addressing different roles citizens may take, as proposed by Pröpper (2013), with accompanying implications for innovation development through research. This way, we enable local learning and change that reduces inequalities, and in the process, gain insight into generalizable principles about effective partnerships such as the ones described above.

We may well then be able to add a sixth category of advantages to CS (cf. The Why): advantages in agency, empowerment and equality, which aligns with the Healthy Lifestyle and Environment theme as well as the Equality and Participation theme in the strategy of CoE HA.

5. Final remarks

Few research domains are as meaningful to the public as the health sciences, which should therefore be well positioned for citizen science engagement. Though the approach entails a radical shift in thinking about how to shape research and innovation and leaves a few salient (ethical) questions and paradoxes to ponder, we propose to use and develop Citizen Science for the field of health research (Vohland et al., 2019).

We work on agenda setting, capacity building and support system building for local/regional communities to engage in social innovations that positively impact on the three CoE HA themes of enhancing equality and participation in health, improving healthy lifestyle and environment, and addressing vulnerability and suitable care. We involve our own collaborative network in this, as well as new parties that are part of the system. In addition, to optimize our students' chances of achieving impact in practice, we ultimately aim for each student to have gained knowledge and experience in CS by the time they graduate.

We believe this approach fits well with the Hanze University's strategic course towards being an engaged university as well as its general research orientation towards evidence informed practice.

References

Akkerman, S. F., & Bakker, A. (2011). Boundary Crossing and Boundary Objects. Review of Educational Research, 81(2), 132–169. https://doi.org/10.3102/0034654311404435

Anderson, G. L., & Herr, K. (1995). Is There Room for Rigorous Practitioner? Educational Researcher, 28(5), 12–21.

Avelino, F., & Wittmayer, J. M. (2015). Shifting Power Relations in Sustainability Transitions: A Multi-actor Perspective. Submitted to the Journal of Environmental Policy & Planning, 7200(Dec), 1–23. http://doi.org/10.1080/1523908X.2015.1112259

Boog, B. (2011). Handelingsonderzoek, in: Boer, F. de & Smaling, A. (red.). Benaderingen in kwalitatief onderzoek; een inleiding. Amsterdam: Boom Lemma Uitgevers.

Den Broeder, L., Lemmens, L., Uysal, S., Kauw, K., Weekenborg, J., Schönenberger, M., ... & Wagemakers, A. (2017). Public health citizen science; perceived impacts on citizen scientists: a case study in a low-income neighbourhood in the Netherlands.

Den Broeder, L., Devilee, J., Van Oers, H., Schuit, A. J., & Wagemakers, A. (2018). Citizen Science for public health. Health promotion international, 33(3), 505-514.

Cohn S., Clinch M., Bunn C. & Stronge P. (2013). Entangled complexity: why complex interventions are just not complicated enough. J Health Serv Res Policy. 2013;18(1): 40–3. 13

Dutch Ministry for Health, (2020). Retrieved 5.1.2021: [https://www.movisie.nl/sites/movisie.nl/files/2020-07/Burgerparticipatie-in-onderzoek-van-respondent-tot-medeonderzoeker.pdf]

Fosse, E. (2012). National objectives–local practice: implementation of health promotion policies, in: Wold, B. and Samdal, O. (eds). An ecological perspective on health promotion systems, settings and social processes. Bergen: University of Bergen.

Greenhalgh T, Wieringa S. (2011). Is it time to drop the 'knowledge translation' metaphor? A critical literature review. J R Soc Med. Dec;104(12):501-9. doi: 10.1258/jrsm.2011.110285. PMID: 22179293; PMCID: PMC3241522.

Greenhalgh, T., Jackson, C., Shaw, S. & Janamian, T. (2016). Achieving Research Impact Through Co-creation in Community-Based Health Services: Literature Review and Case Study. The Milbank Quarterly, 94(2), 392–429. https://doi.org/10.1111/1468-0009.12197

Greenhalgh, T. & Papoutsi, C. (2018). Studying complexity in health services research: Desperately seeking an overdue paradigm shift. BMC Medicine, 16(1), 4-9. https://doi.org/10.1186/s12916-018-1089-4

Hart, R. (1991) Childeren's participation. From Tokenism to Citizenship. Unicef Innocenti Essays, no. 4.

Hinckson, E., Schneider, M., Winter, S. J., Stone, E., Puhan, M., Stathi, A., ... & King, A. C. (2017). Citizen science applied to building healthier community environments: advancing the field through shared construct and measurement development. International Journal of Behavioral Nutrition and Physical Activity, 14(1), 1-13.

Hoyng, J. & Eck, M. van (2019). Whitepaper Speel, ren, fiets, skate, zwem, sup en bewandel... de route naar een beweegvriendelijke omgeving. Ede: Kenniscentrum Sport.

Kania, J. & Kramer, M. (2013). Embracing Emergence : How Collective Impact Addressing Complexity. Stanford Social Innovation Review, 1–14. Retrieved from [http://www.ssireview.org/blog/entry/embracing_emergence_how_collective_impact_addresses_complexity]

Kimbell L. (2014) The service innovation handbook, Understanding impact, Amsterdam: Bis publishers Amsterdam.

King, A. C., Winter, S. J., Sheats, J. L., Rosas, L. G., Buman, M. P., Salvo, D., ... & Dommarco, J. R. (2016). Leveraging citizen science and information technology for population physical activity promotion. Translational Journal of the American College of Sports Medicine, 1(4), 30.)

King, A.C., King, D.K., Banchoff, A., Solomonov, S., Natan, O. Ben, Hua, J., ... & Porter, M. M. (2020). Employing participatory citizen science methods to promote age-friendly environments worldwide. International Journal of Environmental Research and Public Health, 17(5), 1–34. https://doi.org/10.3390/ijerph17051541

Kok, M. O., & Schuit, A. J. (2012). Contribution mapping: a method for mapping the contribution of research to enhance its impact. ???, 10(1), 1. https://doi.org/10.1186/1478-4505-10-21

MHAP (2017) Opleidingsprofiel Master Healthy Ageing Professional, Hanzehogeschool Groningen.

Ministry of Health and Care Services. White paper no. 34. Public Health Report. Good health-a common responsibility. Oslo: 2012- 2013

Mittelmark MB, Wold B, Samdal O. The ecology of health promotion. In: Wold B and Samdal O, eds. An ecological perspective on health promotion systems, settings and social processes. Bergen: University of Bergen; 2012. pp 85-9

Pelt, K. van, Singels, L. & Laar, K. van de. (2011) Handreiking participatie allochtonen in gezondheidsbevordering. Woerden: NIGZ.

Postma, D. (2016) Workshop 'Participatie in onderzoek als middel voor empowerment', op conferentie 'Meer kracht en meer macht. Waarom empowerment juist nu nodig is' (Movisie).

Preskill, H. & Beer, T. (2012). Evaluating Social INNOVATION. Center for Evaluation Innovation. Retrieved 6.2.2021: [https://community-wealth.org/sites/clone.community-wealth.org/files/downloads/paper-preskill-beer.pdf]

Preskill, H., Gopal, S., Mack, K., & Cook, J. (2015). Evaluating Complexity: Propositions for Improving Practice. Fsg, 1–37. Retrieved from papers://a160a322-7748-499f-b1e5-c793de7b7813/Paper/p15933

Pröpper, I. M. (2013). MAKING PROCESS. *Science, Politics and Morality: Scientific Uncertainty and Decision Making*, *17*, 127.

Ruger, J.P. (2010). Health capability: Conceptualization and operationalization. American Journal of Public Health, 100(1), 41–49. https://doi.org/10.2105/AJPH.2008.143651

Rathenau Institute retrieved 5.1.2021
[https://www.rathenau.nl/nl/kennisgedreven-democratie/betrek-burgers-en-wetenschappers-van-allerlei-pluimage-bij-de-bestrijding-van-de-coronacrisis]

Tassone, V. C., O'Mahony, C., McKenna, E., Eppink, H. J., & Wals, A. E. (2018). (Re-) designing higher education curricula in times of systemic dysfunction: a responsible research and innovation perspective. Higher Education, 76(2), 337-352.
Tuckett A., Freeman, A., Hetherington, S., Gardiner, P.A., King, A.C. and on behalf of Burnie Brae Citizen Scientists (2018). Older Adults Using Our Voice Citizen Science to Create Change in Their Neighborhood Environment. International Journal of Environmental Research and Public Health.
Ulrich D. (2019), Leaders as paradox navigators: Retrieved 5.1.2020:
[https://www.rbl.net/insights/articles/leaders-as-paradox-navigators]

Van De Ven, A. H., & Johnson, P. E. (2006). Knowledge for theory and practice. Academy of Management Review, 31(4), 802–821. https://doi.org/10.5465/AMR.2006.22527385

Vohland, K., Weißpflug, M., & Pettibone, L. (2019). Citizen Science and the Neoliberal Transformation of Science – an Ambivalent Relationship. Citizen Science: Theory and Practice, 4(1), 19. https://doi.org/10.5334/cstp.186

WHO, Kickbusch, I., & Gleicher, D. (2014). Smart governance for health and well-being: the evidence. https://doi.org/ISBN 978 92 890 5066 1

Wielinga, E H. E. W. (2018). Dynamics of Living Networks. Link Consult. Retrieved 5.1.2020: www.toolsfornetworkers.nl

de Winter, M., & Noom, M. (2003). Someone who treats you as an ordinary human being... Homeless youth examine the quality of professional care. British Journal of Social Work, 33(3), 325-338.