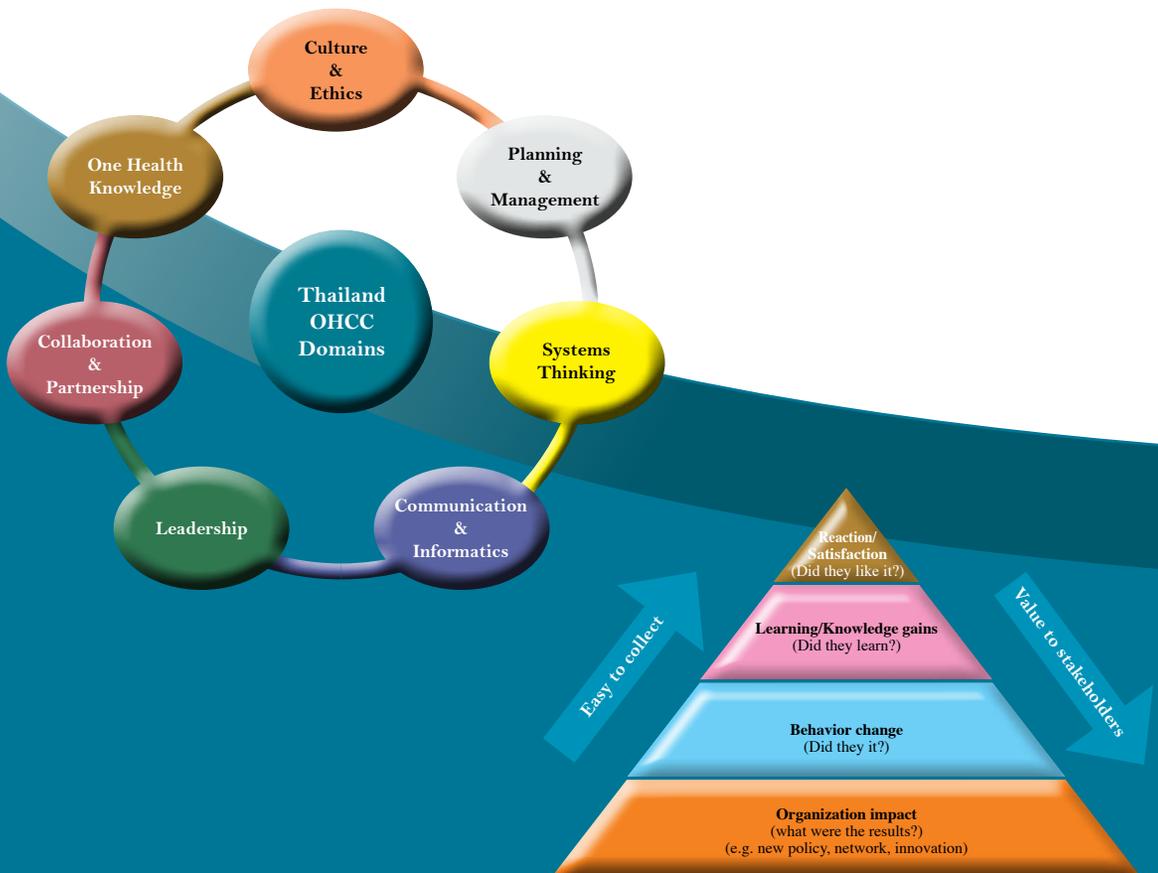




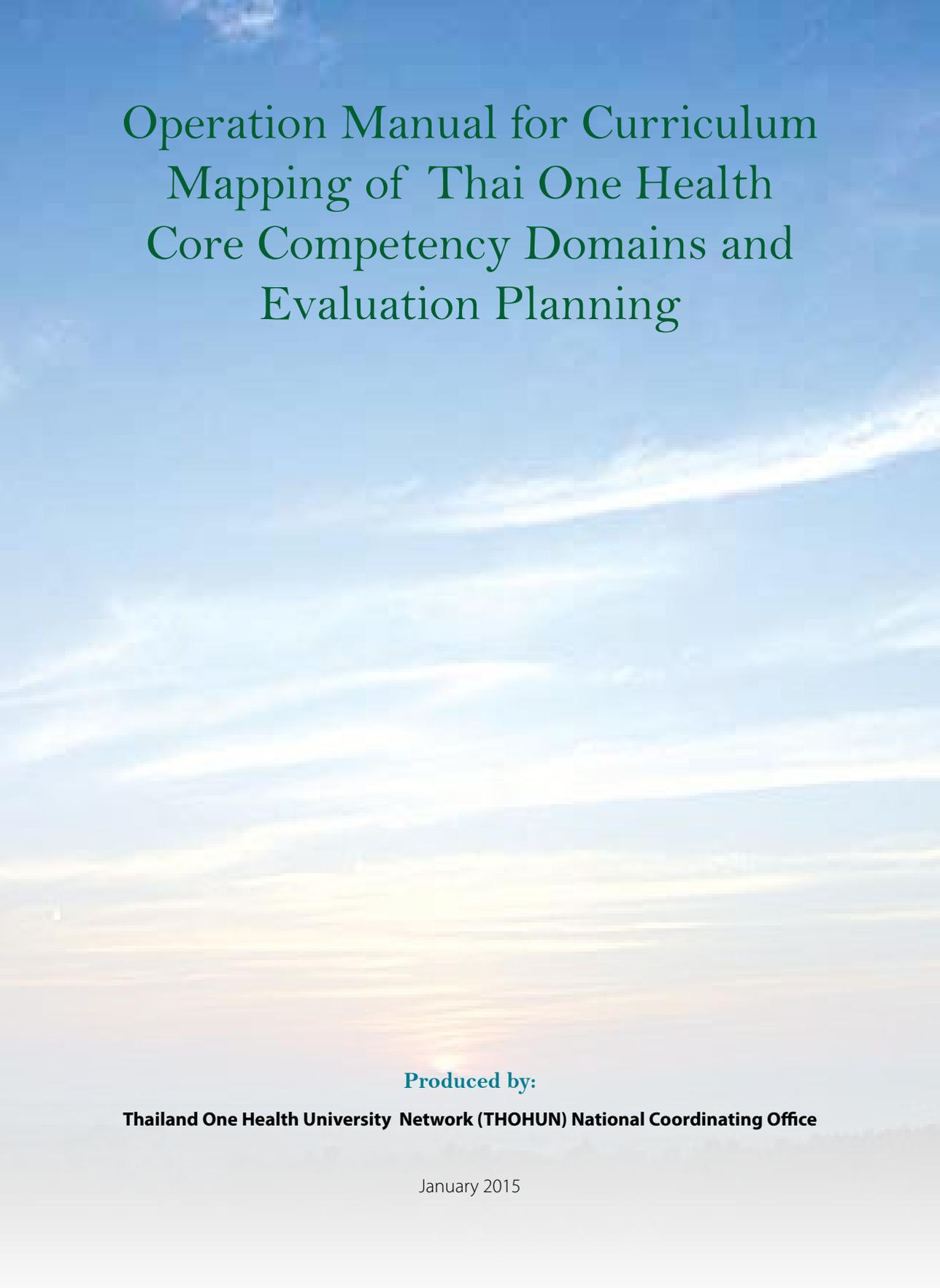
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Operation Manual for Curriculum Mapping of Thai One Health Core Competency Domains and Evaluation Planning



Produced by
Thailand One Health University Network (THOHUN) National Coordinating office



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Chapter I

ONE HEALTH CORE COMPETENCIES AND CURRICULUM MAPPING

One Health Core Competencies

Global One Health Core Competencies

“Competencies” are knowledge, skills, and behaviors of personnel that are measurable, regardless of their disciplines. The competencies that are essential for success of an organization, either for an academic institution or governmental unit, are known as “core competencies”. A set of competencies which are grouped together in a logical category is called a “competency domain”. Common terms in One Health are shown in Table I.

Table I: *Examples of One Health Core Competency (OHCC) Terminologies*

OHCC Term	Example
Competency Domain	A set of competencies that are grouped together in a logical category (e.g. Collaboration and Partnership)
Competency	Creating an environment that encourages open and supportive behaviors.
Competency Skill/Behavior	Supporting works of other One Health response team-members in the field.
Competency Measurement	Interviewing team members to ascertain that they feel there are benefits in being supportive of others.

Core competencies in One Health context, known as ‘One Health Core Competencies’ (OHCCs), were developed on three simultaneous tiers: global level (called Emerging Pandemic Threats (EPT) Program), regional level (e.g. collaborations such as South East Asia One Health University Network: SEAHOHUN, and One Health Central and Eastern Africa: OHCEA), and country level (competencies determined by country needs). The process of determining and developing the OHCC domains and example competencies had already been done. It started with a literature review by the University of Minnesota and Tufts University, followed by telephone interviews of key-informants by Training Resources Group Inc. (TRG) and Tufts University. Thereafter, information and data were translated, encoded, and analyzed qualitatively, employing NVIVO software. Then, data was taken to experts in infectious diseases in each SEAHOHUN country for further analysis and convergence. Finally, a full report was drafted and circulated to project staff and experts in March 2013. Details of domains and definitions of global One Health competencies are shown in Table II.

Table II: *Domains and Definitions of Global One Health Competencies*

Domain	Details
<p>Management</p>	<p>Definition: Includes competencies that enable partners to plan, design, implement, and evaluate programs across disciplines and sectors in order to maximize effectiveness of action and desired One Health outcomes</p> <p>Subdomains:</p> <ol style="list-style-type: none"> 1. Planning: Its competencies consist of <ol style="list-style-type: none"> 1.1 Assess resource needs for accomplishment of your roles and responsibilities in managing a One Health intervention (prevention, surveillance, or outbreak) 1.2 Contribute to interdisciplinary planning 2. Design: Its competencies consist of <ol style="list-style-type: none"> 2.1 Develop surveillance initiatives for zoonotic infectious diseases 2.2 Understand one’s roles and responsibilities within a One Health team 2.3 Create team management and plan of protocols 2.4 Develop programs and plans for a outbreak response 3. Implementation: Its competencies consist of <ol style="list-style-type: none"> 3.1 Manage an effective use of one’s time and resources, as part of a One Health team 3.2 Prioritize tasks in one’s own role and responsibilities within an interdisciplinary team 3.3 Demonstrate ability to work together as a team member and to improvise when anticipated resources are not available or the situation changes 4. Evaluation: Its competencies consist of Specify metrics to support evaluation of an effort to respond to a threat of zoonotic disease
<p>Culture and Beliefs</p>	<p>Definition: Includes competencies focusing on effective communications and interactions through understanding of diverse social norms, roles, and practices of individuals, communities, and organizations, that impact an intended One Health outcome</p> <p>Subdomains:</p> <ol style="list-style-type: none"> 1. Cultural Sensitivity: Its competencies consist of <ol style="list-style-type: none"> 1.1 Interact with team members from various backgrounds (cultures, disciplines, etc.) during an outbreak response 1.2 Demonstrate familiarity with local languages or dialects, practices, and customs of the affected outbreak area 2. Belief Systems: Its competencies consist of <ol style="list-style-type: none"> 2.1 Distinguish between different existing belief systems and spiritual practices among various ethnic groups involved in outbreak areas

Domain	Details
	<p>2.2 Acquire and use knowledge of diversity principles to identify common ideas and beliefs of those involved in the response to an outbreak</p> <p>2.3 Adapt disease management to cultures, beliefs, and practices</p>
<p>Leadership</p>	<p>Definition: Includes competencies that focus on creating shared visions, championing collaborative solutions through critical and strategic decision-making, and energizing commitment to trans-disciplinary approaches for One Health challenges</p> <p>Subdomains:</p> <ol style="list-style-type: none"> 1. Strategic and Critical Thinking: Its competencies consist of <ol style="list-style-type: none"> 1.1 Evaluate a project, team, event’s performance, outcomes, and impact, to implement continuous improvement 1.2 Formulate objectives, priorities, and strategies for One Health and organization 1.3 Implement continuous improvement in One Health teams, organization, and strategies 1.4 Design a strategic plan based on situational analysis 2. Shared Visions: Its competencies consist of <ol style="list-style-type: none"> 2.1 Demonstrate ability to advocate, create partnerships, and foster collaborations among One Health teams 2.2 Create and communicate shared visions across sectors and disciplines 2.3 Promote mutual respect among different professionals in a One Health team 2.4 Utilize change-management strategies to guide people or team to accept new ideas 3. Decision Making: Its competencies consist of Make informed decisions in order to move forward, after a collaborative consensus building in a multidisciplinary team 4. Collaborative Solutions: Its competencies consist of <ol style="list-style-type: none"> 4.1 Facilitate cooperation, mutual trust, team function, and commitment, throughout an outbreak response 4.2 Lead efforts in implementation of a collaborative response to One Health challenge 4.3 Develop an integrative vision 5. Team Commitment: Its competencies consist of <ol style="list-style-type: none"> 5.1 Motivate the outbreak response team to work together to achieve the agreed upon goals 5.2 Create the environment leading to engagement and commitment by team members 5.3 Energize commitment to goals across sectors and disciplines Mobilize, coach, and mentor others from a variety of disciplines

Domain	Details
Values and Ethics	<p>Definition: Includes competencies that enable partners to identify and respond, with respect and fairness across all disciplines and sectors, to One Health issues in diverse human, animal, and ecosystem contexts, and promote accountability for the full impact of decisions on the integrated system at local, national, and international levels</p> <p>Subdomains:</p> <ol style="list-style-type: none"> 1. Respect and Fairness for Individuals: Its competencies consist of <ol style="list-style-type: none"> 1.1 Demonstrate willingness to listen to and recognize individuals from other disciplines and sectors, and to change ideas, opinions, or approaches, based on new information or situations 1.2 Behave in an honest, fair, and ethical manner 1.3 Treat others fairly, and with respect 1.4 Take responsibility for one's own works, including problems and issues, and openly admit mistakes 1.5 Use applicable professional standards and established procedures, policies, and/or legislation, when taking actions or making decisions 1.6 Demonstrate willingness to change ideas, perceptions, or opinions, based on new information or situations 1.7 Identify different ethical aspects of a situation when making decisions 1.8 Identify competing values when selecting approaches or recommendations for dealing with a situation 1.9 Identify ethical dilemmas and conflict-of-interest situations and take action to avoid and prevent them 2. Respect and Fairness in Teams: Its competencies consist of <ol style="list-style-type: none"> 2.1 Identify different ethical aspects of decisions, including dilemmas and conflict of interest, that exist across disciplines and sectors, and take account of these when making decisions about team actions 2.2 Actively seek to learn from others 2.3 Foster a climate of trust within the team 2.4 Promote personal accountability in practice 2.5 Actively support other team members, and show willingness to share skills, knowledge, expertise, and time 2.6 Interact with others fairly and objectively 2.7 Advise others in maintaining fair and consistent dealings with others, and in dealing with ethical dilemmas 2.8 Deal directly and constructively with lapses of integrity (e.g., intervene in a timely fashion to remind others of the need to respect dignity of others) 2.9 Identify underlying issues that impact negatively on people and take appropriate action to rectify the issues (e.g., systemic discrimination)

Domain	Details
	<p>3. Respect and Fairness between Organizations: Its competencies consist of</p> <ul style="list-style-type: none"> 3.1 Ensure that decisions take into account ethics and values of all the organizations and stakeholders involved in One Health actions 3.2 Define, communicate, and consistently exemplify the organization's values and ethics 3.3 Ensure that standards and safeguards are in place to protect the organization's integrity (e.g. professional standards for financial reporting, integrity/ security of information systems) <p>4. Accountability for Full Impact: Its competencies consist of</p> <ul style="list-style-type: none"> 4.1 Recognize and admit when unintended consequences resulted from a lack of understanding or disciplinary differences, then develop improvement plans in future actions 4.2 Implement processes and structures to deal with difficulties in confidentiality and/or security
<p>Collaboration and Partnership</p>	<p>Definition: Includes competencies that identify, recruit, work with, and sustain the willingness and ability of a diverse range of stakeholders to work effectively to advance One Health</p> <p>Subdomains:</p> <p>1. Stakeholder Identification: Its competencies consist of</p> <ul style="list-style-type: none"> 1.1 Promote inclusion of representatives of diverse constituencies across human, animal, environmental health, and other One Health relevant disciplines into collaborations/partnerships 1.2 Take a broad view of the potential stakeholders and the roles they might play, both now and in the future, in a One Health approach to meet objectives of the collaboration/partnership. 1.3 Respect and leverage diversity 1.4 Understand each potential stakeholder's value, motivation, legitimacy, willingness to engage, and necessity to the collaboration/partnership <p>2. Stakeholder Recruitment: Its competencies consist of</p> <ul style="list-style-type: none"> 2.1 Contact potential stakeholders and clearly articulate the needs, interests, and objectives of the One Health collaboration/partnership, align those with each stakeholder's objectives and expected commitments required of participating stakeholders 2.2 Tell stories of One Health successes in a compelling manner, such that they illustrates complementarity between stakeholder's motivation and the objectives of the approach 2.3 Strategically select stakeholders that are necessary and sufficient in order to accomplish the objectives

Domain	Details
	<p>3. Stakeholder Roles: Its competencies consist of</p> <ul style="list-style-type: none"> 3.1 Share vision, power, responsibility, accountability and credit among human, animal, environmental health and other participants 3.2 Listen, speak, and write to be understood by all (i.e. avoid jargons, acronyms, discipline or sector-specific language, or behaviors.) 3.3 Recognize and demonstrate respect for others' expertise, professional abilities, perspectives, and culture 3.4 Demonstrate empathy, and seek to understand motivations of others 3.5 Create an environment that fosters innovation and creativity 3.6 Develop procedures and processes for joint analysis, planning, communication, and commitment of decisions into action, to achieve common goals 3.7 Clearly define joint expectations, commitments, roles, responsibilities, and time lines 3.8 Communicate transparently on decisions taken, lessons learned, ongoing progresses, and challenges 3.9 Ensure that information is accessible by everyone and keep stakeholders informed, through a variety of communication strategies (e.g., regular stakeholders' meetings, distribution of minutes, etc.) 3.10 Proactively plan to manage conflict, and collaboratively resolve conflict 3.11 Recognize potential benefit of a conflict as a catalyst for improvement and change; leverage positive aspects of conflict while ameliorating the negative aspects <p>4. Stakeholder Retention: Its competencies consist of</p> <ul style="list-style-type: none"> 4.1 Ensure that individuals and organizations continue to understand the alignment of goals and objectives of the collaboration/partnership with their own, and to recognize the benefits of the collaboration/partnership 4.2 Reinforce the goals and objectives of the collaboration/partnership (results driven) 4.3 Maintain trust and transparency, ensure that all voices are heard 4.4 Recognize and remove barriers to collaboration and progress 4.5 Recognize, congratulate, and reward contributing individuals and organizations 4.6 Maintain positive attitudes and working environments 4.7 Celebrate successful milestones and benchmarks towards achieving the goals and objectives 4.8 Recognize the situation when involvement with individuals or organization is no longer necessary nor productive, either replace individual representatives or withdraw the organization from the collaboration/partnership 4.9 Explore and understand the motivation behind a withdrawal or replacement of a stakeholder's representative, and take any corrective actions as necessary 4.10 Seek opportunities to transfer information and knowledge among stakeholders, and to the wider public

Domain	Details
<p>Communication</p>	<p>Definition: Includes competencies that foster effective communication and information sharing across disciplines and sectors</p> <p>Subdomains:</p> <ol style="list-style-type: none"> 1. Communication Management: Its competencies consist of <ol style="list-style-type: none"> 1.1 Listen to others, and communicate in a manner that fosters open communication to support and enable a One Health response 1.2 Communicate effectively with the media and the public 1.3 Identify who the designated spokesperson(s) is/are for a particular issue 1.4 Demonstrate ability to communicate about risks at multiple levels 2. Information Management: Its competencies consist of <ol style="list-style-type: none"> 2.1 Analyze lessons learned in the field in a way that other team members can understand how they are relevant to a zoonotic disease threat 2.2 Use fundamental IT methods and demonstrate willingness to learn new technologies as needed 2.3 Collect, manage, organize, and report data to ensure that each person in the team has the information needed to do one's job 2.4 Know about government's, industry's, and academic policies on releasing and sharing of information
<p>Systems Thinking</p>	<p>Definition: Includes competencies that recognize how elements influence and interact with one another within a whole that results from the dynamic interdependencies among human, animal, environmental, and ecological systems, and how these interdependencies affect the relationships among individuals, groups, organizations, and communities</p> <p>Subdomains:</p> <ol style="list-style-type: none"> 1. Systems Knowledge: Its competencies consist of <ol style="list-style-type: none"> 1.1 Provide examples of integrated complex systems that include human, animal, environmental, and ecological components, and identify key characteristics, elements, and integration points where individual system components (e.g. social networks, organizations, government, communities, ecosystems) interact 1.2 Explain how the contexts of gender, culture, beliefs, history, etc. are important in the design of interventions within One Health systems 2. Systems Management: Its competencies consist of <ol style="list-style-type: none"> 2.1 Demonstrate the ability to integrate information across disciplines and sectors, to determine and mitigate potential unintended consequences of planned interventions in a complex system 2.2 Provide an example of unintended consequences produced by changes in one part of a One Health system 2.3 Analyze the effects of political, social, and economic policies on One Health systems at the local, state, national, and international levels 2.4 Analyze the impact of global trends and interdependencies on One Health related problems and systems

Domain	Details
	<p>3. Systems Evaluation and Improvement: Its competencies consist of</p> <p>3.1 Illustrate how both intended and unintended changes in One Health systems (including input, processes, and output) can be measured and analyzed for future improvement</p> <p>3.2 Provide examples of essential feedback loops to support an effective One Health system</p> <p>3.3 Assess strengths and weaknesses of applying the systems approach to One Health problems</p>

At the national level, OHCC domains and their competencies have been refined locally using a participatory approach, based on institutional and national needs. The identified competencies domains would be used to map and identify current gaps in curricula of Thai universities and to discuss opportunities to fill those gaps, and to develop acceptable strategies to produce One Health students or leaders of the future. In curriculum mapping or curriculum development, developers typically work with domains in order to address large areas of conceptual design rather than working with specific competencies in a given course syllabus. Development of OHCC and implementations in various curricula are multiple processes as shown in Figure 1.

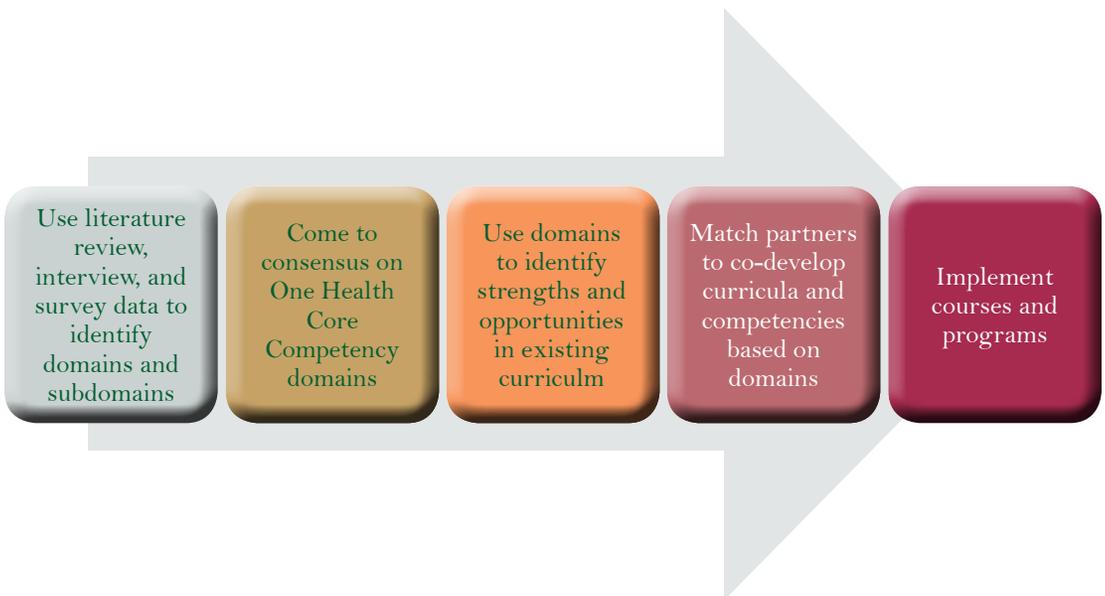


Figure 1: *Diagram Displaying OHCC Development Processes*

Thailand's One Health Core Competencies

Thailand's OHCC domains have been defined since the workshop in July 2012. Thailand's OHCC domains comprise of Culture and Ethics, Planning and Management, Systems Thinking, Communication and Informatics, Leadership, Collaboration and Partnership, and One Health Knowledge (Figure 2). These OHCC domains are mostly similar to those of SEAOHUN and member countries (Table III).

Table III: Comparison of SEAOHUN and National OHCC Domains

OHCC domains					
Malaysia		Indonesia	Thailand	Vietnam	SEAOHUN
Management		Management	Planning and Management	Planning and Management	Management
Communication		Communication	Communication and Informatics	Communication and Informatics	Communication and Informatics
Culture and Belief		Culture and Belief	Culture and Ethics	Culture and Belief	Culture and Belief
Leadership and Professionalism		Leadership and Professionalism	Leadership	Leadership	Leadership
Collaboration and Partnership		Collaboration	Collaboration and Partnership	Collaboration and Partnership	Collaboration and Partnership
Ethics		Values and Ethics		Values and Ethics	Values and Ethics
Systems Thinking	Systems Thinking	Systems Thinking	Systems Thinking	Systems Thinking	
	One Health Knowledge	Policy, Regulation and Advocacy			



Figure 2: *Thailand's OHCC Domains*

One year later, THOHUN-NCO organized the THOHUN One Health Core Competencies and Curriculum Mapping workshop on October 8-10, 2013. Participants comprising of university lecturers from various disciplines collectively created each domain's definitions, subdomains, and levels of core competencies as shown in Table IV.

Table IV: *Definitions, Subdomains and Competencies of Thailand OHCC Domains*

Planning and Management	
<p>Domain definition: The ability to set goals, to plan for, to design, to implement, to monitor, and to evaluate One Health programs, in order to maximize effectiveness of One Health action and desired health outcomes.</p>	
<p>Competencies</p>	
Novice level	<ul style="list-style-type: none"> • State current status of One Health Issues • Describe and list problems of One Health Issues • Assess One Health management team
Mid-level	<ul style="list-style-type: none"> • Categorize problems of One Health Issues • Schedule work plan in accordance with a year plan • Apply One Health program by following the schedule
Expert level	<ul style="list-style-type: none"> • Formulate goals and objectives of team • Organize work plan for One Health program • Rate progress of One Health program • Assess the need for One Health program • Evaluate the effectiveness of One Health program • Revise One Health program
Systems Thinking	
<p>Domain definition: The ability to analyze how various elements influence and interact with one another within a global perspective that results from the dynamic interdependencies among human, animal, environmental, and ecological systems</p>	
Subdomains:	<ol style="list-style-type: none"> 1) Systems connection 2) System management 3) Impact assessment
Novice level	<ul style="list-style-type: none"> • Identify elements of One Health systems (animal, human, environment)
Mid-level	<ul style="list-style-type: none"> • Analyze the interconnection of One Health system
Expert level	<ul style="list-style-type: none"> • Generate the web of causation of the impact that affect One Health systems
Communications and Informatics	
<p>Domain definition: The ability to effectively acquire, process, synthesize, share, and exchange appropriate information across sectors, disciplines, and stakeholders, in order to establish, enhance, and promote One Health actions.</p>	
Subdomains:	<ol style="list-style-type: none"> 4) Effective communication to professionals in different fields 5) Information management

Subdomain: Effective communication to professionals in different fields

Novice level	<ul style="list-style-type: none">• Describe importance and uses of information on One Health team• Identify and analyze lessons learned
Mid-level	<ul style="list-style-type: none">• Practice active communication skills (speaking, listening, writing)• Disseminate and customize IEC (Information, Education, and Communication) to various levels• Apply various communication media approaches• Demonstrate motivation and approach's teaching• Demonstrate willingness to learn new technology
Expert level	Justify fact of information and culture beliefs

Subdomain: Information management

Mid-level	<ul style="list-style-type: none">• Apply knowledge management techniques• Use fundamental information technology methods
Expert level	<ul style="list-style-type: none">• Justify fact of information and culture beliefs• Organize effective data management (collection, analyze, and conclusion)• Develop appropriate strategy to knowledge management

Leadership

Domain definition: The ability to initiate a shared trans-disciplinary vision and to motivate and inspire teams across sectors to organize, manage, and foster One Health action

Competencies

Novice level	<ul style="list-style-type: none">• Recognize professional and cultural diversities among disciplines in One Health team• Explore the motivation behind participation, withdrawal, or replacement of a stakeholders' representative, and take any corrective actions as necessary
Mid-level	<ul style="list-style-type: none">• Operate interdisciplinary communication to reach the goal of the One Health team• Negotiate and appreciate roles and responsibilities among disciplines in One Health team
Expert level	<ul style="list-style-type: none">• Develop inter-professional relationships among One Health staff• Create trans-disciplinary activities in One Health projects• Formulate strategic and problem solving plans related to One Health issues

Collaboration & Partnership

Domain definition: The ability to foster and sustain effective collaboration and partnership across disciplines within One Health teams, individuals, stakeholders, partners, communities in the advancement of One Health actions

Competencies

Novice level

- State principles for effective collaboration and partnership
- Identify issues that influence collaboration and partnership
- Describe differences and similarities between collaboration and partnership
- Describe (classify) characteristics of different stakeholders and partners

Mid-level

- Choose and implement appropriate strategies that promote effective collaboration and partnership; and develop or establish collaboration, partnership, and networking

One Health Knowledge

Domain definition: The ability to comprehend, describe, apply, identify, integrate, and effectively transfer one's own One Health knowledge and expertise at different levels of proficiency.

Competencies

Novice level

Effectively apply, describe, identify, demonstrate, and transfer, each professional skill in One Health knowledge, expertise, capacities, roles and responsibilities, via scientific, critical, and systems thinking as needed at different levels of proficiency, to be compatible with local situations using One Health approach.

Culture and Ethics

Domain definition: The ability to understand, analyze, and appreciate social, religious, and historical diversity across different cultures within individuals and societies.

Competencies

Novice level

- Identify norms and wisdom between local and neighboring histories
- List differences and similarities between local and global histories/cultures
- Compare global issues to one's own culture and religion

Mid-level

- Participate in every level of social culture
- Evaluate One Health to local area

Expert level

- Explore impacts of culture and beliefs on One Health issues
- Implement One Health concepts to social leader
- Develop cultural sensitivity

Curriculum Mapping

One way to embed One Health concept and spirit into the new generation of Thais is to integrate them into various university curricula. One Health curriculum mapping is the first step to conduct prior to such integration. This activity will enable mappers to see strengths and gaps within their courses, as well as to appraise how well their current courses are aligned with the domains of Thailand's OHCC. Since this part is mainly aimed for curriculum mapping in Thailand's context, we would start with a brief information on Thai Qualifications Framework (TQF) for higher educations, followed by a description of the curriculum mapping process, and an example of integration of One Health domains into existing course, respectively.

1. TQF for Higher Education

1.1 Overview and Levels of Qualifications

Thailand's TQF for higher education has been designed to support implementation of the educational guidelines set out in the National Education Act B.E. 2542 (1999), and its amendment in B.E. 2545 (2002). The system was aimed to ensure consistency in both standards and awarded degree titles for higher education's qualifications and to make clear their equivalence to those given by institutions in other parts of the world. The TQF provides appropriate points of comparison in academic standards for institutions in their quality assurance processes. It can also help prospective employers in understanding the skills and capabilities of graduates they may employ. In addition to knowledge and professional skills, educational programs developed within the TQF framework also emphasize transfer and application of cognitive skills, entrepreneurship, familiarity with and support for national culture, traditions, ethics, as well as other expected requirements for graduates. The qualifications framework comprises six levels, while each one describes an expected increasing intellectual demand and complexity of learning as students progress toward higher academic degrees. The six levels in the framework are: Advanced Diploma (three years), Bachelor, Graduate Diploma, Master, Higher Graduate Diploma, and Doctor levels.

The framework also comprises two general tracks representing different orientations in programs: academic and professional. Programs in academic track generally focus on research and transmission of knowledge, while programs in professional track emphasizes more on a practical work-related skills. However, the two tracks are not mutually exclusive. Academic programs were expected to develop abilities that would be necessary in employment. Professional programs were also needed to involve thorough understanding of research and theoretical knowledge in their field and related areas. In other words, the two types of programs would be composed of both academic and pragmatic knowledge, yet with different emphasis.

1.2 Learning Outcomes in Domains of Learning

Learning outcomes are generally grouped into five domains according to the scale or complexity of expected learning. An example of learning outcomes by domains is shown in the table V below.

Table V: *Example of Learning Outcomes by Domains for Bachelor Degree*

Domains	Learning outcomes
Moral and ethics	<ul style="list-style-type: none">• Consistently demonstrate honesty and integrity with an appropriate balance of personal goals and group's goals and objectives• Provide positive influence to others through exemplar and leadership
Knowledge	<ul style="list-style-type: none">• Have possession of a comprehensive, coherent, and systematic body of knowledge in a field and the underlying principles and theories associated with it• Be familiar with the latest developments at the forefront of specialization within the main field of study
Cognitive skills	<ul style="list-style-type: none">• Be able to carry out investigations, comprehend, and evaluate new information, concepts, and evidence from a range of sources without external guidance• Be able to investigate complex problems and recommend creative and innovative solutions, taking account of relevant theoretical knowledge and practical experience
Interpersonal skills and responsibility	<ul style="list-style-type: none">• Contribute to and facilitate constructive resolution of issues in group or team situations, whether in a role of leader or group member• Be able to exercise group leadership in undefined situations, which call for innovative responses
Numerical analysis, communication, and information technology skills	<ul style="list-style-type: none">• Be able to communicate effectively, both orally and in writing• Be able to select the appropriate means of presentations for differing issues and audiences

1.3 Types of TQF

The framework consists:

- TQF-1: Qualifications Framework for field of study (set by Higher Education Commission, Ministry of Education)
- TQF-2: Program specification
- TQF-3: Course specification
- TQF-4: Field experience specification
- TQF-5: Course report
- TQF-6: Field experience report
- TQF-7: Program report

Curriculum mapping is a component in” in the section 4 of TQF-2 (see the table VI below). The curriculum mapping process in this operational manual involves directly with TQF-2, as it frames the directions and contents of the whole program. The process enables lecturers or educational experts to map core competency domains of their program with the Thailand OHCC domains.

Table VI: *Sections and Components of TQF-2*

Section of TQF-2	Example of components
Section 1: General information	<ul style="list-style-type: none"> • Curriculum name • Name of degree and sections • Major subjects • Required credits • Curriculum characteristics
Section 2: Information of the curriculum	<ul style="list-style-type: none"> • Philosophy, justification, and objectives • Plan for development and improvement
Section 3: Educational management system, curriculum implementation, and structure	<ul style="list-style-type: none"> • Educational management system • Curriculum implementation • Curriculum and lecturers
Section 4: Learning outcomes, teaching strategies, and evaluation	<ul style="list-style-type: none"> • How to develop specific qualification of students • How to develop learning outcome in each area • Curriculum mapping
Section 5: Criteria for student evaluation	<ul style="list-style-type: none"> • Grading system • Evaluation process for the learning outcome of students • Requirements for graduation
Section 6: Faculty development	<ul style="list-style-type: none"> • Orientation for new faculty members • Development of skills and knowledge for the faculty
Section 7: Quality assurance	<ul style="list-style-type: none"> • Curriculum management • Management of teaching materials and resources • Faculty management
Section 8: Evaluation and improvement of curriculum implementation	<ul style="list-style-type: none"> • Evaluation on the teaching efficiency • Evaluation of the curriculum in general • Evaluation of curriculum implementation in accordance with the curriculum

2. Mapping of Thailand OHCC Domains with a Thai Curriculum

For ease of understanding the mapping process, all examples in this part are taken from the case of Bachelor of Science program in Public Health at Mahidol University in Bangkok. The prerequisites of the curriculum mapping process are shown in Table VII:

2.1 Prerequisites of Mapping Curriculum

2.1.1 Original curriculum mapping of your program (according to section 4 of the TQF-2)

Table VII: A Part of Original Curriculum Mapping of the Program in English Version¹

Course	1. Moral and ethics					2. Knowledge		3. Cognitive skills				4. Interpersonal skills and responsibility			5. Numerical analysis, communication, and information technology skills			
	1	2	3	4	5	1	2	1	2	3	4	1	2	3	1	2	3	
Nutrition in Public Health		●			●	●	●	●	●	●	○	○	●		●			
Public Health Administration ¹		●	●	●	●	●	●				●	●	●		●			
Comprehensive Health Development Field Training	●	●	●	●	●	●		●	●	●	●	●	●	●				●

¹ The dark dots represent the primary aims of the course, while the white spots symbolize the secondary aims of the course.

2.1.2 Learning outcomes of your program (according to section 4 of the TQF)

Table VIII: Core Competency Domains and Expected Learning Outcomes of the Bachelor of Science Program in Public Health, Mahidol University

Expected outcomes	
TQF-2's domains	TQF-2's subdomains of the program
1. Moral and Ethics	1.1 Hold the values of ethics, morality, and honesty 1.2 Abide by disciplines, be punctual, and be responsible to oneself, one's work, and the society 1.3 Protect one's own rights and respect others' 1.4 Obey and follow regulations, standards of organizations and the society 1.5 Act in accordance with academic and professional ethics
2. Knowledge	2.1 Have knowledge with regard to public health and the related issues 2.2 Understand how to conduct field research in a community and with modern technology
3. Cognitive skills	3.1 Analysis of health situations 3.2 Set holistic development plan focusing on community participant and collaboration 3.3 Promote health protection and restoration, as well as transfer the knowledge to others 3.4 Provide knowledge about public health to people and other organizations
4. Interpersonal skills and responsibility	4.1 Have good relationships with colleagues and other people 4.2 Be able to work in a team; be responsible to himself/herself and other people, and to assigned tasks 4.3 Have leadership skills and act as a good follower
5. Numeric analytical skills, communication, and use of technology and information	5.1 Be able to use techniques in statistics and biostatistics to analyze and interpret data 5.2 Be able to use computer and other technology to search for, collect, and analyze data 5.3 Effectively communicate through speaking, listening, and writing

2.1.1.3 Thailand OHCC domains definitions and competencies²

Table IX: *Template for mapping of Thailand OHCC domains with core competency domain of curriculum of Thai universities*

Course Name	Thailand OHCC Domains						
	Culture & Ethics	Planning & Management	Systems & Thinking	Communications & Informatics	Leadership	Collaboration & Partnership	One Health Knowledge
Some courses of Bachelor of Science program in Public Health, Mahidol University							
Nutrition in Public Health							
Public Health Administration 1							
Comprehensive Health Development Field Training							
Sum of the number of TQF-2's subdomains that matches with Thailand OHCC domains							

² See details on page 11-13.

2.2 Process of Mapping Thai OHCC Domains with TQF-2's Domains of Thai Curriculum

1. Identify and summarize learning objectives of the program from learning outcomes as stated in section 4 of the TQF-2 of the program.
2. Match TQF-2's subdomains with Thailand OHCC domains (Table X).
3. Redo mapping of the program's learning outcomes against Thailand OHCC domains by using the prepared template and filling in the numbers of TQF-2's subdomains of learning in the corresponding Thailand OHCC domains (some item numbers may appear in more than one core competency domain).

Table X: *Result of Matching TQF-2's Subdomains with Thailand OHCC Domains*

TQF's domains and subdomains of the program	Thailand OHCC domains
1. Moral and Ethics	
1.1 Hold the values of ethics, morality, and honesty	1.1 Culture and Ethics
1.2 Abide by disciplines, be punctual, and be responsible to his/herself, work, and society	1.2 Culture and Ethics
1.3 Protect their own rights and respect others'	1.3 Culture and Ethics and Collaboration and Partnerships
1.4 Obey and follow regulations and standards of organizations and society	1.4 Culture and Ethics
1.5 Act in accordance with academic and professional ethics	1.5 Culture and Ethics and Collaboration and Partnerships
2. Knowledge	
2.1 Have knowledge regarding public health and the related issues	2.1 One Health Knowledge
2.2 Understand how to conduct field research in community and modern technology	2.2 Culture and Ethics, Communication and Informatics, Systems thinking, Planning and Management, Collaboration and Partnership, and One Health Knowledge
3. Cognitive skills	
3.1 Analyze health situations	3.1 Systems thinking
3.2 Set holistic development plan focusing community participant and collaboration	3.2 Planning and Management, Collaboration and Partnership, Communication and Informatics, One Health Knowledge, and Leadership

TQF's domains and subdomains of the program	Thailand OHCC domains
3.3 Promote health protection and restoration as well as transfer the knowledge to other	3.3 Planning and Management, Collaboration and Partnership, Communication and Informatics, and One Health Knowledge
3.4 Provide knowledge about public health to people and other organizations	3.4 Communication and Informatics and One Health Knowledge
4. Interpersonal skills and responsibility	
4.1 Have good relationships with colleagues and other	4.1 Culture and Ethics, Collaboration and Partnership, and Communication and Informatics
4.2 Be able to work in team and be responsible to his/herself and other people and to assigned jobs	4.2 Planning and Management, Collaboration and Partnership, and Communication and Informatics
4.3 Have leadership skills and be a good follower	4.3 Leadership
5. Numeric analytical skills, communication, and use of technology and information	
5.1 Be able to use techniques of statistics and biostatistics to analyze and interpret data	5.1 Systems Thinking
5.2 Be able to use computer and technology to search for, collect, and analyze data	5.2 Planning and Management, Systems Thinking, and Communication and Informatics
5.3 Effectively communicate through speaking, listening, and writing	5.3 Communication and Informatics

Table XI: Final Result of Thailand OHCC Map of a Bachelor of Science Program in Public Health, Mahidol University³

Name course	Thailand OHCC Domains						
	Culture & Ethics	Planning & Management	Systems Thinking	Communications & Informatics	Leadership	Collaboration & Partnership	One Health Knowledge
Some courses of Bachelor of Science program in Public Health, Mahidol University							
Nutrition in Public Health	1.2, 1.5, 2.2, (4.1)	2.2, 3.2, 4.2, 3.3	2.2, 3.1, 5.1	2.2, 3.2, (3.4), (4.1), 4.2, 3.3		2.2, 3.2, (4.1), 4.2, 3.3	2.1, 2.2, (3.4), 3.3
Public Health Administration 1	1.2, 1.3, 1.4, 1.5, 2.2, 4.1	2.2, 3.3, 4.2	2.2, 5.1	2.2, 3.3, 4.1, 4.2		1.3, 1.5, 2.2, 3.3, 4.1, 4.2	2.1, 2.2, 3.3
Comprehensive Health Development Field Training	1.1, 1.2, 1.3, 1.4, 1.5, 4.1	3.2, 4.2	3.1	3.2, 3.3, 3.4, 4.1, 4.2, 5.3	3.2, 4.2, 4.3	1.3, 1.5, 3.2, 3.3, 4.1, 4.2	2.1, 3.2, 3.3, 3.4
Sum of the number of TQF-2's subdomains that matches with Thailand OHCC domains	16	9	6	16	3	17	11

Number of TQF-2's subdomains of the program that corresponds to Thailand OHCC

³ The item numbers in parentheses shown in the table represent secondary responsibilities of the course in the program.

2.3 Results of Curriculum Mapping and Possible Actions to Improve the Program

The One Health curriculum map or One Health curriculum matrix is able to reflect the strengths and gaps within the program as well as appraise how well their current courses are aligned with the Thailand OHCC domains. From the example above, domains of Culture and Ethics, Communications and Informatics, and Collaboration and Partnership are mostly present in three courses, while the domains of Systems Thinking and Leadership are rarely detected. If we regard these three courses as representatives of the program, we might have to integrate System Thinking and Leadership competencies more frequently into the existing program, as they are crucial for public health students. However, it is important to note that this mapping method has some limitations. The process is quite a rough assessment, as well as possibly might be based on subjective judgments.

3 An example of Integration of One Health Competencies into an Existing Course

After identifying strengths and gaps of the program from curriculum mapping, a curriculum developer might fill the gaps by integrating some of One Health competencies into the program. An example of One Health integration is the case of the Medical School course at Tufts University School of Medicine, which was initiated by Assoc. Prof. Dr. Raymond R. Hyatt. Students of the course were students from Doctor of Medicine (MD) and Doctor of Veterinary Medicine (DVM) programs, who were also pursuing a Master of Public Health (MPH) degree. In the one semester course, students were required to attend a class session per week. The class consisted of 20 students: 16 third year MD and 4 second year DVM students. The technical competencies of the course that students were to achieve were derived from those of the American Schools of Public Health, including:

1. Apply descriptive and inferential methodologies according to the type of study design for answering a particular research question
2. Identify basic theories, concepts and models from a range of social and behavioral disciplines that are used in public health research and practice
3. Apply evidence-based principles and the scientific knowledge base to critical evaluation and decision-making in public health
4. Explain how the findings of a program evaluation can be used
5. Explain the contribution of logic models in program development, implementation, and evaluation
6. Differentiate among goals, measurable objectives, related activities, and expected outcomes for a public health program
7. Differentiate the purposes of formative, process, and outcome evaluation
8. Differentiate between qualitative and quantitative evaluation methods in relation to their strengths, limitations, and appropriate uses

9. The process of integrating OHCCs into the course (Figure 4) began with identification of specific competencies within the global OHCC domains⁴ to focus on (Table XII).

Table XII: *Global OHCC Domains and Specific Competencies Selected for Course Integration*

Global OHCC Domains	Specific Competencies for Integration
Management	Categorize problems according to priority, and formulate goals and objectives
Culture and Beliefs	Create a plan to generate trust among the target communities within the One Health research/evaluation program
Leadership	Evaluate project's team performance and impacts for continuous quality improvement
Values and Ethics	Actively support other team members, and show a willingness to share skills, knowledge, expertise, and time
Collaboration and Partnership	Formulate strategies to harmonize collaboration and partnership across disciplines
Communication and Informatics	Design a public media communication approach
Systems thinking	Create a research plan that integrates animal, human, and environmental approach to the disease and region you are studying

After identification of the specific competencies, the developers had to set learning objectives of each competency. These are what a learner is expected to know, understand, and be able to do as a result of the learning process. They are to be measurable as well. These learning objective should be aligned with both expected technical and One Health competencies (Table XIII).

Teaching methodology and assessment strategy must fit into One Health-integrated curriculum as well. Teaching methods should allow acquisition of both desired technical and One Health competencies. A workgroup composed of students from various disciplines should also be encouraged. In case of the exemplified Medical School course at Tufts University, students were organized into four groups: each with four MD and one DVM students. A case study approach using those from One Health for One World is the main teaching method in the course. A compendium of case studies⁵ and resources from One Health Short Course⁶ were given as main class materials.

⁴ See details on page 1-10.

⁵ It is downloadable from the following source: Vétérinaires sans Frontières – Canada. (2010). One Health for One World: A Compendium of Case Studies. Available: http://www.onehealthinitiative.com/publications/OHOW_Compendium_Case_Studies.pdf. Last retrieved: September 29, 2014.

⁶ It is downloadable from the following source: SEAHOHUN-RESPOND. (2014). RESPOND SEAHOHUN One Health Course Modules. Available: <http://seahonehealth.wordpress.com/>. Last retrieved: September 29, 2014.

Table XIII: *Global OHCC Domains and Specific Competencies for Integration and Related Learning Objectives*

Global OHCC Domains	Specific Competencies for Integration
Management	Categorize problems according to priority, and formulate goals and objectives
	Learning objective of the course: Work as a team to prioritize works and formulate goals to respond to weekly assignments
Culture and Beliefs	Create a plan to generate trust among the target communities within the One Health research/evaluation program
	Learning objective of the course: Act in an ethical and honest manner that respects others on your team
Leadership	Evaluate project team performance and impacts for continuous quality improvement
	Learning objective of the course: Create a process to assess performance, outcomes, and impacts for yourself and team members
Values and Ethics	Actively support other team members, and show a willingness to share skills, knowledge, expertise, and time
	Learning objective of the course: Offer positive suggestions and seek a “team” solution to problems and barriers that arise
Collaboration and Partnership	Formulate strategies to harmonize collaboration and partnership across disciplines
	Learning objective of the course: Take responsibility to ensure that everyone on the team has a voice in creating the strategy for responding to the weekly in-class assignments
Communication and Informatics	Design a public media communication approach
	Learning objective of the course: Contribute to the design of presentation slides, video, photographic media, etc., to team presentations that address weekly group assignments
Systems thinking	Create a research plan that integrates an animal, human, and environmental approach to the disease and region you are studying
	Learning objective of the course: Design an integrated research plan for your specific disease and region

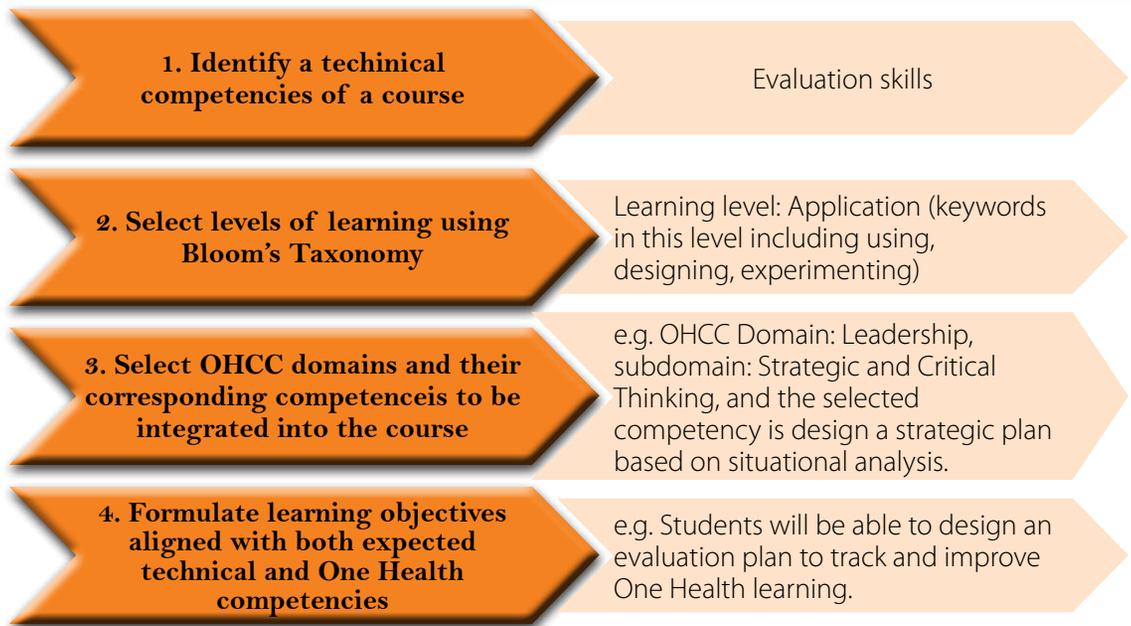


Figure 4: *Process in Embedding One Health Core Competencies into the Learning Objectives of a Course*

B L O O M S T A X O N O M Y

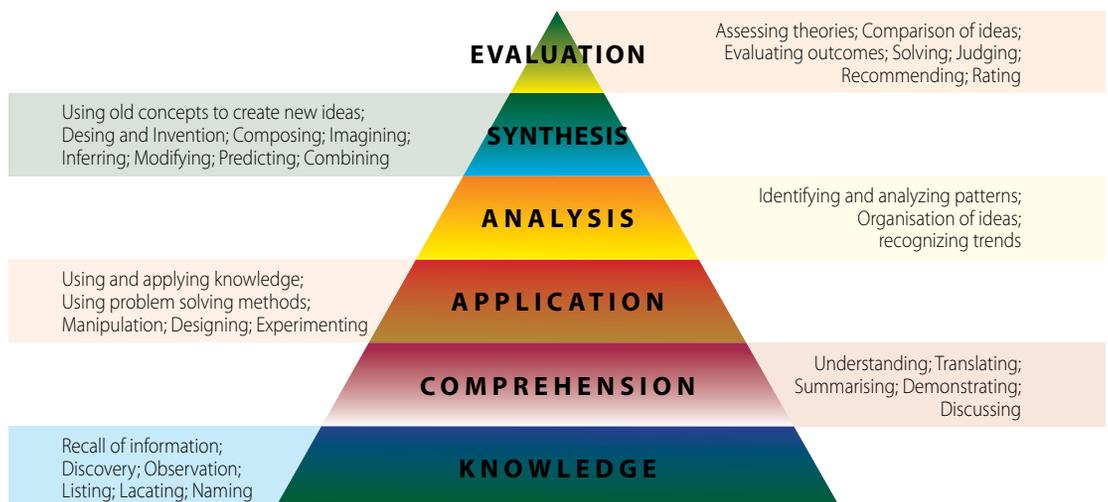


Figure 5: *Bloom's Taxonomy of Learning*⁷

⁷ Source of the figure: Cornwell, J. (2011). *Bloom's Taxonomy: Encouraging Higher Cognitive in Primary School Classrooms*. Available: <http://juliaec.wordpress.com/2011/03/23/blooms-taxonomy-encouraging-higher-cognitive-thinking-in-primary-school-classrooms/>. Last retrieved: September 29, 2014.

From this example, they found that assignments should be appropriately mixed between group and individual works and allow other colleagues to get involved with scoring. In case of the exemplified course, the assessment was made on the following criteria: in-class assignments, written report, final proposal, and class participations (Table XIV).

Table XIV: *Criteria of the Exemplified Course's Assessment*

Task	Percentage of the whole score	Assessors
9 in-class group assignments	45%	Professor, teaching assistant, and the other three groups
Written report	20%	Professor and teaching assistant (grading on individual level)
Final proposal	15%	Professor and teaching assistant (grading on individual level)
Class participation	20%	Professor and teaching assistant (grading with input from students)

According to the evaluation of this One Health integration course, students generally gained more technical competencies than One Health Core Competencies. Although most students thought that they gained experience and succeeded in working in multidisciplinary teams, most teams struggled with aspects of collaboration (i.e. the ability to share leadership and responsibility, as well as respecting colleagues from other disciplines). Some students even suggested that groups should consist of only students from the same discipline in the future (i.e. separate groups for MD and DVM students). Nonetheless, the real success of this approach is that OHCCs can be integrated into a technical course. Also, it provided students with opportunities to acquire knowledge, skills, and behaviors related to the challenges they would face in the field without creating an entirely new course with a specific set of OHCCs.

Chapter II

EVALUATION

1. Introduction to Evaluation

According to a definition in Cambridge Dictionary, evaluation means to judge or calculate the quality, importance, or value of something. As stated by Michael Scriven (2003)⁸, a British academic best known for his contributions to the theory and practice of evaluation, the characteristics of evaluation include:

- 1) Assesses overall achievement and impacts
- 2) Systematic (using rules and procedures) way of learning
- 3) Aims to improve current and future activities
- 4) Assumes changes occurred that can be measurable
- 5) Involves value judgment

The term “evaluation” is similar to “assessment”, “monitoring”, and “research”. Evaluations differ from traditional research in that they are typically driven by stakeholder interests and value judgments rather than the desire to create new knowledge. Usually conducted by internal staff, monitoring is a continuous process. Monitoring generally consists of tracking inputs and outputs of a program or project to see if it is performing according to expectations. Therefore, monitoring is useful for tracking program implementation and changes. While monitoring and evaluation respond to stakeholder needs and interests, research is primarily driven by curiosity and hypothesis-testing. Whereas monitoring and evaluation results are often written up as internal reports, research is often intended for a broader audience and published in academic journals. Figure 6 shows similarities among evaluation, assessment, monitoring and research in a Venn’s diagram.

⁸ Scriven, M. 2003. Michael Scriven on the difference between evaluation and social science research. The Evaluation Exchange. IX(4):7.

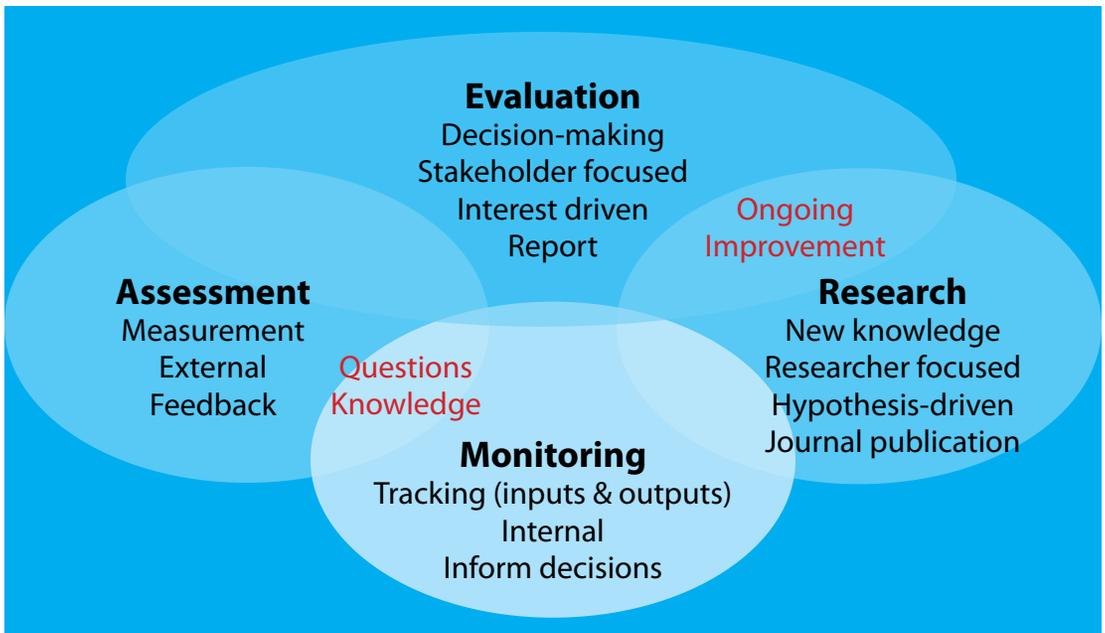


Figure 6: *Some Similarities between Evaluation, Assessment, Monitoring, and Research displaying by Venn's diagram*

There are numerous reasons to evaluate. Generally, evaluation is used to:

- 1) Show accountability to stakeholders who are interested in or affected by the results.
- 2) Demonstrate value to current and potential stakeholders.
- 3) Make improvements for the internal staff.

In other words, an evaluation helps people know if and how well the activity works. According to Kirkpatrick (2005)⁹, evaluation can be divided into four levels: reaction/satisfaction, learning/knowledge gains, behavior change, and results/organizational impact. Generally, as the value of the information increases, so does the difficulty of collecting that information (e.g. participant satisfaction is generally the easiest information to collect but it also provides the least amount of information about a training's long-term impact). Figure 7 shows Kirkpatrick's four levels of evaluation.

⁹ Kirkpatrick, D., & Kirkpatrick, J. (2005). *Transferring learning to behavior: Using the four levels to improve performance*. Berrett-Koehler Publishers.

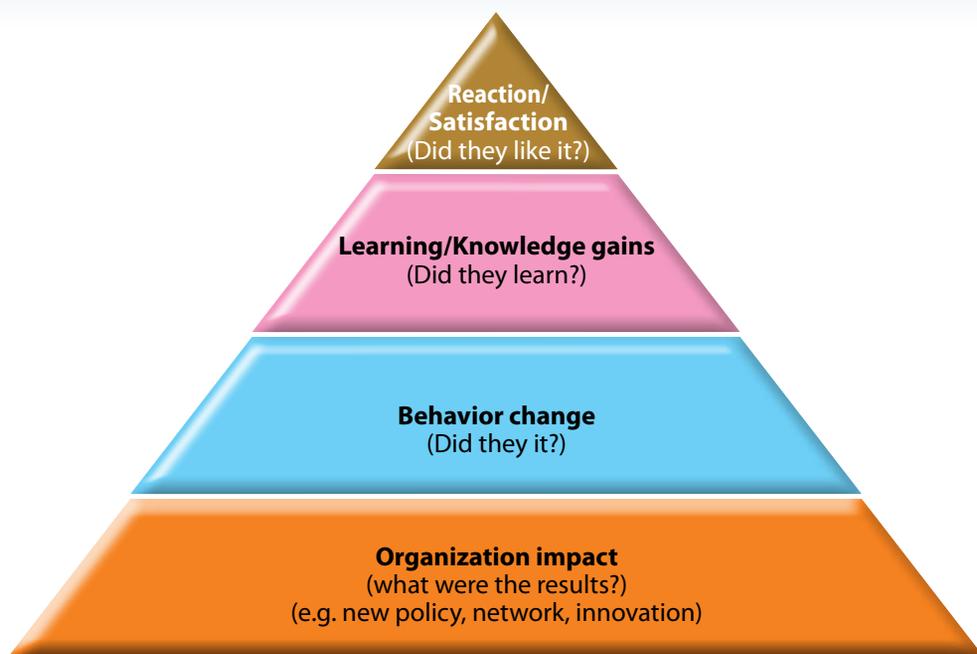


Figure 7: *Kirkpatrick's Four Levels of Evaluation*

Since each level of evaluation answers different questions and utilizes different budget and resources, evaluators have to select proper level(s) of evaluation according to their needs. For example, they may ask who are they accountable to and what are information they want to know, budget, resources, and timeline.

Table XV: *Characteristics of Each Level of Kirkpatrick's Evaluation*

	Purpose	Budget	Resources (staff, time, and information)	Timeline
Reaction/Satisfaction	How did they like it?	Low	Low	Immediate
Learning/Knowledge gains	What did they learn?	Low-Medium	Low-Medium	Somewhat immediate
Behavior change	How did they use this knowledge?	Medium	Medium	Immediate to long term
Organizational impact	What resulted from individual behavioral change?	High	High	Immediate to long term

Class or program evaluation can be conducted at different stages, depending on needs and resources. Based on the timing of evaluation, the evaluation can be divided into four types.

- 1) **Needs assessment** is conducted before a program or class starts in order to define needs and adjust the class or program accordingly.
- 2) **Formative evaluation** is done throughout the class or program to improve learning.
- 3) **Summative evaluation** is immediately conducted at the end of the class or program and used for comparing objectives against outcomes.
- 4) **Impact assessment** is conducted further down the road to see what the longer-term impact was. Figure 8 shows the 4 types of evaluations.

Needs Assessment	Formative Evaluation	Summative Evaluation	Impact Assessment
<ul style="list-style-type: none"> • Goal: Define needs & adjust • When: Before program/class starts 	<ul style="list-style-type: none"> • Goal: Improve program/learning • When: Ongoing • Forms: Quiz, survey, feedback 	<ul style="list-style-type: none"> • Goal: Summarize results; judge performance • When: End of class or program • Forms: Final exam, portfolio 	<ul style="list-style-type: none"> • Goal: Understand long-term impact • When: After program has ended (more than three months), but rare for classes

Figure 8: *Different Stages of Evaluations and their Details*

Each evaluation contains different types of questions and goals to achieve (Table XV). For formative evaluation, general questions include “How is the program working?” “How well are students learning?” and “What needs or problems are arising?” Questions such as: “Did the program achieve its goals?,” “Did students achieve the learning objectives?,” and “What effect did this program/class have on students?” may be found in the summative evaluation.

Evaluation is complex as it serves many different purposes and comes in many different forms. Each has different opportunities and constraints; evaluators therefore need to decide properly based on their needs and resources. Furthermore, it is a political decision since it involves many stakeholders but within limited resources. It also needs collaboration from respondents who may represent different perspectives. It is value-laden and therefore has real consequences for people and programs.

2. Data Collection Methods

Methods of data collection are grouped into three different types: qualitative, quantitative, and mixed methods.

Qualitative methods focus on answering questions of the type ‘how’ and ‘why’, using inductive reasoning. Their descriptive answers are generally used for explaining about experience, behaviors, and beliefs.

Quantitative methods are employed to answer questions about ‘what’, ‘how many’, and ‘who’. Their explanatory answers are derived from deductive reasoning and usually presented in forms of relationships, statistics, and probabilities.

Mixed methods are the combination of both qualitative and quantitative collection methods and applied for describing and explaining. The data that evaluators collected depends on the information they want. Examples of data collection methods are shown in Table XVI.

Table XVI: Examples of Data Collection Methods¹⁰

Qualitative methods	Mixed methods	Quantitative methods
<ul style="list-style-type: none"> • Interviews • Focus groups • Documents and journals 	<ul style="list-style-type: none"> • Surveys • Case studies • Observations 	<ul style="list-style-type: none"> • Quizzes • Pre and post tests

¹⁰ Some methods are mixed and can be made more or less qualitative/quantitative (e.g. case studies, observations, and surveys)

Table XVII: Data Collection Methods and their Measures, Strengths, and Weaknesses

Method	Measures	Strengths	Weaknesses
Randomized Control Trial (RCT) ¹¹	Change due to treatment	Objective Experimental	Cost, Ethics Classes not random
Pre-Post Tests	Change in knowledge	Objective Comparison Value added	Previous exposure Ceiling effect ¹¹ Drop out
Test	Knowledge	Objective	Teaching to the test
Survey	Experience, attitudes, beliefs, behavior	Easy to do Cross-check Range of info	Response bias Varied interpretation
Interview	Experience, attitudes, beliefs, behavior	In depth info Seek clarification	Rapport matters Relies on quality of questions Time-consuming
Observation	Performance, behavior	Authentic	Subjective
Self-assessment or reflection	Attitudes, perceptions, learning experience	Understand what cannot be observed	Very subjective Not generalizable

← Subjective – Objective →

From the table XVII above, it is apparent that each method is different in terms of its strengths and weaknesses, as well as its suitability for different purposes. For instance, surveys and interviews are proper methods for measuring satisfaction; observation is suitable for monitoring performance and behavior; surveys and self-assessments can help in understanding attitudes; and randomized controlled trials (RCT) or randomized impact evaluations and pre-post tests are useful for evaluating program impacts.

¹¹ It is a method in which participants are randomly allocated to receive one of several interventions (mostly mean clinical treatments). One of these interventions is the standard of comparison or control. For this group, there is no any intervention at all. Thus, any significant differences of outcomes between groups can be attributed to the intervention.

Apart from being arranged by objectivity, the data collection methods can also be sorted by purpose. (See Figure 9)



Figure 9: *Data Collection Methods Listed According to Purpose of Evaluation*

Ideally, evaluators should limit their biases as much as possible. In other words, they have to attempt to increase objectivity¹², particularly when they deal with qualitative data. There are four strategies to avoid biases in the data collection process.

- 1) Triangulation of data: using multiple sources of data to gain more perspectives.
- 2) External review: asking an outsider to review questions.
- 3) Member checking: confirming findings with participants.
- 4) Systematic analysis processes: coding qualitative data by themes and use a grading rubric¹² with clear criteria; therefore, evaluation can be repeated by other evaluators with similar results.¹³

An example of grading rubric for assessment of writing is shown in Figure 10. Using of different data sources to get information is exemplified in Figure 11.

¹² Rubric, known as scoring, grading, or performance rubric, is a clear instruction of grading criteria based on expected performance. It has widely used when scoring written assignments, oral presentations, student performances, student-patient interaction, etc. to reduce subjectivity or standardize grading.

¹³ There are several websites providing rubric templates and allowing people to create rubric online for free such as <http://rubistar.4teachers.org/index.php>

PERSUASIVE WRITING SCORING GUIDE

COMPONENT	6	5	4	3	2	1
Focus	Takes a clear position and supports it consistently with well-chosen reasons and/or examples; may use persuasive strategy to convey an argument.	Takes a clear position and supports it with relevant reasons and/or examples through much of the essay.	Takes a clear position and supports it with relevant reasons and/or examples; there is some development of the essay.	Takes a position and provides uneven support; may lack development in parts or be repetitive OR essay is no more than a well-written beginning.	Takes a position, but essay is underdeveloped.	Attempts to take a position (addresses topic), but position is very unclear OR takes a position, but provides minimal or no support; may only paraphrase the prompt.
Organization	Is focused and well organized, with effective use of transitions.	Is well organized, but may lack some transitions.	Is generally organized, but has few or on transitions among sections.	Is organized in parts of the essay; other parts are disjointed and/or lack transitions.	Is disorganized or unfocused in much of the essay OR is clear, but too brief.	Exhibits little or no apparent organization.
Sentence Fluency and Word Choice	Consistently exhibits variety in sentence structure and word choice.	Exhibits some variety in sentence structure and uses good word choice; occasionally, words may be used inaccurately.	Most sentences are well constructed but have similar structure; word choice lacks variety or flair.	Sentence structure may be simple and unvaried; word choice is mostly accurate.	Sentence lack formal structure; word choice may often be inaccurate.	Sentence run-on and appear incomplete or rambling; word choice may be inaccurate in much of the entire essay.
Conventions	Errors in grammar, spelling, and punctuation are few and do not interfere with understanding.	Errors in grammar, spelling, and punctuation do not interfere with understanding.	More frequent errors in grammar, spelling, and punctuation, but they do not interfere with understanding.	Errors in grammar, spelling, and punctuation sometimes interfere with understanding.	Errors in grammar, spelling, and punctuation interfere with understanding in much of the essay.	Errors in grammar, spelling and punctuation prevent reader from fully understanding essay.

Figure 10: *An example of a Grading Rubric (for Writing Assessment)*

If possible, evaluators should collect data by employing various methods, i.e. mixed data collection methods, to obtain data from varied perspectives. This is sometimes referred to as **data triangulation**. This technique facilitates the validation of data through cross verification from different sources. Figure 11 below illustrates the many different ways an evaluator could evaluate One Health learning. Ultimately, the type of data collection will depend upon desired results and available resources.

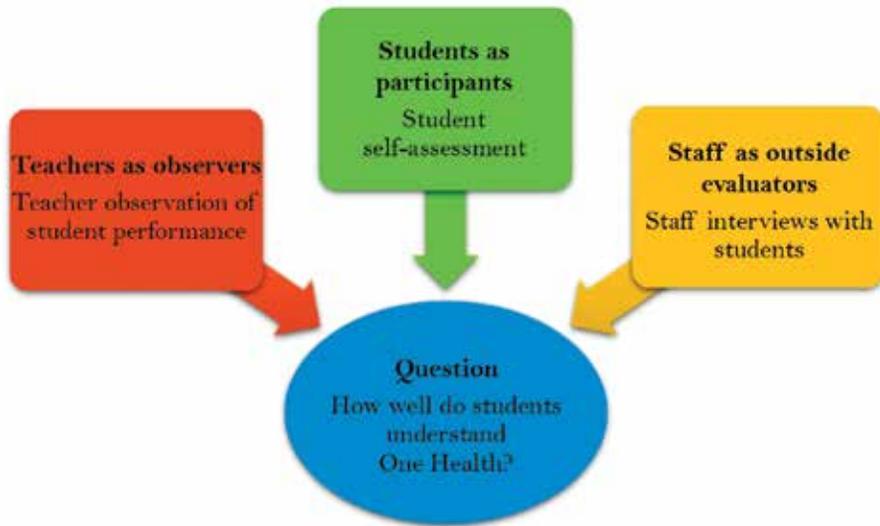


Figure 11: *Example of Possible Data Sources and Different Ways of Capturing Information from these Sources to Answer How Well Students Understand One Health*

Stakeholders can be divided into three categories: primary, secondary, and tertiary.

- 1) **Primary stakeholders** are those meant to be benefitted from a program or clients funding a program.
- 2) **Secondary stakeholders** are those who will be a part of the evaluation design.
- 3) **Tertiary stakeholders** are someone who might be interested in the results of evaluation. For this type of stakeholders, evaluators might share the report with them if being allowed by their clients.

Hints: How to deal with different types of stakeholders

- With primary stakeholders: **Keep them happy** because they are paying you.
- With secondary stakeholders: **Make friends because you need their help.**
- With tertiary stakeholders: **Explain the value of their participation and explain how you will use that information.**

EXERCISE

Exercise on data triangulation

Evaluators can translate data triangulation knowledge into practice particularly in their disciplines by creating one question that they would like to answer regarding student learning and five possible data sources. In case that they might have to choose only some data sources to gain the information, evaluators should assess strength and feasibility of data sources they identified. Also, they should rank the evidence from most to least valuable (from 1st to 5th) as well as to rate the degree of difficulty of data collection (from difficult, moderate, and easy). As a result, they can easily select only some sources by balancing their difficulties and their values.

Sample response:

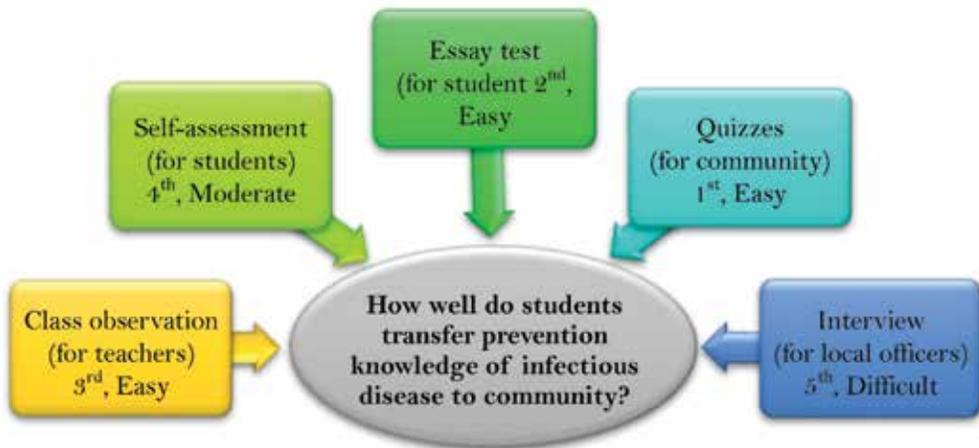


Figure 12: An Example of Data Triangulation Designed by Workshop's Participants

In addition to dividing methods into qualitative, quantitative, and mixed groups, they can also be categorized as direct, indirect and holistic assessments. **Holistic assessment** is a complex assessment that is designed to take more nuanced and textured approach to students' progress. It is often a combination of direct and indirect assessments. Evidence or information, at least 2 sets of data, are collected from students. Therefore, an evaluator or assessor can gain an in-depth understanding of a particular case as it derives from multiple aspects. **Direct assessment** tries to gather data of what students show and what they have

learned. It basically displays their knowledge and skills. Evidences from course work such as project or tests of knowledge are examples of its main tools. **Indirect assessment** attempts to collect reflections on students' learning. Its measures the perceptions rather than academic work of students, alumni, employers, and other outside agents.

Table XVIII: *Examples of Tools of Direct and Indirect Assessments*

Direct assessment	Indirect assessment
<ul style="list-style-type: none"> • Observation of class performance (Participation, group work, presentation, and activity) • Analysis of course assignment (graded paper and project) • Examinations (quiz, test, and pre- and post-tests) 	<ul style="list-style-type: none"> • Survey/course evaluation (of class experience and satisfaction) • Self-assessments (of knowledge, skills, and learning) • Journals/Reflections (written reflections and discussions)

EXERCISE

Exercise on Analyzing Forms of Evaluation

Regardless of data collection methods, each type of evaluation has different forms/tools with particular strengths and weaknesses. Evaluators should choose the right form(s) for their evaluation. While pre-post tests can help evaluators attribute change in knowledge to a particular course or intervention, they need to be designed carefully to ensure they are valid measures of knowledge change. As the questions below illustrate, there are many limitations to pre- and post-tests as evaluations of knowledge change.

1. Pre-Post Test to understand change in leadership knowledge

Pre-Test:

Team members should share vision, _____, responsibility, accountability and credit among collaborators.

- A- Power
- B- Meals
- C- Money
- D- Emails

Post-Test:

Team members should share vision, _____, responsibility, accountability and credit among collaborators.

- A- Power
- B- Meals
- C- Money
- D- Emails

2. Post student reflection/Self-assessment to understand change in leadership

OHCC Domain	Proficiency before workshop	Proficiency after workshop
Leadership	<input type="checkbox"/> None <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High	<input type="checkbox"/> None <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High

Figure 13: Two examples of evaluation forms of self-assessment method

Analysis: From the figure, it is apparent that the first form cannot evaluate if the knowledge is acquired through the course because the question is too easy so that students can answer correctly even they do not learn it. This phenomenon is called a “ceiling effect”. Also, leadership knowledge can be more properly evaluated by asking students to solve specific problems. In comparison to the first form, the second method provides more accurate reflection of change in leadership of the respondents.

3. Evaluation Planning

The first step of evaluation planning is to identify questions, which guide an evaluation. Thereafter, evaluators have to set objectives needed to which aligned with their desired/expected outcomes, so that they can measure what happened. After that, they have to identify inputs and activities correspond to outputs of the program/class. They also have to examine the underlying assumptions that bind the program/class elements together by simply asking themselves: “Does teaching automatically lead to learning?” Evaluators then should revisit objectives and compare them with outcomes to see if students really achieve the goals of the program/class. The process of evaluation planning is shown in Figure 14.

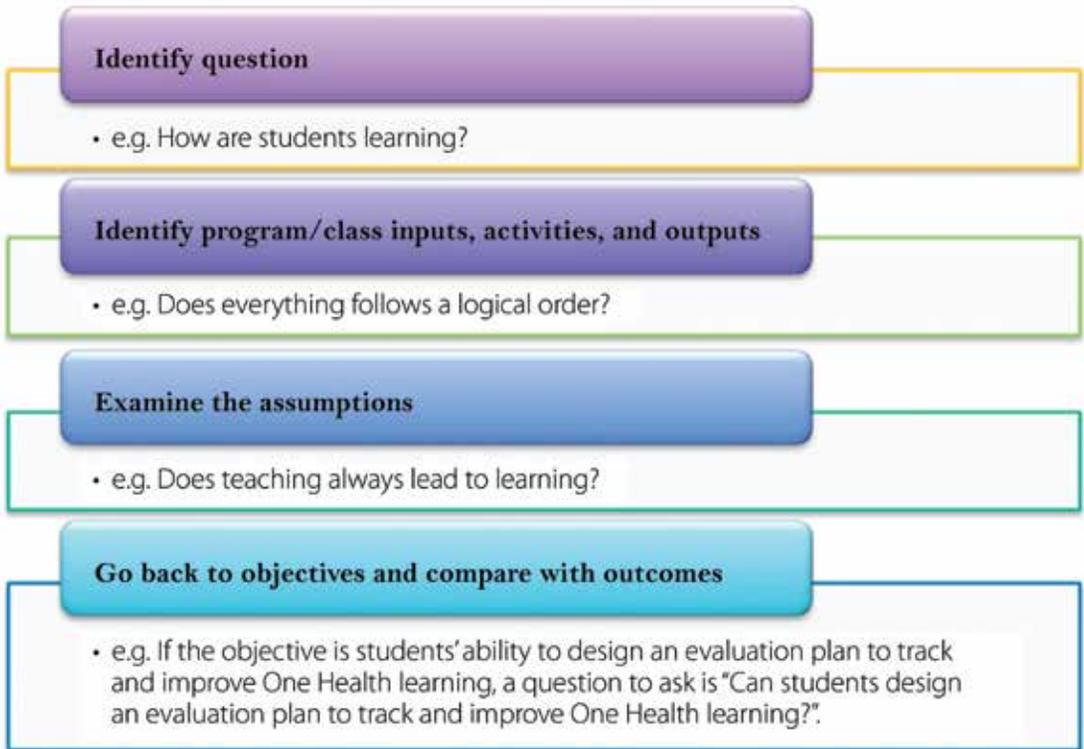


Figure 14: *Evaluation Planning Processes*

A logic model is a tool often used to check if components of a program/course are well aligned with one another. It is a visual diagram that helps evaluators to identify inputs, activities, outputs, short-term outcomes, and long-term goals of a program or course. The expected outputs and short-term outcomes should match the objectives of the course or curriculum, while the long-term goal should align with the department's objectives. As development of logic models can help a program to clarify elements and

expectations of the stakeholders, evaluators can see logical relationships between program aspects and then develop the connections between each step of the program or course. Ultimately, they can test the intended outputs and outcomes by appropriate evaluation. Aside from assisting evaluators to check alignment and coherence of the program aspects, the logical model also helps them identify implicit assumptions on what causes something to change (theory of change model). Examples of logic model are shown in Tables XIX and XX.

Table XIX: *An example of the Logic Model for a Basic Class*

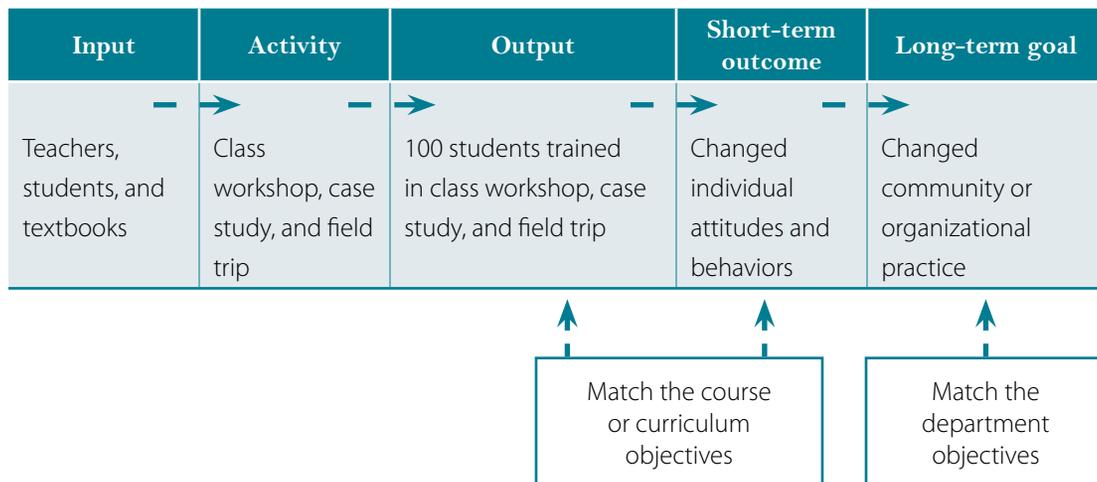


Table XX: *An example of the Logic model for One Health-Integrated Master of Public Health Course*

Input	Activity	Output	Short-term outcome	Long-term goal
- 1 required One Health course - 1 required One Health field trip - 1 required One Health capstone project - 7 OHCCs integrated into core MPH classes	- Students study and work with students in other health disciplines - One Health capstone project	Students learn about and apply One Health principles to a complex health issue	- MPH students understand and communicate different health perspectives - MPH students work collaboratively to address One Health issues	MPH graduates are One Health leaders

The next step is to evaluate if the program/class was successful. Prior to evaluation, evaluators must know what they will be looking for as well as clarify standards and indicators that will help them measure how well student’s learning meets those standards. However, it is important to note that it is impossible to observe and measure every aspect of intelligence. Therefore, evaluators have to choose what is a widely acceptable and suitable representation of knowledge is Generally, performance on an exam is used, as a Key Performance Indicators (KPI) to evaluate mastery of a course subject. Nonetheless, selection of methods should also align with purpose of evaluation. For example, if an evaluator would like to evaluate ability of students’ collaboration, he/she might not be assigned more or less value to examination as an indicator and observation of collaborative practices might be a better measure for this case.

Main questions evaluators should ask themselves when doing a logic model

- Are there any logical connections between different program aspects?
- Does ‘A’ lead to ‘B’?
- If it does, does ‘B’ lead to ‘C’?

Hints: Standards and Indicators

Standards or expectations represent how evaluators identify success or inform them what to look for. The standards include broad categories of desired knowledge, skills, and performance.

Indicators or KPI are factors or variables that help to define and measure success. The indicators describe specific knowledge, skills, and performance that correspond to each standard.

Table XXI: Example of One Health collaboration standards and their corresponding indicators

One Health collaboration standard	One Health collaboration indicator
<ul style="list-style-type: none"> • Universities support interactions between different health disciplines 	<ul style="list-style-type: none"> • Partner universities offer interdisciplinary One Health classes.
<ul style="list-style-type: none"> • Government ministries coordinate disease outbreak response 	<ul style="list-style-type: none"> • Government ministries have multi stakeholder engagement plans in the event of a disease outbreak.

EXERCISE

Hints: Steps of Evaluation Planning

This exercise is regarded as a comprehensive test of evaluation since it requires all knowledge learned from the whole chapter. The exercise is divided into two parts: evaluation planning **for a program** and **for a course**.

Exercise sheet with helps evaluators

- Identify stakeholder
- Determine the appropriate type of evaluation
- Create a plan for data collection, analysis, and communication.

Materials required for the exercise include

- An exercise sheet
- Background information of a workshop and TQF3 of a course
- Three different scenarios, while those for the latter consist of an exercise sheet

At the end of each part, key answers outlining some of the most likely and appropriate answers are also provided to help guide evaluators. The exercise sheet is as follows.

EXERCISE SHEET

EVALUATION PLAN COMPONENTS¹⁴

1. Introduction

- Evaluation purpose: What is the purpose of this evaluation? What do I want to know? How will findings from the evaluation be used?
- Stakeholders: Who has an interest in the program or results? What is their interest and role in this evaluation?

Activity: Stakeholder Assessment and Engagement Plan

Stakeholder	Primary, secondary, or tertiary stakeholder?	Interest or perspective	Role in the evaluation	How and when to involve

2. Evaluation Description

- Object: What do I want to evaluate and what information do I need?
- Stage: At what stage of the program is this evaluation occurring?
- Context: What external factors influence the performance of what is to be evaluated?
- Program description: Use a logic model to determine inputs, activities, outputs, and outcomes

Activity: Program Logic Model

Inputs	Activities	Outputs	Outcomes/Goals

3. Evaluation Design

- Evaluation questions: What specific questions do you intend to answer?
- Stakeholder needs: Who will use the evaluation's findings and how?

¹⁴ This exercise is adapted from the McCormick Foundation Evaluation Guide. Source of the guide: Robert R. McCormick Foundation. (2013). *Program Evaluation Guide*. Available: http://documents.mccormickfoundation.org/pdf/EvaluationGuide_6.19.13.pdf. Last retrieved: September 29, 2014.

EXERCISE SHEET

Evaluation Plan Component (continued)

- c) Evaluation design: What is the design for this evaluation (e.g. experimental, pre- and post-test, case study, post-test only, mixed methods)?

4. Evaluation Design

- a) Evaluation questions: What specific questions do you intend to answer?
- b) Stakeholder needs: Who will use the evaluation's findings and how?
- c) Evaluation design: What is the design for this evaluation (e.g. experimental, pre-post test, case study, post-test only, mixed methods)?

5. Data Collection

- a) Which methods will you use?
- b) How are these methods related to your questions?
- c) What or whom will be your data sources?
- d) How will you account for reliability, validity, and generalizability?
- e) How will the data be collected and protected?

Activity: Stakeholder Assessment and Engagement Plan

Evaluation question	Data collection method	Source of data
1.		
2.		

EXERCISE SHEET

Evaluation Plan Component (continued)

6. Data Analysis and Interpretation

- a) Indicators & Standards:

How will you measure the results?

What standards will you use to determine if they are successful?

Activity: Stakeholder Assessment and Engagement Plan

Evaluation question	Indicators	Standards (What is success?)
1.		
2.		

- a) Analysis: How will you analyze your data?
- b) Interpretation: How will you interpret and justify conclusions? Who will you involve in this process and how (e.g. member checking)?

7. Communication and Reporting

- a) Use: How will evaluation results be used? Who will make recommendations based on these findings?
- b) Communication: Whom will you communicate with, and why? How will you share the results (e.g. in-person meetings, emails, written reports, presentations)?

Activity: Communication and Reporting Plan

- a) How will you communicate the results of your evaluation? (Written report, oral presentation, research article, etc.?)
- b) With whom will you share the results of your evaluation? (Think about your primary, secondary, and tertiary stakeholders). Who hired you to conduct the evaluation? What type of deliverables have they requested? Do you have permission to share the results with others?)
- c) When (at which stages) will you share the results of your evaluation? Interim (while the evaluation is on-going), or summative (after)?

Program Evaluation Planning

In addition to the exercise worksheet, evaluators are provided with background information of a workshop, i.e. THOHUN One Health Short Course workshop, as a reference. There are three different scenarios on which evaluators have to work on by using evaluation plan components as a guide. Evaluators can work either in small group on each scenario or as the whole group on same scenario and compare their answers. Although each evaluation plan is consisted of many questions, in case having a limited time, the main ones to be focused on should include:

- 1. Introduction:** Who are your stakeholders?
- 2. Evaluation Description:**
 - a) What type of evaluation will you conduct (needs assessment, formative, etc.)?
 - b) Describe the program components and assumptions (using a logic model).
- 3. Data Collection:**
 - a) Which data collection methods will you use?
 - b) What or whom will be your sources of data?
- 4. Data Analysis:**
 - a) What indicators will you use to measure results (e.g. what kinds of faculty and university changes will you look for)?
 - b) What will success look like (e.g. at least 60% of participants are now teaching OHCCs)?
- 5. Communication and Reporting:**
 - a) Who will you communicate with during the course of your evaluation?
 - b) How and within whom will you share the results of this evaluation?

THOHUN ONE HEALTH SHORT COURSE WORKSHOP

Background:

Thailand One Health University Network (THOHUN) One Health Short Course workshop, held on January 14 - January 17, 2014, aimed to develop curriculum and training materials for One Health short course modules as well as support its integration into existing curricula of public health, medicine, veterinary medicine, and nursing, in both core and member faculties and universities.

Objectives:

- 1) To demonstrate innovative teaching techniques in One Health Short Course modules.
- 2) To apply the resources in teaching classes so that learners can develop various skills and knowledge in accordance with core competencies and/or technical competencies.
- 3) To share ideas of application and/or integration of One Health Short Course modules into an existing course or a program among lecturers who come from multiple disciplines.

Activities:

All activities in this workshop will be divided into five main groups:

- 1) **Introduction activities** allowed learners to be more familiar with the One Health concept and core competencies, its modules, and how to use facilitator guides of One Health Short Courses.
- 2) **Demonstration activities** where learners could experience many One Health activities from various modules.
- 3) **Small group activity** where learners had an opportunity to create their own One Health courses in small group assignment.
- 4) **Wrap-up activities** helped participants conclude the lessons from the entire workshop, as well as encouraged them to discuss on the possible ways to integrate the One Health Short Course into the existing course and to develop One Health courses after the workshop.
- 5) **Reflections** to gather feedback from participants so that trainers and staff could improve

Demonstration Activities:

Demonstration activities (below) allowed participants to experience One Health teaching.

SCENARIO

THOHUN One Health Short Course Workshop (continued)

Module	Activity
One Health Knowledge	One Health Jeopardy game
Collaboration and Partnership	<ul style="list-style-type: none">• The Marshmallow challenge• Diffusion of innovations• Communication for collaboration
Leadership	Leadership self-assessment
Behavior Change	Change agents role play
Infectious Disease Management	Case study: travelers with diarrhea
Epidemiology and Public Health	<ul style="list-style-type: none">• Contagion movie clip and extract of presentation• Contagious classroom

EXERCISE

SCENARIO I: TO REPLICATE OR NOT?

The Vietnam One Health Network National Coordinating Office (VOHUN-NCO) read a “Success Story” about the THOHUN One Health Short Course and they would like to replicate it in their country.

However, USAID funding has stopped, so VOHUN-NCO is asking their partner universities (Hanoi Medical, Hanoi Public Health, Hanoi Agriculture, Hue University of Agriculture, Ho Chi Minh City University of Medicine and Pharmacy, and Can Tho University) to help fund this workshop. The Vietnamese universities are not yet convinced this is worth their money. They would like to know how this workshop could benefit their universities. Specifically, they want to know how Thai universities benefitted from having faculties participated in this workshop.

Now, **four months after** the THOHUN One Health Short Course workshop ended, VOHUN-NCO has asked you to conduct an evaluation to see **what changes have taken place** among Thai faculties and universities as a result of the workshop.

SCENARIO II: ACTIVE OR PASSIVE LEARNING?

The Vietnam One Health Network National Coordinating Office (VOHUN-NCO) is interested in having a One Health Short Course workshop in their country, similar to the THOHUN OHSC workshop. However, USAID funding has stopped, so VOHUN-NCO and they don't have enough money to support a 4-day workshop.

They have reviewed the planned THOHUN OHSC activities and a lot of them appeared to be fun games that take a very long time. Senior staff at VOHUN-NCO think that the same amount of learning can be achieved through a 1 or 2 day lecture about One Health Core Competencies. Specifically, they want to know 1) what impact these interactive activities have on One Health learning and 2) if the workshop could be shortened from 4 to 2 days and yet achieve the same goals.

The THOHUN Short Course has not yet started; it will start next week, and you will attend as an evaluator to answer the above questions about the **effectiveness and outcomes** of a four-day experiential learning workshop.

SCENARIO III: TO REPEAT OR NOT?

THOHUN National Coordinating Office (NCO) would like to do this workshop again with new faculty members. THOHUN-NCO staff are not sure which faculties to include in the next workshop. Due to limited funding, they would like to concentrate on those faculties which **either benefited most** from the last workshop **or have the greatest need** for a future workshop.

The THOHUN-NCO has asked you to conduct an evaluation to help them **determine who their target audience** for the next One Health Short Course workshop should be. You may decide to conduct an **impact assessment of the last workshop or a needs assessment for the future workshop**, or a combination of the two. You have one month to finish the evaluation and share your findings before THOHUN-NCO makes a decision.

ANSWER KEY

SCENARIO I: TO REPLICATE OR NOT?

1. **Introduction:** Who are your stakeholders?

Answer:

- Primary stakeholder: VOHUN-NCO (they requested the evaluation)
- Secondary stakeholder: THOHUN-NCO (they organized the workshop being evaluated, and you will need to work with them to conduct the evaluation)
- Tertiary stakeholders: Thai and Vietnamese universities, past and future workshop participants (they have an interest in the evaluation results, though they may directly not participate in the evaluation)

2. **Evaluation Description**

a) What type of evaluation will you conduct (needs assessment, formative, etc.)?

Answer: Summative (this evaluation is taking place four months after the THOHUN One Health Short Course workshop ended; VOHUN-NCO has asked you to conduct an evaluation to see what changes have taken place)

b) Describe the program components and assumptions (using a logic model).

Answer:

Inputs	Activities	Outputs	Outcomes/Goals
<ul style="list-style-type: none">● Workshop● 41 faculty participants	OHCCs demonstrations, group work, and reflection activities	Participants learn about OHCCs and gain familiarity with innovative teaching techniques and OHSC modules	Participants use innovative teaching techniques to teach OHCCs at their respective universities

3. **Data Collection**

a) Which data collection methods will you use?

Answer: Answers will vary depending on each group's chosen evaluation plan. Each decision will be influenced by time and resource constraints as well as individual preferences and skills. Possible answers include surveys, interviews, classroom observation, tests, document analysis (course syllabi).

SCENARIO I (continued)

- b) What or whom will be your sources of data?

Answer:

- Course syllabi (document analysis)
- Past workshop participants (survey/interviews)
- Faculty and administrators at participating universities
- Classroom observation at participating universities
- Students of faculty participants (test of student OHCCs)

4. Data collection

- a) What indicators will you use to measure results (e.g. what kinds of faculty and university changes will you look for)?

Answer:

- Use of innovative teaching methods in the classroom
- Participants teach their students about OHCCs
- Teachers and students understand OHCCs

- b) What will success look like?

Answer: Again, answers will vary considerably from one group to the next. A possible answer is: at least 60% of participants are now teaching OHCCs in their classes using innovative teaching methods

5. Communication and Reporting

- a) Who will you communicate with during the course of your evaluation?

Answer:

- VOHUN-NCO: To communicate plans and results and ensure their needs are being met. VOHUN-NCO is your client.
- THOHUN workshop organizers: To obtain information about the workshop, participant lists, etc. The workshop is your object of evaluation.
- Workshop participants and their universities: You will measure impact by changes taking place in faculty teaching and university activities. They are the unit of analysis.

- b) How and within whom will you share the results of this evaluation?

Answer: The evaluator and client should determine this before the evaluation begins. In many cases, the client owns the data and can decide whether or not to share the evaluation findings with others. A typical deliverable is a written report for the client (VOHUN-NCO). If the client allows, and the data can be shared anonymously, it is good practice to share findings with other stakeholders (THOHUN, participants, participating universities).

ANSWER KEY

SCENARIO II: ACTIVE OR PASSIVE LEARNING?

1. Introduction: Who are your stakeholders?

Answer:

- Primary stakeholder: VOHUN-NCO (they requested the evaluation)
- Secondary stakeholder: THOHUN-NCO (they organized the workshop being evaluated, and you will need to work with them to conduct the evaluation)
- Tertiary stakeholders: Thai and Vietnamese universities, past and future workshop participants (they have an interest in the evaluation results, though they may directly not participate in the evaluation)

2. Evaluation Description

- a) What type of evaluation will you conduct (needs assessment, formative, etc.)?

Answer: Formative (this evaluation will take place during the THOHUN One Health Short Course workshop. VOHUN-NCO has asked you to conduct an evaluation to determine the need for interactive activities).

- b) Describe the program components and assumptions (using a logic model).

Answer:

Inputs	Activities	Outputs	Outcomes/Goals
<ul style="list-style-type: none">● Workshop● 41 faculty participants	OHCCs demonstrations, group work, and reflection activities	Participants learn about OHCCs and gain familiarity with innovative teaching techniques and OHSC modules	Participants use innovative teaching techniques to teach OHCCs at their respective universities

3. Data Collection

- a) Which data collection methods will you use?

Answer: Answers will vary depending on each group's chosen evaluation plan. Each decision will be influenced by time and resource constraints as well as individual preferences and skills. Possible answers include pre-post tests, surveys, interviews, and workshop observation.

SCENARIO II (continued)

- b) What or whom will be your sources of data?

Answer:

- Current workshop participants (surveys/interviews)
- Workshop facilitators (surveys/interviews)
- Observation during workshop (student and facilitator engagement)
- Test of knowledge gain (pre-post test, control group, etc.)

4. **Data Analysis**

- a) What indicators will you use to measure results (e.g. what kinds of faculty and university changes will you look for)?

Answer:

- Survey of participant experience and satisfaction with interactive activities
- Test of participant knowledge gain as a result of interactive activities

- B) What will success look like?

Answer: The great majority of participants is satisfied with the workshop activities and feels that it is worthwhile and superior to lecture-based activities. Participants exhibit knowledge gains that can be attributed to interactive activities.

5. **Communication and Reporting**

- a) Who will you communicate with during the course of your evaluation?

Answer:

- VOHUN-NCO: To communicate plans and results and ensure their needs are being met. VOHUN-NCO is your client.
- THOHUN workshop organizers: To obtain information about the workshop, participant lists, etc. To discuss and coordinate evaluation during the workshop.
- Workshop participants: You will be observing and measuring their learning experiences.

- b) How and within whom will you share the results of this evaluation?

Answer: The evaluator and client should determine this before the evaluation begins. In many cases, the client owns the data and can decide whether or not to share the evaluation findings with others. A typical deliverable is a written report for the client (VOHUN-NCO). If the client allows, and the data can be shared anonymously, it is good practice to share findings with other stakeholders (THOHUN and participants).

ANSWER KEY

SCENARIO III: TO REPEAT OR NOT?

1. **Introduction:** Who are your stakeholders?

Answer:

- Primary stakeholder: THOHUN-NCO (they requested the evaluation and they organized the workshop)
- Secondary stakeholders: Sponsoring universities (you will be evaluating their workshop experiences and needs)
- Tertiary stakeholders: Workshop participants (you will be evaluating their workshop experiences)

2. **Evaluation Description**

a) What type of evaluation will you conduct (needs assessment, formative, etc.)?

Answer: This could either be a needs assessment for a future workshop or an impact assessment for a past workshop. Since the timeline is very short and the future participants will be the direct beneficiaries, a needs assessment may be the best use of limited time and resources. Ultimately, the decision will be informed by the client's preferences, budget, and timeline, with input from the evaluator.

b) Describe the program components and assumptions (using a logic model).

Answer:

Inputs	Activities	Outputs	Outcomes/Goals
<ul style="list-style-type: none">● Workshop● 41 faculty participants	OHCCs demonstrations, group work, and reflection activities	Participants learn about OHCCs and gain familiarity with innovative teaching techniques and OHSC modules	Participants use innovative teaching techniques to teach OHCCs at their respective universities

3. **Data Collection**

a) Which data collection methods will you use?

Answer: If needs assessment: May conduct interviews or surveys with target university faculty and administrators.

SCENARIO III (continued)

- b) What or whom will be your sources of data?

Answer: If needs assessment: May conduct interviews or surveys with potential department administrators and faculty at target universities to determine their need and support for faculty participation in a future OHSC workshop.

4. Data Analysis

- a) What indicators will you use to measure results (e.g. what kinds of faculty and university changes will you look for)?

Answer: Demonstrated university support and need for faculty participation in OHSC workshop. Support and need will be evaluated using agreed upon indicators of support, including relevance to faculty interests and work, past departmental participation, etc.

- b) What will success look like?

Answer: If needs assessment: The target audience for a future workshop will be faculty from university departments that demonstrate the greatest need or most support for an OHSC workshop.

5. Communication and Reporting

- a) Who will you communicate with during the course of your evaluation?

Answer:

- THOHUN-NCO: To communicate plans and results and ensure their needs are being met. THOHUN-NCO is your client. They are also the workshop coordinators so you will need to communicate with them to obtain information about the workshop and participants and coordinate the evaluation logistics.
- Workshop participants: You will be assessing their needs and support an OHSC workshop.
- Sponsoring universities: You will be assessing their needs and support regarding the OHSC workshop. You may also assess their past experiences if they had supported faculty to attend the previous OHSC workshop.

- b) How and within whom will you share the results of this evaluation?

Answer: The evaluator and client should determine this before the evaluation begins. In many cases, the client owns the data and can decide whether or not to share the evaluation findings with others. A typical deliverable is a written report for the client (THOHUN-NCO). In this case, the results will help your client make a decision about who the target audience should be for future OHSC workshops. Furthermore, if the client allows, and the data can be shared anonymously, it is good practice to share findings with other stakeholders (university faculty and administrators).

EXERCISE

COURSE EVALUATION PLANNING (ENMT 606)

Besides the exercise worksheet, evaluators are provided with TQF-3 of a course. Although each evaluation plan component consists of many questions, in case having a limited time, the main ones to be focused on should include:

1. Introduction:

- a) What is your course objective?
- b) Based on your course objective, what do you want to evaluate?
- c) Who are your stakeholders?

2. Evaluation Description:

- a) What type(s) of evaluation will you conduct (needs assessment, formative, etc.)?
- b) Describe the program components and assumptions (using a logic model).

3. Data Collection:

- a) Which data collection methods will you use?
- b) What or whom will be your sources of data?

4. Data Analysis:

- a) What indicators will you use to measure results (e.g. what kinds of faculty and university changes will you look for)?
- b) What will success look like (e.g. at least 60% of participants are now teaching OHCCs)?

5. Communication and Reporting:

- a) Who will you communicate with during the course of your evaluation?
- b) How and within whom will you share the results of this evaluation?

ANSWER KEY

COURSE: ENMT 606 (PRACTICES OF ENVIRONMENTAL MANAGEMENT AND TECHNOLOGY), MAHIDOL UNIVERSITY

1. Introduction:

- a) What are course objectives?

Answer:

After successful completion of this course, students will have gained:

- 1) Explain the environment and natural resources using tools and techniques both science and social science aspects.
- 2) Present and critique on the environmental issues and environmental management as least 2 issues
- 3) Define and apply the ideas on environmental management and technology as least 3 ideas
- 4) Define the different among environmental management and technology approaches
- 5) Apply and use the appropriate technologies for environmental management as least 4 technologies

- b) Based on your course objective, what do you want to evaluate?

Answer:

The evaluation will be conducted for each objective according to Bloom's taxonomy.

Objective 1: Explain the environment and natural resources using tools and techniques both science and social science aspects.

Bloom's Taxonomy: Comprehension

Objective 2: Present and critique on the environmental issues and environmental management as least 2 issues

Bloom's Taxonomy: Evaluation

Objective 3: Define and apply the ideas on environmental management and technology as least 3 ideas

Bloom's Taxonomy: Remembering, Applying

Objective 4: Define the different among environmental management and technology approaches

Bloom's Taxonomy: Remembering

Objective 5: Apply and use the appropriate technologies for environmental management as least 4 technologies

Bloom's Taxonomy: Applying

ANSWER KEY

Course: ENMT 606 (continued)

- c) Who are your stakeholders?

Answer: 1 teacher, 4 professional in environmental management and technology, 10 students, and 2 communities

2. Evaluation Description

- a) What type(s) of evaluation will you conduct?

Answer: Formative assessment includes student feedback & teacher feedback, classroom participation and presentations, Holistic Scoring Rubrics (students' work, reports, and fieldwork performance)

- b) Describe the course components and assumptions about learning (using a logic model)

Answer:

Inputs	Activities	Outputs	Short-term outcomes	Long-term outcomes
<ul style="list-style-type: none"> - 1 teacher - 4 professional in environmental management and technology - 10 students - 2 communities - Books and articles - Field trips 	<ul style="list-style-type: none"> - Compare common environment and natural resources tools and techniques - Identify and critique on the environmental issues and environmental management - Field trips - Presentations to community people and professional experts <p>Learning activities: Group discussion, consultation workshops; fieldwork; field observations; team learning and team work; presentations</p>	10 students and community people practiced in environment and natural resources tools and techniques for environmental management and technology	Students and communities people will have enhanced knowledge, skills, ethics, awareness, and professional practices on environmental management and technology	Sustainable Development in communities

ANSWER KEY

Course: ENMT 606 (continued)

3. Data Collection

- a) Which data collection methods will you use?

Answer:

- a Student feedback & teacher feedback which will be collected during the course and at the end of the course.
- b Observation on classroom participations and fieldwork performance which can tell about how students behave and participate in the classes. This data will be collected during the course and field trips
- c Journals and surveys which can tell you what students think. This data will be collected during the course and at the end of the course.
- d Student's work and field trip reports can show what students know & how they behave.

- b) What or whom will be your sources of data?

Answer: Students, teachers, professionals, community members

4. Data Analysis

- a) What indicators will you use to measure results?

Answer:

Items for assessment	Value
Classroom participation and presentations	40%
Fieldwork performance	30%
Final report and presentation	30%

- b) What will success look like?

Answer: Evaluation and achievement will be justified according to faculty and university code of conduct by grading system as A, B+, B, C+, C, D+, D and F.

5. Communication and Reporting

- a) Who will you communicate with during the course of your evaluation?

Answer: The results and report will be delivered to all of stakeholders: students, teachers, professional you, and community people.

- b) How and within whom will share the results of this evaluation?

Answer: The results of this evaluation will be delivered to all of stakeholders: students, teachers, professional, community people, program committee, and administrators.

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