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Exploring Training Effectiveness of One Health Training Programs among Academics

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Abstract

Formal educational education systems do not expose medical and veterinary academics to the One Health approach to infectious disease management. In order to increase their knowledge and exposure on One Health, Malaysian One Health University Network (MyOHUN) has been conducting number of One Health training programs specifically for medical, veterinary, ecosystem, and health stream academics. However, the effectiveness of the One Health training programmes is unfamiliar. Therefore, a qualitative was conducted to explore the training effectiveness by evaluating the academics' reactions, learning experience, and behavior changes among the academics as a result of the One Health training programs based on Kirkpatrick's four-level evaluation model. All participants were purposively selected which consist of academics who had joined the signature training programs conducted by MyOHUN between 2015 and 2019. The data were collected through in depth semi-structured interviews and supported with participant observation and field notes. The data were further analysed through coding, categorizing and the development of the main theme to answer research questions. The findings broadly suggest that three aspects has emerged which includes reactions to the overall training and the structure, learning experiences, as well as behavior changes that have positively influenced the training effectiveness. The findings of this study will help MyOHUN to plan and execute the preparation needed in order to increase the effectiveness of One Health training to the all generation in general.

Introduction

A growing idea known as One Health is based on a global development plan that emphasizes the link between human, animal, and environmental health, which demands multi-stakeholder collaboration across numerous cultural, disciplinary, institutional, and sectoral borders (Hitziger et al., 2018). Sustaining people's and animals' health is One Health's main objective, which also has implications for the environment, society, economy, and politics. In addition, governments and international health organisations have started implementing One Health surveillance systems to tackle challenges to the security of the global health system and enhance outbreak response efforts. These systems range in terms of their scale, interest in diseases, coordination of stakeholders, and One Health capabilities. Furthermore, multi-sectoral surveillance systems that integrate human and animal illness detection have been

put in place and are being maintained by numerous public health organisations. However, the effectiveness of the One Health training programmes is still unknown. In this case, the effectiveness of One Health training program is influenced by the receiver, especially academics. However, previous research in this area has only focused on the training effectiveness of One Health among students. Therefore, there is a need to look at the additional issues encountered by academics during and after joining One Health training program.

Along with the issues, Malaysia One Health University Network (MyOHUN) plays its role as an organizer in providing training that could improve the discovery of One Health scientific knowledge among academics. One Health is a global plan that could improve interdisciplinary cooperation and communications in all aspects of human, animal, and environmental health care, improving public health efficacy, expanding the scientific knowledge base and improving medical education and clinical care. Therefore, academics is one of the catalysts in One Health to educate future professionals who will be able to fix global health problems through multidisciplinary scientific knowledge, integrative teaching methods, research collaboration, community linkages, and leadership (Trosko et al., 2016). In addition, academics should develop professional expertise to keep up with research advances, adapt to changing educational policies, and provide high-quality learning experiences for their students. As a result, it is vital for academics to continuously learn and improve throughout their careers to accomplish their jobs properly (Neumann, 2009; Terosky & Gonzales, 2016). Through the training program provided by MyOHUN, especially for academics, leadership, curriculum development, faculty linkages and exchanges, workshops, staff development, and mentoring between institutions, cross-sectoral skills and knowledge will be fostered, together with enhancing the capacity of health and veterinary professionals to respond to emerging infectious and zoonotic diseases. Hanaysha (2016) found that learning organizations promote stronger organizational commitment in Malaysian higher education institutions. The training program is one example of the continuous learning process, which is important in the academic profession and distinguishes itself from other fields by having its own knowledge kinds (Ozer et al., 2020).

This research aims to explore the effectiveness of the training program: the academics' reactions to the One Health training program, the academics' learning experience of the training, and the behavior changes among the academics as a result of the training programs. This study uses Kirkpatrick's four-level framework (1998), which is often discussed for assessing the efficacy of training programs before concluding their applicability in today's economic context. In addition, Seaman (2016) stated that it could help design, assess, and implement various training courses for an organization.

Literature Review

Kirkpatrick's Four Levels of Evaluation

Kirkpatrick's four-level framework has served as a foundation for other evaluation models, such as Hamblin's (1974) Model of Evaluation, Peter Warr's (1970) CIPO Model, the Virmani and Premila's (1985) model, and Peter Bramley's (1996) Model of Evaluation. However, among researchers and practitioners, Kirkpatrick's four-level framework is still the most effective paradigm. Duke (2017) has also suggested a logical connection and relationship between the various levels. This research intends to evaluate One Health training programs

among academics using reaction (Level 1), which evaluates the academics' reactions during and after the One Health training program. Callinan et al (2021) stated that this level reflects the participants' feelings and impressions about the training programs and whether the participants found the training programs beneficial. Level 2 (learning) evaluates specifically what the academics gained/learned from the One Health training program. It focuses on the extent to which trainees change attitudes, improve knowledge, and increase skills due to attending a training program (Kirkpatrick, 1998). This level should evaluate the extent to which participants are familiar with the principles, facts, techniques, procedures, or processes emphasized in the training programs, as well as measure the knowledge participants acquired during the training programs (Teixeira et al., 2014). At the third level (behavioral changes), it evaluates the academics' behavioral changes noticed after the training program. It focuses on how it has changed since completing a training program (Kirkpatrick and Kirkpatrick, 2006). In other words, this level evaluates the transfer of knowledge or skills from training to the participants' on-the-job behavior (Kirkpatrick, 1998). The researcher must decide whether to employ interviews, questionnaires, or both; nonetheless, extensive or scientific evaluation is not required at this level as it is more difficult to evaluate than the first two levels (Liao & Hsu, 2019). Level 4 (results) entails determining the behavior changes that have influenced the whole process and whether the training investment yielded a positive return on investment. However, in this research, because this evaluation is more complex and time-consuming than the evaluations of the three preceding levels, the results level was excluded.

Methodology

A qualitative content analysis approach using in-depth semi-structured interviews was used. The participants were contacted via email to arrange focus group discussions (FGD) sessions. The discussions were recorded with the consent of the participants, and data confidentiality was explained to the participants before commencing each discussion in collecting qualitative findings of the One Health training programs using Kirkpatrick's model based on the academics' reactions, learning experiences, and behavior changes towards the academic's profession.

The participants of this study consisted of academics who had joined the signature training programs conducted by MyOHUN between 2015 and 2019. MyOHUN provided the list of academics, and the researchers built a database from this list. Ultimately, seven academics attended Community Education Belum, 14 academics attended In-Situ Problem-based Learning, ten academics attended One Health Young Leaders, seven academics attended Tablet Top Simulation, and four academics attended Wildlife Zoonoses. In comparison, 24 academics attended the Field Epidemiology Training Program. Purposive sampling procedures were employed to select participants for the study, and academics that participated in the training program were selected as the target population. This is to enable the researcher to choose cases that are relevant to achieving the study's objectives.

The academics attended two focus group discussions (FGD). Purposive sampling was used to select the academics for the FGD. They were chosen based on several criteria: the participants had attended a MyOHUN training program at least once between 2015 and 2019. Each FGD was based on semi-structured interview questions that had been developed from the specific research objectives. It was conducted twice to seek more information from the participants, gain a deeper understanding of the issues raised, and achieve saturation. For FGD 1, there were 12 invitations sent to the academics, and only six academics managed to join the FGD. Meanwhile, for FGD 2, 12 invitations were sent to academics. However, only five academics

joined the second FGD. Both FGD were conducted using the Zoom Meeting platform (lasting 1 hour 46 minutes for FGD 1 and 1 hour 51 minutes for FGD 2), which has been moderated by the principal investigator of the MyOHUN project. The FGD were digitally recorded and transcribed. A brief profile of each FGD participant is presented below to obtain a full picture of the study participants. The anonymity of the training program and the use of only the codes names of participants were maintained. Table 1 shows the demographic profile of the academics in the Focus Group Discussion.

Table 1

Demographic profile of the academics in FGD 1 and FGD 2

Code No.	Report	MyOHUN Program	Role
A1P1	Academic, 12 years of experience	Field Epidemiology Training Program (2017)	Training Participant
A1P3	Academic, 5 years of experience	Community Education Belum (2019)	Facilitator
A1P4	Academic, n.a.	Field Epidemiology Training Program (2017)	Committee Member
A1P5	Academic, 15 years of experience	Wildlife Zoonoses (n.a.)	Training Participant
A1P6	Academic, 15 years of experience	Wildlife Zoonoses (2017)	Training Participant
A2P1	Academic, 10 years of experience	In-Situ Problem Based Learning (2019)	Committee Member
A2P2	Academic, 26 years of experience	Wildlife Zoonoses (2018)	Facilitator
A2P3	Academic, 4 years of experience	Community Education Belum (2019)	Facilitator
A2P4	Academic, 35 years of experience	Field Epidemiology Training Program (2017)	Training Participant
A2P5	Academic, 10 years of experience	One Health Young Leaders (2015-2019)	Facilitator

Ten of the academic group participated in different training programs, including the FETP, Community Education Belum, Wildlife Zoonoses, and In-Situ Problem-based Learning. The participants from the academic group ranged in age from 34 to 55. Each profile highlighted the participant's report and length of work experience, age, gender, employment, training program, and their role in the training program.

Data Analysis

According to Marshall and Rossman (2014), qualitative data analysis is a "messy, complicated, time-consuming, creative, and exciting process." The data of this research were analyzed using thematic analysis. According to Nowell et al (2017), thematic analysis functions as a translator for those who speak the language of qualitative analysis, allowing researchers to communicate with one another who apply diverse research methods. In this research, several

approaches were used: the transcription and further coding of interview tapes. The researchers started reading the transcripts twice to identify the potential subjects, which were then passed to the main researchers. At the second analysis level, the first and last researchers reviewed the initial codes. Then, they studied how to maintain the original codes' diversity while developing overall themes and higher-level sub-themes. The research issue, which was the effectiveness of the training experience on their academic profession, has guided this procedure. In the third step, the first and last researchers performed the analysis, identifying quotes that were consistent with the main themes. Then, the researchers went over the topics again before defining them. The report writing began after the researchers had established their themes.

Findings

The results of this study are presented and discussed based on the three levels of Kirkpatrick's model based on the academics' reactions, learning experiences, and behavior changes towards their profession.

Level 1: Academics' reactions to the training programs

The Kirkpatrick model's first level, i.e., reaction, assesses how people react to a training model by asking questions that extract the participants' ideas. For example, participants' responses include whether they enjoyed their experience or did they find the program information relevant to their profession. At this level, the reaction evaluation is important in guiding the training provider in developing engaging training and ensuring that the higher levels of training evaluation are compromised. As a result, the participants' reactions may serve as a beginning to successfully implement a training program. During FGD, the academics have reported various reactions that can be classified into three categories: a reaction to the overall training programs, reaction to the contents and structure of the training programs, and reaction to the challenges to change.

Reaction to the Overall Training Programs

Individual and organizational satisfaction is an important component of every training program. Individual satisfaction is related to participants, whereas organizational satisfaction is related to the companies where participants work. In every training, it is important to ensure the participants are satisfied with the training provided. For instance, for an academic, training could stimulate and enable them to understand their role as an educator and build a sense of productivity and satisfaction.

In this research, the academics agreed that they were satisfied with the training program they had attended. Callinan et al (2021) stated that the satisfaction of the participants toward the training program is important in creating training effectiveness. An academic who participated in the Wildlife Zoonoses and CE Belum training program reiterated their satisfaction with the program as below:

*I attended one field exercise that... was in Sarawak concerning rabies outbreaks. I feel that was handled quite extensively. I think it was well conducted by the state health authorities as well as the Department of Veterinary Science Sarawak.
(A1P5, Wildlife Zoonoses 2017, 15 years of work experience)*

I have attended quite several programs. I think I am quite satisfied with how all the programs are being conducted.

(A1P2, CE Belum 2019, 5 years of work experience)

Once the participants were satisfied with the training program, it could motivate the academics to create a positive effect at the end of the training program. Overall, most of the academics admitted that they were satisfied with the training program they had attended.

Reaction to the Structure of the Training Program

A structured training program contains a well-defined agenda, timeline, activity outline, and responsibilities assignment, so it has well-defined objectives and outcomes. A structured training program is more likely to lead to its effectiveness and staff than an unstructured or casual one. However, some organizations cut corners or fail to complete training activities completely because they lack a defined structure. Thus, the second theme that emerged from the data analysis was the structure of the training programs. One of the subthemes related to this theme is effective coordination and a well-structured training program. One participant stated that he was amazed at the coordination of the training program. He revealed:

We are all doing very well with what we do now. I think Dr. H was the coordinator for the In-situ training program... That was amazing! Getting people as far from Kuching like myself from UNIMAS and even UMS... some participants came... and to put us all together in one place in Lenggong, which is very rural and the logistics themselves are a nightmare. He was able to put everything together... That was amazing coordination.

(A2P2, Wildlife Zoonoses 2018, 26 years of work experience)

This research proves that the academics agreed that the content was well-coordinated and that they were satisfied with the program's coordination and structure.

Level 2: Academics' learning experiences from the training programs

Academics who participated in the training program disclosed the various skills, capabilities, competencies, and new knowledge they acquired, classified as individual learning. The academics who participated in the training program revealed that they gained positive learning experiences. Individual learning is significant because it helps learners from all backgrounds or disciplines to educate themselves at the speed of their intellectual capacity while complying with the learning directions established by educators or trainers by following their existing experiences and skills. There are various learning experiences faced by the academics that shows they acquired knowledge of the significance of other cultures as stated above:

Before I went there, my thought was always like they lived in tree houses. They live in a quite nice village. Some of their houses are like low-cost houses, and some of them even have Astro. They are well updated with television and stuff. It is just that the way their culture and their lifestyle are slightly different, where they hunt for food or whatnot. But I did learn a lot during the Community Education Belum

*program, especially how the aboriginals ... do not know what zoonotic diseases are. I learned how much they know about all these public health issues.
(A1P2, CE Belum 2019, 5 years of work experience)*

*Another thing is that I have come to appreciate when handling or experiencing these OHYL activities is to respect cultural differences because I believe this One Health would unite a community, a country, a citizen, and they would understand because when I see Malaysia, we also have many races. When I go to Indonesia, they have hundreds of ethnicities in Indonesia. ... I see that this One Health program conducted with these students 85 has united them to come and give ideas, share their experiences and work together to be safe and to prevent future zoonotic outbreaks.
(A2P5, OHYL 2015-2019, 10 years of work experience)*

These diverse learning experiences could help equip the academics with tolerance and peaceful coexistence and increase learners' cognitive ability to acquire intercultural sensitivity.

In general, when academics participate in a training program, they can absorb a wide range of new knowledge and skills, including those related to the management and supervision of zoonotic, wildlife, and other disease outbreaks. These new practical skills will be extremely beneficial to them and their students. Participants A1P5 and A2P1's learning experiences are categorized below to highlight the importance of acquiring diverse skills and knowledge in the management and supervision of outbreaks of zoonotic, wildlife, and other diseases:

*I don't have any practical experience handling rabies outbreaks. At that juncture, that was already a rabies outbreak in Kalimantan, Indonesia, bordering Kuching, Sarawak. So, the field exercise in preparing how to handle the rabies outbreak, I think ...was very timely because as soon as we finished the exercise, two or three months down the line, Sarawak was hit by a rabies outbreak.
(A1P5, Wildlife Zoonoses 2017, 15 years of work experience)*

*One Health In-Situ is more towards domesticated animals and food animals, while wildlife zoonosis is more towards diseases that are derived or generated from wildlife. The only different thing is the setting and our approach because wildlife is different from these domesticated animals and food animals. That's what we learned from our previous experience coordinating these two projects.
(A2P1, In-Situ PBL 2019, 10 years of work experience)*

Thus, with this management and supervision of outbreaks, the academics will be able to share with their students how to extend their practical knowledge gained through the many theories presented in the classroom.

Hard and soft skills are an element of continuous development related to effective communication, problem-based learning, and multi-tasking is critical for academics. It is important to the participants as academics because these skills enable them to transfer technical multi-disciplinary skills to their students. These skills are required not only in the

workplace but also in one's personal life outside of work. The learning experiences of participants A2P1 and A2P2, as categorized below clearly proved in this research:

Another thing that we learned ... is how to talk or effectively communicate with the industry or with the communities. For example, in Lenggong, we have a very big community of people that face all these problems, being near the hazards of working with animals and with humans, currently, due to the pandemic. So, communication is another ... very important thing we learned. When we held the program the first time, we encountered a lot of problems because the personnel in Lenggong didn't know what we are doing and what we wanted. They don't know how to convey the message to them. But after the second time we did the program, they learned, and they knew what to do from the effective communication that we taught in the inaugural or first program.

(A2P1, In-Situ PBL 2019, 10 years of work experience)

I am wondering what it means by In-situ PBL. When I experienced it, thanks to Dr. H, we went to Lenggong. It was an experience that you had to be there to appreciate. So, to me, what I gained is a new version of how you can do PBL and the way we can go about addressing so-called PBL.

(A2P2, Wildlife Zoonoses 2018, 26 years of work experience)

These learning experiences show that the training module is effective enough as they acquired new knowledge in hard and soft skills that are needed in an academic to ensure the development in their professions.

Level 3: Academics' behavioral change as a result of training programs

The third level of the Kirkpatrick model's focus is assessing the transfer of knowledge or skills gained through training to the academics' workplace (Kirkpatrick, 1998). In this research, some academics mentioned that inputs received from the training program helped them in the research projects. The participants recognized the benefits of their training program, which included the skills, information, and support they needed to tackle complex challenges, particularly in their research projects. Participants explained they experienced a transfer of skills to other research projects after joining the training program:

We also went to see different types of birds in Sabah and other wildlife, and we briefly discussed the potential pathology that they can carry and the impact of zoonosis on human life and also on poultry. That one also transferred to another research project in which I am also in discussion with the Sarawak Forestry Corporation, which is equivalent to the Department of Wildlife and National Parks (DWNP) in Peninsular Malaysia.

(A1P3, FETP 2017, n.a.)

In terms of research, it expanded the scope of my research. For example, I study dengue, and I can actually further extend it to wildlife to study the origin of the virus. So this applies to all the pathogens also.

(A1P5, Wildlife Zoonoses, 15 years of work experience)

As a result, the capacity of participants to apply their abilities to such projects proves that other researchers valued their ideas and thoughts. In addition, the individuals' cognitive performance improved as a result of these training programs. Academics require cognitive strategies because they require the ability to think critically, evaluate and contrast different ideologies, and use precise procedures to get results. This is crucial for academics to comprehend what is expected of them and how they learn best.

The training program is responsible for ensuring the module could benefit the participants in their profession as an academic, especially knowing that we now live in a world of limitless knowledge. Many organizations and educational institutions are introducing a variety of training programs to assist students in achieving their academic objectives. However, when the participants absorbed all training program input, their behavioral changes occurred where students' knowledge was transferred. Two participants from the CE Belum training program have responded with their thoughts on this training program as stated below:

*I involved my postgrad students as well to see the implementation of the One Health concept in understanding malaria transmission in the area. So, from there, together with the officers from the health office, we had an active discussion, a meeting on how actually will be the way to reduce the cases there. From this study, we were able to work together from different aspects.
(A1P1, CE Belum 2017, 12 years of work experience)*

*Since MyOHUN's main office is located at the Faculty of Medicine in UPM, we integrated all the things about One Health in our syllabus from year 1 until year 5. We have conducted a lot of PBL training. One of the things that we integrated into each course is the component of One Health. We have to make sure that when it comes to how to handle zoonotic diseases or maybe some non-zoonotic 108 diseases, we have to integrate all the different stakeholders to solve the problem. It has been quite a while that One Health has been on the syllabus. Personally for me, I have integrated whatever I have learned, especially the epidemiology part and everything, into my teaching and my research.
(A1P3, CE Belum 2019, 5 years of work experience)*

Kirkpatrick Level 3 Behaviour measurement is one of the most valuable measurements for any modern organization, especially in university. Without behavioral change, obtaining new outcomes for the students is almost impossible – keep doing what you are doing, and you will keep getting what you are getting. In addition, any training program aimed at improving firm results usually requires new behaviors towards the academics to produce high-quality learning transfer

Conclusion and Implication

The goal of this research, which is to explore the effectiveness of One Health training programs among academics using the first three levels of the Kirkpatrick training assessment model between 2015 and 2019, is achieved. It shows that the training provided by the MyOHUN training programs is effective as the academics have applied the knowledge, abilities, and attitudes learned throughout the training to their current occupations, according to the findings of this study. The Kirkpatrick training evaluation model provides a systematic

evaluation technique that emphasizes the importance of the first three stages in evaluating the One Health training program. In practice, this study highlights the effectiveness of One Health Training among academics, providing a better view of One Health to the relevant authorities. The study findings can help the Ministry of Education in particular and the Education Departments to plan and execute the preparation needed to reduce the barriers academics face. The authorities could also look at the training needs especially related to the latest technology for academics, to prepare them for the future challenges awaiting their students. The relevant authorities could also look into possible actions to be taken based on the findings in terms of technology and social support to the academics who struggled in making sure the training provided is effective to improve their profession as lectures. The findings of this research also offer practical insights for supporting academics' reactions, learning, and behavior change towards the training program provided by MyOHUN. MyOHUN could use the results of the academics' training evaluation to enhance their training program in the future.

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