A Comprehensive Analysis of the WASH System Academy's Experience

WASH Systems Academy learning series

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Abstract

The WASH Systems Academy, initiated in September 2019, has evolved into a global online learning platform with a user base exceeding 7640 professionals from 121 countries. This paper uses an adapted Kirkpatrick model for training evaluations to analyse user experience and identify areas for improvement. The analysis in this paper forms the basis for a restructuring of the platform and its contents in April 2024.

Additionally, the paper explores the potential integration of artificial intelligence (AI) to improve user experience, accessibility, and personalised learning. From October 2023, IRC in collaboration with WASHNote is piloting the use of AI for training on WASH systems strengthening.

The diverse user profile of the WASH Systems Academy, predominantly from low- and low-middle-income countries, emphasises its impact on early-career professionals. The feedback survey that users fill in after course completion reveals positive sentiments, with users expressing satisfaction, empowerment, and a desire to apply newfound knowledge.

The paper assesses the impact on learning and professional lives, showcasing users' ability to apply acquired skills in diverse contexts. Recommendations for improvement include extending durations of trainings that make use of the WASH Systems Academy, enhancing interactive elements, and addressing language and accessibility concerns.

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Introduction

The WASH System Academy was introduced in September 2019 as a cooperative online learning platform designed to empower professionals in the water, sanitation and hygiene (WASH) sector by providing them with knowledge and tools essential for enhancing WASH systems. As of December 2023, the platform boasts a user base exceeding 7640 individuals from 121 countries, with over 2400 users completing their courses.

A diverse audience of users enrolled in the Academy, with diverse backgrounds in terms of their WASH-related work experience, employers, and gender. This paper aims to analyse the Academy's users and their experiences with the WASH Systems Academy. Additionally, it aims to identify areas for improvement based on user perceptions.

Methodology

This paper follows an adapted version of the Kirkpatrick model for training evaluations (Figure 1), which the WASH Systems Academy uses as its monitoring and evaluation framework.

All WASH Systems Academy courses have three automated and anonymous surveys built in; 1) a pre-course assessment to determine who the user is and what a user knows at the start of a course, 2) a feedback survey at course completion to assess reaction and learning and 3) a post-course survey six months after starting a course to evaluate behaviour change.

The reaction describes the users' experience and explores possible improvements. The learning and behavioural change levels are used to analyse the impact of the course.

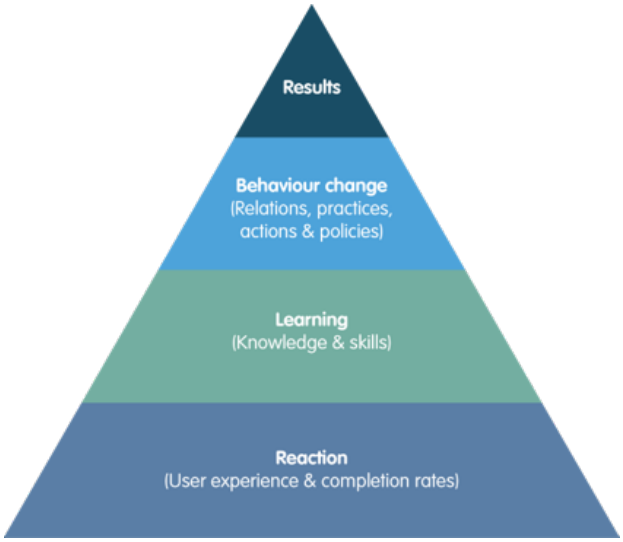

Figure 1: Kirkpatrick model

In addition to the three standard user surveys, focus group discussions with users in Ethiopia and key formant interviews with IRC staff in the Netherlands and Ethiopia were convened (see Table 1).

Table 1: Data collection methods

Method	Targeted group	Frequency
Focus group discussion	Ethiopian government staff – national and subnational levels	1
Pre-course assessment	Academy users from June 2023 to December 2023	1373
Feedback survey		397
Post-course assessment		147

The paper is divided into four sections answering the questions: 1) Who are the users? 2) What was their experience? 3) How did the WASH Systems Academy courses impact users' learning and professional lives? 4) And what can we do better?

1. Who are the WASH Systems Academy users?

The 7640 WASH Systems Academy users come from a variety of backgrounds in terms of employer, age, gender, and work experience related to WASH. This section will analyse the user profile from January 2019 to December 2023.

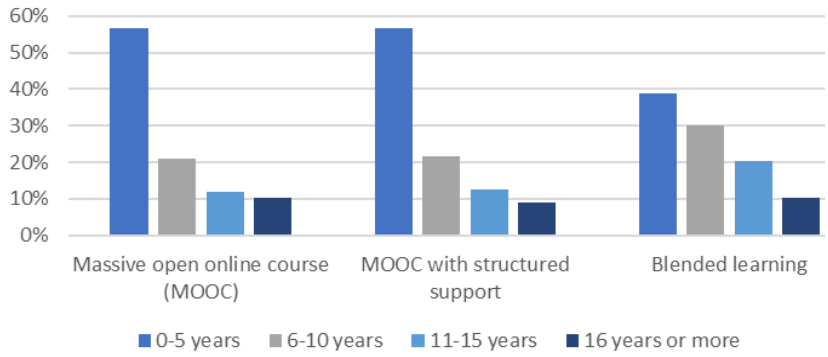

Figure 2: Participants per course type

46% of the users are non-governmental organisation employees, followed by government employees (26%). Students, consultants, private sector, and donors represent the rest (see Annex 1 for the user profiles). Over three- quarters of the Academy's users are in low- and low-middle-income countries (77%), representing the main audience. Geographically, the top countries are Ethiopia, the Netherlands[1], and Benin.

Moreover, most Academy users have less than six years' experience in the WASH sector (62%). Another important aspect is the gender distribution of the Academy users. Around 72% of the users are male and 28% female and 0.75% identified themselves as others. During interviews with IRC staff, this was explained by the generally limited number of females in the sector, especially in low-middle-income countries.

The Academy provides training through three different modes of learning:

a) **Massive open online course (MOOC):** where the training is free and self-guided. The support from the Academy staff is provided through email.
b) **MOOC with structured support:** where support is provided virtually in live webinars or virtual workshops in addition to group work and WhatsApp groups.

[1] The presence of the Netherlands among the top five countries maybe because IRC has an office in the Netherlands and the team managing the Academy is based there. The WASH Systems Academy was also originally aimed IRC staff and associates as its key target audience. However, from the launch of the Academy in September 2019, it was picked up by professionalise in the WASH sector and the target audience shifted to staff outside IRC.

c) **Blended learning:** the training is provided through 1-5 days face-to-face training with adapted content and in-person support.

As shown in the Figure below, early career professionals with less than six years' experience are mainly following the MOOC courses. While users with more work experience related to WASH are following trainings with structured support or blended learning as shown in the following figure.

2. What was the WASH Systems Academy users' experience?

At course completion, users were asked to score their experience by responding to statements in an anonymous survey. Almost all users agreed that they learned something new (96%), found the course interesting (97%) and that they recommend the course to others (97%) (see table below).

Table 2: Feedback survey that is filled in by all users at course completion (N= 397, July to December 2023)

	Percentage				
Statement	Strongly agree	Agree	Neither agree or disagree	Disagree	Strongly disagree
I learned something new	65%	31%	1%	0%	2%
I would recommend this course	70%	27%	0%	1%	3%
I found the content interesting	66%	31%	1%	0%	2%
The content motivated me to continue with the course	61%	36%	1%	0%	2%
The content was easy to understand	47%	44%	6%	1%	2%
The platform is easy to navigate	51%	40%	6%	1%	6%
I did not have any technical problems	47%	37%	8%	5%	3%

Furthermore, the feedback survey dives deeper into questions on the content of the courses. Most of the users found that the courses were comprehensive and had well-organised content covering critical topics, e.g., nine building blocks and the WASH systems strengthening approach. The practical approach, including quizzes and real-life examples, is praised for enhancing understanding and application. The course's flexibility and accessibility are highlighted, allowing learners to repeat sessions until they grasp the material. Instructors are commended for their knowledge and calm presentation style, with some users noting the positive impact of experts from different countries sharing their experiences. The combination of audio, video, and text is described as effective, providing varied perspectives and insights.

On the other hand, blended learning users mentioned specific points such as the training duration being too short, the volume of content to cover in a short space of time or technical issues like power cuts disrupting internet connectivity. A user suggested an increase in the length of videos and a reduction in text, drawing inspiration from platforms like LinkedIn and Udemy. Additionally, there were a few mentions of language preferences and connectivity challenges. One user provided constructive feedback, expressing a desire for more interactivity and real-life examples to enhance the learning experience. These points were also mentioned in the focus group discussion and the interviews,

where language[2] and internet connectivity were reported as the main barriers, particularly at the district level.

The responses to the question about how the course made users feel are positive. Users express excitement, empowerment, confidence, and eagerness to apply their newfound knowledge. Many highlight a sense of satisfaction and pride in their achievements throughout the courses. Some respondents mention feeling more informed, knowledgeable, and skilled in WASH planning and implementation.

For instance, one user noted, "The course made me feel motivated and inspired to make a difference in my local community", while another stated, "It upgraded my understanding of WASH systems strengthening." The positive impact on confidence and skills is evident, with users expressing that they now feel more equipped to contribute effectively to WASH initiatives. A few users noted challenges, such as feeling tired due to the course's length or recognising areas where they still need to learn.

The feedback regarding the platform's navigation is predominantly positive, with users expressing ease and satisfaction. While a small percentage remained neutral or did not provide specific comments, there were some mentions of initial challenges like password creation or occasional technical issues. Users also offered constructive suggestions for improvement, such as introducing a more user-friendly interface, making progress tracking more visible, and providing downloadable course content[3]. The focus group discussion and interviews with the country offices also mentioned challenges regarding account set-up and password creation. It was suggested that a phone number could be used as a unique identifier instead of an email address.

[2] The WASH Systems Academy has 10 courses in English, French (7 courses), Spanish (2 courses), Russian (1 course), Amharic (1 course) and Oromoo (1 course).
[3] Course content can be downloaded per session in a PDF. But this is not always clear to users.

3. How did the courses impact users' learning and professional lives?

To assess the learning, the pre-course and feedback surveys include a list of key terms and statements on which users score their knowledge on a scale of 1 to 5 (i.e. very poor to very good). The pre-course assessment had an average score of 3.4, feedback surveys had an average score of 4.2, while the average score of six-month post-course surveys was 4.3. The following charts illustrate the distribution of knowledge scores.

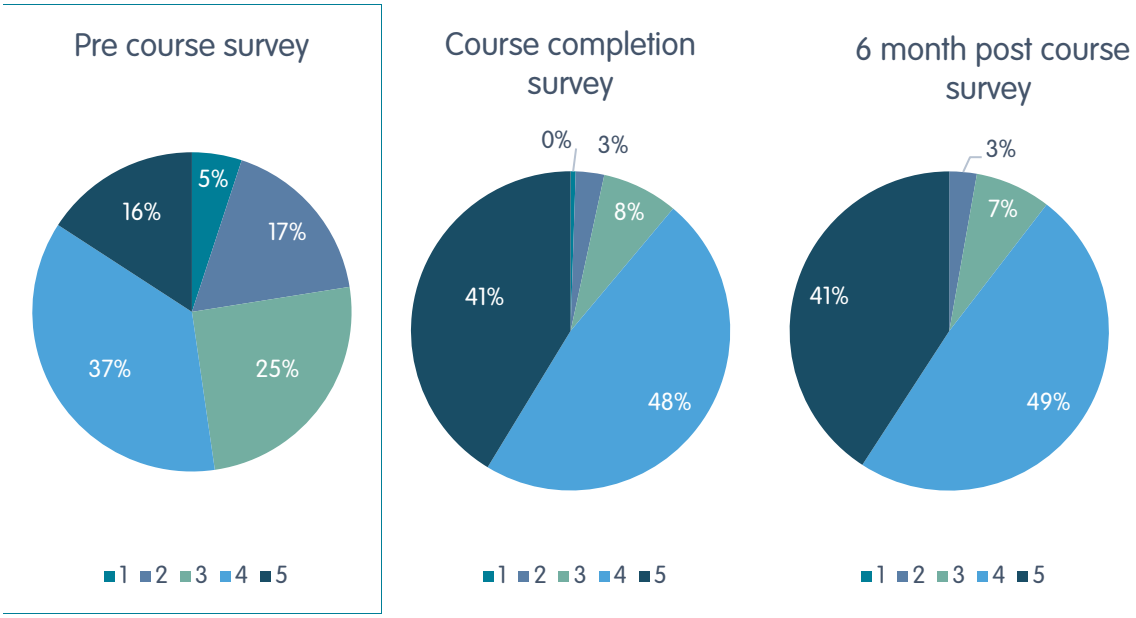

Figure 3: knowledge scores in pre-course assessments, feedback surveys and post-course surveys

Regarding their professional life, 90% of users stated in the feedback survey at course completion and in the six-month post-course survey that they could apply what they had learned from the course in their work. The responses indicated a diverse range of opportunities where users can apply the content from the course in their work. Some users emphasised the applicability of the processes and resources described in their specific contexts, with comments such as, *"All described processes are well explained and can be applied in our state and nation context"* and *"All of the resources are useful for my place of work."*

Others shared practical examples of application, such as engaging in community structures to promote WASH, advocating for legislative support, and implementing sustainable WASH systems, particularly in rural areas. For instance, one user mentioned, "*Engaging community structures to own WASH, especially in institutions,"* and another stated, *"Ensuring that WASH systems are implemented at all levels, especially for the girl child in the rural areas."*

Several users highlighted the dissemination of knowledge within their teams and communities. One user mentioned, "Have cascaded the training to two of our selected districts where we are undertaking WSS support project in Zimbabwe as a pilot." Another user shared, "Have learnt a lot in the implementation of a sustainable WASH system, especially in the rural areas where maintenance of the WASH infrastructure has to be done."

Furthermore, there were examples of applying the knowledge in response to specific challenges, such as disaster relief and sanitation service chain management. One user explained how the course content influenced the response to a flood disaster, stating, *"I have found the opportunity to apply the content of this course in my routine work, for example, the current humanitarian flood disaster has greatly affected parts of Nyatike Sub County in areas such as Kabuto; Nyora; Nyakweri and Angugo where the WASH infrastructures have been greatly destroyed. So, in line with the SDG 6 on universal access to safe water and sanitation, there has been distribution of water treatment chemicals and demonstration on treatment methods spearheaded by the village Sanitation and Hygiene committee for sustainability purposes. Also, in terms of sanitation service chain, Migori town is majorly relying on the On-site Sanitation model and even there has been a challenge in terms of the suitable and sustained Faecal sludge management. The course helps in designing and strengthening the relevant institutions for effective Faecal sludge management."*

4. What can we do better?

The feedback and six-month post-course surveys offer a comprehensive picture of experiences with the course, shedding light on various aspects such as time allocation, platform usability, content structure, language preferences, and suggestions for improvement.

Time Allocation and Course Structure: A recurring theme in the feedback on blended courses is the desire for more time, to extend the course period and dedicate additional time for reading and group discussions. Users expressed a need to grasp the content thoroughly, with statements like "*Extend time for the course*" and "*Need for additional time to understand this course*." This highlights the users' commitment to a deeper understanding and engagement with the course material.

Content and Structure Enhancement: Users desire more interactive elements, including quizzes, case studies, and discussions, emphasising the importance of practical applications and contextualisation. They suggest incorporating more real-world examples and providing additional resources for further reading. Some users recommend more country-specific content, aligning the course with local contexts. The feedback underscores the importance of a well-rounded, engaging curriculum that caters to diverse learning preferences.

Language considerations: The users' diverse linguistic backgrounds are evident in their requests for more content in Spanish and their efforts to engage francophones on the platform. Catering to a global audience involves considering language preferences and ensuring inclusivity.

Platform and Accessibility: Several users highlighted challenges in accessing the platform, with comments like "*Accessing sometimes was not easy*" and concerns about the platform's heaviness affecting users with poor network connectivity. Improving accessibility and ensuring a smoother online experience is a crucial consideration for the course administrators.

Conclusion

The WASH Systems Academy has a diverse user profile, predominantly from low- and low-middle-income countries. Early career professionals form its largest audience. The feedback from users is positive, with users expressing satisfaction, empowerment, and a desire and ability to apply newfound knowledge and skills.

Recommendations for improvement include extending the duration of (supported and blended) trainings that make use of the WASH Systems Academy, enhancing interactive elements, and addressing language and accessibility concerns.

In April 2024, these recommendations will form the basis for a restructuring of the platform and its contents, with improved navigation and adding new interactive elements. The improved platform will be live by the end of April 2024.

What can artificial intelligence do?

In the era of rapid development and fast-paced life, artificial intelligence (AI) is considered an integral tool that can be used to overcome many barriers. A study investigated the role of AI and, specifically, ChatGPT, in achieving the Sustainable Development Goals (SDGs). In relation to SDG 6, it was suggested that AI chatbots can be used to train and raise communities' awareness of issues related to water and sanitation, in addition to AI's role in water management (Rane, N., 2023).

Moreover, the past years witnessed the development of some sector-specific chatbot tools mainly related to the WASH sector, such as:

1. The chatbot "Ask Diana" was developed to assist in managing water-related disasters. The tool was tested in Taiwan and enhanced information accessibility and time effectiveness in response during disasters (Tsai et al., 2019).
2. The chatbot WASH AI aims to be a comprehensive global tool for data transformation, knowledge dissemination, and support. It aims to overcome language barriers and provide contextualised knowledge. The tool is still being tested (Baobab Tech, 2023).

From October 2023, IRC, in collaboration with WASHNote, is exploring the possibility of using AI in WASH systems strengthening training through developing a chatbot learning companion with a curated knowledge base.

The learning companion aims to address the users' requests to improve access and navigation, contextualise the user experience by providing country-specific examples and information, and overcome the language barrier. For example, the curated knowledge base could include a video library with real examples from external organisations and partners on elements of WASH systems strengthening. These could be in more languages than are currently available.

Moreover, the learning companion also aims to assess the learners existing capacities and knowledge in order to recommend other courses that may meet their needs.

A series of interviews with IRC staff and users in Ethiopia provided the opportunity for integrating AI into the WASH Systems Academy. From the user's perspective, the learning companion should be

available through Telegram or WhatsApp for easy accessibility, and local languages will also be incorporated, e.g., Amharic. Nonetheless, internet accessibility and limited technical capacity at the district level were highlighted as a possible barrier. Another point that was raised during the interviews with IRC staff was the potential high cost of operating AI.

Other innovations to improve training

In addition to AI, adult learning has embraced innovation through online courses, gamification, virtual reality, podcasts, and collaborative peer learning. Online platforms offer flexible, self-paced education, while gamification elements enhance engagement. Virtual and augmented reality offer immersive, realistic training experiences. Podcasts and audiobooks facilitate on-the-go learning, and peer collaboration fosters social learning. Self-directed learning empowers individuals to set goals and create personalised plans. The flipped classroom model redefines traditional learning approaches. Adaptive technology tailors experience to individual needs, while experiential learning emphasises hands-on, real-world applications. Continuous feedback and assessment ensure ongoing progress and motivation in the adult learning journey.

Stay tuned!

Other papers in the WASH Systems Academy learning series:

- Leal, A, Saleh, A, Verhoeven, J. 2022. E-learning for WASH systems strengthening: lessons from a capacity-building platform
- Sanchez I., 2022. Using serious gaming to build water and sanitation capacity
- Lemecha Boru G., 2021. Testing the WASH Systems Academy's blended learning approach in Ethiopia

References

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2. Tsai M-H, Chen JY, Kang S-C. Ask Diana: A keyword-based chatbot system for water-related disaster management [Internet]. Multidisciplinary Digital Publishing Institute; 2019 [cited 2024 Jan 10]. Available from: https://www.mdpi.com/2073-4441/11/2/234.
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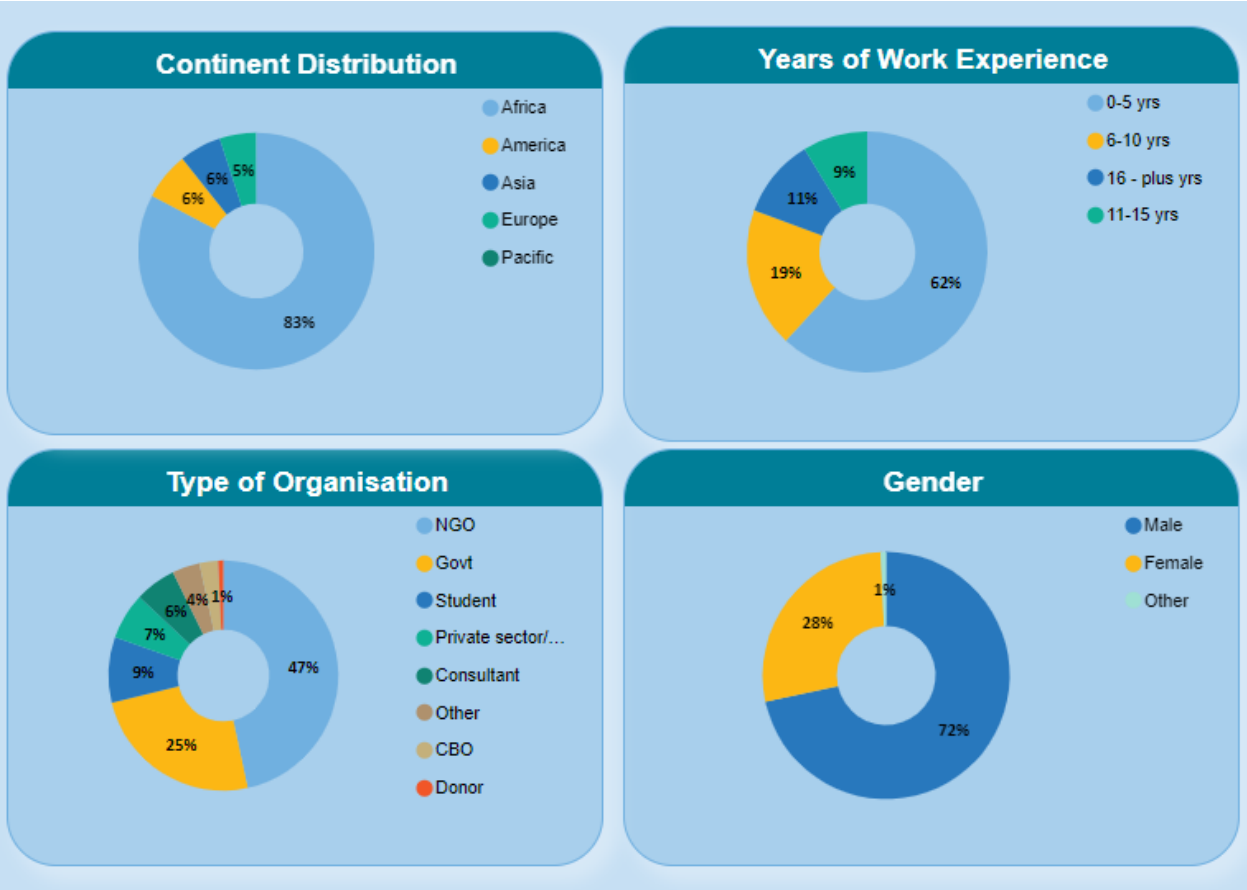
Annex 1: User profile