

# Assessment of Preservice Education eLearning Courses Using the QStream Platform

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## EXECUTIVE SUMMARY

Populations must have access to qualified health workers to ensure quality health services. However, more than seven million additional health workers are urgently needed—one million in sub-Saharan Africa alone—to meet current health care demands (Campbell et al. 2013). Increasing the quantity and quality of preservice education (PSE) for health care workers is essential to creating an adequate health workforce.

Public PSE institutions and traditional financing mechanisms for the education of health workers are necessary, but are not enough to meet growing health workforce needs. Privately-owned schools and innovative financing can help reduce the deficit of trained health workers.

CapacityPlus has developed eLearning courses with the aim of increasing capacity in the management of private-sector institutions and in innovative financing of PSE for health professionals. The courses are offered through QStream, a learning platform that uses a spaced, repeated question-and-answer format that has been shown to improve the retention of knowledge over time (CapacityPlus 2013).

The [Private Sector Participation in Preservice Health Education](#) course provides an overview of factors bearing on the success of private sector involvement in educating health workers. It explores the similarities between public and private institutions; challenges for private schools; and business models in use by private PSE institutions. It was developed for learners who are engaged in leading private PSE institutions in low- and middle-income countries.

The [Innovative Financing for Preservice Education of Health Professionals](#) course is based upon work completed in collaboration with the World Bank, the International Finance Corporation, and the Global Health Workforce Alliance. It looks at the fundamentals of financing for PSE, and includes examples of health PSE institutions that have applied innovative financing schemes. The course targets school leaders, Ministries of Health and of Education, planning and budget professionals, professional associations, and other stakeholders engaged in managing health professional institutions.

Thirty-seven participants from at least 25 different countries enrolled in the courses. About one third of participants are engaged in teaching, a third in policy, and a third in management of PSE institutions. Almost three-quarters reported taking a previous Internet-based course.

Ten learners completed the Private Sector Participation in Preservice Health Education course and eight completed the Innovative Financing for PSE of Health Professionals course. Six learners completed both courses. Course completers were more likely to come from high-income countries and be working at nongovernmental organizations and universities than enrollees who did not complete the courses. They were also older than the average participant and had more years of experience.

Upon enrollment, participants were asked about the Internet connectivity where they would access the course, access to email and a computer, and about their English proficiency. While

completing participants were more likely than non-completing participants to have excellent Internet reliability, there were no significant trends between course completion and most logistical or language constraints.

Enrollment in the two courses was low, but the participants were within the target audience: overwhelmingly, these were persons who lead or make decisions regarding the leadership of schools producing health workers. While overall enrollment in the courses would likely be improved slightly with repeated advertisement of their availability, this type of publicity is unlikely to attract especially large numbers of participants, given the narrow scope of the course. Participants expressed satisfaction with course content and with the QStream mechanism, and they acquired new knowledge. Given the extensive reach and high cost of QStream, however, it will be most useful as a tool for the delivery of courses that appeal to broad audiences.

Completion rates for non-degree-awarding eLearning courses is low generally (20-30% in the US and UK [Flood 2002]), 6.5% for massive online open courses (Jordan 2014), and most of the participants in these courses reside in middle- or low-income countries (notably in sub-Saharan Africa), where broadband Internet is expensive and connectivity unreliable. These factors likely discourage learner participation in QStream and other distance courses in developing nations. Given these issues, the participants' 30-45% course completion rate is admirable.

## BACKGROUND

To ensure all men, women, and children have the health services they require, populations must have access to qualified health workers. However, trained health workers are in short supply globally, especially in low- and middle-income countries. Estimates suggest that more than seven million additional health workers urgently need to be educated, deployed, and retained to provide adequate health care to the world's growing population—one million in sub-Saharan Africa alone (Campbell et al. 2013). Increasing the quantity and quality of preservice education (PSE) for health care workers is an essential first step to ensure an adequate health workforce, and that populations can access the care they need to live healthy lives.

Public PSE institutions and traditional financing mechanisms for education of health workers are necessary and governments should, and do, finance health professional education. However, traditional public mechanisms will not be enough to meet the health workforce needs of the future. Privately-owned schools and innovative financing schemes can contribute to reducing the deficit of trained health workers. Both national governments and international development partners have expressed interest in supporting these non-traditional approaches to increase the production of new health workers and to increase the quality of education provided to students.

In the scramble to support increasing numbers of students while continuing to ensure the high functioning of PSE institutions and the relevance and quality of their graduates, new or innovative financing mechanisms are often not explored nor included in strategic plans. The USAID-funded *CapacityPlus* project, the International Finance Corporation, the World Bank, and the Global Health Workforce Alliance brought together technical experts and stakeholders in 2012 to discuss and agree on innovative solutions to finance PSE. From these discussions, [examples of funding sources](#) seen to be successful in nursing, medical, or pharmacy schools were identified.

In educational institutions, school management and administrative capacity could be strengthened through formal management training. However, opportunities to reinforce school managers' and administrators' effectiveness through continuing professional development are often limited. *CapacityPlus* led the development of two eLearning courses with the aim of increasing institutional leaderships'—and their national and international partners'—capacity in management of [private-sector institutions](#) and [innovative financing of PSE](#) for health professionals. This report describes the development and delivery of those courses and provides an assessment of their delivery mechanism.

## COURSE DEVELOPMENT AND IMPLEMENTATION

The courses are offered through QStream, an online learning platform that uses a spaced, repeated question-and-answer format offered via email and mobile devices. This platform hosts courses that can be made either openly available to any interested learner or accessible only to invited participants. The courses reviewed in this report are accessible to all, and can be found either from the CapacityPlus-branded QStream page or by searching from [Qstream's home page](#).

QStream courses are delivered using a spaced-education structure, which relies on “spacing” and “testing” effects. Questions are repeatedly asked and explanations given to participants a few at a time. These spacing and testing effects have been shown to improve the retention of knowledge over time (CapacityPlus 2013). The two courses developed by CapacityPlus each included 15 multiple-choice and true-false questions related to the curriculum, and provided participants with explanations of the answers, including graphs. In a standard QStream course, two questions are delivered to each participant via email every third day, although course designers may adjust spacing and present additional questions to learners if the designers wish to. Each question must be correctly answered twice before it is “retired,” meaning that it is no longer presented to the learner. Participants complete the course when they have answered all course questions correctly twice. Once learners have answered a given day’s questions, they may request a second pair; learners can answer up to four questions each day.

### Course Content

The [Private Sector Participation in Preservice Health Education](#) course draws upon CapacityPlus experiences in Ethiopia, Kenya, and other sub-Saharan African countries to provide participants with an overview of the many factors bearing on the success of private sector involvement with educating health workers. It covers material related to the similarities and differences between public and private institutions; challenges unique to private schools; and promising practices for private PSE institutions (including vision and mission, faculty and student profiles, curricula, and pedagogy). The course also covers some business models in use by private PSE institutions, including their role in markets, competitive and comparative advantages, governance and administrative structures, campuses and infrastructure, funding, financial management, quality assurance, and collaboration with other institutions.

The course was developed for learners who are directly engaged in leading private PSE institutions in low- and middle-income countries, as well those who are charged with making health and education policies related to both private schools’ inclusion in the educational marketplace and to educational quality assurance. Such audience members include: private sector health professional school management officials; board members and investors in existing private sector health schools; potential founders of or investors in private sector health professional schools; Ministries of Health, Education, and Finance; health workforce institutional accrediting bodies; and leaders of health professional associations.

CapacityPlus developed the [Innovative Financing for Preservice Education of Health Professionals](#) eLearning course based upon technical work completed in collaboration with the World Bank, the International Finance Corporation, and the Global Health Workforce Alliance. The course curriculum includes a look at the fundamentals of PSE and of financing PSE, such as definitions of health PSE institutions and traditional sources of financing; some case-based examples of innovative financing schemes identified and applied to health PSE institutions; stakeholder-driven financing strategies; and considerations educational management should keep in mind while selecting financing mechanisms for health PSE institutions.

The course targets health professional school leaders (deans, registrars, and administrators); Ministries of Health (human resources for health [HRH] planning and budget professionals); Ministries of Education (higher education planning, budgeting, and HRH staff); Ministries of Finance (planning, banking, and budgeting professionals); professional association members and leaders; nongovernmental organization (NGO) and faith-based organization health and education stakeholders (contributors, and planning and budgeting staff); and those in the private sector who are engaged in establishing, managing, and financing health professional institutions. After completing the course, it is expected that participants will be able to identify traditional and nontraditional mechanisms for financing health workforce educational institutions, and will understand the process one may use to select and prioritize financing options for a given institution.

### Course Dissemination

CapacityPlus worked with [QStream](#) to customize a page on the company's website to deliver the organization's courses, collect demographic data from participants, and direct participants to the CapacityPlus website for further information. QStream staff also assisted with composing and phrasing the course's learning items by coaching CapacityPlus staff to build easily-understood questions, and to format the questions and explanations so as to make them deliverable via the spaced education modality.

Once courses were online, invitations to participate were sent via email to more than 200 health professionals and educators. Notices were posted to websites and listservs relevant to this work, including the [Global Health Workforce Alliance's ePlatform](#), the [Global Health Hub](#), the [Health Information and Publications Network](#), and the [Association of Schools of Public Health in Africa](#), among others. The courses were also publicized at the Third Global Forum on Human Resources for Health in Recife, Brazil through a one-page handout, and were included in IntraHealth International's monthly emails.

## ASSESSMENT

To the project leaders' knowledge, this was the first use of spaced education courses to improve the capacity of country-level professionals and administrators engaged in the financing and private management of health worker PSE. In order to learn more about the feasibility and acceptability of using spaced education through QStream to improve the knowledge and capacity of these target audiences, *CapacityPlus* accompanied the roll-out of the course with an assessment, which aimed to describe those who took the course and their experiences, and to assess whether participants' knowledge changed. The assessment's questions included:

- Who takes the courses (geographic, demographic, type of institution, etc.)?
- How did participants learn about the courses?
- Do logistical considerations (e.g., connectivity) factor into participation?
- Who completes the courses?
- Is the course content pertinent to learners?
- What are the most useful parts of the courses? The least useful parts?
- What was the level of participants' existing knowledge of course content?
- Did participants' topical knowledge change in the short term?

### Data Collection

The QStream platform enables tracking of course participants through their learning process—for example, tracking how many times a learner accesses the system and what questions s/he answers correctly. *CapacityPlus* developers worked with the QStream engineers to customize the *CapacityPlus* private page on the site so it would also collect demographic and logistical information when learners enrolled in the course. To evaluate learners' experiences with the course, participants who completed the course were directed to the IntraHealth LeX site, supported by Moodle, to complete a brief optional course evaluation and receive a certificate. Because the course assesses knowledge via repeated questions, the course structure itself allows the second (and third if needed) set of questions within the system to act as the pre- and post-test, thereby determining participants' short-term mastery of the content.

### Data Analysis

The raw data collected on the QStream platform were downloaded, converted to an Excel file, then cleaned and analyzed in Excel and Stata 13.0. Three participants were excluded from the analysis who enrolled and provided demographic data, but never started the courses. Cross-tabulations and chi-square statistics were used to examine correlations between participants' reported characteristics and completion of the courses.

## Limitations

The assessment of the courses and course delivery was limited by the number of learners enrolling in the course and their willingness to complete the optional post-course assessment survey.

A mistake in the uploading of the Innovative Financing for PSE of Health Professionals content resulted in one question—concerning the scaling-up of health professional schools—having no correct answer in the system for some time. During that time period, the CapacityPlus team considered three learners who retired the 14 other questions and correctly answered this question as having completed this course. However, the system did not log these learners as having completed the course, and thus they were not directed to the LeX site to receive a certificate and complete the course assessment survey.

## FINDINGS

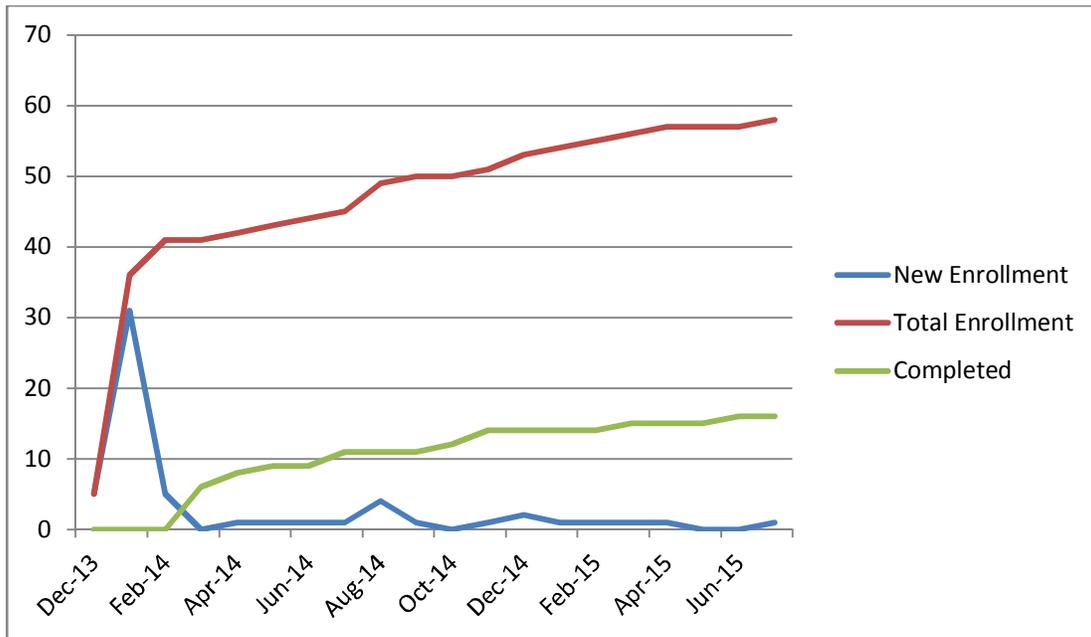
Thirty-seven participants in total had enrolled in the courses at the time of the evaluation (Table 1), with 11 enrolled only in the Private Sector Participation in Preservice Health Education course, 12 only in the Innovative Financing for PSE of Health Professionals course, and 14 in both courses. Of those, three did not begin the course(s) in which they were enrolled. The majority of enrollees were under 40 years of age and male. Most had five or fewer years of professional experience, though one-fifth had more than ten years' experience. The courses reached learners in at least 25 different countries. About two-thirds of participants had completed medical or graduate school. Most learners worked at universities or nonprofit NGOs. About one-third of participants are engaged in teaching, a third in policy, and a third in the management and finance aspects of PSE.

**Table 1: Description of QStream eLearning Enrollees**

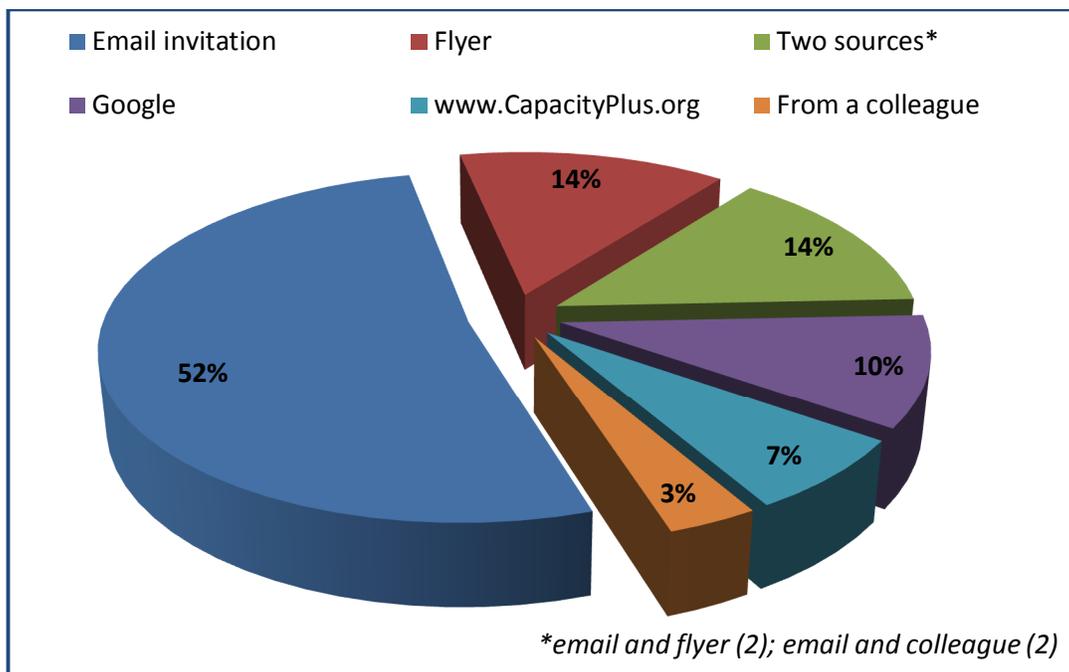
<b>Characteristics</b>	<b>(N=34)</b>	<b>%</b>	
<b>Course taken</b>	Private PSE	11	32%
	Innovative Financing of PSE	12	35%
	Both courses	14	41%
<b>Age*</b>	20-29	8	24%
	30-39	10	29%
	40-49	7	21%
	50+	6	18%
<b>Sex****</b>	Male	21	62%
	Female	11	32%
<b>Region**</b>	United States	8	24%
	Sub-Saharan Africa	7	21%
	Asia	5	15%
	Middle East/North Africa	3	9%
	Europe	3	9%
	Latin America	1	3%
<b>Highest level of education*</b>	Graduate school	15	44%
	Medical school	7	21%
	University/undergraduate	7	21%
	Secondary school	2	6%
<b>Years of experience*</b>	<3	12	35%
	3-5	8	24%
	6-10	4	12%
	>10	7	21%
<b>Type of institution***</b>	University	11	32%
	Nonprofit	16	47%
	Government	3	9%
	Multilateral	2	6%
	Private, for-profit	1	3%
<b>Professional responsibilities****</b>	Teaching (classroom or clinical)	9	26%
	Policy decision making	11	32%
	Management of PSE	9	26%
	Finance of PSE	3	9%
	Health program management /support	8	24%
	Health service delivery (clinical care)	6	18%
	Student	6	18%
	Clinical supervision of students	4	12%
	Management of a clinical facility	3	9%
	Pharmaceuticals	2	6%
Missing cases: *three **seven ***one ****two			
Countries reported as participant locations: Cameroon (1), China (1), Dominican Republic (1), Egypt (2), Ethiopia (1), Ghana (1), India (1), Japan (1), Kenya (1), Korea (1), Mexico (1), Myanmar (1), Netherlands (1), Nigeria (1), Pakistan (1), Palestinian Territories (1), Portugal (1), Romania (2), Senegal (1), South Africa (1), Switzerland (2), Thailand (1), Uganda (1), United Kingdom (1), United States (8)			

The overwhelming majority of participants enrolled in January 2014 (Figure 1), just after emails and listserv invitations were sent and the courses were advertised on the IntraHealth website. More than half of the participants learned about the course via the email invitations, followed by the flyers distributed at the Recife conference (Figure 2).

**Figure 1: Participation in QStream, Online SpacedEd Courses Over Time**

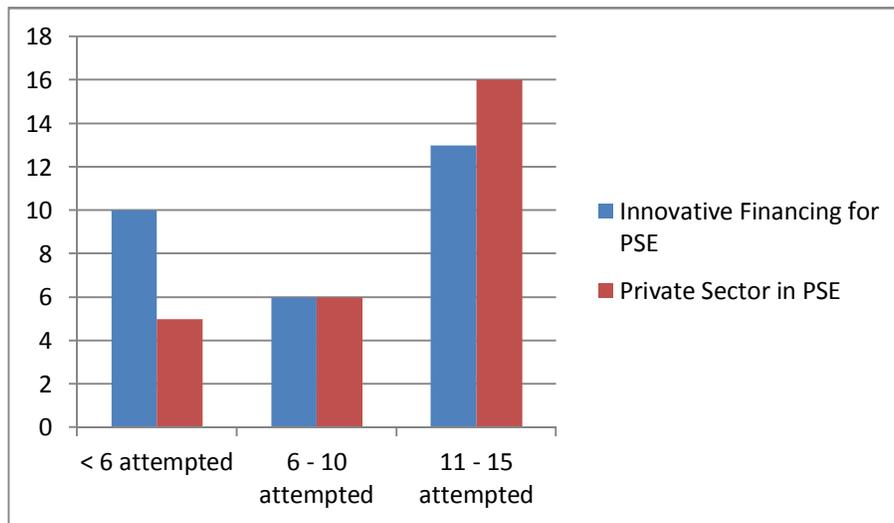


**Figure 2: How Participants Learned About the Course**

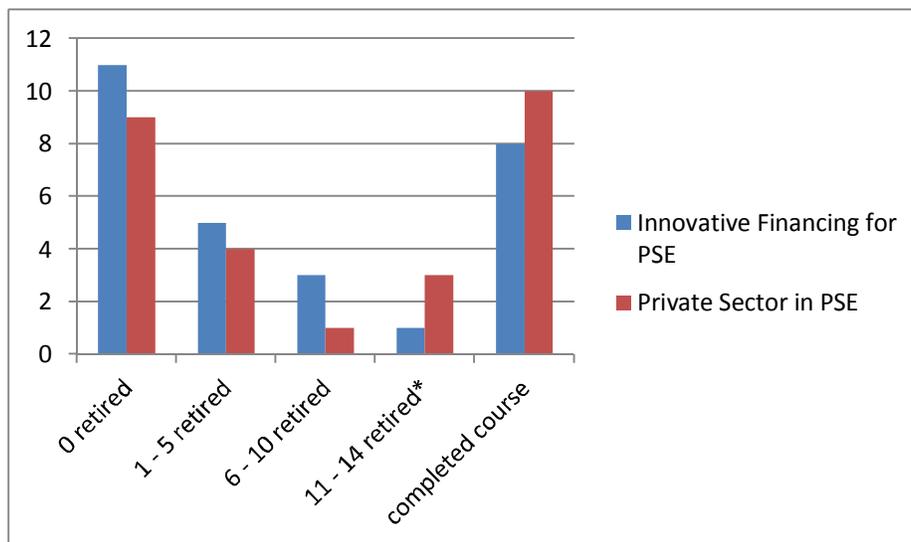


Figures 3a and 3b display the number of questions attempted and retired (i.e., answered correctly twice) by participants. More than half the participants in both courses attempted 11 to 15 questions if they began the course at all, while a number of participants attempted fewer than five questions. Ten (40% of the 25 enrolled) learners completed the Private Sector Participation in Preservice Health Education course and eight (31%) learners completed the Innovative Financing for PSE of Health Professionals course.<sup>1</sup> Six learners completed both courses, thus in total, 12 individual participants completed one or both courses. At least a third of the learners in each course did not retire any questions (Figure 3b).

**Figure 3a: Number of Questions Attempted by Participants in QStream Courses**



**Figure 3b: Number of Questions Retired by Participants in QStream Courses**



\* three students completed the course with 14 questions retired

<sup>1</sup> Learners were considered to have completed the innovative financing course if they retired 14 questions and provided the correct answer to the 15<sup>th</sup> question. Due to an issue with uploading the course content into the system, no answer was accepted at first as correct for the 15<sup>th</sup> question.

CapacityPlus examined associations between participants' characteristics and completion of the courses (Table 2).<sup>2</sup> Men were more likely to complete the course, as were participants from high-income countries and working at NGOs and universities, although none of these trends was significant.<sup>3</sup> There was no clear trend in highest level of education and completion of the courses. Participants completing the course tended to be older than the average participant (median age of 39 years versus 33 years for participants not completing a course) and to have had more years of experience (seven years versus four years), although these differences were not significant (data not shown). Almost three-quarters of learners reported taking a previous Internet-based course, but this did not correlate to completion of the QStream courses.

In order to assess any logistical issues with accessing the course, participants were asked upon enrollment about the Internet connectivity in the place(s) where they access the course, their access to email and a computer, as well as their English proficiency (lower section of Table 2). The majority of participants reported good or excellent Internet reliability, computer access, and English proficiency. While completing participants were more likely than non-completing participants to have excellent Internet reliability, there were no statistically significant trends between course completion and most logistical or language constraints; however, participants self-selected to take these courses knowing that the QStream learning system is entirely digitally-based. This likely attracted participants who on the whole had very good access to a computer and email and good Internet reliability.

Only three participants in the private sector participation course provided overall ratings and comments on the QStream course website. Two learners ranked the course 5/5 stars and one learner ranked it 3/5 stars for an average of 4.3. Only two learners provided written comments as feedback on the overall course. Many more comments were uploaded to the QStream system related to specific questions (see Appendix A), with the majority focused on the issues with the

**I enjoyed doing this course. It has built my capacity in Private, public partnership. I now have an idea of the differences and the linkages between the two.**

--Learner working at an HIV-focused NGO

**Innovative way of learning!**

--Learner with teaching responsibilities at a university

question in the innovative financing course that for a time did not have a correct answer. Once staff monitoring the course read these comments, the issue with this question was resolved. The course is currently online and has further enrolled

participants who will not encounter this issue.

Only four of the participants completing the courses elected to then fill in the course assessment to receive a certificate (see Appendix B). Overall, these four participants were satisfied with the course.

<sup>2</sup> Learners enrolled in both courses were considered as "completing" if they completed either course.

<sup>3</sup> Because the team could only analyze the participants who enrolled in the courses, it did not have the power to detect significant differences.

**Table 2: Completion of QStream Courses by Participants' Characteristics**

Characteristics	Overall sample		Differences in completion	
	% of sample	N	% completed course(s)	% not completing course(s)
<b>Overall</b>	<b>100%</b>	<b>37*</b>	<b>33% (N=12)</b>	<b>67% (N=25)</b>
<b>Sex</b>				
Male	66%	21	73%	62%
Female	34%	11	27%	38%
<b>Country income level*</b>				
Low- to middle-income - a	55%	18	45%	59%
High-income - b	45%	15	55%	41%
<b>Type of institution</b>				
NGO	48%	16	50%	48%
University	33%	11	30%	35%
Other - c	18%	6	20%	17%
<b>Highest level of education</b>				
Graduate school	50%	15	60%	45%
Medical school	23%	7	30%	20%
University/undergraduate	20%	6	0%	30%
Secondary school	7%	2	10%	5%
<b>Taken Internet course in past</b>				
Yes	75%	24	90%	71%
No	25%	8	10%	29%
<b>Internet reliability/availability</b>				
Excellent (24 hrs/day, 7 days/wk)	72%	23	82%	67%
Good (most of the time)	25%	8	9%	33%
OK (sometimes)	3%	1	9%	-
<b>Computer access</b>				
Owned by participant	72%	23	64%	76%
Used at office/place of work	28%	9	36%	24%
<b>Frequency of accessing email</b>				
Many times a day	84%	27	91%	81%
Once a day	16%	5	9%	19%
<b>Self-reported English proficiency</b>				
Excellent	72%	23	64%	76%
Good	19%	6	18%	19%
OK	9%	3	18%	5%
*where totals do not add up to 37, some learners elected not to answer a given question. a – Uganda (1), Cameroon (1), Ethiopia (1), Senegal (1), Kenya (1), South Africa (1), Ghana (1) Thailand (1), India (1), China (1), Egypt (2), Palestinian Territories (1), Dominican Republic (1), Romania (1) b – Portugal (1), United Kingdom (1) Japan (1), Korea (1), USA (8) c – government (3), multilateral (2), private (1)				

## CONCLUSIONS

Enrollment in the two courses was very low. However, the participants who chose to enroll in the two courses tended to be precisely within the target audiences. That is, they were overwhelmingly persons who lead or make decisions regarding the leadership of schools producing health workers. This is likely the result of mechanisms used for publicizing the courses and the courses' narrow scope. The *CapacityPlus* team sent emails directly to more than two hundred persons and many organizations within the target populations, and these emails proved to be the most successful tool in recruiting participants. Furthermore, the courses themselves were developed to be relevant to a very narrow audience—strengthening private involvement in health professional education is not a broadly applicable, general audience subject. While overall enrollment in the courses would likely improve with repeated publication and advertisement of their availability, this type of publicity is unlikely to attract especially large numbers of participants, given the course content.

While global eLearning course completion rates are not available, in the United States, the non-completion rate for non-degree awarding eLearning courses is reportedly 70% (Park and Choi 2009). In the UK, one study reported the eLearning attrition rate to be 80% (Flood 2002). Additionally, eLearning users are affected by other issues, especially time conflicts—a major problem facing eLearning attrition. More than 50% of the QStream users of the measured courses reside in middle- or lower-income countries (notably in sub-Saharan Africa), where broadband Internet is often two to three times more expensive than in other parts of the world (Zelnio 2012), and maintaining continuous Internet connections is difficult. These issues likely discourage continuation of learner participation in QStream and other distance courses in low- and middle-income nations. Given these issues, *CapacityPlus*'s QStream participants' 30-45% course completion rate is admirable.

## RECOMMENDATIONS

The QStream platform was found to be useable, accessible, and acceptable to users of these courses. Participants expressed satisfaction with course content and with the QStream mechanism itself, and question retirement rates show that participants did acquire new knowledge. However, given the broad reach of QStream (and eLearning generally) and the high cost in terms of hosting and question development, it might be more useful for the delivery of courses that appeal to much broader audiences.

The QStream interface provides course developers with regular, general monitoring updates. These updates include aggregated information about participant progress and completion rates, as well as comments made on the overall courses. However, they do not include any comments made on specific questions. Monitoring of all course participants' comments and of responses to individual questions allows course designers to learn from participants. We learned that one question was incorrectly uploaded, and we learned which types of questions were most interesting and/or most challenging to participants. Such cyclical learning is a tool which can enable improvement on existing courses as well as any future courses.

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## APPENDIX A: COMMENTS FROM PARTICIPANTS IN QSTREAM COURSES

Private Sector Participation in Preservice Health Education		
03/24/2014	A private sector health education institution is approached by a medical professional association and the Ministry of Health to develop professional curricula guidelines and position descriptions for specific health worker cadres. It is concerned that if it does so it will be asked to contribute financing in addition to its knowledge and experience, and essentially be committed to the outcome, which may be not what its founders would want.	I still disagree with the "correct" answer. If an organization is not part of the process of determining outcomes, then it has only itself to blame. A wise organization recognizes the need to influence its environment if that is possible.
03/04/2014	What is the <b>LEAST DESIRABLE</b> way for the institution to respond to this request?	Participation is not the same as prior agreement with the outcome. The institution has the freedom to retreat from a statement or outcome not in line with its goals or interests. Nevertheless, failing to participate opens the possibility that the outcome will not align with <i>any</i> of the institution's goals and practices. Participation in the discussion should not be considered optional by the institution. Disagreements may be awkward, but they are the price we pay for negotiation and participation.
02/18/2014	Definitions	I thought more than once before answer to this question but the explanation with the Kenya education help me to understand really why, sometime in my country in Cameroon the third actor is Confessional party where we find Catholic order and so on ... and please what about the current situation in the developed countries?
01/20/2014	Qualified health faculty is difficult to find, recruit and retain, possibly particularly so for the private sector in Africa. What advice would you give to a private sector school?	I believe it would be appropriate to specify, for all questions (like this one above) how many replies are expected, e.g. - choose one that applies best, -choose all that apply...  Thx
01/25/2014	A school began operations in 2000 and initially had the use of a few rooms in a private hospital. As it expanded, it has moved to a site it owns somewhat removed from the hospital. Busses were purchased to transport students to practical rotations at the hospital. On the new site, the school has constructed classrooms, a laboratory, a library, and student dormitories. Although many amenities are still needed, which of the following should the school consider highest priority for its next construction? Choose 1.	Library is supposed to have computers and Internet access (it facilitates research and access to books), no need to build another location, that is quite a standard

Innovative Financing for Preservice Education of Health Professionals		
08/12/2014		WHAT ABOUT THIS QUESTION SINCE 2MONTHS I COULDN'T GIVE THE RIGHT ANSWER....EVEN AFTER READ AND READ SEVERAL TIME THE EXPLANATION....PLEASE CAN SOMEONE HELPS ME....PLEASE HELP ME DEARS COLLEAGUES ...
06/09/2014	When scaling up training programs, health professional schools should consider which of the following?	Finally what about the question : <b>When scaling up training programs, health professional schools should consider which of the following?</b>  <b>I don't not understand what is happening...what is the real answer? Since 2months i still answer as all these propositions are true but unfortunately it looks like the wrong answer.... what is happening.....</b>
04/21/2014		This is a stupid question. Fix it or don't bother sending these irrelevant emails
04/15/2014		MERCI DE REVOIR LES REPNSES A CETTE QUESTION
03/19/2014		No correct answers :)
03/02/2014		This question has no correct answers
02/06/2014		There doesn't seem to be a correct answer to this question.
12/30/2013		The answers are put in wrong order?
03/02/2014		Migration of health professionals from developing countries to developed nations has been a trend for decades. You have been participating in the special advisory group for health professional school reform panel under the Ministry of Education. Health professional schools presented the trends of migration of their graduates. What would you NOT advise the special advisory group to consider?
02/18/2014	Which of the following does NOT represent health professional schools?	Nowadays lot of health schools also have the department or faculty of Health information and Bioinformatics and technology.
02/18/2014	All of the following except one describe pre-service education. Which does NOT?	pre-service education do not always earns through school or university but also in the community through a health care worker to those who can be devotee to health action to help other people. For example, Sometime in our communities, we just need to identify somebody who is so interest to our health activities to help Health District Workers during some campaigns...

## APPENDIX B: EVALUATIONS FOR PRIVATE SECTOR PARTICIPATION IN PRESERVICE COURSE (N=4)

1. Please rate the following on a scale of 1 to 5, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

	Average rank					
	1	2	3	4	5	
The use of questions and answers was an effective way to present this material				■		4.0
The instructions on how to use the QStream system were clear				■		4.0
The timing of receipt of questions was ideal				■		4.0
I liked the ability to access the course questions at my convenience					■	5.0
I did not have any issues receiving emails from QStream/the course					■	5.0
Overall, the Qstream platform was easy to use				■		4.5
This method of distance education is as good as in-person training for the topic covered in the course				■		4.2
I would like to take another course on using this learning approach (with questions and answers)			■			3.5

2. How did you most often access the course?

Response	Average	Total
Desktop computer	 25%	1
Laptop computer	 75%	3

3. How often did you answer the questions sent by the course?

Response	Average	Total
once a day	 50%	2
once every other day	 25%	1
2 to 3 times a week	 25%	1
<b>Total</b>	 100%	4/4

4. In a future course, how often would you like to answer questions sent by the course?

Response	Average	Total
once a day	 75%	3
2 to 3 times a week	 25%	1
<b>Total</b>	 100%	4/4

5. Please rate the following on a scale of 1 to 5, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

	Average rank					
	1	2	3	4	5	
Course objectives were clearly defined				■		4.0
Course objectives were met				■		3.8
The explanations used in the course were clear				■		4.0
The course content was relevant to my work				■		4.0
My participation in the course improved my knowledge on the subject				■		4.0
My participation in the course enhanced or will enhance the management and financing practices at my institution				■		4.0

6. My participation in the course enhanced my skills in performing my job.

Response	Average	Total
Yes	 75%	3
No	 25%	1
<b>Total</b>	 100%	4/4

7. If yes, can you provide a brief explanation of the skills you are using to enhance your performance?

#	Response
1	Improved insight
1	With the course i have news and inovatives ideas
1	none
1	We recently re-branded our organization and PPP is one of the areas we shall be developing capacity building programs in. The course has made me understand PPP its relationship with the public sector. The differences between the two and the linkages.

8. Overall, the difficulty of the questions was:

Response	Average	Total
too easy	 25%	1
just right	 75%	3
Total	 100%	4/4

9. Overall, the explanations:

Response	Average	Total
provided too little information;	 25%	1
provided the right amount of information	 75%	3
Total	 100%	4/4

10. Please rate the following on a scale of 1 to 5, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree

	Average rank					Total
	1	2	3	4	5	
Overall, I was satisfied with this course						4.2
I would recommend this course to others						4.5
Overall, the instruction through QStream was appealing and interesting						4.2

11. Did you have any problems with accessing the course (i.e. connectivity)?

Response	Average	Total
Yes		0
No	 100%	4
Total	 100%	4/4

12. If yes, what problems did you experience? (check all that apply)

No responses for this question.

13. Please explain "other".

No responses for this question.

14. What did you like best about the course?

#	Response
1	very soft
1	none
1	The explanation for clarity when I got the question wrong and the follow-up to ensure I eventually mastered the question enabled me remember the course details.

15. What did you like least about the course?

#	Response
1	none
1	none
1	None

16. What other recommendations do you have for the course?

#	Response
1	none
1	I have none for now.



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CapacityPlus is the USAID-funded global project uniquely focused on the health workforce needed to achieve the Millennium Development Goals. Placing health workers at the center of every effort, CapacityPlus helps countries achieve significant progress in addressing the health worker crisis while also having global impact through alliances with multilateral organizations.

### The CapacityPlus Partnership



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