



**USAID**  
FROM THE AMERICAN PEOPLE



# SPACED EDUCATION: AN INNOVATIVE LEARNING METHODOLOGY TO SUPPORT HEALTH WORKFORCES

## BACKGROUND

Health workforce development requires preservice education as well as sustained in-service training and continuous professional development to keep health workers up-to-date with the rapidly evolving knowledge base, including updated national policies and clinical guidelines. Without access to continuous education, health workers can rapidly become obsolete and incapable of delivering essential, life-saving care to individuals and populations.

## THE CHALLENGE

For busy health workers—especially those stationed in remote or rural areas—participation in face-to-face refresher courses can be difficult due to the need to travel long distances and leave their health facilities, and often means patients are left without access to a health worker. In-service training at a central facility incurs the costs of health workers' travel and per diem, as well as costs for trainer fees, supplies, and use of a facility. The quality of the training may vary from one center to the next and, once the training period is over, it is often inconvenient for health workers to access the material again, or revisions or supplemental materials. By delivering standardized content to all learners, traditional courses sometimes fail to acknowledge the individualism of each learner's level of knowledge or tap into the potential of adaptive content.

## SPACED EDUCATION: A NEW APPROACH TO LEARNING

Spaced Education is an innovative learning methodology that can be delivered electronically by Internet or mobile smart phone. The approach combines two core findings from educational psychology: the spacing effect and the testing effect.\* When information is repeated over spaced intervals it is learned and retained more effectively than when it is presented only once, and the long-term retention of information is significantly improved by testing learners.

A good Spaced Education course consists of thoughtfully framed questions with multiple options as potential answers. Participants can choose to have the questions delivered via e-mail or RSS feeds, or they can choose to access the course questions directly on a website. Once the participant answers a question, the website delivers a brief passage that explains the correct and wrong answers. The questions are delivered to the participant in an adaptive format, and reinforce those topics in which the participant needs additional help. Harvard University developed an Internet-based platform for Spaced Education called [QStream.com](http://QStream.com) (previously named SpacedEd.com), using a computerized algorithm to select and deliver questions. This online methodology has proved, through randomized controlled trials, to improve retention of learned material, and positively impact practice behaviors among health workers in developed countries.\*

## ADAPTING SPACED EDUCATION FOR A DEVELOPING-COUNTRY CONTEXT

CapacityPlus collaborated with Qstream.com to establish a separate section on the website to host its courses. Recognizing the multilingual nature of CapacityPlus's constituents, an agreement was made with Qstream.com to publish courses in languages other than English, including French, Spanish, Portuguese, and, in the future, Mandarin.

CapacityPlus also developed and pilot-tested two Spaced Education courses on the Qstream.com platform. The first course was an internal pilot that offered participants the opportunity to learn more about human resources for health. A follow-up evaluation survey provided positive feedback, and offered insights to improve the usage of the methodology. This experience was integrated into the second pilot that delivered educational material on the topic of feeding infants and children born to HIV-positive mothers. This pilot invited learners from the Ethiopian Federal Ministry of Health, the Ethiopian USAID and IntraHealth offices, and members of the Pediatric Association in Addis Ababa. The pilot resulted in a high course completion rate (84%), expressed satisfaction with the course methodology, increased comprehension of course material, and a preferred way to access refresher training materials; all indicating the potential of Spaced Education through the Internet and mobile devices in low-resource settings.

## NEXT STEPS

CapacityPlus is developing content for courses that educate health workers on health-related topics that are contextually significant, such as the importance of gender issues in HRH, financing of health schools, and private sector health school practices. These courses will be made freely available on the Qstream.com website, and health workers will be invited to participate to improve their ability to deliver quality health services in their communities.

CapacityPlus recognizes the need to bring innovation into the delivery of learning material through the Spaced Education methodology. Taking advantage of the widespread availability and use of mobile phones in much of the developing world, CapacityPlus is creating a platform to deliver learning material using Interactive Voice Response (IVR) technology on mobile phones. The IVR system will read questions and possible answer options aloud to participants over mobile phones, and the participants will enter their selected answers using the keypad. The approach, which is being pilot-tested in Senegal, has the potential to greatly increase the ability of learners in remote areas to access learning material.

## \*REFERENCES

Kerfoot, B. P. 2010. "Adaptive spaced education improves learning efficiency: A randomized controlled trial." *J Urol*, 183: 678–681.

Kerfoot B. P. 2009. "Learning benefits of on-line spaced education persist for 2 years." *J Urol*, 181: 2671–2673.

Kerfoot B. P., E. G. Armstrong, P. N. O'Sullivan. 2008. "Interactive spaced-education to teach the physical examination: A randomized controlled trial." *J Gen Intern Med*, 23: 973–978

Kerfoot B. P., H. E. Baker, M. O. Koch, et al. 2007. "Randomized, controlled trial of spaced education to urology residents in the United States and Canada." *J Urol*, 177: 1481–1487.

Kerfoot B. P., M. C. Kearney, D. Connelly, M. L. Ritchey. 2009. "Interactive spaced education to assess and improve knowledge of clinical practice guidelines: A randomized controlled trial." *Annals of Surgery*, 249:744–749.