Developing Effective Online Quizzes: Lessons Learned

iSpring Solutions Webinar
November 9, 2016

Russell Sawchuk
Steppingstones Partnership Inc.

Presentation Overview

This presentation will demonstrate how online quizzes can be used as an effective component in education and training. The topics to be discussed include:

- Applications of tests and quizzes
- Components of an effective online testing system
- Benefits and challenges of online quizzes
- Research / theoretical considerations
- History and experiences with online quizzes
- Current use of iSpring products
- References and contact information
Applications of Tests and Quizzes

We discuss uses of tests and quizzes as part of cost-effective education and training programs.

Tests and quizzes can be used for:

- Self-assessment of knowledge
- Diagnostic tools (e.g., personality assessments)
- Discovery learning (quizzes with feedback)
- Challenge exams (how much do you already know)
- Screening (e.g., foreign students / professionals)
- Feedback and interaction in e-Learning modules
- Formal evaluation as part of e-Learning modules
- Compliance testing, monitoring and reporting
Components of an Effective Testing System

Describes the necessary and desirable features and components of an effective testing system.

Components of a Testing System

An effective testing development and management software system should have the following features and capabilities:

- Easy to use by SMEs with no technical programming
- Range and variety of question types
- Flexible scoring and grading options
- Easy incorporation of multimedia
- Answer feedback options
- Test item banks, item selection and randomization
- Different delivery options (Internet, CD-ROM, mobile)
- Tracking and reporting of performance and results
- Learner registration, management and administration
Benefits and Challenges of Online Quizzes

Online tests and quizzes have a number of benefits and challenges.

Benefits of Online Quizzes

Having your tests and quizzes online has the following benefits:

- **Self-operating** – once set up, quizzes run themselves
- **Availability** – available 7 x 24 around the globe
- **Scalability** – few limits as to numbers of users
- **Updateability** – easy to update and maintain quizzes
- **Affordability** – relatively easy and inexpensive to produce
- **Cost-effective** – development and production costs can be spread over thousands of users
- **Individualization** – users can select which topics to learn at a time and place convenient to them
Benefits of Online Quizzes … 2

Having your tests and quizzes online has the following benefits: (continued)

- **Pacing** – learners can progress at their own rate
- **Feedback** – instant feedback provided (if enabled)
- **Engagement** – interactive quizzes require active learning that is engaging and interesting
- **Safety and comfort** – you share your results only if you want to (confidentiality and privacy)
- **Randomization** – questions and responses can be randomly selected and presented from a larger pool
- **Data** – capture quiz results that can be used to identify learning needs and monitor effectiveness of quizzes

Challenges of Online Quizzes

However, having your tests and quizzes online also has the following challenges:

- **Best for knowledge** – less effective for psychomotor skills training
- **No instructor** – personal support not available
- **Fewer group interactions** – less learning from others
- **Requires discipline** – self-directed, online learning requires greater individual motivation and discipline
- **Updates** – minor and major software updates require republishing and reposting of the quizzes
Challenges of Online Quizzes … 2

However, having your tests and quizzes online also has the following challenges: (continued)

- **Diversity of users** – different browsers, operating systems, devices and screen sizes are a constant challenge
- **Mobile devices** – present special problems with compatibility, iOS / Android updates and tracking
- **Client support** – how and when to provide support and updates to clients for the quizzes and other e-Learning programs you developed for them

---

Research / Theoretical Considerations

What the research and theory says about adult learners.
Adult Learners

The key premises of adult learning theory are:

- Adults need to know why they need to learn something.
- Adults need to be in charge of their own learning.
- Adults come from a wide variety of backgrounds and experiences.
- Adults become ready to learn when they need to apply a skill or knowledge to the real world (J-I-T-L)*.
- Adults are task-focused and learn things best in the context of using learning to achieve desired outcomes.

Source: Knowles, 1998

*Just-in-time-learning

Our Experiences with Online Quiz Systems

A brief look at our history and experiences with online quizzes and some of the lessons we have learned.
History

Here is a brief history of our experiences with online quizzes.

- In 2005, converted 20 print quizzes for a client and posted them online for their members’ use
- Intended to complement self-assessment forms as a method of identifying learning needs
- Provided a great “reality check” to the self-assessment forms
- Online quizzes become very popular, so we developed and installed them for other clients

Learning Nurse

In 2008, we created LearningNurse.org, a website dedicated to providing convenient and safe online informal learning opportunities for nurses world-wide.

- Free access to all resources
- Clean and uncluttered – no advertising or pop-ups
- Confidential and private – no registration required and results are usually anonymous and not shared
- Service is always available (on a dedicated server)
- Focus is on basic nursing knowledge and competencies
- Learning activities kept to short chunks
- Target audience is 6 million English speaking nurses (about 20 million nurses world-wide)
The website has evolved as we better understood the needs of our users.

- Intended as informal review and refresh of basic nursing knowledge available any time or any place
- Soon used for continuing education credits and PD (required proof of successful completion)
- Recommended by many nursing associations and regulatory / licensing bodies
- Nursing education programs began using quizzes and other resources as supplemental assignments
- Employers and recruiters using quizzes and self-assessment forms as screening devices

Here is a brief description of the technological tools that we have used.

- Our first quiz development tool was Quiz Creator from Wondershare to create Flash quizzes
- Soon changed to Quiz Builder because of ability to capture names, easy tracking to a database, and a built-in certificate (Flash quizzes)
- Our HTML5 nursing games were developed using specially customized software from eLearning Brothers
- Our drag and drop games are developed with Articulate's StoryLine 2
- Our commercial apps are custom programmed
- Same content available in different formats
Time for a Change

In 2016, after 8 years in operation, our nursing quizzes were in need of a serious upgrade for the following reasons:

- All 165 existing nursing quizzes were in Adobe Flash, which is being slowly phased out
- Complaints from users not being able to access quizzes on mobile devices
- We needed better tracking and reporting features for nursing classes and continuing education
- Wanted to be able to publish quizzes in HTML5 only
- Existing software vendors were not making updates to their software that would address our needs

iSpring Quiz Maker

After looking at the various options, we selected iSpring QM as our quiz software development tool.

- Aware of iSpring software; Version 8.1 met most needs
- Like the layout of QM development page
- Ability to capture user data (add / customize fields)
- Print and e-mail summary or detailed results
- Database tracking with “send results to server”
- Player Apps for mobile devices are the best
- Support is excellent (detailed response with 24 hrs)
- Ongoing software development with frequent upgrades (good and bad)
- Listen to clients and keep them informed
iSpring Quiz Maker ... 2

However, there were some challenges with QM that needed to be resolved.

- Key requirement was a PDF certificate of completion
- Contracted iSpring to custom program certificate
- Alas, their solution did not work for us
- Held a contest on Freelancer.com (prize of $500)
- Winner produced a php / cookie solution that proved to be stable, reliable and worked well on most devices
- Limitation: does not work offline or on Player Apps
- Inform users of these limitations of the certificate
- QM now met all of our requirements!

iSpring Quiz Maker ... 3

The next challenge was how to convert 165 nursing quizzes with 12,000 questions to QM.

- Each quiz would take me a day to convert
- Working on other projects so would take much longer
- Solution: Freelancer.com
- Contracted Elta (Indonesia) to enter the data into QM
- Provided Word version of quizzes and QM template for each quiz
- Conversion done in one month for about $1,000
- Revised and added final quizzes myself
- Now use QM for all client quizzes and final exams
- Do I convert other own and client quizzes to QM
### Learning Nurse Today

Here are some main features of the LN website:

- 163 nursing quizzes with 12,000 questions (QM)
- 159 nursing games with 5,800 questions
- 19 iOS and Android native apps
- Average 45,000 visits and 120 GB of traffic each month
- Most learners from USA, Canada, Britain, Australia, NZ, India, Philippines and Saudi Arabia
- 300-400 games and 300-400 quizzes done each day
- “Nursing quizzes” and “nursing games” ranked first by Google
- Recently awarded top-10 nursing website

### Our Use of iSpring Products

A description of how we use iSpring software to develop quizzes and apps, and some of the lessons we have learned so far.
Quiz Maker

What we do with iSpring QM:

- All quizzes created and maintained in Word
- Questions, answers and feedback copied and pasted into QM
- Use multiple choice/response, true/false and matching
- Select 25 randomized questions from pools up to 100 items (chunkable learning)
- Questions submitted one at a time, with immediate feedback (often detailed)
- Option to provide real name if they want it on printed results or certificate; other “guest” or any other name
- Sometimes ask optional course or instructor name

Quiz Maker ... 2

What we do:

- Do not set time limits for learning quizzes
- Send quiz results to database table with following data:
  - Quiz name
  - User name
  - Course name
  - Passing score
  - Passing points
  - Earned points
  - Total points
  - Score %
  - Pass or Fail (80%)
  - Time taken (seconds)
  - Date and time (server)
  - IP address (for location and security)
Quiz Maker … 3

What we do:

- Types of analyses:
  - Most popular / least popular quizzes
  - Average scores, highest scores and lowest scores (*crude measure of learning needs and competence*)
  - Time taken (*indicator of difficulty of quiz*)
  - Daily, weekly and monthly traffic (*peak usage*)
  - Location of learners
  - Can NOT do item analyses
- E-mail quiz results to client and webmaster (backup)
- Will probably request optional user e-mail address to send results to learner (when this feature becomes available)

Quiz Maker … 4

What we do:

- Final exams created by importing module quizzes into distinct question categories; number of questions selected from each category based on importance
- Also possible to set value (points) for each question; we usually don’t do so
- Use music for title page, instructions and results slide; audio sounds for transition and correct/wrong feedback
- Create “perfect” template and question specs and then duplicate (lack of master slides)
- Always check slide view for formatting and layout
Lessons Learned

Here are some things we have learned:

- Quizzes are very popular
- Quizzes or “discovery learning” 4 times more effective
- Quizzes a good choice for dull or boring topics
- Background music is distracting to most
- Narrated quizzes have not worked for us
- True/false questions effective for interactive learning (especially if detailed feedback provided)
- One size does not fit all! (QM feature request: enable learner to select the number of quiz questions)
- Still so much that we don’t know; plan to do some usability research and focus groups

Interactions

Directory Interaction:

- Part of iSpring Suite
- Very easy to use
- Offers multimedia options
- Highly effective and simple way to create look-up apps for learning support, job-aids, etc.
- With iSpring Player apps, can be downloaded for offline use on iPhone, tablets, iPod Touch, etc.
- Works well as an eBook with some documents
- Would like to see ability to group and subgroup, more control over player look, and super/subscripts
Interactions … 2

Directory Interaction:

- App examples from Learning Nurse:
  - *Glossary of Generic Drugs*: pronunciation, and links
    See: [http://www.learningnurse.org/quizzes/drugsapp/](http://www.learningnurse.org/quizzes/drugsapp/)
  - *Infection Precautions*: critical information to prevent infections
    See: [http://www.learningnurse.org/quizzes/ipc-app/](http://www.learningnurse.org/quizzes/ipc-app/)
  - *Diagnostic Tests I*: key information on 180 diagnostic tests
    See: [http://www.learningnurse.org/quizzes/diagnosticapp1/](http://www.learningnurse.org/quizzes/diagnosticapp1/)
  - *Diagnostic Tests II*: data on 91 technology tests
    [http://www.learningnurse.org/quizzes/diagnosticapp2/](http://www.learningnurse.org/quizzes/diagnosticapp2/)

References

Here are some books on digital learning that we suggest:


For related research reports and presentations, see our Library at [http://www.learningnurse.org/index.php/library/research-reports](http://www.learningnurse.org/index.php/library/research-reports)
Contact Information

To contact the presenter for more information:

Russell Sawchuk
Steppingstones Partnership Inc.
Edmonton, Alberta Canada

Phone: 780-430-8245 or 1-800-267-9997 (Canada and USA)
E-mail: russ@steppingstones.ca
Webs: Steppingstones.ca LearningNurse.org

A copy of this presentation can be downloaded from:
LearningNurse.org → Library → Research Reports

Permission is granted to copy and distribute this information for non-commercial uses. Please acknowledge and credit the source.