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A Scenario-Based Learning Approach to Teach K-12 Math in Tamil

Jawaharlal Mariappan, Ph.D., Bob Elmore, Ph.D.,

Gary Hays, Babu Aharam

ProBiz Associates, Minneapolis, MN

Rita Jawaharlal

APlusStudent, Sewell, NJ

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Abstract:

This paper introduces the concept of scenario-based approach (SBL) in e-Learning and its application. We are currently developing a comprehensive K-12 math program using this using SBL approach that is centered on a coherent theme/story that ties all major learning objectives together. We believe such an approach will greatly enhance the learning experience, and make learning engaging and fun for all children. Developing these lessons in Tamil poses greater challenge but we believe this effort will help to reach millions of children from all parts of Tamilnadu. In addition, teachers can also use these lessons as supplemental resource in their classrooms.

Why Scenario-Based Learning (SBL) Approach?

We all know from years of personal experience in education and training that traditional linear, didactic approaches to learning facts, rules, procedures and concepts are at best only tenuously connected to the ultimate aim of achieving competency. In fact, most web-based training, whether in a self-paced asynchronous or synchronous webinar mode, has been implemented with a repetitious lesson-quiz, lesson-quiz or simple lecture/PowerPoint format. Adding interactivity through "fancy graphics, whirligigs and dancing bears" has done little to alter this basic approach. It's not surprising, then, that course completion rates for most e-Learning fall below 50%.

Many training professionals have for years wrestled with how best to connect their efforts to changed behavior or business results. Most ultimately settle for surrogate measures of competency or performance, using pre and post-test scores and ratings of satisfaction with the training experience. Consequently, training cannot often be shown to impact performance, because the focus and measurement of training itself is not on performance.

Improved Retention Through Mentored, Experiential Learning

While knowledge retained after training is one legitimate aim of training, and is in fact a component of competency, we know from research that teaching one-to-one (coaching/mentoring) and learning-by-doing have far superior knowledge retention rates than traditional approaches. A study by National Training Laboratory on coaching and learning-by-doing reported knowledge retention rates of 90% and 75% respectively. The far more common linear, didactic approach approaches to training (lecture, reading, audio/visuals, and demonstrations), in contrast, achieve retention rates of only 5-30%, less than • the rate of mentored experiential learning. Even case studies or discussion groups, both common approaches in higher education and adult learning, achieve retention rates of only 50%.

We know that knowledge retention, while necessary for competency achievement, in and of itself is not sufficient. What is needed is an approach to learning that enables the learner to experiment in a controlled, replicable, and safe environment, allowing the learner to apply knowledge, skills and abilities by testing himself/herself in a "real-world setting."

Therefore, active, experiential learning, using a scenario-based approach offers a new and more effective way of engaging learners and building competency mastery than is true of traditional e-Learning approaches.

K-12 Math Education in Tamil

Applying the principles of SBL can make K-12 education make learning experience engaging and fun. At APlusStudent, we have created hundreds of online supplemental lessons in Math using a more traditional multimedia approach with graphics, animation and audio.

We are currently developing a comprehensive K-12 math curriculum using SBL approach. In addition, our efforts are to synergistically connect the entire curriculum with a coherent, meaningful theme/story as an alternative to traditional, linear textbook approach. Creating such stories using SBL approach in Tamil poses additional challenges.

A few screenshots from the interactive multimedia tutorials developedin Tamil are given in the following figures. These sample lessons are available on the web and can be accessed from links give below.

http://206.29.89.105/tamil/tamil2.htm

http://206.29.89.105/tamil/tamil1.htm