

# Chapter 8

## Promoting Role–Play Simulation Activities in Science–Based Modules

**Lai Zee Wei**

*Taylor's University, Lakeside Campus, Malaysia*

**Wei Hsum Yap**

*Taylor's University, Lakeside Campus, Malaysia*

### **ABSTRACT**

*Educators are facing the challenge of selecting appropriate tools that ensure positive learning outcomes and quality of learning compared to traditional classroom settings. Role-playing simulation is an exciting and motivating tool for engaging students in the activities that are to be presented in the classroom. This study aimed to demonstrate that role-playing simulation activities are a unique and creative tool in science-based modules and how to deploy this student-centred approach that empowers students to take learning into their own hands and apply it in an engaging context. Two science-based modules are selected for implementation of role-play and simulation activities. In these activities, students take on different roles, assuming the profile of a character or personality, to interact and participate in diverse and complex learning settings. Overall, student feedback was positive. Students can apply what they have learnt, create new connections, and reinforce the core concepts by putting them into practice in a fun and engaging context.*

### **INTRODUCTION**

Identifying critical 21<sup>st</sup>-century skills needed to survive and succeed may serve to prepare students for every changing and developing world. Modern learners nowadays want to be challenged and inspired in their learning. They want to collaborate and work with their peers. However, students are still primarily taught and assessed through the teacher-centred approach especially in sciences-based modules in many government/private institutions. Through this approach, students always memorize and regurgitate facts

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instead of making new discoveries throughout their learning process (Chua et al., 2018). Experiential learning is the future of learning for 21<sup>st</sup>-century learners as it offers accelerated learning experience and connects students to the real-world setting. Experiential learning activities deploy a student-centred approach that empowers students to take learning into their own hands and apply it in an engaging context.

Many educational institutions offer experiential education teaching programs for an example field trip, internships, and classroom experiential learning exercises to increase the classroom value and add direct experience components to their own traditional teaching method. All these teaching programs do have group learning, service and problem-based learning components. Role-play learning experience must be correlated between education and experience. It is a pre-planned activity with meaning and with experiential learning, the purpose is reaffirmed by the learners. The core attributes of learning through experiential learning are reflection and action. Activities such as case studies, role-play simulations that use real-life experiences as its basis of instruction are part of the teaching methods. Experiential learning like game-based activities, virtual lab interaction lesson and simulation, engage student's intellect and imagination to strengthen student's understanding. The goal of Taylor's University is to encourage Teach Less Learn More (TLLM) pedagogies. Thus, this book chapter aimed to promote role-play simulation activities in sciences-based modules to ensure the learning process is enjoyable and effective and to deploy a student-centred approach that empowers students in connecting learning to the real-world context.

## **BACKGROUND**

### **Kolb's Experiential Learning Cycle**

Many studies that use experiential learning theory to foster the theory and practice of experiential learning. It is a holistic theory of learning that identifies differences among academic specialities, and research on experiential learning theory is highly interdisciplinary in addressing learning and educational issues in various fields. Experiential learning is known as a process of generating knowledge that involves an interconnected linkage between four learning modes, which encompasses two related modes of grasping experience – concrete experience (CE) and abstract conceptualization (AC), as well as another two related modes of transforming experience – reflective observation (RO) and active experimentation (AE) (Kolb and Fry, 1974). It defines learning as the process in which knowledge is constructed by variation of experience. The process is described as an idealized learning cycle which revolves around – experiencing, reflecting, thinking, and acting.

Kolb states that learning involves an attainment of abstract concepts that can be applied in a wide variety of situations (Kolb, 1984). The experiential learning cycle started with real experience where a new experience or situation is encountered or reinterpretation of existing experience. This is followed by reflective observation when an individual observed discordance between experience and understanding. Reflection helps to give rise to a new idea, or modification of an existing abstract concept and the person has learned from their experience. Lastly, active experimentation involves learners who are applying their ideas. Effective learning is achieved when learners have gone through the four stages cycle which is having a real experience that encountered, followed by reflective observation on that experience, then used for testing hypothesis in future situations after analysis of the concept and generate a new experiences.

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