

## Chapter 2

# The Scholarship of Learning and Teaching in the Dynamic Discipline of Pharmacology and Chemistry

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### ABSTRACT

The scholarship of learning and teaching (SoLT) involves research into practices of teaching, learning, and curriculum. SoLT's main principle is that effective teachers in higher education should engage in scholarly teaching practices as a matter of course by staying in touch with the latest research developments in their discipline, integrating these developments into their curriculum, and routinely gathering and using student feedback to guide curriculum review and improvement. SoLT research focuses on understanding student learning in order to improve the teaching and learning experience for participants. SoLT principles are particularly important in pharmacology and chemistry education because they entail rich content that is rapidly changing. Over the years, the discipline of pharmacology has undergone rapid expansion and advancement: the number of United States Food and Drug Administration-approved drugs has increased exponentially, patients have become more educated, and our knowledge of the mechanisms underlying many adverse drug events and interactions has evolved.

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## INTRODUCTION

The scholarship of learning and teaching (SoLT) involves research into practices of teaching, learning and curriculum. SoLT's main principle is that effective teachers in higher education should engage in scholarly teaching practices as a matter of course, by staying in touch with the latest research developments in their discipline, integrating these developments into their curriculum, and routinely gathering and using student feedback to guide curriculum review and improvement. SoLT research focuses on understanding student learning in order to improve the teaching and learning experience for participants (Boyer, 1991; Buckridge, Krause, & Alexander, 2010; Grauerholz & Zipp, 2008). SoLT principles are particularly important in pharmacology and chemistry education, because they entail rich content that is rapidly changing (Gilbert & Treagust, 2009; Michel, Bischoff, & Jakobs, 2002). Over the years, the discipline of pharmacology has undergone rapid expansion and advancement - the number of United States Food and Drug Administration-approved drugs has increased exponentially, patients have become more educated and demanding, and our knowledge of the mechanisms underlying many adverse drug events and interactions have evolved (Zgheib, Simaan, & Sabra, 2011). Likewise, chemistry education has been intensively engaged in pure chemical education research – advancing fundamental and generic pedagogical knowledge. The advances have not been translated to the classroom, and chemistry education seems unsure of its direction (Bucat, 2004).

This expansion in our knowledge of the discipline has placed more pressure on academics to continuously incorporate new facts and principles and update their curricula (Bucat, 2004; Hughes, 2003). Moreover, students perceive pharmacology and chemistry as a more “difficult” learning area than other subjects in the undergraduate health curriculum (D. K. Badyal, S. Bala, & P. Kathuria, 2010; Sirhan, 2007; Wang, Hu, & Xi, 2012). Consequently, teaching pharmacology and chemistry curricula to students has been a challenge (D. Badyal, S. Bala, & P. Kathuria, 2010; Halliday, Devonshire, Greenfield, & Dommett, 2010) and up-to-date teaching methods, such as e-learning tools, have been proposed to keep the students engaged and up-to-date with the content (Beetham & Sharpe, 2013; McGil, 2011; Michel et al., 2002).

The objectives of this chapter were divided into two main streams:

- Objective One: To review and evaluate the implementation of commercially available e-learning tools in higher education.
- Objective Two: To identify the required educational theories and principles to design effective self-designed e-learning tools and the software needed to produce those tools.

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