Research and Trends in the Field of Technology-Enhanced Learning from 2006 to 2011: A Content Analysis of Quick Response Code (QR-code) and Its Application in Selected Studies

ABSTRACT
This study provides a content analysis of selected articles in the field of QR code and its application in educational context that were published in journals and proceedings of international conferences and workshops from 2006 to 2011. These articles were cross-analysed by published years, journal, and research topics. Further analysis was carried out according to research settings, participants, research design types, research methods and findings. It was found from analysis that QR code technology cover a wide range of applications such as augmented reality game, science education, student assignment submission, library catalogue system, communication tools in large classroom environment, system for learning language, collaborative mapping and knowledge management environment, multimedia access tools, assessment tools and so forth. Although the technology covers a wide range of applications, the reported effectiveness of QR technology was not conclusive as most of the data were self-reported such as from questionnaire survey. Most of the studies involved short term research which would not be sufficient to address the complexity of technology integration in educational settings. Hence, it is suggested that future studies should consider offering more reliable and richer findings through longitudinal study and providing inter-observer and intra-observer agreement reliability.

Keywords: QR-codes, Quick response code, 2-D barcode, Education

INTRODUCTION
QR Code (abbreviated from Quick Response Code) is a multifaceted two dimensional graphical description of data. Its capability has gone beyond the traditional linear barcode (which is mainly used to automate supermarket checkout systems and as automatic identification and data capturing tag) due to its large storage capacity and fast readability. A long piece of multilingual scaffolding text, URL of a linguistic mastering website, a direct link to Moodle or Schoology, an automated SMS message to a formative assessment application, a direct access to students’ science electronic portfolio, or even an augmented reality object can be amalgamated into the small 2D matrix barcode. Affiliated with a sufficiently equipped mobile phone or any handheld devices, QR code is able to power a speedy and ready connection between learners, instructors and digital content available.

Although QR code has existed for almost two decades, there was still a lack of research on its usage in educational setting. However, the interest to integrate this technology in education is rising due to the rapid advancement in mobile and wireless technology, and low technical barrier to encode and decode. These provisions enable educators to explore its potential creatively. In this paper, the authors explored the usage of QR code in educational context. The investigative journey was guided by the following questions: