

EMBEDDING WEB-BASED GEOGRAPHIC INFORMATION SYSTEM (WEB-BASED GIS) IN TEACHING AND LEARNING OF HISTORY

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Abstract

Current education system requires innovative approach in enhancing students' understanding in any subjects. One of the innovative approaches that can be implemented in teaching and learning is web-based geographic information system (web-based GIS). Not only it is easy to use, it is also freely available online. Therefore this study explores the tools available in the current web-based GIS in teaching and learning of history subject. The method used in this study is through experiments in using the web-based GIS tools namely Google Earth in the Malaysian Form Five history curriculum. For each topic that requires the use of map, Google Earth tools are evaluated. Results show almost all tools available in Google Earth can be used in all topics that need the application of high-order thinking skills (HOTS). Therefore it is timely that web-based GIS is used as one of the innovative approaches used in education policy.

Keywords: web-based geographic information system (web-based GIS), history, innovative education, high-order thinking skills (HOTS), teaching and learning tool.

1 INTRODUCTION

The advancement in technology has changed people's life in many ways. This includes education system in which methods of teaching and learning in the 21st century are now integrated with information communication technology (ICT). People who ignore the ICT wave will be left behind. ICT includes the use of technology such as computer, simulator, courseware, smart white board and also internet resources namely youtube, online library, online archive, geographic information system (GIS) and web-based geographic information system (web-based GIS). The integration of ICT in teaching and learning has taken place in many countries. Some of the integration projects might be successful but others might fail due to certain factors which include limited ICT skills, lack of pedagogic expertise, lack of passion, and lack of training (Chikasha et al., 2013; Hu & McGrath, 2011; Huynh et al., 2012). Teachers' knowledge on ICT influences the teaching and learning (Hsu, 2011). Teachers only give assignments to students using tools that they are familiar. Therefore teachers' exposure to ICT tools is essential in students' education. Policy driven method can assist in the successful of ICT integration in teaching and learning (Hadjithoma & Karagiorgi, 2009). Nonetheless, teachers appreciate the availability of ICT which provide vast amount of resources for teaching and learning (Domingo & Marques, 2011). However, proper training need to be provided to teachers to expose them to new method in teaching and learning in the twenty first century.

Geographic information systems (GIS) is an application that has potential in enhancing teaching and learning of subjects that require spatial visualization especially history and geography. GIS can be taught as a separate subject or can be integrated into subjects and use it as a tool. However, Huynh et al. (2012) argue that the second method requires teachers to be trained first before handling the tool. This will be a challenging task since it is time consuming and teachers must be willing to learn new pedagogy technique. Another challenge in bringing GIS in education system is the cost of GIS software which is quite pricy (Singh et al., 2012). In facing these challenges, web-based geographic information system (web-based GIS) might be able to provide solutions. Therefore this study examines the use of web-based GIS in teaching and learning history, a subject that always said to be a boring one.

This paper is divided into five sections which start with the introduction to ICT in education. It is then followed by a section on research background which describes the previous studies on using GIS and web-based GIS applications. The following section elaborates the methodology used in this study and then sections on results and discussion. Conclusion section finalizes the paper.