

A Dynamic Capabilities Theory Assessment of E-Learning in Jamaica

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ABSTRACT

Many governments are looking to e-Learning to foster the growth and further development of their educational systems. Despite the potential of e-Learning as a development tool, there are no guidelines given as to the capabilities necessary for the successful implementation of e-learning infrastructure within a developing country and how these capabilities should be shaped. This research examines how Jamaica plans to use e-learning to address the educational problems faced in the country. Several factors, deemed necessary, are identified within the literature and are used initially to outline the capabilities that may be necessary for e-learning infrastructure implementation success. Applying a dynamic capabilities lens and drawing on the lessons learned from the case study this paper will propose a framework for e-learning infrastructure implementation success in a developing country context.

Keywords: e-learning; dynamic capabilities; education; developing country.

1. INTRODUCTION

As economic and social disparities emerge between the countries of the world, most developing countries struggle to find a path to development. The literature has identified varying options for developing countries to achieve economic and social benefits. Some of these include IT-enabled services (Davis et al 2002), software exports (Carmel 2003) and e-government (Ndou 2004; Sipior et al 2005). However in order for a developing country to offer these services or benefit from them it is reasonable to assume that it will need people with the requisite level of education. Drucker (1996) argued that in this knowledge-based era "there would not be poor countries but only ignorant ones". The development of a country's human capital is essential in a global and knowledge based economy. Knowledge is recognized as the driver of productivity and economic growth. Kante & Savani (2002) further emphasized the importance of developing countries acquiring and enhancing knowledge as a competitive tool.

Kaplan-Leiserson (2001) defines e-learning as "a wide set of applications and processes such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV, and CD-ROM". Although it has been argued that technology does not improve the delivery of pedagogy, it can promote understanding by individuals with different learning styles (Zhang et al., 2004). E-learning as defined by Kaplan-Leiserson 2001 includes various delivery media that cater to differing abilities and learning styles of students.

E-learning has been identified as one of the contributors to a country's development (Kante and Savani 2002). Various governments have employed e-learning to assist in the education of their people. Some of the countries in which e-learning has been implemented at a national level include the Philippines, Thailand and Singapore. In 2001 Singapore implemented a national e-learning strategy which included using e-learning to enhance the delivery of education in schools but also a component which dealt with the use of e-learning within the corporate and government entities for staff training. By 2003, the majority of Singapore households had access to a computer and the Internet. In fact, The World Economic Forum and other indices rank Singapore as one of the most network ready countries in the world.

Despite the evidence that e-learning can propel a country on the path to development,

there are no guidelines given as to the capabilities necessary for the successful implementation of e-learning infrastructure within a developing country and how these capabilities should be shaped. Countries have put e-learning infrastructure in place without full knowledge of all that is needed (Trinidad 2002, Pagram and Pagram 2006). A prescription for successful e-learning infrastructure implementation is needed for developing countries striving to become competitive as a result of increasing the educational level of their population.

The case of e-learning infrastructure implementation in Jamaica will be examined. The objectives of this initiative by the Jamaican government are:

1. Improve the quality of education
2. Enhance the learning experience
3. Ensure high levels of passes in the CXC Exams (a standard set of examinations taken by Caribbean high school students).

The questions that this research will answer are: What are the necessary capabilities for a successful e-learning infrastructure implementation? How does Jamaica develop these capabilities? Examination of this Jamaican case study will add to the body of knowledge on e-learning and provide insights to other researchers on the type and nature of capabilities that are needed in the implementation of similar projects in a developing country context.

The rest of the paper is organized as follows: section 2 gives background on the case study, section 3 proposes to use a dynamic capabilities theory lens to assess the project, section 4 proposes a work plan to engage in the research, section 5 looks at the preliminary findings and section 6 concludes the article.

2. JAMAICAN CASE STUDY

Jamaica has made great strides in integrating technology within its society, particularly voice telephony. The Economist Intelligence Unit's e-readiness rankings for 2006 ranks Jamaica as 43rd out of 68 countries while the Networked Readiness Index for 2005-2006 ranks Jamaica as 54th out of 115 countries of the world. There is access to the Internet and data related services but the use of these technologies is greatly inhibited by the low level of education of the nation's people. Several challenges are identified in the educational system. There are wide disparities in standards among schools, absence of standard instructional materials for teachers and students, an absence of a standard assessment system, inadequate equipment in schools to enhance teaching and learning using modern technologies and an inadequate remedial programme to enable weak students to cope with high school work (Feasibility Study - www.mct.gov.jm/elearning).

The e-learning project, executed mainly through e-Learning Jamaica, a government corporation, in collaboration with two government ministries, was developed with the goal to improve the quality of education in high schools. It proposes using technology to enhance the educational experience. Students in Jamaica's High Schools will benefit from a mix of formal methods with informal approaches to stimulating learning. Proponents of the e-learning project envision applying a blended learning approach that would see e-learning technologies complementing traditional classroom teaching.

The Jamaican e-learning project will be implemented in two phases as indicated in Table 1. The research phase will be "the testing ground for the project design, approach to implementation, the use of teaching and learning materials, the technology applications and software as well as the support systems that must

Table 1

Phases of the E-Learning Project	
1. The Research Phase – The Pilot Programme	<ul style="list-style-type: none"> • September 2006 – August 2007 • Grades 10 and 11 • 28 selected schools • Includes 5 subjects • Three teachers colleges will be included in the pilot
2. The Implementation Phase – All Island Access to e-Learning	<ul style="list-style-type: none"> • September 2007 – August 2009 • Includes all eleven (11) subjects in the high school CXC CSEC syllabus • Implementation will take place from grades 7 – 11 in remaining 166 high schools

Adopted from www.mct.gov.jm

Table 2

E-Learning Project Objectives
<ul style="list-style-type: none"> • To develop a comprehensive set of standard ICT-based instructional materials for teachers and students, in 11 CXC CSEC subject areas
<ul style="list-style-type: none"> • To provide schools with ICT equipment and software for use in the teaching and learning process • Establish a Central Repository for the Educational Materials (CREM) at the Ministry of Education
<ul style="list-style-type: none"> • To enhance the skills of teachers through training programs in the use of software and equipment and in modern methodologies for delivery of the high school CXC syllabus;
<ul style="list-style-type: none"> • To provide modern technologies to existing remedial programs in high schools to ensure that all children keep pace with the schools' programs
<ul style="list-style-type: none"> • To institute standard examinations that will measure and track the performance of students in each grade in high schools, as well as, measure performance among schools.

Adopted from www.mct.gov.jm.

be in place" (www.mct.gov.jm/elearning). The project has various objectives as shown in Table 2.

3. THEORETICAL FOUNDATION

Teece et al. (1997) define dynamic capabilities as 'the ability to integrate, build, and reconfigure internal and external competencies to address rapidly-changing environments'. Dynamic capabilities theory has been applied within various contexts. Ayuso et al. (2006) used two case studies to identify important capabilities necessary to successfully integrate stakeholders' insights into innovations. We have reviewed e-learning literature and this has suggested the existence of several factors necessary for a successful e-learning infrastructure implementation success (see Table 3). This will be our starting point for identifying the necessary capabilities. The dynamic capabilities theory can be effectively used to analyze the processes employed within the e-learning project.

4. RESEARCH DESIGN

The research approach that will be used in this initial assessment of e-learning in Jamaica will be qualitative. The use of a qualitative methodology is appropriate because it may be difficult to identify dynamic capabilities through quantitative research (Eisenhardt & Martin 2000). We will use an exploratory case study research strategy (Eisenhardt 1989).

A longitudinal study will be performed from 2006 to 2008. Interviews will be conducted. The personnel at the various entities, e-Learning Jamaica, the two government ministries involved in the initiative and at the schools where implementation will take place will be interviewed. This will be done at various intervals during the study. The initial interview instrument will include several open ended questions so that the feedback from the respective parties can be as rich as possible. Documentation from a variety of secondary sources will be examined. The different dynamic capabilities emerging will be identified through a review of the information that is gathered. A framework will be developed. It

Table 3

Factors Identified by Literature Review as Contributing to E-Learning Infrastructure Implementation Success
Adequate IT infrastructure and Equipment Implementation(Trinidad 2002)
Trainer Training (Crichton & Labonte 2003, Trinidad 2002)
Pedagogy Development (Pagram & Pagram 2006)
Matching of social and cultural issues to the delivery of the pedagogy (Pagram & Pagram 2006, Edmundson 2003)
Government and Private Sector Support (Trinidad 2002)

is expected that these capabilities will be linked to the factors identified in table 3, among other factors.

5. PRELIMINARY FINDINGS

There are no preliminary findings as yet since the project and our research into it are in their early phases. With regards to the project, the development of instructional materials is currently underway. The equipment will be supplied by a world-renowned company. Orientation and training of teachers in using ICT to train is also currently taking place.

6. CONCLUSION

There is no research on the implementation of e-learning in a Caribbean country. This research will examine the implementation issues related to Jamaica's e-learning project. E-learning has been used as a developmental tool in countries such as Singapore. It will be useful to learn more about successfully implementing e-learning infrastructure in a developing country.

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