Digital Innovation: Evaluation Report

By

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ABSTRACT

The following document analyses Haileybury College current implementations and possible future implementations of digital innovation. Haileybury College is Australia largest secondary school with over 5000 students. In changing times due to COVID-19 and industry 4.0, for Haileybury to be one of the leading secondary schools in Australia an analysis was conducted to determine what digital tools can be implemented to improve their education quality and increase revenue. Based on the analysis despite having some digital application such as computers, projectors and wifi, there are several improvements that can be made to increase the efficiency and quality of their education. Utilizing communication software such as Zoom to teach online during pandemics, the implementation of Learning management systems such as Canvas for relaying information, the application of chatbots to reduce customer service congestion and lastly the implementation of virtual reality to provide a more hands-on learning experience for students from a distance. Ultimately the use of digital innovation can lead to Haileybury College, opening up a distance education school full time to increase student enrollments and ultimately revenue growth.

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INTRODUCTION

Industry 4.0 has paved the pathway for the application of digital innovation within business utilizing artificial intelligence for the automation of cars and vehicles in the transport and logistics sector, robotics in the automotive manufacturing industry and sensor technology across various industries including retail and agriculture (Strandhagen, 2017). Businesses are changing due to digital innovation, transformation and disruption. Radically thinking about how technology can be implemented in a workplace and looking at new technology to shift into a new paradigm is changing the way businesses operate such efficiency, reduced costs and producing higher quality products and services if implemented correctly (Suresh and Meredith, 1985). The education industry, in particular, is facing a paradigm shift following global pandemics, and the education sector has made a shift in the way education is delivered from face-to-face interactions to distance education through digital communication software (Mourtzis, 2018). Evaluative frameworks to assess the further digital application in the sector expert knowledge, surveys, prototyping and feedback can be used to determine uses of digital technology (Hatakka and De, 2011).

ENTERPRISE INFORMATION

Haileybury College is a prestigious Australian private school. The school has students from the age 5-18, this includes a junior, middle and senior school. Haileybury college toots being the largest non-select entry school in Australia (VCE Results & Academic Success - Haileybury, 2020). The school operates on a global scale having campuses across Melbourne (Keysborough, Berwick, Brighton, Melbourne CBD), Northern Territory and China (Beijing). The school has over 5000 students and with staffing numbers at approximately 1000 ranging from teachers, administration and maintenance. The average school fees for the school are approximately $25,000 – $35,000 a year dependent on the students' year level (Fees & Payments - Haileybury, 2020).

Haileybury College is a self-confessed education institution which operates as a business selling education. The principle/CEO of Haileybury College has a strong outlook on entrepreneurship for the school. Amongst academia and humanitarianism, the school profits are still a focus to expand the school's consumer reach. Melbourne hosts some of the top schools in Australia concerning private education including Melbourne Grammar, Brighton Grammar and many more (VCE Results & Academic Success - Haileybury, 2020). In order to maintain their lead as the number one school in Australia, the institution needs to remain the leaders in relation to the application of technology, greener energy and student results. Profits generated for the school are dependent on student enrolment, where student enrolment is dependent on student results. Haileybury's strategic plan is to produce the best student academic results compared to any other school through their services. Haileybury aims to remain competitive by offering extracurriculars which other schools don't offer including a higher quality service (education) compared to other schools in such instance as COVID-19 through strategic digital infrastructure (Community Message - Haileybury, 2020). The key stakeholders engaged with the school range from the employees, students, parents, Old Haileyburians Association, Board members, Australian government and investors.

EVALUATION FRAMEWORK

In order to implement useful digital technology within the school, several evaluation frameworks will be used to determine their effectiveness and applications (Hatakka and De, 2011) (Refer to Appendices). A professional panel will be used to assess the school's current digital status and what digital technology the current infrastructure can support and within the school's budget. Following the panel, a qualitative survey will be taken question students and teachers about the current use of digital innovation at the school and what changes/improvements can be made to improve their work efficiency and quality. Once the expert panel and the school have reviewed the suggested technological implementations, a cost analysis is run by the school with allocated funding for the developments as well a prospecting digital innovation team to manage the implementations in the future. A risk analysis is to be conducted prior to the prototyping phase. Once the prototyping phase has been conducted, further feedback is to be received from student and teachers to determine which technologies will be discontinued.

SUGGESTED DIGITAL TOOLS

Video Communication - Microphones and Cameron (Zoom)

Video cameras and microphones have been used in computers since the '90s (Jain and Wakimoto, 1998). The developments and advancements concerning camera quality and microphone quality have made substantial leaps and bounds, resulting in software development (Kay, 2012). Recently, following the COVID-19 pandemic, Zoom been utilized to deliver educational lessons to students through distance education (Serhan, 2020). The benefits of software such has Zoom has provided a virtual classroom, where multiple individuals can attend a class at any one time. Zoom's benefits as software allow both students and teachers to write on a virtual whiteboard as if they were both in a classroom (Aubé et al, 2003). The virtual setting also allows students to write text without speaking to remove shyness to respond to a question. Issues associated with the software is determining whether students are paying attention (Jiang, 2020). Despite having cameras, there is no way to monitor student focus and prevent them from using other apps whilst on zoom. The application of Zoom can be used at the school to further develop a full-time distance education school which has not been utilized by any other private school in Australia allowing them to access the digital market of education.

Learning Management Software

Learning management systems (LMS) are applications with the purpose of delivering, tracking, reporting, and automating educational information and resources to those who are enrolled in a course/subject (Reigeluth et al, 2008). Traditionally multimedia teaching involved the use of microphones and live video chat for students who were learning from a distance. Following the development of technological innovation, LMS was developed (Reigeluth et al, 2008). Though LMS were developed for students who were learning from a distance, there was a practical implication for students who were learning in the classroom. The accessibility, organization and automation of the application have served to be beneficial for teachers, students (near and far) to access information readily and communicate with others within the course (Sarrab et al, 2013). LMS provides 24-hour access to content and resources to aid students and teachers with collaboration. The negative implication of the software is that it can be difficult to navigate without training and assistance (Watson and

Watson, 2007). LMS was intended to be used through distance education, and now Top universities have implemented LMS (RMIT). However, there is the application of LMS within high schools in particular public schools of which through the COVID-19 pandemic were not prepared for online/distance education. Implementing an LMS style software at the school is a selling point for the digital readiness which the school holds in the face of any future pandemics, as well as 24-hour access students, have to material if they wish to further their own personal studies. The result of this software would be better study results and therefore, more enrolments for the next year for the school.

Chat Bot

Chatbots are a software application which has the intended purpose of conversing with users via text-to-text or text-to-speech. The chat is intended to simulate the customer service process without a human support worker. Chatbots are used across a variety of industries including customer support, travel and finance (Luo et al, 2019). With the advancement of AI technology, chatbots have become more efficient and more helpful (Kurachi, Narukawa, and Hara, 2018). Chatbots have the ability to increase efficiency by answer questions posed by the user. Due to the limited number of human support workers, chatbots can reduce the waiting time for the user to seek help which could be answered quickly by a chatbot (Wintersberger, Klotz and Riener, 2020). Haileybury college has over 5000 student enrolments. With 5000 students there are approximately 10,000 parents who have questions about regarding the school and their children. The application of a chatbot whether at the school could be implemented over the phone or on the school's website. Parents looking to enrol their kids can use a chatbot to assist with paying school fees, finding out further information about the school and the school structure. Using a chatbot would free up the time of the administrative staff to assist those who have more complex questions and have more satisfied consumers with less waiting time for an answer to their simple questions. Issues associated with chatbots includes parents who want to talk to a human for the personalized touch that comes with a school that is expensive to attend. Chatbots can add value to the business through efficiently solving customer problems freeing up resources for more complex tasks (Følstad, Nordheim and Bjørkli, 2018).

eBooks

electronic books (eBooks) is a digital copy of any written script whether it be a journal article, textbook or script (Sargeant, 2015). The eBooks have allowed people to access information anywhere anytime through digital libraries (Fox et al, 1995). The widespread and access to information has been beneficial for individuals who are at university and require instant access at any time of the day, locating different sources through filtering and increased efficiency through referencing (Ashear, 2012). Other major benefits allow for students to have a cheaper copy of the books which can be searched through quickly and cannot be lost. Other benefits of eBooks allow for reduced carbon emissions through the production of physical books (Gupta and Gullett-Scaggs, 2010). Limitations to eBooks are by the user's ability to access the internet to download the book or access to a technological device that allows them to read from it. Those from low socioeconomic backgrounds may not have access to the internet of costly devices to use such technology (Huthwaite, 2011). Haileybury College can use digital services such as online libraries which universities use and single purchase eBooks to save students money on buying books for a one-time use. The use of an online library can also help students at the school find books within the physical library as well as find new articles online to assist them with assignments outside of their

immediate teachings. It is expected that access to more information will produce better results in their test scores and more enrolments the following year.

Virtual Reality

Virtual reality (VR) generates a simulated experience which is used for entertainment and education (Steuer, 1992). Virtual reality can also come in the styles of Extended reality, Augmented reality and mixed reality. Each style of reality manipulates the human senses from touch, sight and hearing (Zyda, 2005). VR is currently being used as educational toll across different sectors including health, training surgeons in preparation for future procedures (Satava, 1993). VR is also used as an interactive tool for 3-dimensional modelling and presentations (Whyte et al, 2000). VR can be incorporated at Haileybury College to provide students with an interactive platform for completing science practicals or exploratory tasks (virtual tours) (Satava, 1993). Issues with VR includes the set-up costs and the necessary digital infrastructure to employ the system.

RECOMMENDATIONS

With future business developments, including a full-time distance virtual school, Haileybury College should aim to implement digital technology which supports the distance school's quality and efficiency to increase enrolments. Based on the assessment of the digital tools, eBooks/eLibraries, Learning Management Systems, video communication software, and chatbots would be the most beneficial. The recommendations are cost-effective and easily implemented based on current research and development. Virtual Reality is relatively infant compared to the other digital technologies and can be costly.

CONCLUDING STATEMENTS

In conclusion, based on the analysis of Hailey College's current use of digital technology (computers, ICT) there is evidently more digital technology that can be implemented to improve the school's education service being provided and the results of the product. Haileybury college can implement Zoom communication software, eBook/eLibraries, LMS software, chatbots and virtual reality based on the current infrastructure. The implementations can be developed further into a permanent online distance education eSchool to increase enrolments and revenue growth. The subsequent implementations are expected to put Haileybury as one of the most digitally innovative private schools where no other private school has a distance education school.

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APPENDICIES

Proposed Expert Panel

Digital Innovation Expert
- Understands and knows emerging technologies and new research developments in the industry.

Digital Infrastructure Expert
- Knows what infrastructure is required to enable the implementation of the recommended technologies.

Educational Expert
- Using first hand experience in the education sector can work in cohesion with the digital experts for the best result.

Proposed Job Position Following the Implementation of New Technology.

Digital Director of Innovation
- The digital director will be responsible for working in cohesion with the IT department and other figure heads of the school to provide on-going information about emerging digital technologies and the management of existing technologies to remain ahead of the competition.

Sample Qualitative Research Survey Questions

Do you think Haileybury is using ICT and digital innovation to improve education?

Do you think ICT and digital innovation can improve?

What recommendations do you think the school can use to improve the level of education?