Imperial College London

Department of Earth Science and Engineering

MSc in Applied Computational Science and Engineering

Independent Research Project
Project Plan

Current Content Discovery for Module Teaching

by

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Abstract

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1 Introduction

Since the emergence of the first Business schools in the late 19th century [19, 15], several distinct pedagogical teaching strategies have been applied. First institutionalized at Harvard Business School [9, 3] in the early 20th century, a method about teaching students with real world business cases (will be called *case method* in the rest of the thesis) has been found more effective and engaging [21, 2, 11] than many traditional, for example, big lecture based, teaching methods. The case method is valued as a form of *active learning* methods for students, for its ability to expose students to complex, context-specific problems that lack clear-cut solutions. As such, it has found wide adoption across the world [20, 6].

However, despite its aforementioned adoption and performance in business school teaching, the case method faces a significant constraint: the availability and collection of timely and relevant case material [17, 14]. In particular, Christensen has identified in his classical article that instructors would have to conduct "extensive preparation" [4] for case method. Another factor contributing to this constraint of case method is the ever-evolving business world and the necessity of the latest information: Clark argues that, because learned skill will lose value quickly in five years, it is critical for students to be up to date to remain relevant in the business world [5]; McFarlane emphasises the importance of updated cases, as otherwise students could be disengaged or discouraged [12].

During the past two centuries, a number of key developments have profoundly expanded an individual's capacity to retrieve information about the world. In the early 19th century, the transmission of information was constrained by the physical limitations of transportation and postal delivery; messages had to be carried on paper or remembered by a person, which would often need days or weeks to reach their recipients. This fundamentally limited both the speed and geographic reach of information retrieval. The invention of telegraph in the 1840s by Morse, Cornell, and Henry [16, 10], notably with Samuel Morse's first telegraph message, "*What hath God wrought?*" in 1844 [13], marked a paradigm shift by enabling nearly instantaneous transmission of textual information over relatively short distances (w.r.t. the earth) via wired networks. This technological innovation was considerably improved by the invention of the telephone by Alexander Graham Bell in 1876 [22, 8], enabling communication directly by human voice, instead of encoded Morse code.

Although wired communication was a giant leap in speed of information spread, it was still critically constrianed by geographical features on where the wires were laid. Around the late 19th century, Guglielmo Marconi's experiments with wireless telegraphy [7] and the first successful transatlantic signal in 1901 [1] introduced electromagnetic wave-based wireless communication, eventually accumulating into the world's first voice broadcast by radio in 1906 [18]. These milestones collectively redefined the temporal and spatial boundaries of information access, transforming information retrieval from a manual and delayed process into a near-instantaneous activity acrossing even continents.

The next many decades have seen people improving on the then limitations of these methods. In particular, the carrying capacity of the wireless waves.

2 Methods

Abc

3 Results

4 Discussion

5 Conclusion

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