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Digitally Mediated Note-taking Practices of Students in Higher Education

Abstract

Studies have suggested that the benefits to students of using laptops and tablets for note-taking during lectures may be outweighed by their potential as a distraction (e.g. Fried, 2008) The purpose of this phenomenological study was to ascertain the note-taking practices of students in a real world setting and across a whole module.

The students were observed during ten two-hour lectures. Digital and traditional note-takers then took part in semi-structured interviews, and finally the results of coursework and final exam were correlated against note-taking preferences. The emergent themes indicated an impact on student note-taking of the pedagogical approach taken by academics, the lecture slides provided, and the revision strategies of the students.

The interviews revealed attitudes and practices among undergraduate students which challenge the traditional lecture/note-taking paradigm and suggest the need for a re-evaluation of academics' expectations of student engagement with the lecture in the face of emerging technologies.

1000 Words

Whilst effective note-taking amongst students in Higher Education (HE) is recognised as a key element in achieving academic success, relatively little published research exists to help us understand students' attitudes and approaches to note-taking in the digital age. Lectures are now often recorded, and almost all lecturers make lecture slides available on the institution's virtual learning environment (VLE), and more recently WiFi has become ubiquitous in lecture halls. The impact of these developments on student attitudes to the importance of taking their own notes has yet to be determined. The majority of the published research into the impact and quality of student note-taking is in the form of lab-based experiments designed to isolate a particular aspect of note-taking; the limitations of this approach are that the lectures are often short-format and unrelated to the students' studies. This study therefore examined the note-taking practices of contemporary students in a live-lecture setting with a view to establishing the impact of technology and a rapidly developing lecture environment.

Influences on the effectiveness of student note-taking range from cognitive capacity, style and quantity of notes, motivation, and the review process adopted by the students. The note-taking review and revision process along with the very act of taking notes in the first place has a significant impact on retention of information and exam performance (Kiewra, 1985a). There are an increasing number of students in higher education who use laptops or tablet devices to take notes during lectures. Some of the literature on academic note-taking suggests that the use of laptops in lecture theatres is detrimental to learning because of their potential as a distraction (Fried, 2008) and that laptops can diminish the encoding effect of taking notes (Mueller & Oppenheimer, 2014). One object of this study is therefore to establish whether digital note-takers in a real lecture theatre setting do take fewer notes, and if so, what (if anything) students using electronic media do to compensate for that. The study also examined what students do with their notes in terms of review, revision and repurpose; and how importantly the students view their notes in relation to the learning process.

A cohort of 180 second year undergraduate students took part in the study and the results were that laptop users outperformed traditional note-takers in both the mid-term assignment and the final exam. Although the differences were not statistically significant, this does suggest that, contrary to the assertions made by Mueller & Oppenheimer (2014) and Fried (2008), the participants in this study are not being impeded by their chosen media for note-taking.

The expected divide between traditional and digital note-takers failed to materialise and instead what become apparent was the amorphous nature of student note-taking. The majority of students used both traditional and digital media, for instance, participants who used laptops or tablets often supplemented their notes with handwritten marginalia and students who took handwritten notes often used digital media as part of their revision process. The striking element was the fluidity with which the students moved between writing media. For them, the digital has been assimilated into a range of tools they feel comfortable with, and use interchangeably as required. The notion of digital and non-digital note-takers amongst today's students is therefore misleading; the majority are both. The differences in how they used their notes were individual and unrelated to the original note-taking media.

The participants in this study demonstrated high levels of reflection and most had arrived at their note-taking and revision strategies only after careful consideration and experimentation. Influenced by a number of factors including the lecturer, the subject, the richness of the provided lecture slides and the perceived value of the material – the overall learning strategies are personal and often unique to the individual. A great deal of the existing research on note-taking was supported by the findings of this study; however, their significance in the learning processes of individual students was dwarfed by factors such as revision strategies and the module assessment schema.

Influential note-taking research has suggested that providing skeletal lecture slides constitutes 'active' learning, in that it forces students to take their own notes. Yet, on closer examination, the literature is far from conclusive on this matter; Hartley (1976) disputes the

long-term learning gains from skeletal slides, and Kiewra (1985b) found that full lecture notes *plus* the students' own notes *plus* revision to be the most beneficial combination.

The evidence in support of providing skeletal lecture notes is therefore questionable and the findings of this study indicate that students whose first language is not English, those with learning difficulties, and those with disabilities could be seriously disadvantaged.

It is clear that writing and reviewing notes (not necessarily in the lecture) produces higher achievement than not producing or reviewing notes (e.g. Kiewra, 1985; Kiewra et al., 1988). And unlike so many interventions it is the weaker students who are most likely to profit (Howe & Godfrey, 1977), as 'contrary to the prediction, the students at lower schooling level benefited from note-taking significantly greater than did the students at higher schooling level' (Kobayashi, 2005, p.254).

A major problem with a great deal of existing research on note-taking is the reductionist, laboratory based, experiments which isolate particular behaviours or techniques. These have been shown to produce misleading results, notably in relation to the provision of skeletal lecture slides, transcription versus summarising, and possibly on the laptop's potential as a distraction. More research is required which takes a holistic view; lecture notes are indivisible from the students' whole learning strategy and experience, and they therefore need to be studied in that context. Only by understanding the learning processes of students in the digital age can pedagogies be developed which maximise the learning gains from lectures.

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