

# **THE EPISTEMOLOGY WAR: WIKIPEDIA, WEB 2.0, THE ACADEMY, AND THE BATTLE OVER THE NATURE AND AUTHORITY OF KNOWLEDGE**

Henk Eijkman

Learning and Teaching Development

University of New South Wales at the Australian Defence Force Academy  
Australia

## **Abstract**

This paper reports on the preliminary findings of an empirical research project that investigates the attitude of academics (or faculty) towards Wikipedia and how their attitudes impact on their use of Web 2.0 for educational purposes. The research data has been obtained via an online survey of academics predominantly from the University of New South Wales campuses in Canberra (ADFA) and Sydney as well as from other universities in Australia and abroad. The findings to date indicate that some academics are well informed about, and embrace Wikipedia, and by extension Web 2.0 social networking applications and services for the purposes of learning. Yet Wikipedia tends to provoke strong opinions, primarily negative and proves to be a highly divisive and controversial issue. While quite a few respondents occupy the middle ground and display a cautious if not somewhat curious attitude towards Wikipedia, those with a negative opinion appear to hold them much more strongly than the few who indicate positive opinions. The paper makes an important contribution to the educational Web 2.0 literature by providing empirical data that highlights a considerable degree of apprehension, if not hostility towards what is perceived to be Wikipedia's disruptive influence on traditional knowledge construction processes and the authority of academia. Despite, or perhaps because of, a long history of online learning, and notwithstanding the appropriateness of a critical approach, these results point to a problematic acculturation of academia into Web 2.0's worldview and practices.

## **Is Wikipedia the Site Students Love and Academics Love to Hate?**

Over the last few years the use of Web 2.0 social networking applications such as wikis, blogs and micro-blogs as well as services such as Facebook, YouTube, LinkedIn to name but some and a host of combinations or mashups have taken the internet by storm. The participatory Web 2.0 social networking revolution is producing a paradigm shift in the way peoples around the globe use the internet. Not surprisingly the literature also indicates that innovative academics (or faculty) are increasingly embracing social networking media for the purposes of formal learning (Allen, 1999; Anderson, 2007; Chowcat, Phillips, Popham, & Jones, 2008; Eijkman, 2008, 2009 forthcoming). However there is also evidence, mostly anecdotal, to suggest many academics are anything but sanguine about the value of social networking for formal learning and research practices. And much of the opposition centres on Wikipedia — the public face of Web 2.0 and its more open

and democratic approach to collaborative knowledge construction (see for instance Baker, 2008; Manion-Fischer, 2007; Waters, 2007).

There is some emerging evidence of academics using Wikipedia in support of innovation in learning and research (see for example Alexander, 2006; Childs, 2007; Kamel-Boulos & Wheeler, 2007; Selwyn, 2008). However the literature, and much anecdotal evidence gleaned from casual conversations with academics in staffrooms, hallways, and faculty pronouncements, tends to suggest that the popular mood about the student use of Wikipedia is one of scepticism if not outright opposition. It is invariably claimed that this is because the sources and accuracy of its information are uncertain and therefore of doubtful value for scientific and scholarly research. Citing its open 'review' processes it is also open to criticism for lacking 'proper' academic scrutiny. Wikipedia seems generally to be seen as *the* representative of the 'cult of the amateur' (Keen, 2007).

Consequently the use of Wikipedia as a research tool by students in undergraduate education is a hotly debated subject. And the debate about Wikipedia is itself highly problematic on a number of counts. Although some discussions have hit the digital airwaves (Childs, 2007; Waters, 2007) they are with few exceptions negative (for an example of an exception see Parry, 2008), rely on anecdotal rather than hard empirical evidence (see for instance Magnus, 2001 and Waters, 2007) and seem unaware of the quality assurance processes that are built into Wikipedia (Viegas, Wattenberg, & McKeon, 2007; Anthony, Smith, & Williamson, 2007). In addition most discussions and debates about Wikipedia focus on its content and, should its knowledge construction process be considered at all, such discussions are inevitably geared to issues around the accuracy of its content. To complicate matters further, when pressed, many academics admit to their own use of Wikipedia as a research tool. They justify doing so by citing their professional ability to determine the truthfulness of its content.

But why make a fuss? Why not acquiesce to conventional academic wisdom about Wikipedia's inadequacies compared to reliable, tried and tested peer review processes and sleep comfortably at night knowing that our treasured ways of knowledge construction and its products are safe and secure? As a matter of fact this paper and the research project it reports on is not particularly interested in issues around the truthfulness of Wikipedia's content. Rather the interest lies specifically in Wikipedia

I maintain that the real issue is not its content — for when all is said and done even 'respectable' scientific knowledge published in academic peer reviewed publications is often hotly disputed and if not disproved then displaced by new paradigms (Kuhn, 1970). No the issue, though mostly hidden behind the veil of content, is that Wikipedia, as part of the new wave of post-Web 1.0 social

networking media, represents a new, more transparently democratic or egalitarian knowledge construction process. It is a knowledge construction process that displaces the centrality and power arrangements of traditional knowledge processes in which academia (until now) reigns supreme.

The point is that Web 2.0 provides higher education with a very different knowledge construction paradigm. And, based on a participatory rather than information-centred platform Wikipedia represents the most highly publicised, if not iconic example of a Web 2.0 wiki; a social knowledge production application in which anyone can contribute, shape and reshape the knowledge landscape.

As Ugoretz (2006) puts it, all social software tools

... share a common theme — good or bad, they all grow out of the recent and revolutionary change in the structure of knowledge, information, research and criticism which has been enabled by the internet. The arena of online interaction and communication which the internet provides — the ability to rapidly publish, categorize, and distribute information and opinion — has allowed the growth of tools which put users, people, in control of the distribution and content of information in ways that are decentralized and non-hierarchical.

Even though the heated debate in academia is about Wikipedia's capacity to generate academically trustworthy knowledge in reality it is essentially a debate about epistemology and power; it's about how academics view the nature of knowledge, how it ought to be constructed, and who is to have power and authority over this process.

This paper, drawing on preliminary data from an empirical research project, explores how the epistemological assumptions of academics influence their approach to Wikipedia and by extension to other Web 2.0 applications that democratise the production of knowledge and its authority.

## **Wikipedia as a Case Study of a Digital Macroshift in the Making**

Wikipedia is a free, Web-based encyclopaedia that, using a 'Wiki' technology, enables anyone with internet access to add to and edit its knowledge content (Wikipedia, 2009). Wikis, as one example of Web 2.0 social networking software and as demonstrated by Wikipedia, have the potential to enable our students to much more easily engage in peer collaboration and evaluation in the construction of knowledge and to do so with far less authoritative input from academics. This is because Web 2.0 is built on, and therefore provides higher education with, a very different knowledge construction paradigm. Based on a participatory knowledge

sharing rather than one-way read-only information-centred platform, Wikipedia, as an exemplar of Web 2.0 social media, embodies a recognition that all knowledge is socially constructed. Wikipedia represents the most highly publicised example of a Web 2.0 social media application — a social knowledge production application in which anyone can contribute, shape and reshape the knowledge landscape. The use of Wikipedia in undergraduate higher education is a contentious issue primarily because of its allegedly problematic nature of its content and its popularity among undergraduate students who use Wikipedia as a readily accessible research tool.

However the real issues lie deeper than its content. Wikipedia is symptomatic of the educational challenge inherent in Web 2.0's reconfiguration of knowledge production. Wikipedia, as a representative of this paradigm shift embodies an invitation to reconsider and reconfigure our web-based educational practices. For better or worse, we are entering a new era in academic research practices (Eijkman, 2008). Web 2.0's participatory platform dissolves the *modernist* epistemic framework in which knowledge, grounded in the objective world, is *ipso facto* universally true and can be pronounced as such by its academic guardians (Rorty, 1980). The production of knowledges through social interactions within global, de-territorialised, transcultural and self-organising Web 2.0 enabled networks underlines the *postmodernist* approach to knowledge construction (Eijkman, 2009 forthcoming). Such democratically oriented interactions will increasingly demonstrate that knowledges are culturally and historically contingent and grounded in culturally specific social contexts rather than in universally applicable empirical realities (Audi, 2002). It also means, as is clear in Wikipedia, that the authority of knowledge *also* increasingly resides in dynamic multi-dimensional networks *as well as* in the (previously exclusive) halls of academia.

Whilst both the conventional and postmodern Web 2.0 paradigms have their strengths and weaknesses, these are not the immediate concerns of this paper or the research project. The new knowledge production processes that Wikipedia and Web 2.0 embody are certainly not without its challenges, peculiarities and difficulties (see for example Fister, 2007). That is not in dispute. The point however is to raise awareness of, and respond to, this paradigmatic shift in an informed way. This is what is at stake in the battle over Wikipedia. This paper marks a beginning by obtaining empirical data about academics' attitudes to Wikipedia and the impact of these attitudes to Web 2.0 forms of knowledge construction. This project takes Wikipedia as a point of departure for examining the linkages between the assumptions of academics and their approach to Wikipedia as a potential indicator of their likely approach to the deployment of Web 2.0 social media in undergraduate learning and teaching.

## The Research Method

Anecdotal evidence about academics' attitude to Wikipedia suggests that they do not believe that the social construction of knowledge and the egalitarian peer review processes increasingly enabled by Web 2.0 social media is capable of generating academically acceptable knowledge. It appears that academics tend to believe that students' use of Wikipedia — and by extension similar Web 2.0 collaborative writing applications — is likely to increase the difficulty of “finding the Truth in a Web of Deceit” (Magnus, 2001). It is this hypothesis and its implications that this research project attempts to ascertain.

Hence this research project aims to contribute to the Web 2.0 education literature by addressing two questions. How do the epistemic assumptions of academics and their levels of knowledge about Wikipedia (a) affect their disposition towards Wikipedia as a Web 2.0 site for social knowledge construction, and (b) by extension, frame their approach to the wider take-up of Web 2.0 social networking applications for learning and research in undergraduate education?

Data collection is by way of a web-based survey instrument (SurveyMonkey) using a predominantly quantitative question bank with opportunities to contribute qualitative responses. Regarding the reliability of Internet data collection methods, Gosling, Vazire, Srivastava and John (2004) in their analyses of six preconceptions about Internet samples and the quality of their data compared to traditional methods found that

the data provided by Internet methods are of at least as good quality as those provided by traditional paper-and-pencil methods . . . . Web-questionnaire results generalize across presentation formats, do not appear to be tainted by false data or repeat responders, and are, so far, consistent with results from traditional methods. In short, the data collected from Internet methods are not as flawed as is commonly believed. (p. 102)

A review of the survey by academic colleagues and two Wikipedians was undertaken, a pilot survey carried out and ethics clearance obtained. The questionnaire was appropriately modified following both the review and pilot survey to ensure the effectiveness of the research methodology. Subsequently research data has been obtained via an online survey of academics predominantly from the University of New South Wales campuses in Canberra (ADFA) and Sydney as well as from other universities in Australia and abroad.

It is envisaged that this predominantly quantitative data will be complemented with extended qualitative information that draws on a grounded theory methodology (Strauss, 1990). Hence a number of semi-structured interviews with

a small sample of academics will aim to provide more in-depth information from academics who (a) strongly oppose the use of Wikipedia by students, and (b) who use Wikipedia creatively in their undergraduate teaching.

## **Results and Discussion**

The availability of the online survey was publicised at UNSW@ADFA and UNSW in Sydney in mid-March 2009. Other universities in Australia and overseas were also invited to participate. To date this has been problematic due to the apparent requirement for local ethic approvals despite ethics clearance from UNSW. Fifty-four respondents have completed the survey as at April 12, 2009. It is noted though that on average at least 4 to 6 respondents regularly skipped most questions. The reason for this is not clear. Though the sample size is still small they at least begin to give an indication of the issues and possibly broad trends. Given the length of the questionnaire (53 questions) and the limitations of the paper only key questions will be dealt with. Copies of the data will be available at the conference and from the author on request.

The discussion, following the questionnaire, covers eight themes: demographic and background information; attitude to and experience of students' use of Wikipedia; School or Faculty's approach to student use of Wikipedia; own knowledge of Wikipedia; own interactions with Wikipedia; workplace culture regarding Wikipedia; the wider implications of social networking for higher education; and own teaching practices.

In terms of demographics, of the 54 respondents 32 were from UNSW@ADFA, 16 from UNSW, and 4 from other universities. Age distribution reflects the general demographics of academia with 6 (11%) being between 26–35 with the bulk (36 or 67%) falling in the 36–55 age range. Females ( $n = 10$  or 20%) are somewhat underrepresented. Respondents covered the range of disciplines except for medicine. In terms of length of teaching experience 11 or 20% are early career teachers with less than 5 yrs experience. Weekly Internet usage tended to be quite high with 18 reporting 10–15 hrs per week, 16 used it 15–20 hrs per week and 20 used the Internet for 20 or more hrs per week. Of the 54 respondents, 40 used some form of Web 2.0 social networking media of which 33 (82.5%) used Wikis including Wikipedia. Demographically respondents appear to be quite representative of the general academic population in the English-speaking world and many seem well connected from a Web 2.0 point of view, at least in terms of their general if not always educational use as is revealed in their responses to later questions.

In terms of their attitude to student use of Wikipedia (Question 9), out of the 46 respondents who had an opinion on this the majority (34 or 68%) approved its use

but only as a ‘research starter’. Two (4%) did not consider Wikipedia a problem at all while 5 discouraged its use and another 5 strongly disapproved and actively opposed its use. The qualitative responses about their attitude towards student use of Wikipedia were insightful both from a positive as well as negative standpoint:

*Wikipedia is excellent in many areas, esp. mathematics and the more mathematical fields of science. I always indicate that students should go well beyond Wikipedia in their search for supporting materials, but accept they will use it.*

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*This is wiki specific — a group of imminent experts writing a closed wiki entry on Constitutional Law, for example, would create the BEST textbook available. Not so many examples of this in Australia.*

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*It's a very mixed bag, but the problem is that students often use it as a sole source.*

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*I say that they should distrust every word written, and treat everything as potentially wrong or deliberately slanted or accidentally uninformed.*

Given the responses to Question 10 about how respondents feel about how students use Wikipedia it is perhaps helpful to categorise student usages in what may be termed ‘low stakes-low risk’ and ‘high stakes-high risk’ uses. For example, respondents were much more accepting of ‘low stakes-low risk’ activities such as for the initial scoping of a question or as a general research starter. However the levels of concern rose considerably in line with student uses of Wikipedia that were increasingly deemed ‘high stakes-high risk’ such as for citing facts and as a serious source of information.

As to the strength of their attitude to student use of Wikipedia and the attitude in their workplace generally, the answers to question 11 (Table 3) indicates a slightly positive inclination towards student use of Wikipedia personally and in the workplace generally though still with a reasonably strong negative tendency. Interesting is that 11 respondents (22%) recorded ‘no opinion’ to this question. It may be useful to interpret this slightly positive approach to student use of Wikipedia at an individual level in light of respondents’ cautious attitude towards ‘low stakes-low risk’ usages. It also appears that respondents tend to view attitudes

about Wikipedia in their workplaces as tending towards the negative (52%) rather than positive (20%). Even when looking at changes over time, as in question 12, attitudes towards Wikipedia both individually and collectively have remained remain quite polarised.

Although some respondents had a quite positive attitude towards Wikipedia and their students' use of it and many were cautiously accepting, the vast majority did comment on issues regarding reliability and accuracy of information though quite a few did not necessarily see that as a problem. However most of the qualitative comments are informative in that, with few exceptions they indicate the need for a critically accepting approach rather than an outright rejection. For example:

*It's no worse than many other internet resources, all need to be taken in context and with a balanced, critical view.*

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*The problem is lack of depth; but on mathematical issues (functions etc) it usually gives a very good overview and introduction to a field.*

In terms of having experienced serious problems with students' use of Wikipedia, out of the 35 respondents who answered Question 16, only 1 person (3%) reported an 'extremely serious' problem, 5 or 14% reported at least one incident they considered 'very serious', 16 (46%) 'moderately serious' and 13 (37%) reported 'non serious' problematic incidents.

At a personal level, in response to real and/or perceived problems with student use of Wikipedia (Q. 18), 3 respondents (8%) banned Wikipedia, 4 (10%) discouraged its use, 30 (79%) urged use with caution, and, 1 (3%) took no action.

Yet given the level of controversy and issues surrounding Wikipedia, institutional responses, whether by way of guidelines, policies and/or sanctions do not necessarily follow. Responses to questions regarding School or Faculty policies and sanctions (Questions 19–27) indicates that problems, real or perceived, has not translated into formal discussions, policies, or sanctions. Very few respondents (8 or 16%) reported formal School level discussions having taken place and only in one instance did a respondent indicate that consensus enabled a school guideline to be formulated. Yet while many 22 (45%) believe their school ought to have a guideline or policy about Wikipedia (though 25 (51%) disagree), at this point in time none of the respondents' schools appear to have yet formulated a policy on Wikipedia.

As to sanctions against its use 22 or 63% of respondents opposed sanctions outright, 11 (32%) supported moderate sanctions and only 2 (6%) strongly supported sanctions. This indicates that reports of sanctions (e.g. Jaschick, 2006; Waters, 2007) in the U.S. while somewhat sensationalised (As one respondent noted: “*Typical US ham-fisted approach*”) are themselves rare even on that continent as they are remain similarly atypical here in the antipodes.

In terms of respondents’ own knowledge of and interactions with Wikipedia, all but one of the respondents has used or uses Wikipedia for some purpose or other with one respondent noting that “I myself contribute to several in my expert capacity.” Most (33 or 94% out of 35) regard Wikipedia as ‘mostly accurate’ while only 2 (6%) found it ‘mostly inaccurate’.

Around half the respondents (e.g. 26 or 60% out of 43, with 11 skipping question 33 altogether) indicated that they have not accessed any of the Wikipedia pages that provide information about how Wikipedia operates other than to access content. Yet it appears from responses to Questions 33, 34, and 35 that a good number have acquainted themselves with the workings of Wikipedia. Even though out of the 46 who answered the question 37 or 80% did not know how Wikipedians rate articles for quality the following responses are indicative of a deeper interest in Wikipedia and its quality assurance processes by a sizable minority:

- 3 have donated to Wikipedia
- 4 have contributed a new article
- 5 have edited an article
- 3 have contacted Wikipedia
- 2 have written to a Wikipedian or written on a discussion page
- 4 know someone who has contributed to Wikipedia by writing or editing an article

The main points that seem to emerge from questions regarding the wider implications of social networking for higher education respondents is again a sense of polarisation. To begin with, while many respondents saw Wikipedia’s strengths in its content, for example as lying in its rapid updating of a broad range of information, only 3 respondents referred in some way to Wikipedia’s new and readily accessible collaborative way of creating, sharing, and recording knowledge (Parry, 2008). In terms of possible improvements to Wikipedia the vast majority of respondents focused inevitably on accuracy and predominantly by strengthening its authoring and review processes — the latter by re-instating “the experts” with their “stamp of approval.” On the other hand 6 respondents advised desisting from any changes via comments such as “*None. It functions differently to an*

*encyclopaedia, with different advantages and disadvantages.” And “Why do we need to?”*

In terms of its potential for formal learning 13 respondents (out of 27) indicated that it has potential even beyond a ‘first port of call’ for assignment research. For example *“Having students write wikis is a great way for them to ‘put their money where their mouth is.’ As a research collaboration tool between academics, it also has a number of advantages (bringing community together).”* Another 5 respondents saw no use for Wikipedia in formal learning at all.

These responses are not surprising given that most (28 or 60%) don’t know any colleagues who might use Wikipedia for learning purposes (Q. 41) another 15 were emphatic about not knowing anyone who used Wikipedia. Yet, while only 4 or 8% answered in the affirmative some of their examples were interesting.

*Yes, I do. I ask students to write a wiki entry for evaluation.*

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*They ask students to create their own ‘Wikis’ on a subject relevant to the course. A first draft is prepared. The student then edit it. I understand this process mimics how a Wikipedia page is created.*

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*I have invited students to consider the requirements for a reviewed ‘featured article’ standard contribution, to describe the difference between this and the normal (more or less unreviewed) standard, and to try to get a contribution accepted at this higher reviewed status as an alternative to writing a case study for assessment in class.*

Respondents were also split regarding their perceptions of the threat posed by social networking tools to conventional ways of constructing academic knowledge (Q45). Though 21 (52%) did not consider these a threat at all, 18 or 44% considered them either somewhat or a considerable threat to conventional knowledge production.

This polarisation is further confirmed in their responses to Question 46, which asked respondents to rate their response to Wikis as a potential collaborative writing tool in higher education. While 25 or 59% saw wikis as “An interesting development that potentially opens new possibilities for learning and teaching” 16 or 38% see Wikis as a somewhat or seriously problematic development that will

provoke considerable change in the role of educators and/or undermine conventional ways of learning, teaching, and about the authority of knowledge.”

These responses would seem to confirm a flow-on effect regarding either their positive or negative view of Wikipedia. It may also be indicative of some academics being still immersed in a traditional individualistic culture while others are embracing the social turn in learning theory (Eijkman, 2009 forthcoming). It may also suggest that academics are increasingly aware, even if at an implicit level of the shift in power arrangements in the knowledge construction process (Eijkman, 2009 forthcoming). This is confirmed when the responses to other questions are factored in. For example in relation to a collaborative or individualistic culture, the responses to Q 47 indicate that most respondents never or rarely adopt a participatory stance and engage in negotiations with their students around, for example, learning outcomes, course content and assessment criteria. Only a relatively small number of respondents indicate a level of participatory thinking as a regular feature of their teaching practice. Also, the strong push to suggest ‘improvements’ in Wikipedia by increasing the role of experts and those with qualifications as proposed by most in Q 43 seem to indicate an implicit understanding of the shift in the balance of power towards ‘the people’ (Lipczynska, 2005). Interestingly, and perhaps as the result of polarisation, all those critical about or opposed to Wikipedia seem, by implication at least, to ignore the reality that even these ‘qualified experts’ are regularly embroiled in academic disputes (see also Kuhn, 1970). While not naïve about Wikipedia (although this was strongly questioned by one respondent) these uncomfortable facts seem to be conveniently swept under the carpet in the attempt by some to paint conventional ways of knowledge construction as apparently being made in heaven.

Responses to Questions 49, 50 and 51 also indicate that some (6 or 14% out of 42) respondents still ‘do not like’ online learning and that those who do use online learning respondents are still predominantly information rather than communication oriented in their use of the internet (34 or 81% and 6 or 14% respectively). This ratio is reflected in respondents’ approach to Web 2.0 applications in their teaching. While 14 out of 43 have used blogs, wikis or other Web 2.0 applications or services in their teaching, 11 or 26% have not but would like to try them, while 16 have indicated that they have not used any of these and do not expect to use them.

## Conclusion

This paper reports on the preliminary findings of a research project on Wikipedia as a case study of postmodern knowledge production facilitated by Web 2.0. The

level of misconceptions about the way Wikipedia operates and of polarisation evident in the research results supports the contention that the Wikipedia debate signals a paradigm war. Web 2.0 social knowledge construction processes embody the threat of a macrosift in formal learning and research. It represents “a process of societal evolution in which encounters with the system’s limits of stability initiates a bifurcation — a process of rapid and fundamental change in complex systems” (Laszlo, 2001, p. 9). Wikipedia seems to provoke divisive debates precisely because academics implicitly at least realise that it invites a radical transformation of pedagogic and research practices in higher education — and hence of traditional academic power and authority arrangements.

Interestingly though, problems regarding student use of Wikipedia, whether attitudinal or actually experienced, does not necessarily translate into concerted action at an institutional level. However, if the trends indicated thus far continue in further responses to the questionnaire, they do signal that educational designers are likely to fight new battles as we shift into a post-Web 1.0 educational world. These trends confirm once more that the real problem in implementing sound and informed use of Web 2.0 is the battle over hearts and minds and not technology.

I concur fully with David Parry’s intent to

. . . make a more controversial claim: It is irresponsible for educational institutions not to teach new knowledge technologies such as Wikipedia. Wikipedia, or more generally the networked archival structure it represents, alters the way in which we create, share, and record knowledge, and thus has rather significant effects on how we approach education across all disciplines, and specifically in technology and science. Students and teachers alike must understand how systems of knowledge creation and archivization are changing . . . [and how] the new software changes the rules of expertise. (2008)

Hence, we as educators have a responsibility to learn to engage with this macrosift and bring all our critical sensibilities and capacities to bear on these developments and promote new and sound ways of constructing knowledge — albeit likely to be in radically different ways.

Note: The results reflect the data set as at 12 April due to the closing date for paper submission. The subsequent conference presentation and paper will reflect the results of the full data set at the close of the survey on 31 May

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