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**‘Economics with Training Wheels’:
Using Blogs in Teaching
and Assessing Introductory Economics**

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Abstract

Blogs provide a dynamic interactive medium for online discussion, consistent with communal constructivist pedagogy. This paper explores the use of blogs in the teaching and assessment of a small (40-60 students) introductory economics paper. The role of blogs as a teaching, learning and assessment tool are discussed. Using qualitative and quantitative data collected across four semesters, students' participation in the blog assessment is found to be associated with student ability, gender, and whether they are distance learners. Importantly, students with past economics experience do not appear to crowd out novice economics students. Student performance in tests and examinations does not appear to be associated with blog participation after controlling for student ability. However, students generally report overall positive experiences with the blog assessment.

Keywords

economics education
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JEL Classification

A20, A22

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1. Introduction

Blogs (a contraction of ‘Web logs’ and akin to an online personal journal) provide a dynamic interactive medium for online discussion, combining text, images, and links to other content to allow ‘bloggers’ an outlet in which to provide commentary on whatever topic interests them. Blogs have become increasingly prevalent in the online world since the late 1990s. In 2008 the internet hosted more than 130 million indexed blogs, of which 1.5 million had been active within the previous seven days (Technorati 2009).

A blog typically consists of a series of discussions (or threads), each of which starts with a ‘post’ by the blogger (although it should be noted that blogs need not be operated by one individual blogger, and indeed group blogs are becoming increasingly common). Blog posts may include hypertext links to other resources on the internet, such as news stories, other blog discussions, and so on, thereby allowing the blogger to connect their reader to a diverse range of resources. In addition to connectivity, a key element of blogs is their interactivity – the possibility for the blog’s readers to respond to the blogger’s initial post with their own opinions, thoughts and commentary. Each discussion thread becomes an interactive conversation involving the blogger and the wider community of readers and other bloggers.

2. The Pedagogical Value of Blogs

The potential for blogs as a tool for teaching and learning was recognised early on (e.g. see Embrey 2002; Oravec 2002), and Goffe and Sosin (2005) commented on their potential for use in specifically teaching economics. Quiggin (2006) notes that academic economists enthusiastically adopted blogs as a public good, often as a forum for comment and analysis of current issues. In the teaching context, the medium provides an excellent opportunity to engage students in a learning environment that is cooperative and student centred, allowing a structured opportunity for knowledge creation and sharing, creativity, reflection and debate, within what may be termed an open-ended learning environment (Land 2000). The use of blogs as a teaching and learning tool is consistent with a broad range of pedagogical approaches.

Whitehead (1929) distinguishes between the learner’s acquisition of inert concepts and their development of robust knowledge. Blogs may be one way of making the transition to robust knowledge. Blogs provide students with a communal forum in which to develop the comprehension and application of the tools of their discipline through their repeated use in situated contexts (Brown et al., 1989; Cobb and Bowers 1999). In interpreting materials and constructing posts to a blog, students are engaged in situated learning (Lave and Wenger 1991) that is more applied than the often well-defined and structured exercises they may encounter in a classroom setting.

As learners contribute to a blog, they are engaging in self-organised learning – investigating, compiling and assimilating information and expanding their experience within the discipline. Moreover, Oravec (2002) notes that blogging empowers students to develop their own perspectives and encourages them to engage in critical thinking, because in

developing their unique ‘voices’ students learn to carefully formulate and justify their opinions. Blogs also reduce the incentives for plagiarism, since the very nature of blogging is to connect to and use materials from elsewhere on the internet, while simultaneously encouraging students to establish intellectual ownership, trust and accountability for their opinions (Godwin-Jones 2003; Oravec 2003). Free riding, a common problem with collaborative learning systems, is much less of a problem with blogs, where individual accountability and assessment are possible (Du and Wagner 2005).

Drawing on constructivist educational theory (Vygotsky 1978), Ferdig and Trammel (2004) also observe that blogs promote an interactive learning experience that is conversational, and as such more conducive to knowledge construction, active learning and higher-order thinking. The ability of students to individualise their contributions and take ownership of their learning is at the core of constructivist pedagogy: the learner as an active constructor of meaning (Piaget 1976). That is, blogs provide students with an opportunity to ‘learn by doing’, and making meaning through interaction with the online environment (social constructivism) and thereby contextualising theory and its’ application as well as building on their prior subject knowledge (Jonassen 1999; Leidner and Jarvenpaa 1995). The process of constructing meaning then leads to a higher level of understanding among learners and hence better learning outcomes.

Blogs (and many other online teaching and learning tools) can go beyond students’ individually constructing their own meaning, to a communal constructivism whereby students and teachers together create knowledge that benefits both themselves and other members of the learning community (Holmes et al. 2001; Leask and Younie 2001; Slavin 1990). Through the use of blogs, students develop their understanding through social interaction, collaboration, and the social construction of knowledge (Brown et al. 1989; Stahl 2006). Interaction and collaboration between students in blogs is akin to the concept of a community of inquiry (Lipman 1991; Farmer 2006) or community of practice (Lave and Wenger 1990). Furthermore, interaction with their peers in a blog setting may lead to cognitive conflict, which can stimulate learners and lead to deeper understanding if carefully managed (Leask and Younie 2001). Blogs also make the process of learning and development of understanding to be much more visible to the teacher.

Peer feedback in a blog setting has been shown to have positive effects on learning (Sayed 2010). Essentially, blogs provide opportunities for learning that are not only learner-centred, but are knowledge-centred (grounded in disciplinary content), assessment-centred (focussed on ongoing, formative assessment), and community-centred (Higdon and Topaz 2009; Bransford et al. 2000). Blogs also provide students with the opportunity to benchmark the quality of their contributions and evidence of learning against those of their peers, adopting the good practices of others and becoming more aware of, and consequently minimising, bad practices (Du and Wagner 2005). Blogs have been shown to contribute to learners’ self-evaluation and time management skills (Wang and Fang 2005, cited by Hsu 2007).

Another advantage of blogs is that they enable those students who might otherwise not have participated in class an opportunity to reflect and share their ideas, developing their self-confidence and opening the class to a wider range of perspectives (Richardson 2006; Vengroff and Bourbeau 2006; Wenden 1991). This is particularly important for those students who may be marginalised in class discussions (Selfe 1990). If open to a wider community than only those registered for the class, blogs can enable students to interact with a wider audience that might include subject experts as well as those with a keen interest in the subject matter (Ellison and Wu 2008; Quiggin 2006).

Blogs have the additional advantage of being well-suited to online delivery and distance learning (Glogoff 2005). Williams and Jacobs (2004, p.232) identify blogs as having the potential to be ‘a transformational technology for teaching and learning’. ‘Transparent technology’ such as blog sites are also relatively intuitive to use, so learners do not require high levels of technical skill in order to contribute (Wheeler et al. 2005). However, their initial use in an educational context has generally been limited to disciplines where reflective journals are a more commonly used learning tool (Williams and Jacobs 2004). More recently, blogs have been used in the teaching of a wide range of disciplines, as noted in the following sections.

3. Strategies for Using Blogs in Teaching and Learning

Oravec (2003, p. 228-229) identified three strategies through which blogs can be integrated into the education system: ‘through the posting of work, fostering reflective approaches to educational genres, and forming and maintaining knowledge communities’. Following these strategies, blogs have typically been used in teaching and learning in three ways: (i) as a means of communication from teachers to learners, such as communication of course content, digital delivery, or to provide feedback on items of assessment; (ii) as a means of communication from learners to teachers with or without feedback from other learners, such as digital portfolios or as a learning log or reflective journal; and/or (iii) as a means of encouraging a community of learning within the class, such as extending in-class discussion through discussion groups or as a tool for peer review or group collaboration. While many classes that make use of blogs use them in two or more of these ways, most studies to date have focussed on blogs used as reflective journals, with or without feedback from other learners (see, for example, Du and Wagner 2005; Ellison and Wu 2008).

Blogs have most typically been used in information technology, pre-service teaching, languages and journalism courses, and relatively infrequently at the freshman level. For instance, most of the papers reviewed in this paper involve studies conducted in courses at the upper undergraduate or postgraduate levels. This is unsurprising given that Hsu (2007, p.79) identifies blogs as being most suitable ‘where there is the need to encourage and stimulate critical thinking and reflection on a work, concept, or idea’, skills that are more often associated with higher-level study.

4. Assessing Blogs

A variety of methods have been employed to assess student blogs, including formal assessment by tutors or lecturing staff, peer assessment, or self-assessment (or some combination of all three). For instance, Smith et al. (2009) assessed a blog in a first year engineering class on the basis of frequency of posting, depth and reflective process but also on a student's ability to respond to feedback given to them by tutors. Similarly, in an undergraduate liberal arts class Farmer et al. (2008, p. 125-126) assessed students based on 'frequency and consistency of activity; reference to and demonstrated knowledge of subject content; active and respectful engagement with the ideas and opinions of others; and, appropriate use of supportive/illustrative material'. Bouldin et al. (2006) used posting frequency, writing clarity and the depth and relevance of postings to assess a blog in a second-year communication course for pharmacy students. Higdon and Topaz (2009) describe a simple rubric that grades a blog assessment on a scale of zero-to-three, while others, such as Hernández-Ramos (2004), have used more complex and detailed assessment rubrics. Overall, there is no consistent method applied to the assessment of blogs.

5. The Effect of Blogs on Student Learning Outcomes

To date there have been few quantitative evaluations of the impacts of blogs on student learning, or student outcomes in general. Most evaluations have instead relied on qualitative survey or focus group data, such as students' subjective perceptions of the blog as a learning tool, or on conceptual fit with pedagogical theory.

For instance, Williams and Jacobs (2004) found that 66 percent of MBA-level students enrolled in macroeconomics or international political economy who participated in a blog either agreed or strongly agreed that the blog assisted with their learning. Goldman et al. (2008) report similar results among postgraduate public health students. In contrast, Bouldin et al. (2006) found that just 32 percent of students in a sophomore pharmacy class agreed that sometimes concepts became clearer when they wrote about them, and only 41 percent agreed that the blog was valuable to their learning. Gullett and Bhandar (2010) found that 77 percent of MBA students found it easy to use blogs, but that just 25 percent agreed that it was easier to follow the discussion in blogs than in discussion boards. Churchill (2009) found in a Masters in Information Technology in Education class that 83 percent of students agreed that blogging facilitated and contributed to their learning; and that accessing and reading the blogs of other students and the facilitator contributed most to their learning. Similarly, Ellison and Wu (2008) found in an upper-level undergraduate information technology class that reading other students' blogs was the most helpful for understanding course concepts. Using pre-post survey data, Hsu (2009) found that a blog assessment contributed to a range of learning outcomes among pre-service teachers.

In one of the few quantitative evaluations of the impacts of blogs as a learning tool, Du and Wagner (2005) found that blog performance was a significant predictor of examination performance in a senior undergraduate information systems class, and that this was most significant for the highest and lowest performing students in the blog, but not for those in the

middle. However, they did not control for student aptitude, and it seems likely that more able students would do better in both the blog assessment and the examination, leading to an incorrect inference about the impact of the blog on student learning.

Some scepticism remains over the value of blogs as tools for student-centred learning. Land (2000) reviewed the early literature on open-ended learning environments, and noted that previous research had found that students: (i) failed to evolve better explanations and retained their early misconceptions; (ii) failed to engage in reflective thinking; and (iii) failed to develop detailed explanations, relying instead on superficial constructs. While not directly related to blogs, these findings have implications for the use of blogs in student learning. Land (2000) concluded that these learning tools often failed to live up to expectations, due to a misunderstanding of the cognitive requirement for students to engage in the task. Similarly, Oikonomidou (2009) found that the narratives employed in a blog by pre-service teachers were superficial and oversimplified. Xie et al. (2008) showed that blogging was associated with an increase in student's reflective learning level, but that the increases were smaller for those who gave and received peer feedback.

The following case study investigates the use of a blog assessment in a small introductory economics class. Specifically, we investigate whether the blog assessment improves student learning (measured by overall performance in tests and examinations), while controlling for student aptitude. We also consider whether participation in the blog assessment is biased towards students with prior economics knowledge, and discuss students' perceptions of the blog assessment obtained from a student survey.

Case Study: Blogs as Assessment in ECON110 Economics and Society, 2007-2010

Following a communal constructivist approach, a blog assessment was introduced into ECON110 (Economics and Society) in 2007. The expectation was that the blog assessment would increase student engagement in the application of economics to real world situations, and improve student learning outcomes and student satisfaction with the paper.

ECON110 (Economics and Society) is an elective paper at freshman level. It involves introductory microeconomics, with a focus on social and policy applications and covers topics such as health economics, education economics, environmental economics, property rights and intellectual property, and poverty and inequality. The overall learning objective for the paper is to introduce students to applications of economic theory and the 'economic way of thinking' to a range of real world and policy situations. The class size is relatively small, with fewer than 65 students each year (Table 1). Most students actively participated in the paper (completing at least some assessments including the final exam), and most of those students completed a final survey about the assessment of the paper. The majority of the students completing the final survey had studied some economics before (often at high school), but the paper retains a lot of heterogeneity in student background and student aspirations, such as that described by Cameron and Lim (2010).

Table 1: Student Characteristics by Year

Year	Number of Students Enrolled	Number of Students Active in Paper	Students Completing Final Survey	Students with Some Prior Economics (of those who completed the survey)
2007	57	48	40	36
2008	34	23	18	11
2009	58	44	35	21
2010	63	55	41	33

Up until 2009, the assessment of the paper was made up of 50% coursework (including 15% for a mid-term test, and 35% for other coursework including weekly assignments, tutorial participation, and the blog assessment), and 50% final examination. The blog assessment was worth 12.5% overall in those years. In 2010 the assessment was changed to two tests (worth 30% each, one at mid-term and one at the end of the semester) and 40% other coursework (weekly assignments, tutorial participation, and the blog assessment). The blog assessment was worth 15% overall in 2010.

The blog assessment was operationalised as follows. All students contributed to a group blog implemented within the Moodle open source virtual learning environment, rather than operating their own separate blogs. The class blog was effectively a closed environment (Kamel Boulos et al. 2006), with only students enrolled in ECON110 able to participate in the blog assessment. This created a blog similar to the learner-led threaded discussions described by Brescia et al. (2004), and overcame the privacy concerns associated with open environments (Wang and Hsua 2008). This also had the advantage of the instructor needing to only visit a single site to view all discussions started by all students (although this could also be achieved by using an RSS aggregation tool – see for example Higdon and Topaz (2009)). At the beginning of the semester to set clear expectations for content, tone and style, all students were provided with an example of a blog discussion from the previous semester which had scored well in assessment (following Fauske and Wade 2003-04).

Over the 14-week semester, students were required to start *at least* two discussions of their own, and to contribute to *at least* eight discussions that were started by other students (in 2007 this was *at least* five discussions started by other students). In their own discussion topics students had to link to an article from the mainstream media online (such as an online newspaper) and apply economic theory and concepts to evaluate the situation described in the article. This is similar to the approach described by Yamauchi (2009). Other students could then contribute to the discussion by commenting on and/or critiquing the analysis.

Marks were awarded for the quality of contributions (assessed according to a grading scale made available to students at the beginning of the semester), and for completing the required number of contributions. If students completed more than the minimum number of contributions, they were awarded the marks for their best contributions (thereby providing an incentive for students to continue to participate after completing the minimum requirements).

Blog discussion topics were often discussed during lectures and tutorials, and were also used as questions in the mid-term test and final examination, providing students with additional incentive to follow and/or contribute to the blog discussions.

After 6 weeks and 11 weeks of the 14-week semester, students were provided with two progress marks and comments from the lecturer as formative feedback. Following the recommendations of Khine *et al.* (2003) and consistent with the constructivist learning model, instructor participation in the blog was minimised. Occasionally the instructor posted questions on student-initiated discussions to facilitate further reflection and discussion, and to probe for understanding. This provided students with a learner-oriented environment where students would feel comfortable participating (Paulus *et al.* 2009). Student participation was generally high, with many students contributing more than the minimum required number of contributions, as shown in Table 2. The number of contributions was substantially lower in 2007 than in later years, reflecting the difference in the required number of contributions to discussions started by other students.

Table 2: Student Participation in the Blog, by Year

Type of contribution	Year	Median	Mean	Standard Deviation	Min.	Max.
Own discussion	2007	2	2.27	1.55	0	8
	2008	2	2.22	0.95	1	5
	2009	2	2.07	1.17	0	6
	2010	2	1.95	0.73	0	3
	All	2	2.11	1.15	0	8
Other's discussion	2007	5	5.65	3.20	0	13
	2008	8	9.61	7.34	0	28
	2009	8	8.00	5.30	0	28
	2010	8	7.91	4.02	0	21
	All	8	7.52	4.88	0	28
Total	2007	8	7.92	4.40	0	19
	2008	10	11.83	8.04	1	31
	2009	10	10.07	6.17	0	32
	2010	10	9.85	4.54	0	24
	All	10	9.63	5.62	0	32

The aim of the blog assessment was to provide a non-threatening environment for students to explore their ideas and comment on other student's ideas, essentially creating a community of inquiry where students could develop their own meaning from the economic concepts explored in lectures and tutorials, thus leading to better learning outcomes for students. In the following empirical analysis section, we consider two research questions: (1) what types of students participated in the blog?; in particular did students with more background in economics (and therefore some head start in learning economic concepts) crowd out the participation by students new to economics?; and (2) did blog participation contribute to better learning outcomes?

6. Empirical Analysis

Data for the empirical analysis were drawn from student records (gender, Grade Point Average, year of study, performance in the assessment components of the ECON110 paper, and whether the student was studying by distance learning or not), and from a survey that was conducted at the end of each semester of the paper. The survey collected data on students' past experience of economics, as well as qualitative data about their experiences with the blog assessment. Grade Point Average (GPA) was calculated for 100-level papers only, based on a 9-point scale from A+ (9) to Restricted Pass or C- (1), with fail grades given a value of zero. To account for students who fail to complete some of their first-year papers and consequently enrol in a large number of papers at that level (which would bias downwards the measured GPA for students who fail to complete a number of papers), each student's GPA was only calculated for the best eight 100-level papers (a complete first year programme of study). Student performance in the ECON110 paper was calculated as the weighted results from tests and examinations only (weighted by their contribution to the overall grade), converted to a within-year z-score (the number of standard deviations away from the mean performance within the year) in order to smooth out any between-year fluctuations in test and examination difficulty.

In order to answer the first research question (what types of students participated in the blog) a regression was specified with blog participation (in terms of the total number of contributions) as the dependent variable, and student characteristics (including gender, GPA, year of study, distance learning, and past experience with economics) as explanatory variables. Alternative specifications of the blog participation variable resulted in qualitatively similar results. The final estimated model is presented in Table 3.

Table 3: OLS Regression Results – Blog Participation

Variable [†]	Coefficient	Robust Std. Error	<i>t</i>	<i>p</i> -value
2007 enrolment	-2.297	0.825	-2.78	0.006***
Distance learner	-2.564	0.984	-2.61	0.010**
Gender (1 = male)	2.531	1.112	2.28	0.025**
GPA	0.994	0.246	4.03	<0.001***
Studied economics before	0.183	1.278	0.14	0.886
Constant	4.434	1.496	2.96	0.004***

Notes: N=130; R²=0.2007; *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level; † Yes = 1 unless otherwise specified.

The results show that students enrolled in 2007 participated less, making 2.3 fewer contributions on average holding all else constant. Distance learners participated less, while male students participated more. More able students (that is, those with a higher overall GPA) participated more, with each additional point of GPA associated with nearly one additional contribution during the semester. In other words, holding all else constant an 'A' student would make six more contributions per semester than a 'C' student. Of most interest to the research question, students with prior economics study did not participate more in the blog, suggesting that there was no crowding out of blog participation among novice economics students by those with prior economics study. This is an important result as it indicates that

all students may be able to benefit from participation in the blog, regardless of their economics background.

In order to answer the second research question (did blog participation contribute to better learning outcomes), a regression was specified with student performance (in terms of their z-score based on test and examination performance) as the dependent variable, and student characteristics (including gender, GPA, year of study, distance learning, and past experience with economics), and blog participation (in terms of the total number of contributions) as explanatory variables. Alternative specifications of the blog participation variable resulted in qualitatively similar results. With the exception of blog participation insignificant variables were removed from the model, leaving the final estimated model shown in Table 4.

Table 4: OLS Regression Results – Student Performance

Variable [†]	Coefficient	Robust Std. Error	<i>t</i>	<i>p</i> -value
GPA	0.427	0.029	14.59	<0.001***
Distance learner	-0.572	0.158	-3.62	<0.001***
Studied economics before	0.463	0.142	3.26	0.001***
Blog participation	-0.005	0.009	-0.50	0.618
Constant	-2.358	0.224	-10.51	<0.001***

Notes: N=130; R²=0.7063; *** significant at the 1% level; ** significant at the 5% level; * significant at the 10% level; [†]Yes = 1 unless otherwise specified.

Unsurprisingly, the results show that more able students perform better overall in the paper, with each grade point of GPA associated with a 0.43 standard deviations of better performance in the paper. Students with some prior economics study perform 0.46 standard deviations better, while distance learners perform 0.57 standard deviations worse than others. After controlling for student ability, economics background, and distance learning, blog participation has an insignificant effect on student performance. This result is relatively robust, as it holds within sub-samples of students by blog participation, or by overall performance (results not shown).

On the surface, the insignificant association between blog participation and student performance suggests that the blog was not a good assessment choice for an undergraduate economics class. However, this was based on a non-experimental design. As all students were required to participate in the blog assessment there was no control group (and hence no randomisation between treatment and control). This means that causal inferences cannot be drawn from these results. The lack of significance of blog participation may be due to the multicollinearity between student ability (measured by GPA) and blog participation. More able students participate more in the blog, but also perform better overall in the paper. This multicollinearity could mask any relationship existing between blog participation and student performance. Unfortunately, a suitable alternative instrument for student ability could not be

identified and therefore an instrumental variables approach could not be used in order to mitigate the multicollinearity problem. However, the finding that online tools have no quantitative effect, or even a negative effect, on student performance is not uncommon (Goffe and Sosin 2005).

Despite the disappointing results in terms of student performance, qualitative results shown in Table 5 suggest that students find the blog assessment both helpful and stimulating. These results are based on students' agreement or disagreement with each statement in Table 5, measured on a five-point Likert scale which has been collapsed to 'agree' or 'disagree' (the midpoint, 'neither agree nor disagree', is omitted from the table). Separating results between students who participated most in the blog (higher than the mean number of total contributions in that year) and those who participated least reveals that, while students who participated the most in the blog assessment had the most favourable perceptions of it, students who participated the least also agreed that it was helpful. In all cases there was more agreement with each statement than disagreement, demonstrating that students had an overall positive qualitative evaluation of the blog assessment.

Table 5: Student Perceptions of the Blog Assessment

Statement	Most active blog participants		Least active blog participants		All students	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
'The blog helped me to recognise applications of economics in 'real world' situations'	91.5%	1.9%	82.1%	7.1%	89.6%	3.0%
'The blog helped me to better understand economic concepts'	67.0%	17.9%	42.9%	25.0%	61.9%	19.4%
'The blog stimulated my interest in the subject'	68.9%	13.2%	32.1%	25.0%	61.2%	15.7%
'The blog helped me to learn new ideas and skills'	61.9%	11.4%	35.7%	21.4%	56.4%	13.5%
'The blog helped me to apply my learning from this paper'	82.7%	0.6%	35.7%	25.0%	72.7%	9.8%
'The blog was a fair test of my knowledge and skills'	65.1%	0.9%	46.4%	17.9%	61.1%	11.1%

7. Discussion

This case study of the use of a blog assessment provides many lessons for other teachers of introductory economics, and for higher education in general. Despite the lack of a significant association between blog participation and student performance, there is much to commend the approach in terms of communal constructivist pedagogy. The high proportion of students who found the blog assessment both helpful and stimulating is an important indicator of the value of this approach. Following Thorndike's (1932) 'Law of Intensity', interesting assessment tasks that are interactive and engaging are more 'vivid' than routine experience and promote better learning outcomes. Students also appreciated the formative learning opportunity that the blog assessment provided, with one student describing the blog as 'economics with training wheels' (hence the title for this paper). However, the instructor noted that many of the contributions early in each semester demonstrate little more than surface learning – this situation improves as the semester progresses and students receive feedback, both from other students commenting on their discussions, and from the formative progress marks and comments by the instructor. However, a few students maintained core misconceptions and failed to evolve to a higher level of explanation, a problem identified by Land (2000). Despite that, students appeared to become more engaged in the material and had a better understanding of current issues than in semesters prior to the introduction of the blog.

The dominance of male students in blog participation is similar to that observed in other online discussion forums (Fauske and Wade 2003-04; Herring 2001). However, the instructor noted that, while female students made fewer posts to the blog, they were generally of higher quality, integrating theory and real world situations in a more coherent way. Furthermore, there was no significant difference between male and female students in terms of overall performance in the paper, so the dominance of male students in the blog may not be of concern.

While the instructor's participation in the blog was kept to a minimum in this study, others have taken a more active approach. For instance, Churchill (2009) reported that students were encouraged to blog by the facilitator's own blogging activity. There is an opportunity for the instructor to become more active in future iterations of the class, and test whether the impacts of blog participation on student performance are different when the instructor is more active. The instructor also noted that they gained through the blog as they became more attuned to what their students were interested in and wanted to learn. The blog can then be used as an application of 'just-in-time teaching' to determine where students need additional support (Higdon and Topaz 2009; Novak et al. 1999). Glogoff (2005, p.3) notes that 'extending contact between instructors and enthusiastic students through a topical blog could provide a practical way to mentor and encourage exceptional students to continue their studies in relevant fields'. However, instructors should be mindful of the substantial time commitment required to be actively involved in a class blog, particularly if the class size is large. The optimal degree of participation by the instructor in online forums such as blogs remains an open empirical question (Fauske and Wade 2003-04), and there remains a further opportunity to investigate whether the nature of participation by the instructor makes a difference as well.

In electronic forums, discussions can become personal and quickly devolve into abuse and inappropriate language (Fauske and Wade 2003-04). However, across the four years of this study, the instructor did not have to moderate, remove, or alter a single discussion post. Students were given clear instructions on posting etiquette, and generally demonstrated a relatively high level of maturity and respect in their contributions to the blog discussions. This may be because there was no way to anonymously comment on the discussions, promoting a high degree of ownership over every comment that each student made in the discussions. Furthermore, due to the software employed each post to a discussion was accompanied by the student's picture, allowing students to continue online discussions in class, or vice versa, which may have further tempered the nature of the discussion (Fauske and Wade 2003-04).

Blogging and reading blogs can be a relatively time-consuming activity, particularly if the instructor makes many comments or has to moderate many of the discussions. Workload obviously depends on class size, but was manageable within this class size of no more than 65. In this case, having a relatively simple grading schedule kept the instructor's workload to a minimum, as each post took no more than a minute to grade. However, there is also an opportunity to move to a more rigorous quality evaluation method, such as that proposed by Khine *et al.* (2003). The results noted here for a relatively small class may not be directly transferable to a large undergraduate class setting. In particular, the number of topics that each student was asked to write about quickly exhausted the most prominent news items of the time, particularly in later weeks of the semester when the blog was most active. However, a blog assessment could easily be implemented within a large class setting at the tutorial or large group level, particularly if a clear assessment rubric were employed that would enable teaching assistants or tutors to assess student performance in the blog assessment.

Overall, whether a blog should be voluntary, unstructured and unassessed, or prescribed, structured and assessed, remains another unanswered question (Deng and Yuen 2009). In this case, students' required participation does not appear to have damaged their perceptions of the blog assessment. This contrasts with Custin and Barkacs (2010), who report that their students were significantly dissatisfied with being required to make a certain number of blog posts; they assert that 'voluntary participation in the blog led to substantive and meaningful discussions of course topics' (Custin and Barkacs 2010, p.2). However, many students in this paper completed much more than the minimum requirement (refer Table 2), and even those who participated the least reported positive perceptions of the blog assessment. These results are similar to those of Sorensen and Takle (2002) for discussion forums.

8. Conclusions

Using a blog as a teaching and learning, and assessment tool, requires a significant commitment from the instructor, and requires buy-in from the students. These commitments need not be costly – adopting a relatively simple approach to grading and a minimalist approach to their own contributions kept the time cost low for the instructor in this course. Many students contributed more than the minimum number of blog contributions required, suggesting that the cost to their participation is not onerous. The instructor benefited from a

class that was generally more engaged and aware of current issues, while students noted their benefit in terms of their qualitative assessment of its contribution to their understanding, even though it could not be shown to have a significant impact on student performance. Overall, there is likely a positive net benefit to carefully introducing a blog assessment in small introductory economics classes, and this might also extend to larger classes.

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