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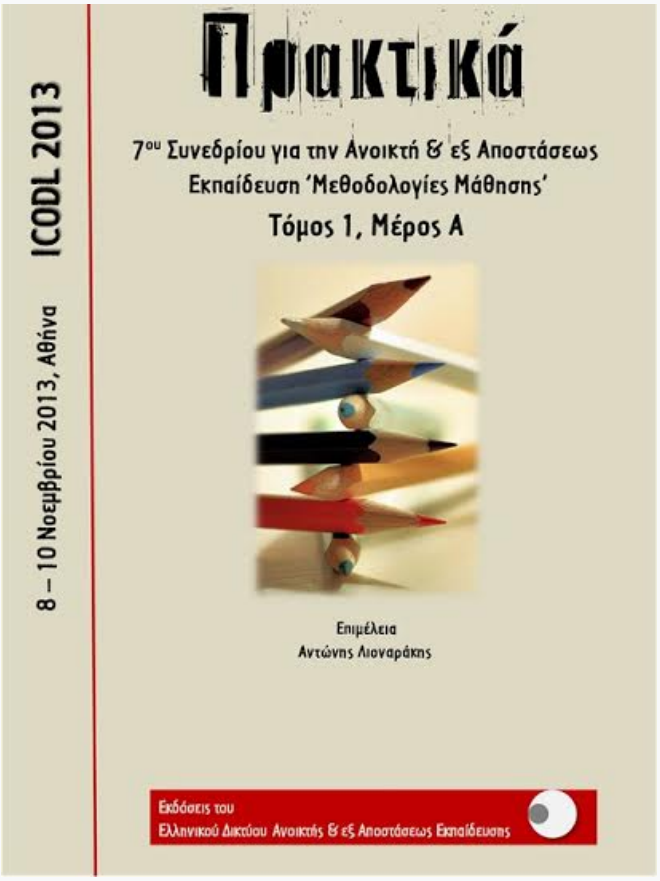

Criteria for evaluating an educational blog as a scientific one

Vasileios Sotiroudas

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Vasileios Sotiroudas
AUEB, IT Teacher
Bsc, Med
vsotirudas@hotmail.com

Abstract
Blogs as one of the most widely used Web 2.0 applications, are globally accepted by a large number of Internet users. The educational blogs have a specific audience, purpose and goals. This research paper explores the criteria by which an educational blog can be characterized as scientific. The survey findings show that the educational blog readers regard an educational blog as scientific, taking into consideration certain criteria to which they attribute different significance. The participation of 10 experts on the field and the contribution of the unknown online educational blog readers was the cornerstone for the completion of this study. This research paper attempts to highlight some particular aspects of an issue, that, although it is one of the most widely used in the web, it has not received similar research attention, either locally or internationally.

Key-words: *blogs, educational, scientific, criteria, evaluation*

Introduction
An educational blog is considered as the blog that created by teachers, students, administrators, industry experts or other stakeholders and focuses primarily on the educational process and educational interests (Hargadon, 2011). Nowadays specific educational blogs have brought big changes in teaching (Curran, Graham & Murray, 2009). The availability and ease of use of blogging software has made their creation a viable classroom activity and a means of communication among teachers (CMIS, 2011). Although the connection among teachers is perhaps the most important feature, however, the use of weblogs in education gives the opportunity for teachers not only to improve their communication with their students but also among students, increase the depth of learning through reflection and allow the formation of different views and perspectives (Siemens & Tittenberger, 2009). More and more teachers around the world show a special interest in blogs and many are those who include them in school practice, taking advantage of their pedagogical value (teamwork, communication with others) (Dapontes, 2007). In recent years, the educational applications of blogs in all levels of education has developed dynamically (Angelaina & Jimogiannis, 2009) and especially in higher education, the use of blogs has expanded to such an extent that in some cases replaces existing means of online communication (Farmer, 2004, as sited in Makri & Kynigos, 2007). The main aim for the use of weblogs in education seems to be the enrichment of the learning experience and the opportunity they offer students to move from the surface to deeper levels of learning (Bartlett-Bragg, 2003). The criteria, by which a blog can be regarded as an educational one, are in order of importance as follows (Sotiroudas & Garitsis, 2013):

1. The content of blog posts with a percentage of 47,92%
2. The content of blog posts, when the blog belongs to an educational institution (university, college, school, etc.) and if the blog is administered by teachers with a percentage of 17%
3. The content of blog posts provided that the blog belongs to an educational institution (university, college, school, etc.) with a percentage of 16%
4. The content of blog posts assuming the blog is administered by teachers with a percentage of 2,71%
5. The content of blog posts, provided that the blog belongs to an educational institution (university, college, school, etc.) administered by teachers along with its name with a percentage of 8,61%

The characterization of a blog as scientific requires first of all the definition of the word science. Some of the definitions given to science at times identify the term as:
"The combination of systematic and verifiable knowledge. The study of sciences and knowledge based on observation and experiment induction "(Bambiniotis, 2004, pp. 368).
"... The constant and uninterrupted effort of the person in some area even if there are encountered difficulties or problems and obstacles" (Matakias, 1993, pp. 242).
"Sphere of the research activity of a man, in order to produce new knowledge about nature, society and the process of knowledge and includes all the terms and details of this production" (Kasiouras, 1986, pp. 112).
Science is something special and distinct from the other forms of culture and social activity, despite significant disagreements of philosophers to clarify the separating criteria. Science is an activity aimed at promoting knowledge and knowledge is the driving force of social renewal and economic development. (Sylakou & Proestaki, 1999).
Although the subject of this research paper isn't the definition of science, some key features of science are clear from the definitions given above. Science is the body of knowledge verified in some way, which is constantly under review, disseminated to the general public and concerning various fields of human activity.
Beke (2009) quotes that a blog can be characterized as scientific if it has several writers and readers, and negotiates scientific issues. He also considered the ability for all blog readers to express their views and comments freely as particularly important. He distinguishes blogs from electronic journals and therefore the blog posts from digital publications, and believes that blogs cannot have the periodicity and frequency of an electronic journal. For this reason, he resembles scientific blogs as whiteboard notes, where experts on the subject expose their ideas, questions, possible solutions, or raise new concerns about the issue in question. The outcome of this process is not only the building of new knowledge but also its diffusion of new knowledge.

Methodology

A combination of quantitative and qualitative approach was used in this research work. In order to answer the research questions, a complex two-phase-strategy was followed, ensuring the maximum validity of the survey's content. In the first phase, the literature review led to the development of a qualitative questionnaire which 10 experts on the field were invited to answer. The purpose of this phase was firstly to record the criteria by which they evaluate an educational blog as scientific and secondly, to check the findings of the literature review for completeness.
The ten experts who have accepted the invitation and who returned a completed questionnaire were:

Professor Peter Jarvis one of the founders of the field of adult education, Knud Illeris professor and scholar in the field of adult education, Michel Alhadeff-Jones assistant professor of adult education at Columbia University, Antonis Lionarakis assistant professor in open and distance education at the Hellenic Open University and visiting professor at Athens University, Vasilios Dagdilelis assistant professor in the department of educational and social policy at the University of Macedonia in the field of computer applications in education, Andreas Oikonomou assistant professor at school of pedagogical and technological education and blog administrator, George Palaigeorgiou researcher at the department of informatics at Aristotle University of Thessaloniki, Nikos Dapontes writer, teacher and web administrator, Konstantinos Kiourtsis professor and director of innovative actions in secondary education, special advisor for the prevention of addiction and a blog administrator, and Leonidas Katsiras school counselor for Central Greece and Thessaly, at legal and political science and web administrator.

The responses indicate that the specific issues related to the design as well as the elements related to the interaction of an educational blog to other social networks do not appear to serve as important benchmarks for evaluating an educational blog as a scientific one. The existence of advertising and the possible interrelation between the blog and economic interests also appears to be irrelevant for the experts, at least so far as to consider it as one of the basic evaluation criteria. Experts seem to give more importance to issues such as the contribution of the blog on various aspects of science (production, dissemination, monitoring and questioning of scientific knowledge), the personality of the blog administrator, the reliability of published information, the democratic policy they follow regarding how to publish the post comments, the online community created between the blog and its readers and the transparency to the purposes and goals of the blog. In addition, there are also some critical doubts of some experts, regarding the conceptual definition of "educational" and "scientific" (Sotiroudas & Garitsis, 2012).

In the second phase, after synthesis and critical evaluation of the responses given by the experts, a questionnaire was prepared and posted on the internet and in which readers of educational weblogs were asked to answer the questions. The purpose of this phase was to assess the criteria by which the readers themselves evaluate an educational blog as a scientific one. In fact it is a kind of triangulation, aiming to increase the validity of the research (Sotiroudas, 2011).

The selection of structured online questionnaire was made, because the main focus was to make measurements rather than collecting rich personal data, while as it is known, the larger the sample size is, the more structured, closed and arithmetic should be the questionnaire (Cohen, Manion & Morrison, 2007, p 417). In this questionnaire every possible effort was made to avoid concentration on verbal data and to minimize the use of sensitive or threatening questions in combination with the use of a pilot questionnaire to increase the validity and reliability of the collected data (Sotiroudas, 2011).

Most of the questions in the questionnaire were posed according to Likert's hierarchy scale of 5 degrees in a table. The outcome was that a total of 26 online questions created 55 independent and dependent research variables.

The independent variables of the study were sex, age, education, employment status, marital status and income. All independent variables were nominal. From the dependent variables, 48 were ordinal, while 7 were nominal.

Due to the fact that the research variables were nominal or ordinal, for every two variables (one independent with each of the dependent) was made an inspection of the

nonparametric statistic test of x^2, applying as a correction the exact test of Monte Carlo in the cases where observed frequency <5. All tests were performed in a confidence interval of 95%. The tested cases were:
H0: there is independence between the two variables
H1: there is independence between the two variables
Accepting the hypothesis H0 implies rejection of hypothesis H1 and vice versa.
For the whole questionnaire, Crombach's alpha (a) index of internal reliability/consistency was additionally used.

Findings

The questionnaire was completed by 519 people over a period of 45 days (from 01/11/2011 until 15/12/2011), which was available for online completion. In the presentation of results that follows, there are no remaining answers, since the answer to all the questions in the questionnaire was mandatory. The online questionnaire shows (Table 1) good level of internal reliability/consistency (a = 0.825).

Reliability Statistics

Cronbach's Alpha	N of Items
,825	54

Table 1: internal reliability/consistency

Readers of educational blogs rank in order of importance the categories of evaluation criteria of an educational blog as a scientific one as follows (Figure 1):
1. Quality of Content
2. Transparency
3. Contribution to Scientific Knowledge
4. Design

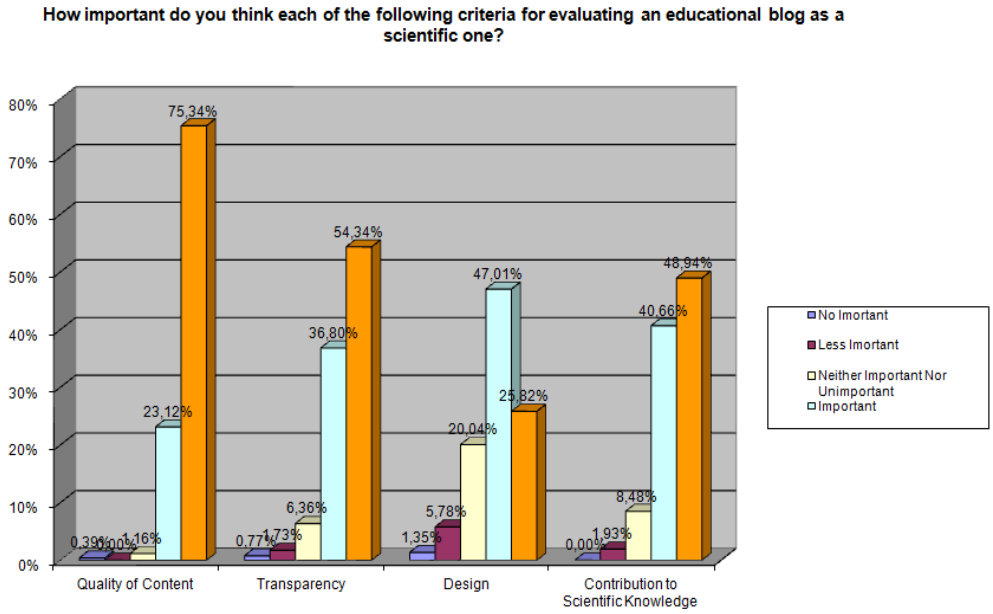

Figure 1: Categories of evaluation criteria

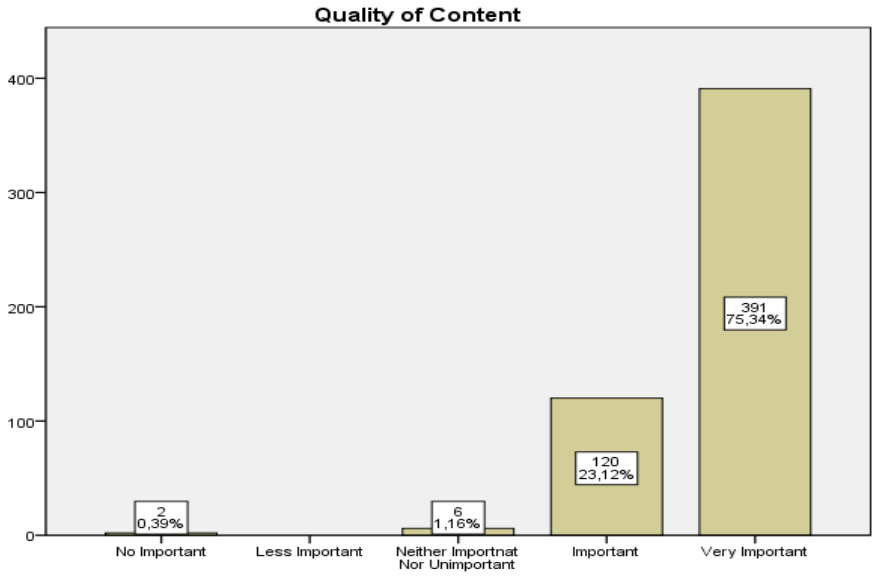

Figure 2: Quality of Content

Almost the entire sample (98.46%), considers the quality of content of an educational blog as an important or very important criterion for evaluating it as scientific, with those who regard it as very important to show a higher incidence of 75.34 % (Figure 2). Undoubtedly this percentage makes sense and leaves no room for any other interpretation.

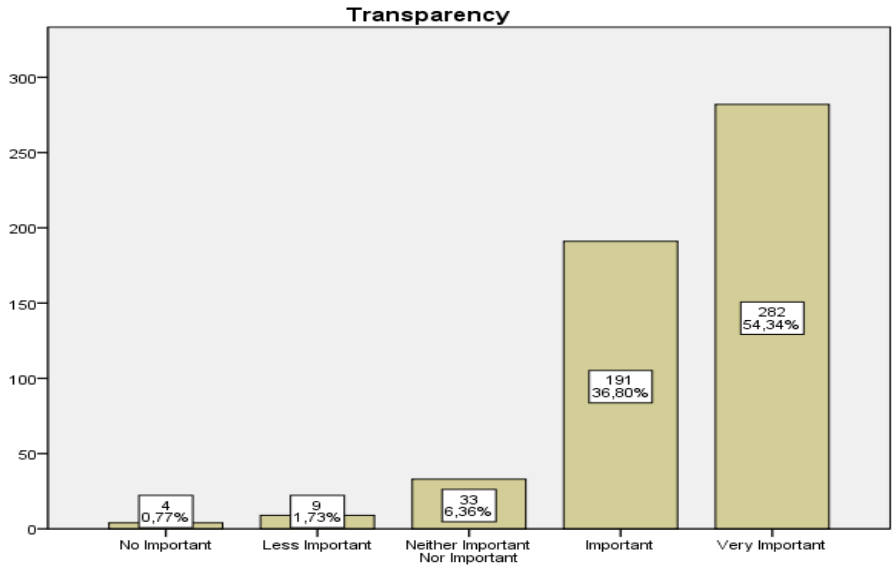

Figure 3: Transparency

Similar to previous observations are those related to the views of respondents, regarding the importance of transparency of an educational blog, as a criterion for evaluating it as scientific. More than 91% of the sample considers this criterion as important or very important, with those who regard it as very important to have the highest incidence in the total with 54.34% (Figure 3). The 6.36% are neutral terms, while the opposing views raise negligible percentages.

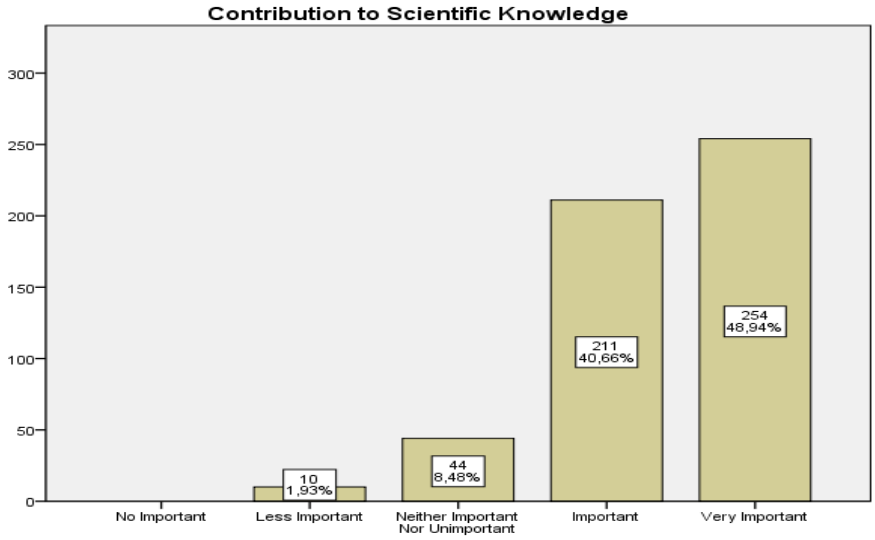

Figure 4: Contribution to Scientific Knowledge

89.6% of the sample considers the contribution of an educational blog to scientific knowledge as an important or a very important criterion for evaluating it as scientific, with those who consider this criterion as very important to exhibit the highest frequency of 48,94% (Figure 4). 8.48% are neutral view, while only 1.93% considers this criterion as less important. It is worth mentioning that none (0%) of the respondents expressed a view that this criterion is of no importance.

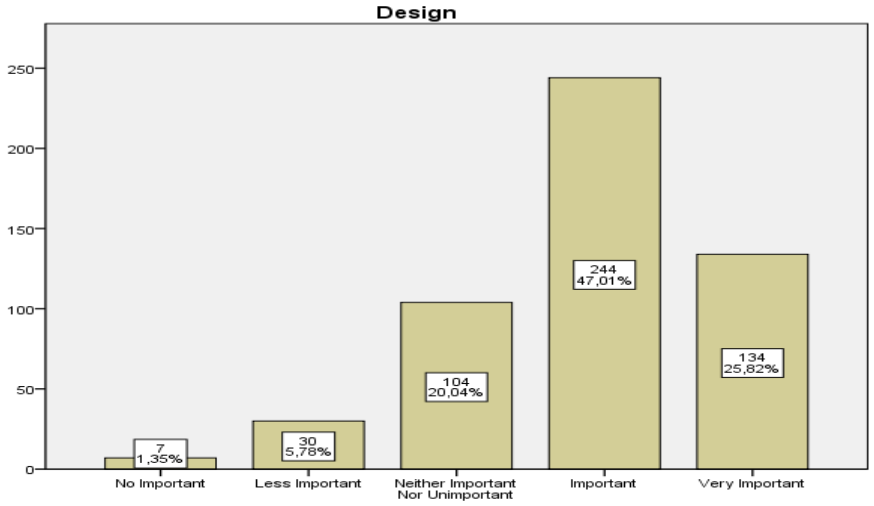

Figure 5: Design

72,83% of the sample considers the design of an educational blog as important or very important criterion for evaluating it as scientific (Figure 5). Those who consider this criterion as important show greater frequency on the whole, with 47.01%. 20.04% deliver neutral view, while 7.13% consider this benchmark as less, or not important. Obviously, although the rate of 72.83% is very high, nevertheless, it falls far short of the percentages reported for the other two benchmarks above, suggesting that readers of educational blogs consider the design as an important element for its evaluation as scientific, however it is considered to be less important than the quality of content and transparency.

In each of the above categories of evaluation criteria a host of other sub-criteria were included, the analysis of which is beyond the scope of this paper. However, the overall analysis produced the following table (Table 2) of evaluation criteria of an educational blog as a scientific one, in a hierarchical order.

Criteria for evaluating an educational blog as a scientific one
1. Quality of Content
1.1 clarity - understandability of information
1.2 objectivity in the presentation of issues
1.3 completeness in coverage that addresses the blog
1.4 lack of spelling and grammar errors
1.5 frequency of new content
1.6 blog posts refer on other reliable sources
1.7 accuracy of the information provided
1.8 support the blog posts with literature
2. Transparency
2.1 declaration of the purpose and the goals of the blog
2.2 declaration of blog's topics
2.3 declaration of who sustains and / or finance the blog
3. Contribution to Scientific Knowledge
3.1 they make more accessible to the public scientific works and researches
3.2 contribute to the dissemination of scientific knowledge
3.3 allow readers to judge and comment on previously published works and articles
3.4 the interaction of readers develop critical thinking that contributes to building knowledge
3.5 offer to everyone the opportunity to publish their work and put them in public review
3.6 provide the ability to all researchers to publish their works, but without criteria
3.7 their posts should be published first in scientific journals and / or conferences
3.8 should apply peer review process for unpublished works and researches before posting them
4. Design
4.1 ability to internally search in blog posts
4.2 archiving blog posts
4.3 accessibility for people with disabilities
4.4 the overall aesthetics of the blog (colors, background, etc.)
4.5 possibility of translation into foreign languages

Table 2: Criteria for evaluating an educational blog as a scientific one

Additional criteria that were examined, but did not prove significant are:
1. information provided should be unique
2. blog should belong to a formal educational organization / club / association
3. blog posts should come from a recognized author
4. blog posts should have previously been published in scientific journals and / or conferences
5. declaration of the target audience of the blog

6. presence of ads

Although the contribution to scientific knowledge ranks third in the category of evaluation criteria of a blog as scientific, however, it seems appropriate to mention some additional elements. Grouping the above criteria in the category of contribution to scientific knowledge of four aspects of science, leads to the following ranking in order of importance:

1. dissemination of scientific knowledge
2. test of scientific knowledge
3. dispute of scientific knowledge
4. production of new scientific knowledge

Dissemination of scientific knowledge is recognized as the most important contribution of educational blogs to scientific knowledge and therefore as the most important evaluation criterion for classification as scientific. Noted that professors Lionarakis and Dagdilelis agreed the contribution to the dissemination of scientific knowledge as an adequate criterion for the classification of an educational blog as scientific (Beke, 2009), which had been a key question in the questionnaire that was sent to experts. Respondents imply that the dissemination of scientific knowledge as the potentiality the educational blogs offer the public, scientific works and researches in a more accessible way. Obviously, they recognize a relative difficulty involved in finding published scientific works and researches that can possibly be because many academics do not have blogs and thought it needed additional time to comment on posts to a blog or even more to share their own research efforts publicly. This leads to remain in their own mysterious world and keep away from the large crowd concerned their work and reviews received (Downes, 2006).

The testing and challenging of scientific knowledge, recognized as equally important criteria for evaluating the contribution of scientific blogs to scientific knowledge, refer to the fact that the most common method of peer review for evaluation of scientific work, has failed to eliminate the fact that poor quality works has been found at times positively and incorporated throughout the scientific literature. The big advantage and the contribution of scientific blogs is that often identify and mention such cases, while simultaneously identify and mention the really valuable works (Moran, 2010). Moreover, many times the otherwise recognized as scientific knowledge is nothing more but a product of altered reality. As it is known, there are three separate cases where scientific recognition could be an alternative product of objective reality. The theory of accumulated benefits, the phenomenon of Mathilde and the mechanism of executing roles (Boudourides, 1998-1999). Readers of educational blogs seem to recognize the cases mentioned above, and therefore perform the test and dispute of scientific knowledge similar significance. The educational blogs have relatively small contribution to the production of new scientific knowledge in relation to the contribution they have to the other three aspects of science mentioned above. Respondents were apparently consistent with the view of Beke (2009), adopted the Berlin Declaration in 2003, that knowledge alone is only half the success. The knowledge collected by mankind is irrelevant, if not shared to all groups in society, especially in science groups.

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