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ISPI Melbourne Chapter
http://www.ispi.org/
Editorial

Six of the seven articles in AJET’s first issue for 2001 have been drawn from ASCILITE’s 2000 Conference at Coffs Harbour (ASCILITE 2000). Continuing a policy adopted in 1999 (Oliver, 1999), AJET received nominations of the most distinguished articles from the Conference’s editorial and review processes. As with the 1999 selection, these articles are excellent examples of a vigorous research and development effort concerning the use of educational technologies in higher education.

The first article in this issue is Geoff Andrewartha and Simon Wilmot’s examination of multimedia program and face to face lecture deliveries (Andrewartha and Wilmot, 2001). Their article was not drawn from ASCILITE’s December 2000 Conference, but was accepted into production on 10 November 2000, just one day after we filled AJET 16(3) and four weeks before the ASCILITE Conference. The delay in publication until April 2001, whilst waiting for the full complement of articles to fill AJET 17(1), is a concern. As Production Editor, I’m preparing a proposal for AJET’s Board to consider, to enable a limited form of web release for individual articles, immediately after completion of peer review and prior to appearance in a print issue. I’m mindful that over three years have passed since offering to explore “the pros and cons of moving to primary publication on the AJET web site, with print issues following at a later date, when a sufficient number of articles, typically 4 to 7, are accumulated to warrant a ‘print, package and post’ job.” (Atkinson, 1997)
Ironically, a delay in publication may not be a disadvantage in all cases, as the following anecdote indicates. During March-April, researchers in Australian universities have become acquainted, or re-acquainted, with DETYA's Higher Education Research Data Collection process (DETYA, 2001). Nowadays this exercise is taken very seriously, because the data enables one component of the Federal Government's procedures for "... determining allocations to universities under performance based funding schemes." (DETYA, 2001) In brief, universities submit to DETYA a count of their research publications for Year 2000 and will obtain a related increase (or decrease) in future annual allocations of Federal funding. Details vary between universities, but to give an indicative example, a research article by Murdoch University staff in a refereed journal is expected to "earn" about $3000 to $3600 in the Year 2000 count for Murdoch University. A seriously rewarding amount, compared with about $900 per article in the Year 1999 count (Murdoch University, 2001). Authors who just missed out on a 1999 publication date and had to take a Year 2000 date probably will not complain to the Editors about delays in the publishing process!

Naturally enough, DETYA has an extensive set of rules and procedures for verifying and auditing the counts of research publications made by Australian universities (DETYA, 2001b). Authors, editors, conference organisers and publishers now take great care to ensure eligibility as a research article in a refereed journal (DETYA category C1) or in a refereed conference proceedings (DETYA category E1). Articles which are not refereed, or are not research, or are deemed ineligible on other criteria (DETYA, 2001b) do not attract a research funding reward for the author's university. Authors submitting to AJET may be re-assured that the status of accepted articles is "DETYA C1 compliant" (however, only authors working in an Australian university are able to obtain a practical benefit from that status, as the scheme is applicable only for DETYA funded universities).

Online references

AJET's editorial policy to "promote and facilitate the citation and use of online references" (Atkinson, 2000) has been applied comprehensively to three issues (Table 1). Records of editorial action show that about 20% of the URLs (Uniform Resource Locators, or web page addresses) cited by authors require correction or are annotated as "broken" (refer Table 1, column "Corrected or broken"). Editorial addition of URLs (refer column "URLs added") increases the percentage of URL based citations from about 19% (column "URLs cited") to about 31% (column "URLs %").

Table 1: Citations of URLs in AJET articles

<table>
<thead>
<tr>
<th>AJET Vol (issue)</th>
<th>Number of articles</th>
<th>Total citations</th>
<th>URLs cited</th>
<th>Corrected or broken</th>
<th>URLs added</th>
<th>URLs %</th>
</tr>
</thead>
<tbody>
<tr>
<td>17(1)</td>
<td>7</td>
<td>227</td>
<td>24</td>
<td>11</td>
<td>38</td>
<td>27.3</td>
</tr>
<tr>
<td>16(3)</td>
<td>6</td>
<td>129</td>
<td>45</td>
<td>4</td>
<td>8</td>
<td>41.1</td>
</tr>
<tr>
<td>16(2)</td>
<td>6</td>
<td>113</td>
<td>20</td>
<td>3</td>
<td>10</td>
<td>26.5</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>469</td>
<td>89</td>
<td>18</td>
<td>56</td>
<td>30.9</td>
</tr>
</tbody>
</table>

The proportion of errors and broken URLs is similar to proportions noted in other studies, for example Germain (2000) and Davis and Cohen (2001).
Editorial work on verifying, correcting and adding URLs is essential, and seems to be well worthwhile. Whilst the main purpose is to facilitate the reader's access to references cited in AJET articles, extensive use of valid URLs helps to demonstrate and promote the increasing importance of the research journals, conference proceedings and monographs which have espoused Internet based delivery of freely accessible literature.

**Access statistics**

Page access counts ("hits") for AJET's home and contents pages (Table 2) continue on the strong growth path noted in a 1999 editorial (Atkinson, 1999). The growth rate is satisfying, although the counts are relatively small compared with some other journals. For example, the library and information services journal *Ariadne* records a total of over 100,000 page views per month (Hunter, 2000), and its usage "...doubled between May 1998 and October 1999" (Hunter, 1999). AJET usage, assessed by home page hits for the month of March, increased 47% between March 1999 and March 2000 (from 1277 to 1879) and coincidentally, also by 47% between March 2000 and March 2001 (from 1879 to 2768).

<table>
<thead>
<tr>
<th>Date</th>
<th>Home</th>
<th>Vol 16</th>
<th>Vol 15</th>
<th>Vol 14</th>
<th>Vol 13</th>
<th>Search</th>
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</thead>
<tbody>
<tr>
<td>2 Dec 99</td>
<td>23150</td>
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<td>4252</td>
<td>6408</td>
<td>4874</td>
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<td>3 Oct 00</td>
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<td>1599</td>
<td>9932</td>
<td>7091</td>
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<tr>
<td>4 Dec 00</td>
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<td>2470</td>
<td>10742</td>
<td>7539</td>
<td>6372</td>
<td></td>
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<tr>
<td>5 Feb 01</td>
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<td>3242</td>
<td>11404</td>
<td>7845</td>
<td>6844</td>
<td></td>
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<tr>
<td>5 Apr 01</td>
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<td>4313</td>
<td>12237</td>
<td>8268</td>
<td>7807</td>
<td></td>
</tr>
</tbody>
</table>

Unfortunately, it is difficult to obtain statistical data enabling extensive comparisons between journals. We encounter several problems, including some problems in comparability of data, and a major problem in 'coyness' about data relating to circulation and numbers of readers. Very few publishers, whether commercial or non-profit, provide publicly accessible information about the numbers of subscribers to print versions, or about accesses to online articles. Perhaps this is understandable, because librarians may cancel subscriptions, and authors may be reluctant to submit articles, if a journal is known to have a small number of subscribers (or low hit counts) (Luther, 2001).

Commencing with AJET 15, we have placed hit counters on the web pages for all articles. Access rates show a marked peak after new articles are released from the period of password restricted access (currently 3 months) before entering a "decay curve" (Anderson et al, 2001). AJET 16(3) articles currently show access counts in the range 62-120 hits per week (average 78; sampling period 22 Mar-5 Apr 2001), compared with counts in the range 8-34 per week for articles in AJET 16(1) and (2) (average 15.1), and 5-130 for articles in AJET 15 (sampling periods 6 Feb-5 Apr 2001). Omitting the remarkably high count of 130 per week for McLoughlin (1999), the average count for AJET 15 articles is 13.8 per week. There is bad news for writers of AJET's editorials. The hit count average for AJET 15, 16(1) and 16(2) editorials is a mere 3.1 per week. And editorials don't earn DETYA research funds :-(

Roger Atkinson
References

http://www.press.umich.edu/jep/06-03/anderson.html

http://cleo.murdoch.edu.au/ajet/ajet17/andrewartha.html


http://www.asis.org/Publications/JASIS/vol52n4.html


http://www.ariadne.ac.uk/issue22/editorial/

http://www.ariadne.ac.uk/issue24/editorial/

http://www.press.umich.edu/jep/06-03/luther.html


Murdoch University Division of Research and Development (2001). Internal seminar, 8 March.