Measuring the Quality of Electronic Journals

Maricela López-Ornelas, Graciela Cordero-Arroyo and Eduardo Backhoff-Escudero
Autonomous University of Baja California, México
ornelas@uabc.mx
gcordero@uabc.mx
backhoff@uabc.mx

Abstract: This paper presents the methodology developed to create a system to evaluate academic electronic journals. This methodology was developed in two stages. In the first stage, a system to evaluate electronic journals was created. The criteria framework and the indicators for assessment for academic electronic journals were selected and defined. According to this framework, several questions were designed to measure each indicator and, as a result, an instrument to evaluate academic electronic journals was built. In the second stage, this instrument was validated by 16 editors of electronic journals of different countries and different areas of knowledge that were considered as judges to evaluate clarity, importance, relevance and coverage of each question, indicator and criteria. This instrument was distributed by e-mail. The opinions given by the judges were processed and then used to help in the construction of a new instrument that is ready to be presented to the Mexican Council of Scientific Research in order to evaluate Mexican academic electronic journals.

Keywords: Key words: electronic journals, journals quality indicators, journals evaluation.

1. Evaluation of electronic journals

What we call the Gutenberg Era began in the Fifteenth Century with the invention of the printing press in 1463. By 1665 in Europe there appeared the first publications considered as systems of formal communication: *Journal des Savants* in París and *Philosophical Transactions of the Royal Society* in London (Guédon, 2000; Reyna, 2000).

Inaugurated more than three centuries ago, the formal publications (also known as primary, academic, scientific or research and development publications (Grunewald, 1982, in Rovalo, 1998) continue to be considered as basic links in academic communication, especially in the process of transferring and disseminating scientific information (Guédon, 2000; Ríos, 2000; Barrueco, 2000).

Traditionally, the study of the evaluation of scientific publications dates from 1934, when Samuel Clement Bradford published *Bradford's Law of Mathematics.* The end of another three decades saw the birth of the science called *bibliometrics,* the brainchild of an Englishman named Alan Pritchard, who gave another name to "statistical bibliography." Garfield, toward the end of the fifties, expanded on the idea of indexing the sciences and the role of citations in creating a new concept for the evaluation of academic publications (Guédon, 2000).

The continuing advances in information and communications technology have transformed the production and dissemination of scientific knowledge. One of the fields in which this change has been most significant is that of publishing (Área, 1998), particularly in the publication of journals dealing with science and research.

The majority of authors tend to emphasize as advantages of online publication: the rapidity of publication; the ease with which illustrations, sound, animation, video, databases, hypertext links, and other characteristics of the electronic medium can be incorporated into the articles, and the low cost of reproduction and distribution.

In their fifteen short years of existence, electronic academic publications have shown rapid growth, but lamentable disorder because there are no quality standards by which to regulate them. The quest for excellence in this type of published material makes it necessary to define a set of criteria for its evaluation. Reserach on evaluative material for electronic publications is barely ten years old (Rohe, 1998). A look at the criteria for the evaluation of printed material (standardization, organization, clarity, indexing, etc.) shows that these are clearly identified and defined. In contrast, the criteria for evaluating online resources (access, navigation, design and speed, among others) are still in a state of confusion. Even among the authors themselves—those who deal with the subject—there is obviously little correlation in their way of defining and organizing the criteria (López and Cordero, 2001).

Some authors, such as Smith (1997), Alexander (2000), Brandt (1996), Beck (1997),

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Coutts (2001), Hinchliffe (1997), and Retting (1996), have dedicated themselves particularly to the evaluation of Internet publications. These authors have based their definition of criteria for the evaluation of electronic sources on those already established for evaluating traditional sources.

Some of those who specialize in the evaluation of digital journals are Cooke (1999), Bustos (2000), Codina (2001), Laerte (2001), Rodríguez (2001), Testa (2001), Lugo (2004) and Schulz (2001) who have proposed specific criteria for evaluating of electronic academic journals as adaptable to user needs, access, content, navigation and site design. Although their work has been an important contribution to the field of electronic scientific publishing, they do not claim that their models of evaluation have been validated. These authors offer only a list of elements for consideration when evaluating academic journals.

As a contribution toward the resolution of this problem, the Autonomous University of Baja California's Institute of Research and Educational Development organized a research project which had as its objective the development and validation of an evaluation system for electronic academic journals (López-Ornelas, 2003). The purpose of this paper is to present the methodology used and the results obtained, so as to consider these as a contribution to the evaluation of information technologies.

2. Method

The design for a system of criteria for the evaluation of electronic academic journals was structured in two stages. The first has to do with the design of the evaluation instrument, and the second, with the validation and restructuring of that instrument. Figure 1 shows the complete sequence of the work.

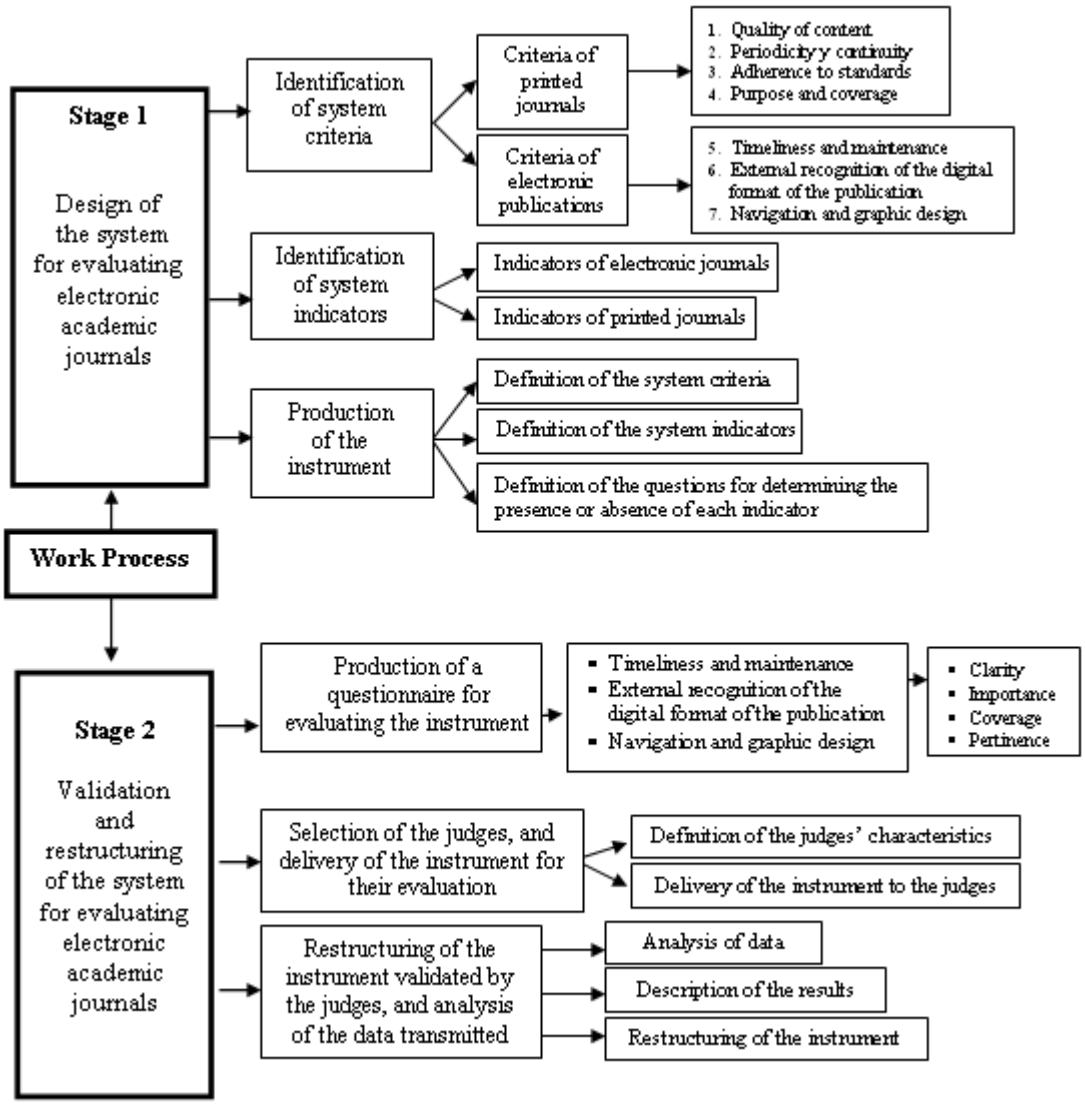

Figure 1: Work process for the production of an instrument for evaluating electronic academic journals

3. Design of the evaluation instrument

The purpose of this phase of the study was to propose a plan representing the best criteria for the evaluation of printed academic journals, as well as the most significant criteria for the evaluation of online publications. It was developed in three stages:

- Identification of criteria for the evaluation system;
- Identification of indicators for the evaluation system;
- Construction of an instrument for evaluating electronic academic journals.

In order to identify the criteria of the evaluation system, a search was made for the principal evaluation models of printed academic journals, and for the evaluation systems of online academic journals and resources. After reviewing the models, a comparative analysis was made to identify the criteria used most frequently. As a result of this analysis, it was found that the criteria used in the evaluation of printed academic journals are suggested by the consulted authors as an indispensable part of the evaluation of electronic academic publications as well. Thus, in order to evaluate an electronic resource, it is necessary to fall back on these traditional criteria.

There have also been identified the three criteria most frequently used for systems evaluation in academic journals and online resources: 1) timeliness and maintenance, 2) external recognition of the digital format of the publication and 3) navigation and graphic design.

Table I points out the criteria most frequently used in the evaluation of academic and electronic journals, as well as the seven criteria selected for the production of an instrument for the evaluation of electronic journals.

Table 1: Criteria selected for evaluating electronic academic journals

Criteria selected for evaluating electronic academic journals
▪ Quality of content
▪ Standardization
▪ Purpose and coverage
▪ Periodicity and continuity
▪ Timeliness and maintenance
▪ Navigation and graphic design
▪ External recognition of the graphic design of the publication

To identify the indicators of the evaluation system for electronic academic journals, a methodology similar to the preceding was followed. The indicators of the models for evaluating printed academic journals, used in the first stage, were compared and selected.

The identification of the indicators used for evaluating electronic academic journals and online resources proved more difficult. To identify these indicators it was necessary: a) to review all the check lists proposed by the authors for the evaluation of electronic resources; b) to rearrange the questions according to the criteria obtained in stage number one (timeliness and maintenance, external recognition of the digital format of the publication, and navigation and graphic design), c) to eliminate similar questions, and d) to restructure the indicators. The result of the second stage is presented in Table 2.

Table 2: Identification of indicators used for the evaluation of electronic resources

Criteria for evaluating electronic academic journals	Indicators for evaluating electronic academic journals
Timeliness and maintenance	▪ Validity of publication links ▪ Preservation of links
External recognition of the digital format of the publication	▪ Circulation and forms of distribution ▪ Inclusion in databases ▪ Financing
Navigation and graphic design	▪ User-friendliness ▪ Navigation and organization ▪ Design ▪ Technical requirements ▪ Interactivity ▪ Connectivity ▪ Search capability

Finally, the purpose of the third stage of the study's first phase was the production of an instrument for evaluating electronic academic journals by means of the criteria selected in the previous two stages, and by following the three following steps:

- Definition and integration of the system's seven criteria: Quality of Content, Standardization, Purpose and Coverage, Periodicity and Continuity, Timeliness and Maintenance, Navigation and Graphic Design, and External Recognition of the Digital Format of the Publication (See Table I).
- Definition and integration of the systems integrators (See Table 2).
- Formulation of questions for determining the presence or absence of each indicator.

Table 3 presents the definition and classification of the criteria and indicators of the system. First are shown the four

indispensable criteria for all academic journals; the three final criteria are those which may be used in evaluating electronic academic journals.

Table 3: Definition and classification of the criteria and indicators of the system

Criteria	Indicators
1. Quality of the content Mechanisms used by the journal to assure content quality	**1.1 Authority** *Presence of reviewers recognized by their academic community*
2. Continuity and Periodicity Historical prestige of the journal and time of publication	**2.1 Continuity** *Historical prestige of a journal* **2.2 Periodicity** *Time established for its publication*
3. Standardization Inclusion and endorsement of the general aspects of a publication	**3.1 Standardization** *Inclusion and endorsement of the general aspects of a publication*
4. Purpose and audience Clarity with which the purpose of the site is stated, and the type of readers to whom it is directed	**4.1 Purpose and audience** *Purpose of the information in relation to the type of audience to whom the publication is directed*
5. Timeliness and maintenance Validity and preservation of the publication's internal and external links	**5.1 Timeliness** *Validity of the publication´s internal and external links* **5.2 Maintenance** *Constant preservation of the publication´s internal and external links*
6. External recognition of the publication's digital format External recognition of the journal by its inclusion in libraries, incorporation in databases of relevant journals of the specialty which covers and finances the journal	**6.1 Circulation and forms of distribution** *Various systems of circulation and distribution used by a publication* **6.2 Inclusion in databases** *Indexing of the publication in databases and indices of national and international visibility in its thematic area* **6.3 Financing** *Recognition which a journal may have by means of its financing*
7. Navigation and graphic design Use of factors which permit the effect use of the resource, such as images, color and graphic support, navigation, and structure of the information	**7.1 User-friendliness** *Ease of access of an Internet publication* **7.2 Navigation and organization** *Organization which facilitates orientation and access to the information, as well as rapidity and ease of movement throughout the site* **7.3 Design** *Use of esthetically-pleasing graphic support, in harmony with the content* **7.4 Technical requirements** *Characteristics of the hardware and software needed by the computer to access the resource* **7.5 Interactivity** *Ease of interaction between the system and the user* **7.6 Connectivity** *Time of access for consulting the resource* **7.7 Search Capability** *Presence of search systems with which to facilitate the access and recovery of information.*

As the final step of the third stage, questions were formulated for the determination of the presence or absence of the indicators in the journal evaluated

4. Validation and restructuring of a system for evaluating electronic academic journals on the Internet

The purpose of the second phase of the work was to validate the system for evaluating electronic academic journals on the Internet. According to the Classical Theory of Measurement, content validity shows the level at which the items of an evaluation instrument are representative of the content of the domain that is tried to measure; that which is assured based on the opinion of experts, who determine whether this is, or is not, representative. The steps for validating the content are the following: definition of the universe of experts, selection of experts in the said universe, judgment of the experts regarding the relevance and representativeness, and analysis of the data (Backhoff, 2002).

What this means is that the study could not merely rely on an existing instrument by which to evaluate electronic academic journals, but rather, it was necessary to develop a new instrument in order to find out whether what had been considered important for evaluating a journal was, or was not valid, based on the verdict of the experts. There were three stages in the development of the phase:

- Production of a questionnaire for validating the instrument;
- Selection of the judges and delivery of the instrument to them for their validation;
- Restructuring of the instrument validated by the judges.

In making up the questionnaire, only three criteria were considered specific to the evaluation of electronic resources: timeliness and maintenance, external recognition of the publication's digital format, and navigation and graphic design.

Three questionnaires were produced, one for each variable. For the validation of the instrument by the judges, four aspects were distinguished:

- *Clarity.* Evaluated legibility and clarity in the wording of the questions. This, for example, was one of the questions: "Is the indicator clearly defined?"
- *Importance*. Evaluated the questions' level of relevance to the theme. For example: "What is considered the level of importance of the indicator *timeliness* in evaluating electronic journals?"
- *Coverage.* Evaluated whether or not the questions covered the theme in totality; that is, whether their content distinguished a particular theme, or was an indicator of another. One question, for instance, was: "Do you consider that new questions for evaluating this indicator should be included?"
- *Pertinence.* Evaluated whether the question was necessary, right and suitable for the theme; thus, evaluated whether or not the question belonged to the topic. For example, the questionnaire requested: "Mark the questions that are pertinent to the evaluation of the indicator *financing".*

Table 4 shows the three criteria or variables reviewed by the judges, the indicators by variable and four aspects were distinguished.

Table 4: Criteria and indicators of the instrument

Criteria (Variables)	Indicators	Aspects that the judges evaluated
Timeliness and maintenance	Timeliness Maintenance	Clarity
External recognition of the publication's digital format	Circulation and forms of distribution Inclusion in databases Financing	Importance
Navigation and graphic design	User-friendliness	
	Navigation and organization	
	Design	Coverage
	Technical requirements	
	Interactivity	
	Connectivity	Pertinence
	Search capability	

Afterward, the judges were selected. It was first determined that the judges would be the editors of online electronic journals, refereed, published in Spanish, free access to complete text, at least two years old, and sponsored by recognized institutions, such as universities, educational organizations, governmental bodies, or societies.

Once the characteristics of the journals were identified, an Internet search was made to locate the journals and verify the length of their existence. After six months of checking, 36 electronic publications were found that met this criteria.

Finally, a letter of presentation and an invitation to participate in the study was designed and sent by electronic mail to the editors of the 36 journals selected. Of the 36 editors invited, 26 Emailed their acceptance, and the instrument designed was sent to them by the same means. Only 18 answered and Emailed back the questionnaires. Of these 18 questionnaires, two were eliminated because the questions were answered incorrectly. As a result, the evaluation sample was composed of 16 judges. The journals participating in the study had the following characteristics: all were from the area of social sciences; 15 were published by public universities, and one by a private university. As to their countries of origin, six were Mexican, six Spanish, one Canadian, one Northamerican, one Argentinean, and one Costa Rican.

5. Results

The validation of the instrument specifically considered four aspects of the criteria in each indicator and its questions: whether the questions were worded with sufficient clarity, whether their inclusion in the instrument were necessary (important), whether they adequately covered the them and whether they were pertinent to the system.

Table 5 presents the results of the validation questionnaire. The results show the total points of all the questions which have to do with each indicator. It can be seen, for example, that in the case of the indicator *circulation and forms of distribution*, the judges considered that the questions were clear, but they thought there were too few, and suggested that further questions be added to the instrument.

Table 5: Average percentages of each block of questions

Criteria	Indicators	Quest.	Clarity	Impor-tance	Coverage	Pertinence	% total
Timeliness and maintenance	Timeliness	5.1.1. - 5.1.4.	75%	81%	50%	81%	72%
	Maintenance	5.2.1. - 5.2.5.	88%	81%	75%	92%	84%
External recognition of the publication's digital format	Circulation and forms of distribution	6.1.1. - 6.1.5.	100%	81%	50%	83%	79%
	Inclusion in Databases	6.2.1. - 6.2.3.	88%	63%	64%	92%	77%
	Financing	6.3.1 - 6.3.2	81%	44%	50%	84%	65%
Navigation and graphic design	User-friendliness	7.1.1.- 7.1.7	88%	63%	75%	61%	79%
	Navigation and organization	7.2.1. - 7.2.12.	94%	88%	75%	90%	87%
	Design	7.3.1. - 7.3.5.	88%	69%	88%	93%	85%
	Technical requirements	7.4.1. - 7.4.3.	88%	88%	69%	94%	85%
	Interactivity	7.5.1. - 7.5.4.	81%	44%	56%	72%	63%
	Connectivity	7.6.1. - 7.6.5.	88%	56%	75%	71%	73%
	Search capacity	7.7.1. - 7.7.6.	94%	75%	69%	89%	82%
Average percentage		5.1.1 - 7.7.6	88%	69%	66%	84%	78%

As to the open questions, these were analyzed in qualitative terms; this was followed by the addition of the precise terms and techniques necessary for rejecting some questions of the instrument or for modifying the way these were worded.

The contributions of the judges were sufficient to make possible the restructuring of the original instrument, and for adding new questions. Table 6 shows in more detail the changes made in each of the criteria and indicators of the instrument for evaluating electronic journals.

Table 6: Control of the restructuring of the instrument

VARIABLE	INDICATOR
Timeliness and maintenance The name and definition were modified.	**Timeliness** 1. The name and definition of the indicator were modified. 2. Questions 5.1.1, 5.1.2 and 5.1.4 were restructured; question 5.1.3 was eliminated. **Maintenance** 1. The name and definition of the indicator were modified. 2. The construction of the five questions of the indicator was modified.
External recognition of the publication's digital format The definition of the variable was modified.	**Circulation and forms of distribution** 1. The indicator was given a new name. 2. All the questions were restructured, based on the name of the indicator, and two more questions were added. **Inclusion in databases** 1. The wording of the three questions was modified, and another question was added. **Financing** 1. The definition of the indicator was modified. 2. Question 6.3.2 was eliminated, and three questions were added.
Navigation and graphic design The definition of the variable was modified.	**User-friendliness** 1. The name and definition of the indicator were modified. 2. Questions 7.1.1 and 7.1.5 were eliminated. **Navigation and organization** 1. Questions 7.2.1 and 7.2.4 were eliminated. **Design** 1. The definition of the indicator was modified. 2. Questions 7.3.1 and 7.3.5 were eliminated, and two more questions were added. **Technical requirements** 1. The name and definition of the indicator were modified. 2. The wording of question 7.4.3 was modified, and three questions were added: one new, and two transferred from the indicator *Interactivity*. **Interactivity** 1. The indicator was eliminated, and questions 7.5.1 and 7.5.2 were relocated in the indicator previously called *technical requirements (now access requirements)*. **Connectivity** 1. The indicator was eliminated. 2. Question 7.6.3 was relocated in the indicator previously called *technical requirements (now access requirements)*. **Search capacity** 1. Another question was added. 2. Questions 7.7.4, 7.7.5 and 7.7.6 were relocated in the indicator *access requirements*.

The table 7 includes some examples of the questions that were finally selected by the judges giving their clarity, importance, and pertinence. It is not possible to include the complete instrument because of the space required.

Table 7: Examples of some questions included in each indicator

Criteria	Indicators	Question
External recognition of the publication's digital format	**Circulation and forms of distribution**	o Does the journal have web statistics software? Yes ( ) No ( ) o If your answer is yes, do the readers have access to the reports? _____ o Does the journal have a subscription database? Yes ( ) No ( )
	Inclusion in databases	o Is the journal indexed in any data base? Yes ( ) No ( ) o If your answer is yes, give the name of the data base in which the journal is indexed? o Is the journal registered in any group, consortium or institution that registers academic electronic publications? Yes ( ) No ( )
	Financing	o Does the journal receive financial support of any kind? Yes ( ) No ( ) o If your answer is yes, what kind of financial support does it receive? Please include the name of the organization. a) From your own institution _____ b) Private _____ c) Public _____ d) Foundations _____ e) Another kind _____ o Is the financial support dependant on any kind of evaluation? Yes ( ) No ( )
Navigation and graphic design	**User-friendliness**	o Does the journal indicate any kind of help on the page? Yes ( ) No ( ) o Does the journal indicate the resolution required to see it better? Yes ( ) No ( ) o Is there any indication of the kilobytes of the files? Yes ( ) No ( )
	Navigation and organization	o Does the journal have a table of contents for each number? Yes ( ) No ( ) o Is the navigation the same in each number? Yes ( ) No ( ) o Is there any way for the reader to know where s/he is on the page? Yes ( ) No ( )
	Design	o Do the colors used on the page make the reading easy? Yes ( ) No ( ) o Are the pictures clear? Yes ( ) No ( ) o Do the pictures make reading the journal difficult? Yes ( ) No ( )
	Technical requirements	o Does the server of the journal work 24 hours a day seven days a week? Yes ( ) No ( ) o Besides the navigator is there any *software* required to have access to the journal? Yes ( ) No ( ) o If your answer is yes, specify what software is needed? _____
	Search capacity	o Does the journal have a search tool? Yes ( ) No ( ) o If your answer is yes, specify the fields that it covers? ( ) Author ( ) Title of the document ( ) *Abstract* ( ) Key words ( ) Content ( ) e-mail ( ) Something else. Specify _____ o Can the search tool access the information from past numbers of the journal? Yes ( ) No ( )

6. Conclusions

The appearance of electronic publication has proved to be phenomenon capable of transforming the traditional methods of circulation, publishing, dissemination, and transmission of scientific knowledge in a manner never before seen (Lafuente and Rosas, 1998).

The lack of methodological knowledge for the evaluation of electronic academic journals on the Internet has permitted the appearance of a great number of publications that neither adhere to traditional standards nor include quality criteria.

The evaluation system proposed in this work permits the designing of an instrument based on the exhaustive review of the check lists proposed by various authors, and also offers users the guarantee that this instrument has undergone a validation process, a process considered as basic in any evaluative process.

The validation of the instrument showed that the questions included were mainly clear and pertinent, but were not enough and there were still more important questions to include. This shows that from the time when the instrument was developed to the time in which it was answered by the judges, there were changes in the evolution of electronic academic journals.

This work contributes to the construction of the field of evaluation of technology in that it uses the principles of the Classical Theory of Measurement to evaluate a medium to which, until the present time, only general check lists have been applied.

7. Thesis contributions

This research proposal not only gives a methodology of criteria and indicators for the assessment of academic electronic journals, but it also supports the idea that those indicators and criteria should be use as "tools" of evaluation, which can be picked according to the users needs in each journal.

Likewise, because of the newness of this topic in Mexico, this study can be useful as:

- A basis for the development of new online academic journals design projects, or to develop web sites within a quality criteria framework. Understanding that the proposed criteria are not final.
- A check list to verify the quality of online data, selecting specifically the items to the kind of data one's interested in.
- A guide to develop academic and non-academic electronic journals assessment models.
- A way for organisms to periodically assess the quality of their journals. In other words, to make an auto-assessment of their online periodicals.

- As a validation scheme for further publication assessment models.

In our country in particular, the lack of recognition, standards and criteria for having electronic scientific journals assessed by evaluating agencies has caused the academic community to be uninterested in publishing in this type of journal. From this perspective, the application of the instrument will be useful not only for the Autonomous University of Baja California (UABC) and the National Council of Science and Technology (CONACYT) (a government bureau, dependent on the executive power of the federal government, which defines the scientific and technological policy of the country), but also for evaluative groups that need to use criteria for assuring the quality of information taken from the Internet.

References

Alexander, J. & Tate, M. A. (Eds.). (1996, September 9). *Evaluating web pages* (Last update: July 21, 2000). Retrieved September 4, 2000 from Widener University, Wolfgram Memorial Library Information Gateway Web site: http://www2.widener.edu/Wolfgram-Memorial-Library/webevaluation/examples.htm

Área, M. (1998). *¿Y a partir de ahora qué? Del aislamiento a la colaboración entre los docentes e investigadores españoles en tecnología educativa*. Paper presented at the VI Jornadas universitarias de tecnología educativa, Tenerife, Spain. Retrieved October 2, 1998 from: http://www.ull.es/congresos/tecneduc/M-Area.html

Backhoff, E. (2002*). Desarrollo y validación de un modelo para la selección de estudiantes de la Universidad Autónoma de Baja California.* Unpublished doctoral dissertation. Universidad Autónoma de Aguascalientes, Aguascalientes, México.

Barrueco, J. M. (2000, May 5). *Revistas electrónicas: normalización y perspectivas.* Retrieved January 16, 2001 from Universitat de València Web site: http://www.uv.es/~barrueco/badajoz.pdf

Beck, S. E. (1997, July). *The good, the bad & the ugly, or, why it's a good idea to evaluate web sources* (Last update: May 15, 2000). Retrieved August 18, 2000 from New Mexico State University Library Web site: http://lib.nmsu.edu/instruction/eval.html

Brandt, D. S. (1996). *Evaluating information on the Internet.* Retrieved July 27, 2000 from Purdue University Libraries Web site: http://thorplus.lib.purdue.edu/~techman/evaluate.htm

Bustos, A. (2000, September 11-October 6). *Metodología para la evaluación de revistas científicas electrónicas*. Paper presented at the *1er Simposio Electrónico las Revistas Electrónicas: del papel al espacio*, Argentina.

Codina, L. (2001). Evaluación de publicaciones digitales en línea. Barcelona.Documento reprografiado curso doctorado Biblioteconomía y Documentación, Universitat de Barcelona

Cooke, A. (1999). *Authoritative guide to evaluating information on the Internet.* New York: Neal-Schuman.

Coutts, H. T. (2001, January 23). *Critical evaluation of resources on the Internet.* Retrieved January 23, 2001 from the University of Alberta Libraries Web site: http://library.ualberta.ca/guides/criticalevaluation/index.cfm

Fosmire, M. & Yu, S. (2000). Free scholarly electronic journals: How good are they? *Issues in Science and Technology Librarianship*. Retrieved June 8, 2003 from: http://www.library.ucsb.edu/istl/00-summer/refereed.html

Guía para publicaciones científicas [en línea]. [Paris, Francia]: ICSU Press Committee on Dissemination of Scientific Information, 2001. ISBN: 0-930357-50-7

Guédon, J. C. (2000, December). Digitalizar las revistas científicas. ¿Cómo garantizar el acceso universal a la información científica básica? *Mundo Científico, 218*, 80-87.

Hinchliffe, L. J. (1997, May 29). *Resource selection and information Evaluation*. Retrieved June 27, 2000 from the University of Illinois at Urbana-Champaign, Graduate School of Library and Information Sciences Web site: http://alexia.lis.uiuc.edu/~janicke/Evaluate.html

Hitchcock, S., Carr, L. & Hall W. (1995, January 15). *A survey of STM online*

journals 1990-1995: the calm before storm (Last update: June 3, 1998). Retrieved January 13, 1999 from the University of Southampton, Department of Electronics and Computer Science Web site: http://journals.ecs.soton.ac.uk/survey/survey.html

Lafuente, R. & Rosas, A. M. (1998). La publicación electrónica: ¿Un paradigma de organización documental digital? *Investigación Bibliotecológica*, *12* (25), 164-196.

Laerte, A., Rocha, M., Antonio, I., Takemaka, R. M., Pedroso, A., Costa, A., *et al*. (2001). SciELO: una metodología para la publicación electrónica. *Acimed, 9,* (Suplemento), 9-22. Consultado el 4 de septiembre de 2001 en: http://www.infomed.sld.cu/revistas/aci/vol9_s_01/sci03100.pdf

López Ornelas, M. & Cordero, G. (2001). *Una propuesta metodológica para evaluar la calidad de las publicaciones académicas electrónicas*. Paper presented at the III Bienal Iberoamericana de Comunicación, Cholula, Puebla, Mexico.

López Ornelas, M. & Cordero, G. (2003, September-October). La evaluación de un medio electrónico en línea, el caso de las revistas académicas electrónicas en Internet. *Revista Mexicana de Comunicación, 83*. Retrieved March 14, 2004 from: http://www.mexicanadecomunicacion.com.mx/Tables/RMC/rmc83/revistas.html

López-Ornelas, M. (2003). *Diseño y validación de un instrumento para evaluar revistas académicas electrónicas en internet.*Unpublished masters dissertation. Universidad Autónoma de Baja California. Baja California, México

Lugo Hupb, M. y Hernández Sánchez, A. (2004) Evaluación de recursos digitales: Análisis de algunos parámetros. Revista Digital Universitaria [en línea]. *5* (6),. Retrieved January 12, 2005 from: http://www.revista.unam.mx/vol.5/num6/art38/art38.htm

Retting, J. (1996, September). *Beyond "cool". Analog models for reviewing digital resources*. Retrieved February 11, 2003 from: http://www.onlinemag.net/SeptOL/retting9.html

Reyna, F. R. (2000, October 5-6). *La publicación electrónica en México, vista a través de las revistas académicas*. Paper presented at the XVIII Coloquio Internacional de Investigación Bibliotecológica y de Información, México, D.F.

Ríos, J. (2000). Normalización de revistas científicas mexicanas: campo de investigación y aportación. *Biblioteca Universitaria, 3* (2), 85-91.

Rodríguez J. M. (2001). Parámetros e indicadores de calidad en la evaluación de una revista electrónica. El caso de BiD: textos universitaris de biblioteconomia i documentació. *Bid,* junio, n.6.

Rohe, T. A. (1998). How does electronic publishing affect the scholarly communication process?. *The Journal of Electronic Publishing, 3* (3). Retrieved April 23, 1999 from: http://www.press.umich.edu/jep/03-03/rohe.html

Rovalo, M. L. (1998). Revistas científicas electrónicas. *Revista Biblioteca Universitaria, 1* (2), 59-64.

Schulz, S., Klar, R., Auhuber, T., Schrader, U., Koop, A., Kreutz, R., et al. (1999, February 1). Criterios de calidad para publicaciones electrónicas en medicina. *GMDS. Deutsche gesellschaft für medizinische informatik, biometrie un epidemiologie e. V.* Retrieved August 24, 2001 from: http://www.imbi.uni-freiburg.de/medinf/gmdsqc/es.htm

Smith, A. G. (1997). Testing the surf: Criteria for evaluating Internet information resources. *The Public-Access Computer Systems Review, 8* (3). Retrieved July 27, 2000 from: http://info.lib.uh.edu/pr/v8/n3/smith8n3.html

Testa, J. (2001). La base de datos del ISI y su proceso de selección de revistas. *Acimed, 9* (1) [Suppl.]. Retrieved September 4, 2001 from: http://bvs.sld.cu/revistas/aci/vol9_s_01/sci23100.htm