Abstract

The surge of interactive media and the Internet has posed particular challenges to universities and research organizations in Germany. The virtual space of online communication has given them access to an entirely new form of publicity, enabling them to make use of a communication forum received worldwide, with its own structure, topics, means of communication, and interests. But are German universities and research organizations prepared for these challenges? Which public relations strategies have they developed, and do their offers on the Internet meet the demands of target groups? What kinds of opportunities does multimedia communication provide for enhancing the dialogue with the public?

This paper introduces an integrative study that was undertaken at the Free University of Berlin. It consisted of several parts: a written investigation of suppliers of science information, two online surveys aimed at the users of science news and information, and, finally, a content analysis of the websites operated by German universities and research organizations. The research objectives formulated in each partial study were overlapped somewhat, which made it easier to relate the respective results to each other. We were, for instance, able to compare the deliberations of suppliers and users with the results of the content analysis. The studies’ overall objective is to do the groundwork for the development of popular science communication on the Internet by means of analyzing empirical data, which will in turn provide a basis for practical, relevant concepts.

Key words: Internet, Science Communication, Public Relations, University, Research Organization

Introduction

A society that considers knowledge and science its most important fundamental resources needs new ways for producers and consumers to exchange knowledge. Here, the Internet is on the way to becoming one of the most important communications tools. Almost all German universities and a
large number of research organizations have their own Internet sites. The flexibility of the Internet and the many ways of combining its technologies has led to many different types of use. These institutions do not simply use their websites to provide information about their spectrum of services and achievements. Social dialogue is being sought on an increasingly frequent basis. This has not been completely voluntary, for currently in Germany, discussions concerning academia and the public are marked by worry about the loss of trust in academia, its lack of legitimation and acceptance in society, and, last but not least, continuous financial woes.

This study analyzes the Internet PR activities of German universities and non-university research organizations. It also suggests strategies for an integrated online PR concept. The investigation deals with a series of issues in research, which will be briefly examined here.

Results

Research question one:

Universities and research organizations must communicate their operative and strategic goals in various arenas: in market communications, in competition with other academic organizations; in public relations in social and political fields; and in internal communications involving the organization’s own members and committees. How is it possible to apply familiar PR theories to both the university and the academic organization, and to continue to develop online communications?

In developing PR theories, two significant influences are: (1) social and organizational theory and (2) marketing theories for another. The strengths of the individual approaches are connected with serious weaknesses, however. Economic approaches to public relations largely disregard communications studies and issues. At the same time, communications studies and sociological theories ignore many economic and political organization factors.

Universities and research organizations must communicate their operative and strategic goals in various arenas. Therefore, a more comprehensive theoretical approach is necessary here. Zerfass produced such an approach in 1996, with his “Grundlegung einer Theorie der Unternehmenskommunikation und Public Relations” [Establishing a Theory of Business Communications and Public Relations]. An action-oriented concept of public relations, Zerfass’s approach bridges social theory, communications, and economics.

Pragmatically speaking, internal communications, market communications, and public relations are distinguished by their divergent problems. While economic theory positions these three things in a hierarchical order, Zerfass’s theory regards them as equal. Instead of being nothing more than a subordinate element in the marketing mix, public relations are an equal, supporting element of organizational communications.

Universities and research organizations must achieve recognition on national and international levels, develop their profiles, and specify goals. In this sense,
they must conduct themselves as “businesses.” They must communicate their operative and strategic goals in different arenas. For one, they have to pursue market communications in competition with other academic organizations. They also have to practice public relations in the social and political fields, and take care of internal communications for their own organization. Seen from these standpoints, business communications theory can also be applied to universities and research organizations. Public relations can only succeed in universities and research organizations if PR is included in the institution’s overall concept. Online communications is an increasingly important fundamental element of an integrative overall concept.

**Research question two:**

Scientists and scholars are called upon to inform the public about their work and to legitimize it in society by allowing the public to view it. This is not simply about gaining acceptance or polishing one’s own public image for political purposes: it also involves the critical dialogue between academia and the public. How does academia communicate its knowledge both in and outside of the scientific community? What role does science journalism play? How does the public perceive academic studies? What is the difference between science journalism and science PR? What kind of communications strategies, goals, and themes are used in PR at universities and research organizations outside of the university? What does the German PUSH program contributes to the dialogue between academia and the public?

This research question addresses the perspectives of those disseminating scientific information, as well as those of its recipients. Five perspectives were selected for investigation, and the following results were achieved:

1. **Communication in the Academic System**

Scholars depend upon communication within the scientific community when they want an overview of the current state of research in their field of expertise, or when they want to comment upon or judge their colleagues’ work. Many scholars are now accustomed to using the Internet as a source of data and literature, as well as a place to present their findings. At the same time, the Internet is used as an investigative tool for scholarly research purposes.

Scholars are now able to draw attention to their research and reach interested parties in their fields of expertise and disciplines much faster than before. They are also able to reach a broader audience. Moreover, it should not be underestimated how much the Internet, as a public tool, is able to attract the public’s attention to academic studies. The scientific paper published on a university’s or research institute’s Internet page is, at the same time, “PR” for its scholars’ work and for the institution. Many scholars are still unaware of this public platform.

Scholars primarily use the Internet for interpersonal communications, most often via the mode of communication known as e-mail. Other possibilities of communicating over the Internet (chatrooms, computer conferences,
newsgroups, and discussion groups) play a less important role in the scientific discourse.

The greatest reservations toward publishing online have to do with the habits of the scientific community. Currently, arguments in favor of online publishing, which cite speed and cost effectiveness, still have an uphill battle against the reputation of the traditional forms of publication, as well as their academic and sociological functions.

2. Scientific Expertise

As an expert, the scholar’s opinion is requested, whether the issue is the implementation of knowledge in decision-making processes, analyzing situations (judging risk), forming opinions, or developing solutions for problems. Citizens have a strong need to participate more in making decisions. Therefore, there must be more of an effort to include the public in the development, evaluation, and application of scientific knowledge – to enter into a dialogue with the public. Here, the Internet provides more chances for communication.

An organization, which in the meantime counts 460 universities and research institutes as members, is known as the Informationsdienst Wissenschaft (idw; Scientific Information Service). This group helps print, television, and radio journalists research scholarly topics.

One model that has been successful in conveying scientific, psychological, sociological, and medical knowledge from experts to citizens is the Krebsinformationsdienst (KID; Cancer Information Service) in Heidelberg. Their use of the World Wide Web to distribute information has allowed them to reach an audience that could not be attained through other media. Chatrooms, discussion groups, and e-mail can reach previously unheard-of numbers of new target groups, independent of place, time, and national boundaries.

This concept of transferring knowledge via user-focused dialogue also works for other academic themes. Successful examples are ScienceLine and ScienceNet in Great Britain. A small team of young scholars at the Broadcasting Support Services (BSS) operates this service. They research, make phone calls, and publish individual answers to questions on the Internet. Some of their sponsors include the large television channels, museums, the Novartis Foundation, and the Wellcome Trust. Currently, Germany is still lacking this kind of collective action on the part of its universities and research institutes.

3. Science and Media

In order to do their jobs successfully, journalists – especially science journalists – take on the role of mediator. On one hand, they act as conversation partners for scholars, and, on the other hand, as critical observers of academia. In the best case scenario, the journalists themselves have some education in the particular fields in which they work, yet they also have the
ability to question scientific information and contexts and to represent them so that they are comprehensible and interesting to a broad public.

Many scholars see journalists in the role of “information mediator,” treating public relations work and journalism as if they were the same thing. Very seldom does one hear of the critical, guiding functions of science journalism. Furthermore, the problems academia has in transmitting information and gaining public acceptance is explained away as a problem of science journalism: it is journalism that has trouble transmitting information and gaining public acceptance.

Criteria selected by journalists are criticized, especially reporters’ permanent focus on the newsworthiness of topics. Apart from a small amount of information concerning audience numbers and attention span, little else is known about how useful and effective science journalism is for the public. There is a great need for more research here. Research question three deals with the user data retrieved from this integrative study.

In the meantime, a series of investigations proves that public relations determine the themes and timing of reports in the media. Public relations officers of universities and research institutes estimate this sector to make up sixty to ninety percent of all reporting. This makes it quite clear how very influential public relations are – since they determine which scientific themes and experts are ultimately represented in media – and how very dependent the mass media are upon the public relations work done by the universities and non-university research organizations examined here.

4. PR Management in Universities and Research Organizations

Press and public relations offices at universities and research organizations fulfill three functions: they are seismographs measuring the transference and mediation of changing states of affairs. They are also communicative mediators between academia and the public, and, last but not least, they represent the interests of their own institutions.

Whereas there have been several studies of universities’ public relations work, there are no comparable studies providing information about the communications strategies, communications goals, relevant target groups, and topics covered by non-university research institutions. Since this type of information is an important requirement for any investigation of the online activities of universities and academic organizations, the information was derived from a preliminary empirical study. The most important conclusions, which apply to PR management at both universities and research organizations, are once again summarized here:

At the universities, public relations work is almost entirely centralized, but at non-university research institutions, it tends to be decentralized. Ninety-seven percent of the universities and seventy percent of the research organizations examined here have a press office. The average number of press office employees at the universities is 1.7; at the research organizations, the average
is 1.9. Almost one-third of the universities do not even have a full-time employee in the press office.

Although twenty percent of the universities and thirty-one percent of the non-university research organizations have in the meantime developed a marketing concept, only twelve percent of the universities and twenty-nine percent of the research organizations have a communications concept.

Due to increasing competition and limited resources, the most important communications goal for universities and research institutions is to improve their profile and increase their recognition factor.

Active PR work focused on the principles of improving profile, competition, and transparency must fulfill different functions. However, only forty percent of the universities and fifty-one percent of the research organizations believe that the work involved in organizing the public dialogue is complete. Universities are mainly concerned with providing information about instruction, study programs, and research activities, while research organizations provide research information and facts. Seventy-two percent of the research organizations believe that improving public understanding of science will be an important task for communications in the future.

Media and potential students are particularly important target groups for university public relations; research organizations are interested in reaching a public made up of their peers in the scientific community.

The wide variety of communications tools is remarkable. Universities and research organizations send out large quantities of press releases. Only the information available in the Internet is considered by the research organizations to be more important. Corporate design plays a larger role in the non-university research organizations than it does in the universities.

Up until now, there has hardly been any kind of evaluation of the effectiveness of public relations work.

The barriers to communication that exist between scientific and non-scientific cultures are also mentioned. If their press and public relations work is to succeed, universities and non-university research organizations must take these barriers into consideration.

5. Public Understanding of Science – The Scientific Community in Dialogue

A society that considers knowledge and science its most important fundamental resources needs new ways for producers and consumers to exchange knowledge. While the concepts of popularization, explanation, and mediation of science are based on the claim that they will allow the layperson a better understanding of science, continually growing segments of the public are no longer satisfied with the role of passive listener. Journalists, too – such as science journalists – who, for a long time, were solely occupied with gaining public acceptance for science, are no longer content to simply act as a conduit for scientific knowledge and claims. Critical dialogue is in demand.
In May 1999, after several years of discussion, top representatives of German academic groups from the Stifterverband für die deutsche Wissenschaft spearheaded a PUSH organization. PUSH is an acronym for “Public Understanding of Sciences and Humanities.” Initiators signed a memorandum calling for a stronger dialogue with the public. In the following years, the foundation announced the start of “PUSH – Academic and Social Dialogue” programs, which would each be funded with 250,000 euros. Soon, however, the dialogue metaphor came under critical fire. Were scientific organizations really interested in critical dialogue between the scientific community and the rest of society, or simply in gaining acceptance – mere image polishing? If not, then support would not just be in the form of informative events for the public, but efforts would also be made to strengthen the sensitivity of the scientific community for the public.

PUSH’s innovative contribution in Germany is certainly based in the motivating power that brought together experts and non-experts. Universities and research organizations can help solve complex problems by making more efforts to allow the information and knowledge available to their own institutions to be utilized in community processes of making decisions and shaping opinions.

Research question three:

Interactive PR employs new channels to open up technically mediated dialogues with community target groups (e-mail, newsgroups). It makes it possible for communications partners to call up specific electronically distributed information (WWW, CD-ROM), and it can support PR management. Which tasks and goals do universities and research organizations pursue with their online presence? Of what use is the information to the recipients, and what are their demands?

Universities and research organizations use their online sites to represent themselves in cyberspace, to increase their name-recognition around the world, pursue image politics, and support dialogue with target groups. Currently, all German universities and ninety-nine percent of the research institutions are represented in the Internet. However, there are enormous differences among the sites. Whereas the main pages of the universities and research organizations are often several hundred to several thousand pages long, other top German research institutes make do with a short description of their field, a reference to the institution’s address, and an e-mail address to contact.

1. Image – Corporate Design

In almost all of the university Internet sites investigated, a uniform image is – at the most – recognizable on the central pages published directly by the university administration. On the department level, including the institutes and research groups, “chaos rules.” Often the pages cannot be identified as part of a university site. The Fraunhofer Gesellschaft institutes and most of the institutes at the Max Planck Gesellschaft place more value on a uniform external image, using the same typography, colors, and logos. On the pages for
the institutes of the *Wissenschaftsgesellschaft Gottfried Wilhelm Leibniz*, the coding was not always visual, and the contents did not always make it clear that the various pages belonged to the same institute.

2. Responsibility for the Internet Site

Responsibility for the online presence of universities and research institutes is of strategic importance. The responsible party ultimately influences the concepts and contents of the site. A good case can be made for assigning this responsibility to the press office. It makes a great deal of sense if the press office is regarded as the leading communications office for the organization, and the Internet as a tool for public relations work. A large number of universities and research organizations have in the meantime hired “Internet officers,” some of whom, however, work independently of the press office. For the reasons outlined above, they should be working for the press and communications office.

The investigation also showed that, at some universities, the chief responsibility for the Internet site lay with the data processing department. This might have been the right place in the beginning, due to the many technical problems. With a view to communications, however, this decision should be reconsidered, as there is a danger that technical skills might be more highly rated than content.

3. Desired Target and Dialogue Groups

To have an efficient PR strategy, it is essential that communications be focused on particular target groups. Of course, various communications partners have different expectations and want them to be specifically addressed in the Internet. The study shows that, up until now, universities and research organizations barely take advantage of the Internet as a PR and marketing tool. This becomes clear in the way target groups are defined and addressed.

Pre-existing and desired target and dialogue groups are ascertained by surveying the press offices and analyzing the contents of websites. Comparison shows that there is still a wide gap between wishes and reality. On the university sites, students and scholars were overloaded with information, whereas there was a lack of information for journalists. On sites belonging to non-university research organizations, there is need for great improvement in the information available to scholars, students, and journalists alike.

Finally, the user survey also showed which main groups use the sites belonging to the universities and scientific organizations. The scientific community itself is in first place (forty-one percent), followed by secondary school and university students (thirty-seven percent), journalists (fourteen percent), and companies (two percent).

4. Tasks and Goals of Online Communications
Until now, the public understanding of science and humanities has been of secondary importance to the universities. To the research organizations, it is still the third most important reason for maintaining an Internet site, preceded by the presentation of the institution and information for potential employees. The investigation revealed that only five percent of the sites operated by the top research institutions advocate public understanding of science and humanities and publish information specifically for an interested lay public.

As far as Internet communications are concerned, press offices consider their primary tasks to be publishing press releases, administering the institutional and departmental websites, and presenting courses and research projects. In addition, the survey made it clear that for instance, not only journalists avail themselves of press information. This information fulfills the main criteria desired by those who use the websites: it is current, understandable, and above all, prepared according to journalistic standards.

Whether scholars, secondary school students, university students, or companies, many target groups regard the press office pages as an information point, where they hope to find current, well-prepared, and understandable information on their topic or problem. This supports the idea that universities and other scientific organizations should maintain extensive, well-prepared services in a central place – for example, in the form of a current news magazine on the home page.

Altogether, it is clear that until now, university and research organizations’ Internet pages have only minimally contributed to scientific communication with the public.

5. User Needs and Internet Services

According to the wishes of users and producers, online sites should be “highly up-to-date.” The content analyses showed, however, that only one percent of website contents fulfilled this wish. The fact that many documents were not dated was more frequently criticized than the fact that the dated documents were no longer current. Many documents are still current after six months. Results of studies carried out in fundamental research were valid for the longest periods of time. However, the reader should have the opportunity to see how much time passed while the research was carried out, reports written, and the results published online.

Another important criterion for academic pages in the Internet is the “comprehensibility” of the contents – a demand that also happens to be made across the board by scientists, journalists, students, and interested laypersons. Here, the situation of the websites investigated is not quite so dramatic. Even though only one-tenth of the online documents manage without scientific terminology, thirty-one percent of university documents or thirty-nine percent of research organizations’ documents include explanations of such terms.

More than one-third of the users would like material targeted specifically for their groups. Companies and journalists value this service especially, because they want fast access to information. In the meantime, however, seventy-one
percent of universities investigated and sixty-seven percent of the research organizations offer this service on their homepages. Things are different on the pages and documents administrated by academic departments or labs. Only one fifth of the webpages administered by the research institutes contain target group information for users. The percentage increases to thirty-five percent on university pages, but employees and students still remain the chief addressees. As a target group, journalists are of almost no significance when it comes to the distribution of scientific information. For the most part, communications are meant for the scientific community.

Altogether, it is clear that users and publishers still have very different ideas about the ways the Internet is used and what the contents of webpages should be.

As more people increasingly turn to the Internet for information about scientific themes and organizations, this should play a more important role for those involved in public relations. Ultimately, each organization must bear this in mind, and develop and agree upon its own strategy. All of the schools, departments, and employees must work together. The positive effect of a homepage, no matter how well-made it is, will quickly dissolve when the information offered by the departments and research groups is not sufficiently tailored to the target groups, with a communicative, engaged approach.

6. Application of Participatory Elements

A society that considers its most important foundation to consist of knowledge and science needs new ways of sharing information between producers and consumers. Broad segments of the population are no longer satisfied with the role of passive listener. A critical dialogue is necessary. It is precisely in this area that online communication offers great advantages.

However, up until now, universities and scientific organizations have generally offered information that can be called up by the user, instead of elements that encourage dialogue. True, the user has the opportunity to call up information. But, apart from e-mail, there is hardly any other way of participating in decision-making routines through dialogue with the provider. The symmetric type of communication touted by public relations as ideal is seldom offered. Press office managers are completely aware of this shortcoming. It is necessary to keep looking for ways to create dialogue.

Research question four:

Communication with various social target groups means a multiplicity of communication forums and thus a multiplicity of integration strategies. Public relations can only be successful when it is a part of the overall concept. Seen from this point of view, how is it possible to develop an integrated online PR strategy for universities and research organizations? What standards should be taken into consideration for structure, content, and design of such a concept?

Online PR management strategy comprises different steps that correspond to the classic cycle of business management. It must be integrated into the
communications concept. Beginning with the formulation of communications goals, the analysis phase should at first systematically examine the network of relationships between academic organizations and external interest groups in society. Issue analysis (tracking themes) thus identifies relevant themes, and organizational analysis identifies the online PR potential of the organization.

In the process of planning, goals for online presence are formulated in agreement with the PR guidelines for scientific organizations. In addition, other kinds of communications tools must be tested, in order to see which can be used for the online site. During the operative planning phase, the dimensions of the Internet strategy will be transferred to real programs of action with regard to process organization, scheduling, and budgeting.

The final PR control will determine how many of the goals have been achieved through the actual communications activities. Simultaneous testing will continually control the process to see if it is necessary to redirect the goals or even rethink the entire communications process (PR controlling).

With just a few exceptions, universities and non-university scientific organizations have not had any goal-oriented strategies for their online presentations up until now, and so these control mechanisms are lacking.

Notes


ii Top representatives of German academic groups signed a memorandum calling for a stronger dialogue with the public. PUSH is an acronym for “Public Understanding of Sciences and Humanities.”
Parallel Session 16: Are Internet expectations being accomplished?

NOVATORES: AN INTEGRAL PROJECT FOR SCIENCE COMMUNICATION

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Abstract

The Novatores project has the objective of promoting the diffusion of scientific and technological information and of building in society as a whole the degree of awareness and understanding of science deemed necessary for eliciting the citizenry support to public activities of scientific research and technological innovation in Castile and Leon, Spain. Its main product is an Internet-based technical platform for the management and diffusion of scientific and technological information, open to the participation of the region’s scientific and technological institutions. In the present work we describe the project’s background, strategies, sub-projects and expected results.

Keywords: scientific knowledge, models, TIC.

Text

Background

In present times, it is very common to consider scientific information diffusion as a main point in research and development (R&D) policies. A science and technology system disconnected from the society that supports it, due to an absence of reciprocal communication between both of them, is under the risk of loosing citizen support and of being condemned to stagnation and inefficiency. For this reason, the major acts in science policy try to incorporate elements directed to harness the diffusion of scientific and technological information, the accessibility of research results accomplished by companies and a general outreach among the population of a culture favourable to research and innovation processes.

The Novatores Project

Within the bounds of this context appears Novatores Project, whose main objective is to develop a Regional System for Science and Technology Communication, bringing scientific activities closer to society and increasing the social valuation of this performance. The project is born from the Regional Science and Technology Strategy prepared by the Junta of Castile and Leon, Spain, that proposed the implementation of a “social” information system directed to the whole of society, to make citizens participant of science and
technological advances’ benefits. The Internet based system is being developed by experts from the University of Salamanca, with financial and political support of the Junta.

Besides approaching science to society, it is also the project’s aim to provide researchers and people responsible for science and technology institutions and companies access to all relevant information, responding to the necessity of society’s demands and priorities being fully met. Thus, science and technology policies initiatives prepared by the government should reach the R&D system and its members: researchers and technologists. Additionally, the system helps in the internal management of the local government’s science and technology policy, as well as to any institution that may wish to use it.

Agreeing to the marked objectives, the system is articulated in two main parts: a scientific and technological information system (INFOCYT) and a system for science and technology popularization (DIFUCYT).

The name Novatores hides a demand: it is an archaic word used in 17th and 18th centuries to contemptuously give name to a group of thinkers and intellectuals that claimed for the modern scientific method. As the Authorities Dictionary published in 1743 states, Novatores is one that is a “novelty inventor. It is taken regularly as the one that invents them dangerously in doctrine matters”. The modern Novatores try to recover this innovative spirit.

Subprojects

In order to accomplish these multiple objectives, Novatores is divided into different subprojects.

The Novatores Core (INFOCYT) is a system for information on and management of science and technological activities, aimed for individual researchers, R&D groups, universities, public institutions, companies and social organizations that carry out research, technological development and technological innovation activities. Its content is information that calls for a demand for activities or that reveals a supply of R&D results. In the first case, there are calls for congresses and events with scientific character, grants and financial helps and technological demands. In the second case, information
about projects, finished or in course, scholarly publications, thesis, patents and other gray literature, education programs and technological supplies. Additionally, it offers for the individual researcher a set of services: *curriculum vitae* management to make easier their participation in scientific activities calls and an *e-prints* server for the storage of and open access to scientific literature and electronic thesis and dissertations.

The *Science and Technology Communication Agency (DICYT)* is a specialized news agency, focused in science and technology subjects in Castile and Leon. Its final users are mass communication media (radio, press, television), for whom it provides exclusive science and technology information in different genres (news, articles, interviews) which is completed with additional elements like infographics, video files and audio clips. Its main contribution is to make up a reliable and rigorous communication channel, in which information is prepared by specialized science communicators (Sabbatini, Maciel & Coll, 2004).

InfocienciaNet is an Internet portal dedicated to science popularization with a regional focus and reaching for the most general audience possible. It is based upon the experience of homonymous portal that has been working since 2001 as an communication / interaction space in Internet and dealing with Science, Technology and Society subjects and also as a practice field for students of the Science, Technology and Society: Communication and Culture in Science and Technology Master course from the University of Salamanca (Quintanilla et al, 2001). In its objective of bringing science closer to society, distinguishes form other initiatives by integrating all Novatores products, reflecting science as process rather than closed results, as well as promoting its historical sense and social importance. Besides that, the portal makes a creative and efficient use of multimedia elements, improving comprehension of scientific processes and concepts, rather than using it as cosmetic accessories.

**Conclusions**

Novatores project is a novel science communication experience, considered that it has an integral approach characteristic, in which information is used in different contexts, being reformulated and adapted according to the audience demands, and also establishing a *continuum* between highly specialized and technical information and that information that can be absorbed by the public. With this project, it is intended to bring the science and technology system closer to society, ultimately boosting regional economic development, through active participation of all actors involved in this dynamics.

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SCIENCE, SOCIETY AND INTERNET IN POLAND.

WHAT ARE DOING POLISH SCIENCE INSTITUTIONS FOR INTERNET SCIENCE COMMUNICATION WITH THE DIFFERENT GROUPS OF THE PUBLIC?

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Abstract

WWW services of scientific institutions have become a communication platform with different groups of audiences. The each of them: scientists, students, science journalists, government, industry, teachers and wide public have their own reasons to look for information and dialog. It is the question if the services may be joined with the different needs of the different groups?

The content analysis of Websites services of all public scientific institutions in Poland: universities, Polish Academy of Science and R&D institutions were the main method used in the research.

The results may show, the most important group of audiences of the universities’ WWW services are: students and scientists, of PAS: scientists and industrial organizations and of R&D institutions - industrial organizations mainly. There is little information straight addressed to the wide public, no information for teachers, science journalists. The results may also show, inside the services there are too little activities for public understanding of science and technology.

Key Words: Scientific Institutions, Public, WWW Services, Poland

Introduction

It is a fact that, both the Internet that is generally accessible for senders and receivers of scientific communication and the technology development raising the quality of World Wide Web services, caused that the dialogue of the science and the society in the Polish digital environment has no more the testing capacity. The age of the thoughtfulness of the services quality and making them the platform of communication for any group of users that belong to scientific institutions environment, begins.
In Poland there are three types of public and research institutions that are bound by particular ministries, such as the higher education institutions [U] conducting educational and research activities (103 institutions and 100% has the WWW service), the institutions of Polish Academy of Science [PAS] conducting scientific activity (87 institutions and 98% has WWW services) and the Research and Development institutions [R&D] centred on research activity and the practical use of results of the researches (236 institutions and 72% with the WWW services).

The analysis

The aim of the analysis is to receive the answer if the scientific institutions communicate with all groups of users using the WWW services. The types of users are scientists and students; institutional and individual customers of the products and services, including the knowledge based enterprises; science journalists; people interested in science that are teachers, young people and children; wide public for whom the results of research could be useful for everyday life and the foreigners.

The questions asked in the analysis were:

Q.1. What groups of customers are distinguished in the WWW services and which are preferred? What are the differences in communication between scientific institutions, educational and scientific ones and between scientific research institutions and the public ones?

Q.2. What type of information that is the results of scientific research is addressed to each group of users?

Q.3. Is the communication bilateral or is the unilateral? What are the forms of communication used in Websites services?

Methodology

The content analysis of Websites services for all public scientific institutions with the use of questionnaire was the main method of gathering the data in research. The content analysis had been also used in similar research before [see References]. The websites representing the whole entity such as the home pages of general institutions and the interdisciplinary departments web sites were analysed in services, but without the WWW pages of faculties, institutes, chairs and departments. The author carried the research personally between October and December 2003. Generally the 1893 web pages were analysed. The questionnaire contained the users with the type of information addressed to them and the forms of electronic communication with the representatives of particular groups. The analysis of the data was carried using the statistic method.
Results

Q.1.

The priority group of users in the WWW services of analysed scientific institutions are [see Chart 1] scientists and students: 83% of all services have the information presented on the libraries and the scientific publishers websites and addressed to that group. Then 32% of services present information dedicated to products and services customers. 28% of information is addressed to people interested in science, 12% to wide public, 11% to foreigners and 2% to science journalists.

The higher education institutions address information in following proportions: 92% to scientists and students, 33% to teachers and young people, 13% to foreigners, then 5% to customers, 3% to wide public and 2% to journalists.

The institutions of Polish Academy of Science recognised as their priority groups the scientists (93%), customers (29%), young people interested in science (23%), wide public (16%), foreigners (9%) and science journalists (1%).

The Research and Development Institutions recognised as the main and most important groups of users their customers (74%), scientific environment (65%), people interested in science (34%), wide public (17%), foreigners (12%) and science journalists (3%).

Q.2.
The analysis showed that the following types of information are addressed to particular groups of audience:

- Academic environment (academic staff, scientists, students): information about research (89%-R&D institutions, 87%-Polish Academy of Science, 71%-universities); bibliographic information about research record (79%-PAS,65%-U,62%-R&D institutions); special scientific bibliographies; library online catalogues (91%-U,45%-R&D,39%-PAN); information about scientific events (25%-PAS,12%-U,11%-R&D); electronic publications, factographic databases (19%-PAS,16%-R&D,12%-U); scientific services for selected knowledge domains or issues (15%-U,6%-PAS,5%-R&D); scientific publishers catalogues (92%-U,73%-PAS,67%-R&D);

- Institutional and individual customers of the products and services such as catalogues of products (77%-R&D,5%-PAS,0%-U) and the services offer (54%-R&D,29%-PAS,5%-U);

- Wide public: the service for scientific findings (5%-U,4%-PAS,2%-R&D); popular services for scientific methods for study the world, such as astronomy service (11%-PAS,9%-R&D,1%-U); information service for selected issue, e.g. environmental protection or health protection’s services (34%-R&D,33%-U,23%-PAS); databases (16%-R&D,11%-PAS,9%-U); information service for public use, e.g. meteorology’s service, maps of forests fire danger (17%-R&D,16%-PAS,3%-U);

- Science journalists: press room (3%-R&D,2%-PAS,1%-U);

- Foreigners: the co-operation offer or the utilization of the research results offer-using products and services is presented in English (13%-U,12%-R&D,9%-PAS).

Q.3.

Presentation of information is the beginning, encouragement, and the attempt to interest the user the selected issue, curious because of the young people or hobbyists interests. However, the real co-operation begins when the invitation to discussion is received, when the information is exchanged or if there is a willingness of the experts employed in scientific institutions to answer the question and when the young people are engaged in participating in projects popularising science and knowledge. The following groups are invited to dialog via different forms:

- Academic environment: e-mail (8%-PAS,7%-U,4%-R&D); discussion lists (3%-PAS,2%-U,1%-R&D); the invitation to participation in discussions for academic staff and/or students (4%-U);

- Products and services customers: e-mail (33%-R&D,29%-PAS,5%-U); FAQ (13%-R&D,2%-PAS,1%-U); newsletter (6%-R&D,4%-PAS);
− Wide public: e-mail (5%-R&D,4%-PAS,2%-U); discussion lists (2%-R&D,1%-U,1%-PAS); FAQ (3%-R&D,2%-PAS,1%-U); science knowledge competitions for young people (3%-PAS,3%-R&D,2%-U); newsletter (1%-PAS);

− Science journalists: press room (3%-R&D,2%-U,1%-PAS);

− Foreigners: e-mail (12%-U,12%-R&D,9%-PAS).

Conclusions

− The access to scientific information for academic environment is accommodated satisfactorily thanks to professional libraries activities (especially the higher education institutions libraries stand out among all higher institutions);

− Institutions, that are concentrated on research and development activities address information particularly to potential users;

− Science journalists, even the intermediaries in scientific knowledge communication to wider users environment, they are unfortunately nearly omitted in WWW services.

− The appearance of the websites in English and the information addressed to foreigners indicates that the educational and scientific co-operation with other countries is revealing now;

− The wide public such as young people, teachers, hobbyists, people interested in science are more and more often visible in the services as the very important group of users. Statistically the few number of services addresses the information to such groups, but the large and supple institutions that boast the scientific achievements employing the scientific authorities serve them setting the examples. Mainly, the astronomy and the physic are the issues of the services;

− More and more often the information useful in everyday life, following the research, reliable, appears in WWW services. The only source of such information is scientific institutions. The environmental protection and the health protection are the mainly issues of the services;

− Generally the Polish scientific institutions’ websites use the interactivity of the Internet to a little degree. The dialogue is carried using the e–mail as the simplest form.

References


Abstract

Observatory of Woman & Health started out as an innovative Internet health project in Spain with the purpose of serving an audience interested in receiving quality information and gaining access to reliable information resources, creating a virtual community that uses the site as an information and knowledge platform. The site is an interactive tool. OBSYM came about as a response to the growing need for quality health information requested by citizens and especially women for the different health needs of this community as well as for being the main family health "managers" in our society.

Keywords: woman’s health research, associations, quality health information.

Text

OBSYM is a project that was developed by Josep Laporte Library Foundation (JLLF) under an independent sponsorship of Merck Sharp & Dohme (MSD) to collect, produce, edit, disseminate, and publish information regarding health and women, creating in turn a platform for information exchange and the promotion of activities of national and international women and patient associations in the health field.

OBSYM came about as a response to the growing need for quality health information requested by women, for being the main family health "managers" in our society. Also, it pretends to modify gender asymmetries in the provision and development of health care studies (1).

OBSYM has the specific objectives (3):

- To provide and offer the necessary information and training to promote a process of rational and high quality decision-making in health providers and health users based on knowledge.
• To promote the creation, collection, selection, synthesis, integration, transfer and publishing of information and knowledge in the field of woman and health. That includes the implementation of a website, a traditional physical library, training activities, research, and an electronic journal.

• To respond and attend current and future information and knowledge needs of health providers, teachers, students and consumers by way of specific documentation strategies that incorporate information and communication technologies in the field of woman and health.

Contents
OBSYM has been configured in six major content sections (See Figure 1), so in a near future the project will grow without site structure modifications (2):

Society (adding information about social perspective), health (including information related to specific health topics), and social community (promoting the relation between Spanish women associations)

Services
• Health and Social Updated news.
• Documents Database.
• Electronic Journal of Woman and Health
• Traditional Library: journals titles in woman and health
• Health and Woman Research
• OBSYM Meetings in woman and health topics
• Health Offline training activities.

Certified Quality
To obtain maximum rigour in the search and inclusion of content, OBSYM has benefited from the participation of a multidisciplinary Scientific Committee, integrated with relevant personalities in Spain health scope, hospitals, research institutes and health organisms addressed to patients, which has implied the acquisition of some inclusion criteria for the website content.

In turn, the OBSYM has received the certifying seals of Health on the Net and the Certified Medical Web Site Seal of the Medical Association of Barcelona for following the quality principles of both certifications.

Finally the Project Website has a resource selection policy, to improve the quality of documents and e-resources adds to the database.

Results
1) Web
OBSYM has actually a huge success with 4 millions of hits in 18 months. With the visit of 66.000 users and 108.000 visitor sessions. Users has been downloaded 60.000 files. Finally the number of subscriptions to EJWH has been 3.235.
2) Research

OBSYM has the aim to promote the creation, collection, selection, synthesis, integration, transfer and publishing of health and life science knowledge with (3) with a specific research in health scope. Actually the Observatory has finished studies in topics like: information needs of woman in Spain, priorities in public health, woman associations in Spain, mass media and gender, scientific evidence in the clinical management of fibromyalgia, analysis of scientific production in women’s health, inequalities in gender and health care in Spain, osteoporosis, stroke, gender perspective in national Health Survey, health of physicians woman.

3) Electronic Journal of Woman and Health

EJWH (See Figure 2) includes the last information about the Portal and interested news to the user. It has an attractive appearance and design. All contents specific to a main topic in each issue (1). Actually, EJWH has eleven issues edited in Spanish and three in English.

Conclusion

OBSYM might turn, not only in an interactive tool that offers quality contents, but also into a platform that allows virtual communication between its users and associations and develop a structure which promote research in woman and health. The implementation of learning and research activities increase the quality and originality of the project.

Public and private partnerships are needed to implement this kind of projects under social responsibility corporate policies.

References


Figures and tables

Figure 1.- Homepage of OBSYM
"Migranes, un problema incomprensible"
La genética trata de identificar las causas de este problema, más invasivo que enfermedades crónicas como la diabetes

Congreso "Derechos y el futuro de la mujer. Salud, ciencia y tecnología"
Los pasados días 20 y 21 de febrero tuvo lugar en Barcelona el Congreso "Derecho y el futuro de la mujer. Salud, ciencia y tecnología" organizado por la Consejería de Ciencia del Conocimiento del Ayuntamiento de Barcelona y patrocinado por MSD.

El síndrome del cuidador
Unido a un enfermo de Alzheimer casi siempre hay alguien que está rodeado a buen parte de su vida por él. Ocurre también con otras pacientes con patologías incapacitantes y con pérdida de autonomía, pero es con la enfermedad de Alzheimer donde más se ha acudido al término "síndrome del cuidador".

El tratamiento hormonal sustitutivo: el estado de la evidencia científica
El tratamiento hormonal sustitutivo (EHS) se ha postulado en los últimos años en las mujeres postmenopauziales con dos indicaciones temáticas diferentes.

Prevenir las Enfermedades de Transmisión Sexual (ETS)
Uno de los riesgos asociados a la sexualidad lo constituye las enfermedades de transmisión sexual (ETS). Las ETS están causadas por virus y parásitos...[ver más][descargar pdf]

Ter Ceguera internacional Mujer y Discapacidad
Las mujeres con discapacidad pueden sufrir una doble discriminación por su discapacidad y por su condición de mujeres, conzistente en áreas tan importantes para el desarrollo humano como la educación y la integración laboral...[ver más][descargar pdf]

Recursos en la web
Recursos en la web www.mujeresdelavista.com...[ver más][descargar pdf]

Figure 2.- Homepage of EJWH
Abstract

The science of particle physics requires international collaboration, because of the scale and cost of particle accelerators and experiments. Global collaboration promotes cooperation and understanding among scientists from all parts of the world. Recent world events have strained the traditional collaborative relationships of international particle physics. Particularly in the United States, issues of visas, access to national laboratories, and travel restrictions create barriers to scientific collaboration. The InterAction Collaboration of particle physics communicators was founded as a countervailing force to these strains on the international particle physics community. Its Web site, www.interactions.org, is critical to the collaboration’s effectiveness.

Key words: collaborative physics communication

Text

Context: A Global Science

The science of particle physics today is a worldwide collaborative endeavor. The scale of the particle accelerators and detectors required for research in this field dictates a degree of international cooperation that is perhaps greater than in any other field of research. Experiments at a handful of high-energy particle accelerator laboratories in Europe, Asia and the United States bring together men and women of science from nearly every country of the globe to carry out research on the fundamental nature of matter, energy, space and time. Born of necessity, these collaborations offer an inspiring model for the free exchange of scientific information. Moreover, the discoveries of the future will require still greater cooperation among laboratories, among nations and across the fields of physics.
At the same time, recent world events have begun to strain the traditional collaborative relationships of international physics. Issues of visas, travel restrictions and access to national laboratories by foreign nationals have created barriers to international collaboration and raised doubts about the feasibility of future large-scale international projects.

Objective: A New Model of Physics Communication

In the field of particle physics, most communication resources are concentrated at the large national or international laboratories. The laboratories have the missions, the dedicated budgets and the professional expertise required for sustained communication with key audiences. Traditionally, each laboratory and communicated independently of the others, with little coordination and frequently at cross purposes.

The InterAction collaboration was founded in 2001 (Jackson, 2003) by particle physics communicators from six particle physics laboratories in Europe and the United States in order to create a new model of physics communication. The founding members defined the collaboration’s mission as “Not only to support the international science of particle physics but to set visible footprints for peaceful collaboration across all borders.” At their initial meeting in Hamburg, the members decided to develop a new, collaborative method of global particle physics communication that would be better suited to the global nature of the field. The members developed strategies to strengthen collaboration among laboratory communicators in order to share resources, speak with a common voice and communicate a common science message.

Methods: Common Web site, News Wire

The InterAction collaborators moved forward on several projects. Key among them were the development of a common Web site for particle physics communication and a news wire for the timely distribution of particle physics news.

The Web site, www.Interactions.org, would be designed to serve as a central resource for communicators of particle physics: science journalists, educators, policy makers and opinion leaders, and physicists themselves. The site would be updated daily with news, information, images and links from the world of particle physics. It would provide links to current particle physics news from the world's press; high-resolution photos and graphics from the particle physics laboratories of the world; links to education and outreach programs; information about science policy and funding; links to universities; a glossary; and a conference calendar. It would offer “work space” to groups within particle physics who were preparing reports or studies and needed a common work area for drafts, images, schedules and bulletin boards. It would have a dedicated webmaster with daily responsibility for updating the site.
The News Wire would offer free subscriptions to an electronic news service. Subscribers would receive particle physics news from the world’s universities, laboratories, government agencies and others. The first news wire, a press release from CERN, the European Organization for Nuclear Physics Research, on a development in Grid technology, went out to a small number of subscribers on September 17, 2002.

**Results**

In the two years since its founding, the InterAction Collaboration has created a global electronic News Wire [http://www.interactions.org/cms/?pid=1000379](http://www.interactions.org/cms/?pid=1000379) for particle physics news, with over 1,000 subscribers, including most of the world’s physics press, from 51 countries. It has issued more than 160 news wires on subjects from dark matter to neutrinos.

In August 2002, the collaboration launched the Interactions.org Web site [www.interactions.org](http://www.interactions.org). A dedicated Web master monitors physics news from the world’s press, maintains an image bank [http://www.interactions.org/imagebank/index.html](http://www.interactions.org/imagebank/index.html) with high-resolution photographs from the world’s particle physics laboratories, and continually develops the site to meet changing communication needs. A Google search for “particle physics news” returns the Interactions Web site as its first entry. Praise from journalists, policy makers and physicists indicates that it reaches those it is designed to serve. Six physics working groups use the Interactions work space for their projects.

**Conclusions**

The InterAction collaboration began with six member laboratories. It now includes 22 members from laboratories, professional organizations and funding agencies from 10 countries in Asia, Europe and the U.S. Every member contributes to and uses the services of the electronic news wire and the Web site. The collaborators carry out many other joint communication initiatives. Other scientific communities have asked the collaboration’s help in developing similar collaborations and Web sites. The Web site has been critical to success in creating a fundamental change in the model of communication in this field of science.

**References**

Parallel session 16: Are Internet expectations being accomplished?

BIOTERRORISM: ANALYSIS OF DIGITAL DOSSIERS ON 11-S

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Abstract

As part of a broader study on terrorism under the approach of Political Communication and the process of public opinion, this paper analyzes dossiers on the 11-S attacks specially designed for the digital environment. The objective is to analyze how digital ventures in Brazil use technology for the in-depth coverage of terrorism. Special attention is given to the use of available resources and to the adaptation of the products to the digital environment, as well as to navigation, structure, categorization of contents and to concepts as user, time and space.

Key words: new media, internet, bioterrorism, political communication

Context

This paper is part of a broader study about the media-centered goals of terrorism1 under a political communication2 approach. Under the asymmetric warfare paradigm, the hyperterrorism makes states and modern cities vulnerable to individuals capable of using violence in defense of private interests. Randomness, irrationality and fanaticism are considered distinctive marks of hyperterrorism. The term bioterrorism emerges to define one of its instrumental manifestations, representing the highest randomness and unpredictability possible by evoking the idea of catastrophe triggered by the invisible and contagious enemy. This paper focus in how dossiers on 11-S published by the main digital ventures in Brazil use new media resources in their hyperterrorism coverage.

Methods

Dossiers specially designed to the digital environment released with certain historical view have been chosen instead of the limited, rushed on the spot coverage. Three dossiers belonging to leading groups in the Brazilian digital market are discussed in depth: UOL, FolhaOnline and Estadão.

According to Ibope eRatings, UOL and Folha takes 63,4% of the whole Brazilian Internet market (September/03). Estadão is the online resource of one of the most traditional Brazilian newspapers.

The categories of analysis were chosen based on expert suggestions on the use of digital media3 and in qualitative observation of the piece. Content analysis goes beyond the goal of this paper and may be dealt with in the future.
Discussion and findings

The structure of the dossiers shows a clear shift of printed press techniques to the digital media, hindering navigation and understanding. Specialists suggest that the transposition of the traditional logic to the digital media hinders the development of its true potential, as it will not conceive the reader as a user and will not treat the environment as a 3D interactive product.

Navigation: The dossiers structure does not provide a proper overview of the categories of contents available and relevant issues discussed. There is no clear differentiation between facts, related documentation, historical data, concepts, opinion and others. Only one of the dossiers analyzed attempts to categorize the related information, which is often presented as a chronological sequence of headings without context as retrieved from a database.

Stories: Stories are too long for the digital environment, frequently recycled from traditional media or press agencies. The inverse pyramid style is used extensively and there are few links within the text to clarify information and concepts. By placing links within the text the writer provides additional resources without having to include explanatory data in the story, creating shorter pieces that improve mobility unveiling new dimensions of the subject.

User: Still conceived as a passive reader. In the digital environment, the user controls the narrative instead by gathering different pieces of information during the navigation. Space and time are also controlled by the user, who can always cross the limits of the story in the screen.

Digital dossiers are long-lasting materials that make possible to explore concepts that the immediacy and limitations typical of the printed media will not allow. Although the content of the dossiers analyzed is broad-ranging, all of them failed to create a structure that made possible to spot all the resources available and still make the navigation easier. Leaving the quality of the content apart, the conclusion over the dossiers analyzed is that they lack USABILITY.

Sample of first level page from FolhaOnline
Second level page, special session on bioterrorism. Example of lack of categorization of information in the in-depth coverage. Related information is presented as a mere sequence of links to headings without context leading to already published stories. There are no clear groups of relevant information that could improve the understanding of the subject.
Recommendations

Review studies on communication of science show the limitations of the traditional pedagogical unidirectional model\textsuperscript{56} and point out to a growing concern with the public.

Focusing in the processes rather than in results is especially useful in the digital environment, in which it is the user who actually builds the story by making navigation choices.

Web experts suggest that the mediators between public and content will be portals, intelligent programs, software, and editorial teams capable of organizing contents to meet the user needs\textsuperscript{3}. Overcoming the traditional techniques for the new media demands a bigger effort from the professionals involved, but only this way we will take advantage of its full potential.

\textsuperscript{1} Nacos, B. L. (2003). The Terrorist Calculus behind 9-11: A Model for Future Terrorism?, Studies in Conflict & Terrorism, Taylor & Francis, 26, 1-16


Parallel Session 16: Are Internet expectations being accomplished?

CONTENT AND LINK NETWORK ANALYSIS OF FIVE SCIENCE COMMUNICATION WEBSITES IN LATIN AMERICA

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Abstract

One of today’s most famous search engine (Google®) is primarily based on the PageRank® methodology described by Brin and Page (1998). As part of this methodology of indexing pages there are some features that could be of great help for those looking to evaluate the impact of a website over the Internet. The links pointing to a particular URL (link network) can be obtained with a simple query search. Here we present an analysis of the link network of five Latin American science communication websites, exploring the applications of this methodology and what to remind of during this evaluation.

Keywords: Internet; Link Network; Search Engine

Introduction

One of the first things we teach to a new Internet user is how to search and find specific information. It is known that over 85% of Internet traffic is driven directly or indirectly by search sites. Each one of these sites uses a methodology of indexation, and we can divide them into two categories: directories and search engines (Hu et al., 2001).

Search engines create their database automatically using “spider” programs. The resulting database is then indexed using an algorithm to sort the search results. After the publication of Page & Brin (1998), their search engine (Google) has become the most used worldwide.
Google uses an algorithm called PageRank in order to sort its results. It is based on the fact that the more one site is referenced by other sites, the greater its relative relevance. This algorithm greatly improved the accuracy of search results.

**Method**

The database that Google has can be accessed using special search tags. One of them is the “link:” tag that shows the list of pages in the database that point to a particular web address (link network).

To obtain that the steps should be as follows:

- Open a Google session
- Set the preferences of *number of results* to the maximum (100)
- Do the search using the tag *link:* + the desired URL
- Save each of the pages
- Consolidate the pages in one document

In general, the links pointing to a particular website can be placed in one or more of the categories listed in Table 1.

<table>
<thead>
<tr>
<th>Type of Link</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Links from the same site or from the same institution</td>
<td>Structural – to be discarded from the evaluation</td>
</tr>
<tr>
<td>Links from institutions, associations or networks</td>
<td>Relation to other institutions on the web</td>
</tr>
<tr>
<td>Links from news or from events held or supported</td>
<td>Ability to communicate new activities over the web</td>
</tr>
<tr>
<td>Links from visitors or groups that enjoy the content of the site</td>
<td>Result from the strategy of the website</td>
</tr>
<tr>
<td>Links from directories and link lists</td>
<td>Increase visibility and access</td>
</tr>
<tr>
<td>Links from documents or references</td>
<td>Documents on the web or personal pages</td>
</tr>
</tbody>
</table>

**Table 1** – Types of links pointing to a website

We selected five websites of institutions involved in science communication in Latin America to perform a link network analysis. They were arbitrarily chosen as examples for this study. Briefly the results obtained are listed in the next session.
They will be better explored during the open plenary with other general information.

Results

- Fundación CIENTEC, in Costa Rica, had a list of 98 links from which 40 were from the same site. Besides that it had a good list of institutions linking to the website and some from special events http://www.cientec.or.cr/

- Maloka, a Science Centre in Colombia, had a total of 100 links of which 70% were from list of links or directories. The website is very well indexed and have links from visitors which is very important for a science centre website http://www.maloka.org

- Papalote, a children museum in Mexico, presented a similar amount of links (92) and a similar link network result from Maloka http://www.papalote.org.mx/

- Programa Explora, a science popularisation program in Chile, had a total of 101 links, but half of them were from the same site or institution. The rest of them were from events and directories http://www.explora.cl/

- RedPOP (Science Popularisation Network from Latin America and the Caribbean) from UNESCO had the modest link network of all five sites. With only twenty links from which ten had to be discarded, the rest were from directories and supported events. For a website of a network that recently promoted a congress and have several institutions this can be considered a really modest result http://www.redpop.org/

Conclusions

We conducted the present study with five arbitrarily selected websites as examples for a link network analysis. We could observe that some of these sites were not referenced by their potential community while others have a good link network.

For Latin America standards, a list of about 100 to 200 links for a site dealing with science communication is quite common. Different languages represent different communities, and nearly the same happens about different countries. Contents in English are more capable of producing a greater network, since they are the majority of pages on-line. Search Engines can't index all the pages on the Web, so the link network obtained is a subset of the real link network on the Internet.

We think that link network retrieval should be part of the routine evaluation of a website.
References


Parallel Session 16: Are Internet expectations being accomplished?

THE FACILITATING ROLE OF AN ITC CENTRE FOR RURAL AFRICAN WOMEN. AN EMPOWERMENT EXPERIENCE

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Abstract

Empowerment includes transformation and liberation processes in complex contexts, including personal, interpersonal, group and society levels. The aim was to investigate the facilitating and empowerment role that an ICT centre played in the lives of rural South African women.

Methodology, Results and Conclusions

This research was qualitative. The data analysis was done through Morse and Fields’ approach.

ICT did play an important role in their empowerment. It manifested at various integrated levels, with emotional, personal, interpersonal and community consequences. Technology and religion also came together in an interesting way.

Key words: Empowerment, women, communication, ICT, facilitation

Context

Nelson Mandela (1996) said that the legacy of oppression weighs heavily on women that as long as women are bound by poverty and as long as they are looked down upon, human rights will lack substance.

The United Nations Fourth Conference on women (Beijing, 1995) can be regarded as a giant step in favour of the empowerment of women worldwide. (United Nations, 1995). Participating governments declared inter alia that the empowerment of women and equality between women and men are prerequisites for achieving political, social, economic, cultural and environmental security among all people (United Nations, 1995:14). The question is what role does ICT play in this respect as facilitating system?

Many scholars describe empowerment as an ongoing, fluctuating, lifelong transformation and liberation process involving positive changes in the

Methodology

The study was conducted at the ICDL Centre in rural South Africa with 30 conveniently selected women with a grade 12 educational level.

Research question and objectives

How do women get empowered through ICT communication facilitation processes as experienced at the ICDL Centre in order to contribute towards community development?

To analyse the experiences of facilitation and empowerment of women through ICT at the intrapersonal, interpersonal, family and community levels.

Analysis of data: Morse and Field's approach

Four integrated qualitative data analysis processes were applied: comprehending, synthesising, theorising and re-contextualising.

Findings and discussions

Empowerment at the intrapersonal and interpersonal levels

The process of empowerment of women at the intrapersonal level operationalised on interrelated levels, such as at skills, technical and at social value levels. Technical skills indicate, for example, the ability to apply computer skills, which makes a difference to their practical performance in the work place. Social skills involve skills like the ability to communicate effectively within a certain group or to maintain oneself. Values indicate the importance of something in comparison with others. It also indicated certain standards or principles, which were accepted by a particular group and thus added particular value to a person as a human being.

The mastering of these skills led to personal fulfilment and self-confidence and a sense of empowerment. Gaining of these skills also led to the fact that the women started functioning on a higher level and that, in turn, resulted in a higher level of acceptability in the community. A total of more than 50% of the respondents indicated that they are had learned certain computer skills and they felt that they were computer literate and well qualified.

Religion plays a very dominant role in the lives of these women because the overall majority indicated that they took part in religious activities. Out of the importance of their religious principles flowed their service to the community, to
serve the community through skills that they have learned (e.g. on the administrative level). As already mentioned, one respondent indicated that some people felt more comfortable asking help from women.

The role models of the respondents are predominantly female (mother, aunt, pastor’s wife, political figures) and could be regarded as empowered women themselves due to their profiles in society.

When comparing the different sources of information at the interpersonal level, in the empowerment process, namely the family, husbands/boyfriends, children, colleagues, friends, the facilitator and fellow students it appeared that fellow students acted as the biggest source of information and input of knowledge in this regard. One possible reason for this is because of the act of sticking together tightly, to share knowledge and motivate each other. The fellow students form part of the educational environment at the study centre and played a very important role in the empowerment process. They served as a strong information source and served as a very positive reference point.

**Empowerment at the community level**

It appeared as if the organisations in the community, especially the church as institution, were not facilitating agents on the level of practical skills, in the process of empowerment. The reason could be that the majority of the respondents indicated that they did not obtain information about the course from talking to people at the organisations to which they belonged.

**Conclusions**

The most evident empowerment aspects were:

- The personal fulfilment, improvement of quality of life, more self-confidence and could get a better job and higher status in the community.
- Close relationships within family and a higher level of emotional support.
- Role models are predominantly female, especially the maternal figure which places a very high value on education.
- Relationships with friends and colleagues for emotional support.
- Religion and a sense of serving the community as a God given instruction.
- The role of the fellow students played a major role in the empowerment process because of the relative same frame of reference and the group cohesion that exists.
References


