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Expert Evaluation of the Virtual Library (2D):
A Qualitative and Quantitative Analysis

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**Expert Evaluation of the Virtual Library (2D):
A Qualitative and Quantitative Analysis**
<http://www.bdp.it/virtual/>

Description of the Virtual Library

The Virtual Library is a project within the European Schoolnet¹, started in 1998. The initial objective for the workpackage consisted of creating a new and innovative model of an educational learning site, based on the educational use of Internet resources. More specifically, the project was aimed at developing an interactive environment on the Internet that would allow co-operation between different schools in Europe. Thereby, a school network for the documentation and development of didactic research activities on-line would be accessible and would provide on-line resources for learning.

Further, responsibility for the conception, development, and creation of the Virtual Library² was given to Biblioteca di Documentazione Pedagogica (BDP)³ in Florence. During these past two years, the BDP has created a 2-dimensional prototype of the Virtual Library. This specific model contains two main elements, the Natural Park environment and the Virtual Library database, both interconnected.

The Natural Park (*Figure 1*) environment presents thematic information, constructed with the aid of multimedia material (text, images films). Additionally, the environment provides a set of tests (multiple choice, yes/no questions) as well as on-line exercises and interactive games (memory, puzzles, building blocks, colouring pictures).

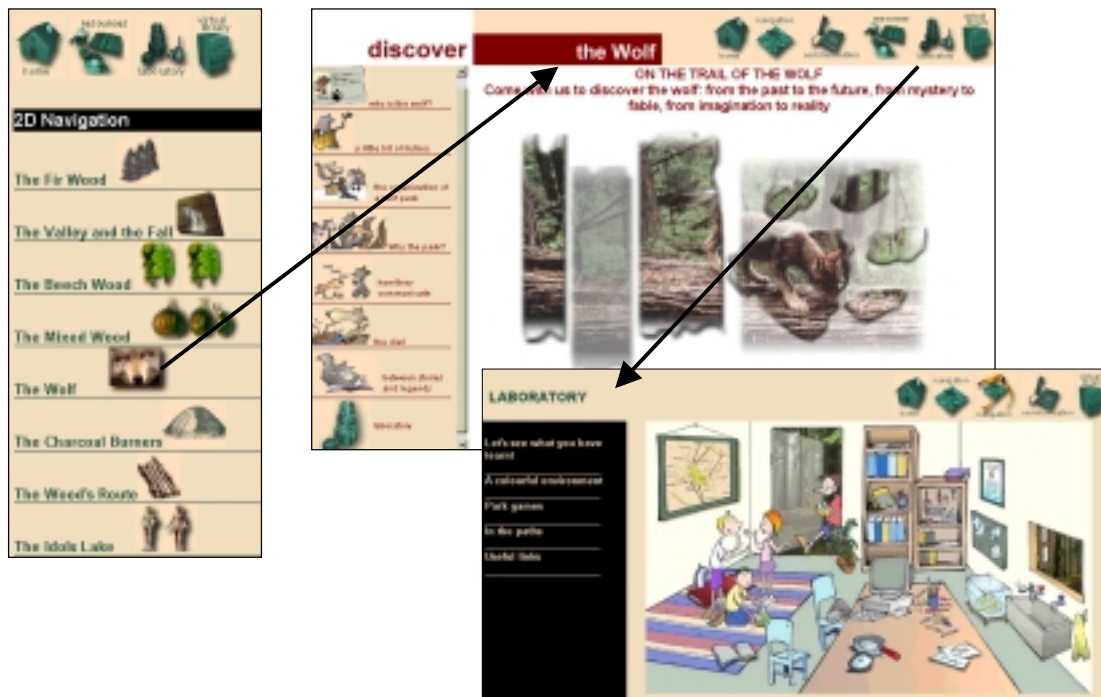


Figure 1: Several screen shots from the Natural Park site show the navigational construction of the site; themes can lead to topics and topic can lead to activities.

The Virtual Library (*Figure 2*) contains a database. This database is a tool that allows students to search an archive of resources, placed by other European schools. Also,

¹ <http://www.en.eun.org/front/actual/>

² <http://www.bdp.it/virtual/>

³ <http://www.bdp.it/>

students are able to find texts, pictures, videos etc. and input reports of their own didactic experiences and material which they have produced. Inside the database students can also download a software (Tool-kit) that allows them to create hypertexts combining material available in the library with other objects created within their own research project.



Figure 2: The Virtual Library contains a large database. Using this database, a user can add or search for a desired resource, relating to specific themes.

Evaluation of the Virtual Library

After the completion of the finished prototype version of the Virtual Library, the Greek partners at the Lambrakis Research Foundation (LRF)⁴ established an evaluation plan for all of the collaborative partners (Italy, Netherlands, Greece and Switzerland) in the project. The evaluation plan contained specific guidelines for conducting the evaluation. First of all, each country was responsible for several evaluation activities of the Virtual Library. More specifically, the Greek partners specified that a total of 5 expert and 5 teacher evaluations would be established for each evaluation. Afterwards, these predictive evaluations would be analysed to predict the pedagogical effectiveness and transferability of the 2D Virtual Library protocol.

The following report details the evaluation activities of the Virtual Library in Switzerland:

Subjects

The participants for this particular evaluation involved a group of pedagogical experts, specialised in Web-based teaching and learning methods. A group of 5 pedagogical Web experts, as specified from the Greek partners, was chosen from a variety of higher education technology domains using ICT. These experts represent the following domains:

1. **TECFA**⁵. TECFA is an academic unit that offers a Masters degree program in the field of educational technology. It belongs to the Faculty of Psychology and Educational Sciences at the University of Geneva.
2. **LME**⁶. LME is an educational unit in the Faculty of Psychology and Educational Sciences at the University of Geneva. It offers undergraduate courses concerning elementary education.

⁴ <http://www.lrf.gr/>

⁵ <http://tecfa.unige.ch/>

⁶ <http://tecfa.unige.ch/tecfa/teaching/LME/lme-overview.html>

3. **CPTIC**⁷ The Pedagogical Centre for ICT (CPTIC) of the Department for Public Education of Geneva (DIP) is operated by teachers professors and specialists.
4. **LEARNETT**⁸. Learn-Nett is a European project that allows students from different European universities to initiate the use of ICT (Information and Communication Technologies) through different projects.
5. **CEFOLEG**⁹. CEFOLEG is a unit in the Faculty of Law at the University of Geneva, offering education at a distance.

The Questionnaire

The questionnaire was conceived by the Greek partners and was particularly targeted for experts. It focused on evaluating and gathering information on the usability, pedagogical effectiveness and transferability of the Virtual Library model.

Additionally the Greek partners chose two defining characteristics in constructing the questionnaire. First of all, English was the chosen language for the questionnaire. Secondly, the questionnaire was conceived in a document format. This allowed the transfer of the document via e-mail. However, in order to fill out the questionnaire, it was necessary to print the document and fill out the responses on paper.

The overall structure of the questionnaire consisted of two main parts, **Part 1**: the work environment in the Natural park and **Part 2**: the resource database in the Virtual Library. In total, a five-point, ninety-one item scale was implied in the questionnaire that represented a set of user attitude statements, ranging from "very poor" to "very good," or "very little" to "very much." This choice of implementing a five-point scale greatly increased the possibility of obtaining results based on a middle scaling. This is due to the occurrence that when there are only a few scale steps to choose from, the selection is often in the middle or "average" category. In addition, several text areas were presented after each set of questions, thereby prompting user comments.

The content of the questionnaire included several different evaluation sections. These sections contained the following titles: context of resource use (general), overall pedagogical effectiveness (Natural Park), learner-focused pedagogical requirements (Natural Park), teacher-focused pedagogical requirements (Natural Park), interactivity (Natural Park), interdisciplinary (Natural Park), resource content efficiency (Natural Park), resource model transferability (Natural Park), and the database usability (Virtual Library).

Distribution of the Questionnaire

Distribution of the questionnaire took place over a two and a half week period. The 5 selected experts were contacted either by e-mail or phone to ask for their participation in the evaluation. After their agreement, the questionnaire was distributed either via e-mail or by person. After distribution occurred, participants were asked to complete the evaluation independently.

Quantitative and Qualitative Results

When all of the five expert evaluations were collected, both quantitative and qualitative results were gathered from the evaluation questionnaire and further detailed. The quantitative data include the experts' responses to the evaluation scale for each section in the questionnaire. Therefore, the following quantitative data tables demonstrate the total number of expert responses for each question. (*Note: one expert is missing from the quantitative data. This is due to the fact that the expert chose to give only qualitative feedback.*)

⁷ <http://www.edu.ge.ch/cptic/>

⁸ <http://tecfa.unige.ch/proj/learnett/>

⁹ <http://webdroit.unige.ch/>

Secondly, the qualitative results can be explained by the solicited expert comments obtained from each section of the questionnaire.

Context of Resource Use

During the course of the evaluation procedure, the experts were asked how much time they spent using the Virtual Library. More specifically, how much time was spend using the Natural Park and also the Virtual Library database. The following table demonstrates the average amount of time that the experts spent using the Virtual Library (*Figure 1*).

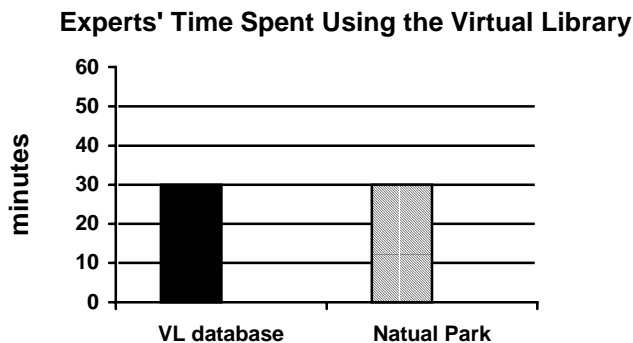


Figure 1: The average amount of time that the experts spent using the Virtual Library was 30 minutes each for the VL database and the Natural Park.

Averaging the experts responses, the results show that each participant spent about 30 minutes using the Virtual Library database and about 30 minutes using the Natural Park. Therefore, it can be generally stated that each participant spend about 1 hour in total in the site.

However, an important issue can be addressed to the experts' usage of the site. The directions on the front page of the evaluation did not specify a task for the experts nor a navigational path for them to follow in the Virtual Library. This lack of direction and activity in the evaluation process most likely led to shorter amounts of expert time spent in the site. Thus, the experts were simply left to wander through the site, not being specifically advised on what, where, and how much time to engage themselves in the site.

Overall Pedagogical Effectiveness (Natural Park)

Quantitative Results

Concerning the overall pedagogical effectiveness of the Virtual Library, the quantitative results show that 50% of the expert responses evaluated the site as rather "average." While 35% of their responses indicate the site as "good" (*Figure 2*). This tends to suggest that the overall pedagogical effectiveness was considered strongly average, however weighing more on the positive end of the scale.

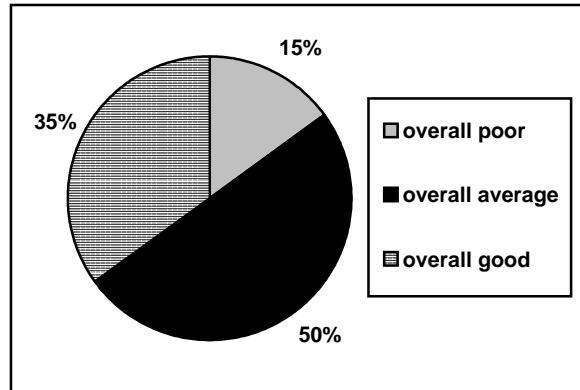


Figure 2: Expert evaluation illustrating their overall responses for the general pedagogical effectiveness of the Virtual Library.

When taking a closer look at the expert responses, some interesting observations are made. Clearly, their were quite moderate (4 experts) to positive (4 experts) responses suggesting that the site offered an educational purpose (*item 1*) as well as fulfilled that purpose (*item 2*). On a more intermediate response level, three experts equally responded "average" when evaluating the site as having learning objectives that are clearly stated for the resources (*item 3*).

<i>General pedagogical criteria</i>	1 very poor	2 poor	3 average	4 good	5 very good
1. The educational purpose of the resource is clearly stated.			2	2	
2. The resource fulfils the stated educational purpose.			2	2	
3. Learning objectives of different parts of the resource are clearly stated.		1	3		
4. The target audience of the resource (or different parts/levels of it) is clearly stated.	1		2	1	
5. Material and activities of the resource (or different parts/levels of it) are well matched to the target audience.		1	1	2	
TOTAL RESPONSES	1	2	10	7	0
	Overall Poor		Overall Average	Overall Good	
	3		10	7	

Qualitative Results

Expert comments expanded these quantitative results. Three expert comments confirmed that the site does not propose a strong general educational purpose and objective. This was further elaborated by four experts who remarked that the site offered more an encyclopaedia research approach. Interestingly, one expert stated, "An encyclopaedia is not a pedagogical learning and teaching environment."

Additionally two experts explained that the site offers a free browsing approach, with several different navigation options to the user. Internally, the site offered interesting information revolving around a multitude of themes with different activities to engage in. However, the three experts mentioned that the principal didactic objectives are not easily identifiable.

However, two experts agreed that the site is aimed at a specific target audience of primary school children. This was illustrated by the information content and the games inside.

Additional Remarks

When looking closer at the quantitative and qualitative data, a contradiction occurs between the evaluation whether or not there is a stated educational purpose in the site. This opposition is most likely due to the vagueness of the questionnaire. For example, the experts suggested a rather positive direction towards this issue in the quantitative data and then further elaborated their views in their comments. Three user comments agreed that there was an educational purpose of the site, but only in terms of its ability to provide an encyclopaedia approach. Therefore, this contradiction can be justified in terms of the educational purpose of a encyclopaedia.

Learner-Focused Pedagogical Requirements (Natural Park)

Quantitative Results

The quantitative evaluation proved that the pedagogical requirements for the site offered quite "little" support for the learner. This was greatly strengthened by 60% of the expert responses pointing in the negative direction (*Figure 3*).

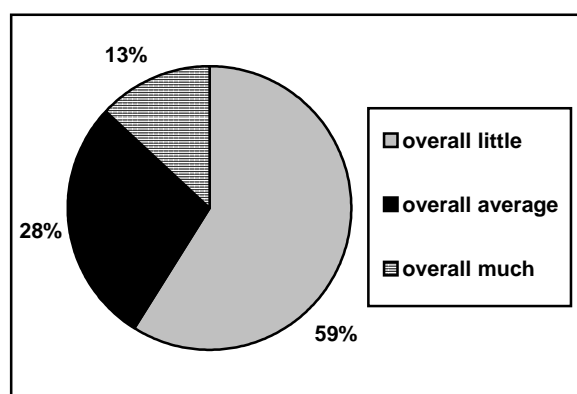


Figure 3: Expert evaluation illustrating their overall responses for the Learner-focused pedagogical requirements in the Virtual Library.

Learner-focused pedagogical requirements	1 not at all	2 little	3 average	4 much	5 very much
1. Set his/her own learning objectives		4			
2. Choose among different alternatives of studying and using the resource		1	2	1	
3. Search for and explore information		1	2	1	
4. Collect and extract information			2	2	
5. Study material by him/herself			1	3	
6. Create own information / material	1	3			
7. Display and publish own information / material		3	1		
8. Work on authentic tasks		1	3		
9. Experiment and play with material		2	2		
10. Exchange and share information with peers (other students)	1	3			
11. Collaborate with peers in a common workspace	2	2			
12. Design and develop projects	1	2	1		

<i>(continued)</i> <i>Learner-focused pedagogical requirements</i>	1 not at all	2 little	3 average	4 much	5 very much
13. Ask for and receive support from subject area experts	1	3			
14. Ask for and receive support from the creators of the resource	1	3			
15. Use evaluation criteria in order to assess him/herself		2	1	1	
16. Take tests in order to assess him/herself		1	3		
TOTAL RESPONSES	7	31	18	8	0
	Overall Little		Overall Average	Overall Much	
	38		18	8	

When looking at the responses to the questionnaire, it is directing more of our attention to the negative side of the scale. Strongly, item 1 signals a unanimous position of the experts confirming that a student is not really able to set his/her own learning objectives when using the site. Even more eye catching are the multiple (3) expert responses to several issues including the lack of the student to create or publish his/her own material (*item 6 and 7*), the inability to exchange and share information with others (*item 10*), and the insufficiency to ask or receive help from experts (*item 13 and 14*).

However, it is also to mention a slighter, but still important piece of data. Turning the attention to the more positive side of the evaluation scale, two characteristics of the site stand out rather independently. The first one is the possibility to collect and extract information, supported by two experts evaluations of "average" and two evaluations of "much." The second one is the ability for a student to study the material by him/herself, supported by 3 experts.

Qualitative Results

Again, unanimously, the experts expressed their written comments concerning the fact that a student was able to set learning objectives for him/herself very little. More precisely, it was advised that a student must have a prior objective before using the site. This is due to fact that the site was not regarded as an instructive model for a student. Three experts remarked that a student can use the site to simply search for information. The student is not lead in any specific pedagogical direction and is free to explore the site by him/herself.

However, the content expressed in the site was viewed by two of the experts as "well presented and structured," offering the student to collect and extract information and study the material by him/herself freely. Continuing, one of the same experts pointed out that a student could easily use this site as a small complementary resource to a traditional course.

On the other hand, three of the experts commented that the site did not offer an adequate place for group collaboration, pedagogical activity, communication, and self-assessment for the learner.

Additional Remarks

These results build on the foundation established by the experts in regards to the pedagogical effectiveness of the Virtual Library. They construct the framework to explain that the site is best structured for students to collect and extract information, fitting very well with the notion that the site offers an encyclopaedia approach. On the contrary, the site possess a major weakness for students who want to crate, display and share information in a collaborative workspace environment.

Teacher-Focused Pedagogical Requirements (Natural Park)

Quantitative Results

More profoundly than the learner-focused pedagogical requirements, the quantitative evaluation results of the teacher-pedagogical requirements were significantly directed even more negatively. And overwhelming 65% of the expert responses agreed with the quality of "less" (Figure 4).

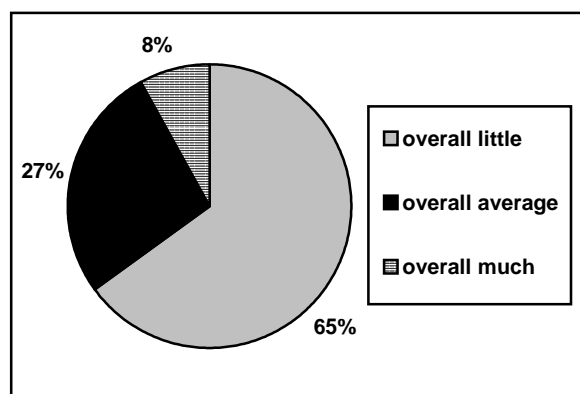


Figure 4: Expert evaluation illustrating their overall responses for the teacher-focused pedagogical requirements in the Virtual Library.

<i>Teacher-focused pedagogical requirements</i>	1 not at all	2 little	3 average	4 much	5 very much
1. Set his/her own learning objectives	1	1	2		
2. Search for and explore information		1	1	2	
3. Collect and extract information		1	3		
4. Choose among different alternatives of studying and using the resource		3		1	
5. Create own teaching and learning material			4		
6. Display and publish own information / material		1	3		
7. Develop lesson plans and classroom activities		2		2	
8. Communicate with learners	1	2	1		
9. Share opinions and experiences in using the resource with colleagues	1	3			
10. Design and develop projects		2	2		
11. Ask for and receive professional support from subject area experts	2	2			
12. Ask for and receive technical and pedagogical support from the creators of the resource	2	2			
13. Collaborate with colleagues in a common workspace	2	2			
14. Use evaluation criteria in order to assess the learner	1	3			
15. Develop tests in order to assess the learner		4			
TOTAL RESPONSES	10	29	16	5	0
	Overall Little		Overall Average	Overall Much	
	39		16	5	

Interestingly, some of the results were quite redundant in comparison to the quantitative results related the support for the learner. For example 3 experts saw that the site did not offer alternative ways of usage (*item 4*), combined with poor opportunities for communication exchange (*item 8*), and few collaborative exchange features (*item 9*). Even stronger, the site offered almost no opportunities to create assessment measures for the students, emphasised by all of the experts (*items 11, 12, an 13*). .On the opposite end, 3 experts agreed that the Virtual Library offered a fair opportunity for teachers to collect and extract information (*item 4*).

However, there were a few surprising differences in the results. All the experts agreed that a teacher could use the site to create material (*item 5*) as well as display and publish information (*3 experts*) (*item 6*). Additionally, 3 experts believed that it was possible to develop lesson plans and classroom activities using the site (*item 7*).

Qualitative Results

The experts' comments confirmed many of the scalable responses. It was advised by two experts that a teacher must have a prior pedagogical objective before using the site. Additionally, most experts did not find a clear pedagogical objective for teachers when using the site. However, this was not viewed as a weak point due to the fact that a teacher can extract this information from the site and afterwards create his or her own objective.

Several comments were made by three of the experts that the Virtual Library site was not very innovative when compared to other similar sites on the Web. For example, one expert wrote, "I don't think that teachers would be overly enthusiastic about this particular site." Additionally another commented, "I think that teachers might prefer to use a more professional and traditional encyclopaedia source, found on the market today."

Finally, the communication tools do not provide a collaborative type of learning environment for teachers. Moreover, the communication tools were evaluated as not directly being linked to the content. Furthermore, the two experts commented that the site did not offer an adequate place for developing projects, collaboration, and assessment of learner competencies.

Additional Remarks

An interesting discussion can be made as to the validity of the responses that the experts gave to the following issues: creating own teaching material (*item 5*), displaying information (*item 6*) and developing classroom activities (*item 7*). Globally, these issues all were given average to good ratings by the experts in terms of their ability in the Virtual Library. However, there is again a vagueness in the questionnaire that does no specify "when" and "where" these events should take place. It is reasonable to consider that a teacher could use this encyclopaedia-type approach to the site to collect and extract information, and then create a lesson or activity from the material on his/her own. There is not a striking emphasis that this event of creating activities should be done only in the Virtual Library workspace.

Interactivity (Natural Park)

Quantitative Results

Again, quantitative data strongly conclude that the Virtual Library offers absolutely little interactivity for both the teacher and the student. Overall, the experts' feedback continuously swayed to the left of the scale, with very little positive direction. An outstanding 70% of the expert responses confirmed this negative emphasis on interactivity in the site (*Figure 5*).

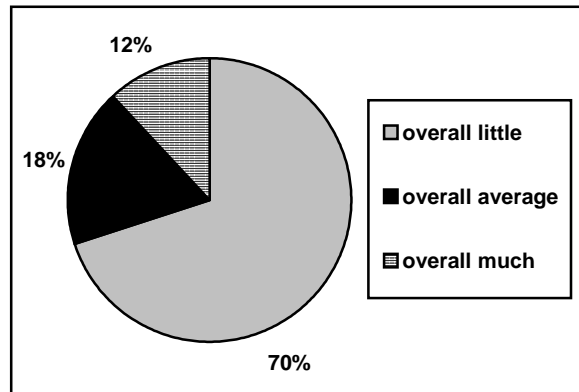


Figure 5: Expert evaluation illustrating their overall responses for the interactivity in the Virtual Library.

Criteria	1 not at all	2 little	3 average	4 much	5 very much
1. The communication messages included in the resource are prompt.	2	1	1		
2. The communication messages included in the resource are friendly and "natural".	1	2	1		
3. The resource facilitates person-to-person communication.	2	2			
4. The resource facilitates group communication.	2	2			
5. The resource provides spaces and tools for learners to display their work.		2	1	1	
6. The resource provides ways and tools for learners to share their work.		3	1		
7. The resource provides support for the development of on-line projects and communities.	1	2	1		
8. The resource includes online forms for student data input or collection.		2	1	1	
9. The resource includes online forms for teacher data input or collection.		3		1	
10. The resource contains evaluation templates and online tests.		3	1		
11. The resource includes online interactive gaming activities.		1	1	2	
TOTAL RESPONSES	8	23	8	5	0
	Overall Little		Overall Average	Overall Much	
	31		8	5	

There is overwhelming evidence that targets this site as lacking interactivity. There were reoccurring responses from three experts pointing out that the site does not offer teacher or student to use the information in order to collaborate (*item 6*), input information (*item 9*), and take online assessments (*item 10*). Additionally, three of the experts confirmed insufficient communication messaging (*items 1 and 2*) and facilitation (*items 3 and 4*).

Qualitative Results

In general, the Virtual Library site was evaluated as being neither an interactive learning site, nor a collaborative learning site. Interestingly, the experts all confirmed that communication tools, resources and activities existed in the site, but there was an overwhelming lack of interconnectivity between all of them.

Additional Remarks

It should be brought the attention that the term "interactivity" was used mistakenly misused in the context of the questionnaire. This is due to the fact that interactivity does not imply "communication," but rather an interaction.

Interdisciplinary (Natural Park)

Quantitative Results

The quantitative results for the interdisciplinary approach to the Virtual Library was given an overall rating of "average" by the experts. However, this quality of "average" is heavily swayed to the left, leaning more to quality of "little." Looking at *Figure 6*, half (50%) of the expert responses were moderately convinced by the interdisciplinary approach, while a large 45% of the responses were not.

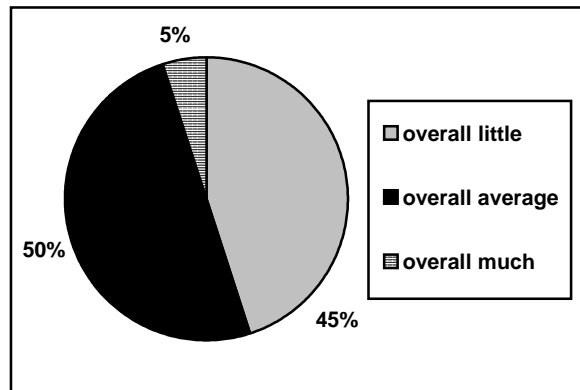


Figure 6: Expert evaluation illustrating their overall responses for the Interdisciplinary approach in the Virtual Library.

<i>Criteria</i>	1 not at all	2 little	3 average	4 much	5 very much
1. The resource includes information on various subject areas.			3	1	
2. The resource integrates information on various subject areas efficiently.	1		3		
3. The resource makes meaningful links between different subject areas.		3	1		
4. The resource includes activities, which draw on knowledge and skills from various subject areas.		2	2		

<i>(continued)</i> Criteria	1 not at all	2 little	3 average	4 much	5 very much
5. The resource provides support for the development of interdisciplinary projects.	2	1	1		
TOTAL RESPONSES	3	6	10	1	0
	Overall Little		Overall Average	Overall Much	
	9		10	1	

Three experts agreed the site does an average job of including and integrating various information on different subject areas (*items 1 and 2*). On the weaker side, the same three experts concluded a lack of meaningful links were included between different subject areas (*item 3*). Even more on the negative scale, two experts rated the site poor at providing support for the development of interdisciplinary projects.

Qualitative Results

Unfortunately, there was a lack of qualitative data from this section. Three out of five experts chose not to give comments regarding the interdisciplinary approach. The other two experts gave comments that mentioned the content presented in the site was expressed as rather appropriate to use in conjunction with lessons on forest environments and that the multi-topic approach (i.e. human geology, vegetation, fauna, occupations) was articulated as a model of traditional didactic processes. One of these experts continued to explain that "each chapter can provide an element of introduction, conclusion or illustration of a sequence of lessons."

Additional Remarks

It is evident that the multi-topic site offers various information on a different subject involving a specific forest environment. This goes back to the emphasis that the site is more an encyclopaedic approach, with its ability to present information by topics and themes.

Resource Content Efficiency (Natural Park)

Quantitative Results

Information

Concerning the information in *Figure 7*, the quantitative results show that many of the expert responses found the criteria quite average (43%), weighing towards the negative side of "little" (36%).

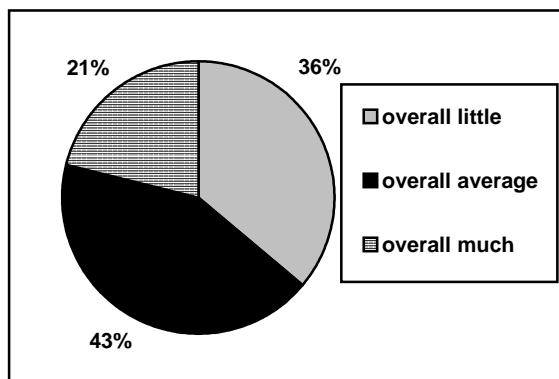


Figure 7: Expert evaluation illustrating their overall responses for the Information presented in the Virtual Library.

<i>Criteria</i>	1 not at all	2 little	3 average	4 much	5 very much
Information					
1. The scope of the resource is stated through meta-information.		1	1	2	
2. The information included is detailed and extensive.			3	1	
3. The information included is relevant to the stated educational objectives.		1	3		
4. The information included enriches school curriculum.			2	2	
5. The information included is linked with other relevant on-line resources.		2	2		
6. The information included is free of political, cultural, social, gender and racial bias, demeaning labels or stereotypes.			2	2	
7. Various points of view are represented in the resource, when appropriate.	2	1	1		
8. The sources of the information included are clearly stated (creator, year, publishing house, copyright owner, if the case arises).		2			
9. The people in charge of the resource creation are clearly identified (name, organisation, role, address, e-mail).		3	1		
10. It is easy to find the date of last update of the information included.		3	1		
TOTAL RESPONSES	2	13	18	9	0
	Overall Little		Overall Average	Overall Much	
	15		18	9	

On moderate level, three experts found the information included was detailed and extensive (*item 2*) and relevant (*item 3*). However, on the weaker side, three experts determined the Virtual Library as minimal at the metadata level (*items 10 and 11*).

Structure

In *Figure 8* the structure of the site was evaluated as very “average” (55% of the expert responses), weighing more on the negative side (35% of the expert responses).

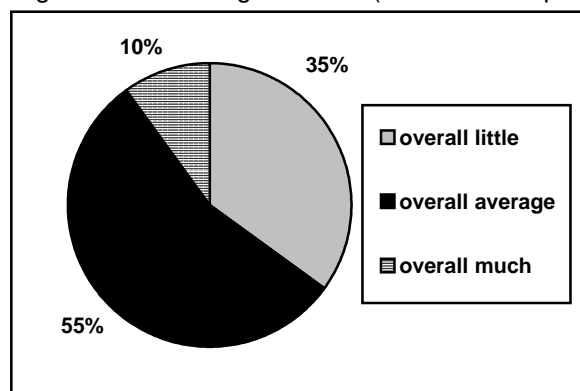


Figure 8: Expert evaluation illustrating their overall responses for the structure of the Virtual Library.

Criteria	1 not at all	2 little	3 average	4 much	5 very much
Structure					
12. The information included is well structured and organised.			3	1	
13. The texts included are well structured.			4		
14. The labelling of pages/sections is representative of the information included in them.		1	2	1	
15. The interlinking of information is meaningful and easy to understand.	1	3			
16. The on-line resources linked with the information are relevant and well structured.		2	2		
TOTAL RESPONSES	1	6	11	2	0
	Overall Little		Overall Average	Overall Much	
	7		11	2	

The experts unanimously agreed that the quality of the text structure was quite average (*item 13*), while three agreed that the information was organised sufficiently (*item 12*). However, all of the experts found a major weakness in the understanding the structure of interlinking the information (*item 15*).

Presentation / Design

The quantitative results for the presentation and design of the site were quite evenly distributed. However, the expert evaluations tended to sway towards a positive attitude towards the presentation and design. Figure 9 diagrams that 41% of the expert responses favoured the site's presentation and design, 28% as average, and 21% as unfavourable.

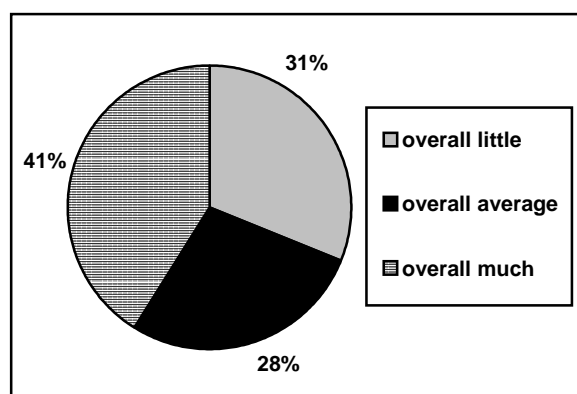


Figure 9: Expert evaluation illustrating their overall responses for the presentation and design of the Virtual Library.

<i>Criteria</i>	1 not at all	2 little	3 average	4 much	5 very much
<i>Presentation / design</i>					
17. The pictorial and sound information included is accompanied by relevant meta-information (labels).			1	3	
18. The links are made in such a way that it is clear that an external site is being referred to.	2	2			
19. The texts included are legible, in terms of colour, size and type of lettering, arrangement and visual effects.		1	1	2	
20. The graphics, images, video and virtual reality included are well presented, in terms of resolution, colour and size.			1	3	
21. The sound information included is well presented, in terms of technical quality.			2	2	
22. Graphics, images, sound, video and virtual reality used are appropriate for the purpose of the resource.		2	1	1	
23. The use of graphics, images, sound, video and virtual reality facilitates understanding.		3		1	
24. The use of graphics, images, sound, video and virtual reality makes the resource more appealing and enjoyable.			3	1	
TOTAL RESPONSES	2	8	9	13	0
	Overall Little		Overall Average	Overall Much	
	10		9	13	

For example, 3 experts were impressed by the graphics and video presented in the site (*items 17 and 20*). Interestingly, three experts also agreed that that these of these multimedia component do not facilitate understanding (*item 23*). While 3 of the experts were only moderately convinced that the use of graphics, images, sound, video, and virtual reality made the site more appealing and enjoyable (*item 24*).

The aesthetic elements, including text, images, video, and sound, were interpreted as quite positive for the experts. It should be noted that there is a potential for these elements, if well designed, to offer a pleasant environment that is enjoyable for its users as well as possibly contribute to the understanding of material.

Qualitative Results

Information. *No experts were comments were given in this area.*

Structure. Concerning the structure of the site, all the experts commented that the general structure lacks logical navigation sequences. Additionally, they all expressed their experiences of being lost in the structure of the site. Two experts didn't even understand the structure. Another criticism was the use of multiple frames in the site. This use of inconstant frame structure lead to most of the confusion concerning navigation.

Presentation / Design. As for the graphical design of the site, two experts agreed that the pages are coherent and nicely presented for young children. However, a couple of the experts remarked that the colour choice for the texts were not very legible.

Resource Model Transferability (Natural Park)

All of the experts unanimously and positively agreed on two issues concerning the transferability of the Virtual Library. First of all, that the Virtual Library protocol could possibly be used in other subject areas. Secondly, that the Virtual Library could possibly be used in Switzerland.

However, experts explained some transferability issues and problems with the Virtual Library. The strongest emphasis was placed on the language of the site. All of the experts made comments that the site was not offered in the two important national languages of Switzerland (French and German). Continuing, the experts concluded that it would be impossible to use the site without knowing the language, hence effecting the transferability of the site.

Database Usability (Virtual Library)

Quantitative Results

The quantitative data prove that the usability of the database in the Virtual Library was quite average, and weighing more on the “poor” side. Looking at *Figure 11*, 45% of the expert responses rated the site at average, while 43% rated it as poor

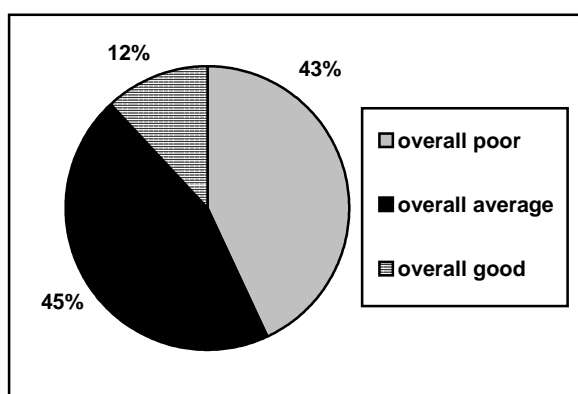


Figure 11: Expert evaluation illustrating their overall responses for the database usability in the Virtual Library.

<i>Virtual Library database</i>	1 very poor	2 poor	3 average	4 good	5 very good
1. To what extent is the database user-friendly?			2	2	
2. To what extent is the database appealing?		1	3		
3. To what extent does it provide adequate navigation tools?		3	1		
4. To what extent is the interface satisfactory for you?		2	2		
5. To what extent is the interface satisfactory for the students?		2	2		
6. To what extent is the search engine easy to use?		2	2		
7. To what extent are the criteria for selecting material appropriate?			4		
8. To what extent does the resource enable data input?		1	2	1	
9. To what extent is the “data input” process easy to understand?		3		1	

<i>(continued)</i> Virtual Library database	1 very poor	2 poor	3 average	4 good	5 very good
10. To what extent are the "metadata" useful?		3		1	
TOTAL RESPONSES	0	17	18	5	0
	Overall Poor		Overall Average	Overall Good	
	17		18	5	

The experts unanimously agreed that the criteria for selecting material was moderately appropriate (*item 7*). Additionally, three experts also concluded that the database was moderately appealing as well (*item 3*). However, three of the experts negatively found that the database did not provide adequate navigation tools (*item 3*), data input processes (*item 9*) and metadata (*item 10*).

Qualitative Results

The usability of the database in the Virtual Library was explained as being operational but not fully effective for conducting a search. Two of the experts' attempts lead to the response "no document available." Also, it was difficult to know what information was actually being stored in the database. Therefore, it was suggested by one expert that a more categorical search be implemented, such as a selection of a theme from a tree structure.

Additionally, there was a prevalent complaint about the lack of clear connectivity between the Natural Park and the Virtual Library. All the experts concurred that there was no explanation how each site was correlated with one another.

Additional Remarks

The interconnectivity of the Virtual Library and the Natural Park posed a major problem to the experts for a number of reasons. Simply due to the fact that the both the interfaces are structured and designed completely different from each other automatically causes problems for first time users. Secondly, there is any type of help system given for the understanding of the interaction between the two sites (a clickable icon is not sufficient enough). But most importantly, the searchable interface should be directly integrated into the Natural Park.

Discussion

Evaluation Procedure

After the completion of the expert evaluation process, a few comments can be made. First of all, due to the specific directive placed on conducting the evaluation process, several frustrations occurred. This is due to the fact that the evaluation process for the experts was not conducted via the WWW. It is conceivable to expect this type of technology aided tool when dealing with the evaluation of Web-based educational sites. Therefore, it is also equally important to provide the technologically equivalent means of performing the evaluation. More specifically, a Web-based evaluation, on-line, was the more logical solution for conducting the evaluation. It seems quite a lengthy and absurd task to ask "Web" experts to evaluate a WWW site and then have to fill out a paper-based evaluation.

Secondly, the length of the questionnaire was too long. Almost all of the experts were initially reluctant to participate in the evaluation due to the size of the questionnaire. In turn, due to the questionnaire's lengthiness, many of the experts cut the questionnaire short, failing to answer all of the questions within. Therefore, this "void" of expert feedback was a negative setback when analysing the data.

Redefining the Virtual Library

Turning now to the issue of the quantitative and qualitative data from the expert evaluation, a series of important issues can be discussed. Overall, the experts evaluated the Virtual Library as being very "average." This "average" quality was attributed to the site due to its lack of interactivity, pedagogical objective, general structure, and language barrier. Additionally, the experts shared the same global sentiment about the Virtual Library, stating that it was not extremely innovative in terms of its conception, delivery, and technical approach.

However, the experts had other two issues to address concerning the Virtual Library. Combined, these opinions provide interesting suggestions on improving the overall pedagogical purpose of using the site. The first suggestion is that the Virtual Library should be used strictly as a tool in correlation with a lesson, and not used as a substitute for teaching. The experts recommended that the site can be useful only as an additional resource to an already existing lesson. This is due to the fact that the Virtual Library does not provide a useful structure for distance teaching and learning, nor does it provide pedagogical objectives for teacher or student.

The second suggestion is that Virtual Library can not be placed in the category of a Virtual Learning Environment. This is due to the experts' feedback stating that the Virtual Library functions only as a reference, such as an encyclopaedia resource. This implies that it can be used as a tool in conjunction with a pedagogical lesson in order to look up specific information about various subjects quickly.

On the other hand, a Virtual Learning Environment is rather further defined by Peraya, Piguet, et Joye (1999) as a "dynamically generated integrated Web-based environment, built around a coherent teaching scenario that is implemented around a metaphor of space."

Therefore, considering the concept and function of an encyclopaedia reference, it is impossible to accept the site as a Virtual Learning Environment. This is due to the lack of pedagogical objectives, activities, assessment, and collaborative space within the site for teachers and students to engage in.

After thorough analysis of our evaluation results, it would therefore be recommended that a redefinition of the Virtual Library be established. The new definition would involve re-establishing the intended purpose of the site and applying it towards its real potential...a Virtual Encyclopaedia Reference.

It could be acceptable to separate the site to offer two different and new sites. The first site could consist of all of the encyclopaedia reference material in the Natural Park to create a pure resource site for teachers and learners. Here they would be able to use the site only to collect and extract information from it. The second site could involve a virtual workspace environment, integrating different communication, collaboration tools, and the integration of the Virtual Library database. This type of workspace would provide a networked community where teachers and students would be able to share work and ideas both asynchronously (different time) or synchronously (same time).

Reference:

PERAYA D., PIGUET A., JOYE F. (1999). *Rapport d'information sur les mondes virtuels*.
Written for the OFFT (l'office fédéral de la formation professionnelle et de la technique).