RECYCLING OR ACADEMIC DEVELOPMENT

Miri Shonfeld, Chana Ma-Naim

ABSTRACT

Educators argue about uploading students' projects to the Internet. Does this support plagiarism or the opposite, preventing copying and enabling the development of student projects? Do students recycle old projects? Or do they go further by using their colleague's experience and learning. In our presentation of the project "Science Activities Database", we will discuss this dilemma.

During a course in science education at the Kibbutzim College of Education, students prepared and presented a project of scientific activities as "a learning center". They uploaded their projects to a personal web site linked to the main course web-site. The projects included digital pictures of their activity center, instructional guidelines and general objectives of the center. The students who created the site were proud of their product and of the fact that it was available on the web. Students who participated in the following courses found the database as a helpful resource for their primary research and as a source for deriving ideas. Students were exposed to their colleagues' projects and used them to improve and better their own work.

Since the course was taught by five teachers in eight groups, the database served as a tool for the teachers to view work done in other teachers' classes. A primary evaluation was conducted, and it seems that the campus benefited from the documentation on the web. According to our experience and the students' evaluation it prevented plagiarism and initiated progress.

INTRODUCTION

As part of the teacher training program for k-2 student teachers at the Kibbutzim College of Education in Israel, students are offered the "Science Education" course. The course focuses on constructing a science teaching unit and is mainly based on learning scientific concepts and finally putting it to practice in school. The students create a learning center based on the topic they choose and implement it during their practicum in school.

Those units are gathered and presented at the college site and are available as a learning center database for the following classes. The students reported on using the database not only as a source for helping them in their actual project, but also as a reference in their future work as teachers.

The science education course has been going on for the last five years with eight groups each year. During this time, instructors debate on the importance and benefits of such a database. Inserting the project into the data base was considered as a compulsory task of this course. It was important to find out the students' attitude towards the described database. A pilot research took place during the winter semester courses where only four of the teachers taught the courses to 60 students.

Online Databases

Database is a collection of persistent data that can be shared and interrelated. It involves language and graphical tools to defines entities, relationships, integrity constrains and authorization rights (Mannino, 2001). Computerized databases became vital to the functioning of modern organizations. We come into

contact with them on a daily basis through activities like shopping, ATM machines or in different registrations.

The use of educational databases is more and more widespread in daily school work. Increasingly, universities, museums and libraries create databases, which can be accessed through the internet and are open to the public. This is due to the fact that advanced technology such as SQL and ASP make it possible and because communication and surfing has become more rapid.
Actually, most resources presented on the Internet are types of databases. Databases are used in administration, management, libraries and multimedia databases, as advanced technology enabled in recent years.

Databases enable interactive lessons, involving technology in class and solving problems of students' disabilities (Monahan). One good example for such a database is the MERLOT (www.merlot.edu), which is a free and open source designed primarily for faculty and students of higher education. Links to online learning materials are collected there along with annotations such as peer reviews and assignments.

Other databases include: the Britannica encyclopedia, General chemistry online, Medline, Environmental research with the help of interactive maps based on GIS (Bull, 1999), Root-knot nematode taxonomic database (Eden, 1998) and Global Digital Museum (Takahashi, Kushida, Hong, Rieger, et. al., 1998), which include museum learning programs. Holmes (1998) describes a database where students prepare learning materials, insert them in the site and the teacher presents them in class. Ennis (1997) reports on an interdisciplinary database for elementary school students, which enable collecting and inserting data. The students are required to sort the information and evaluate it. Temple University designed a digital database of pictures and learning materials for the university (Pastine, Bayard, Lang, 2001). Datamondo is software that is based on a database of articles collected from Italian newspapers aimed to help students in actual research (Degl'Innocenti, R. & Ferraris, M., 1988). There are also educational databases for K-2 students. Most require the participant to perform learning activities, while learning about animals (Freedman, 1998). Tufts' Health Sciences Database sets the standard for medical school knowledge management systems. Medical, veterinary and dental students use the website to study. Among its benefits, the system helps students to master course material, keeps curriculum up-to-date and increases organizational efficiency (Genusa, 2001).

Forming the database
During a course in science education at Kibbutzim College of Education, students prepared and presented a project of scientific activities as "a learning center". They uploaded their projects to an individual web site, which was linked to the main course web-site. The projects included digital pictures of their activity center, instructional guidance and general objectives of the center.

Each student opened a web site on the college server in which the students inserted the written paper and pictures. All sites were than attached to the main course site and was available to the rest of the students and members of the college. This site functions as a learning resource for following courses.

Advantages and disadvantages
The use of databases enables students to understand how different pieces of information are related to each other; they improve the quality of learning materials and enhance motivation of learning. Further more, the use of databases improves the skills of organization, observation, information managing, sorting and selecting. It involves high thinking skills like defining a concept, sorting into groups, comparing and differentiating ideas and concepts. Student teachers working in database environments are encouraged to practice later on using new technologies. Since the database is accessible to all; the rest of the students can take advantage of the knowledge that is available. This presents a convenient source of ideas and lesson plans. In addition, it improves students' self image, since they are very proud of their personal site and of their ability to create an internet site.

As an open source, the "learning center" collection enables students to develop teaching materials based on other students' ideas. Teachers of following courses report that the use of the database from former years improves the quality of the students' projects.

In regards to the technology used, SiteWise, software that was used to manage the database is user friendly and no prior knowledge of computers is necessary. Building a site with SiteWise is as simple as writing a WORD document.

However, the teacher of the course has no control on the materials that are presented in the student's personal site. This is due to the fact that they have no access to the students' sites.

As regards to plagiarism, such a database can be a source for copying others' work, but on the other hand it can help in preventing plagiarism. Such work is done by Turnitin (http://www.turnitin.com), which provides online archiving system for works submitted from a given school, class, or student for an authentic assessment of the learning experience. It is clear that such a database assists teachers in checking for plagiarism.

METHODOLOGY
Participants
60 pre-service teachers from three classes with four different instructors. The instructors differ by the emphasis placed on the importance of a database as a source of their personal work.

Instruments
A questionnaire was handed out to the students before the end of the course. In order to prepare the questionnaire, the researchers (one of them being one of the instructors) collected questions that may explain students' use of the database. A short version was preferred to facilitate answering and avoid teachers' and students' resentment to taking part in the research. The main issue was to understand if the students considered the database as a useful source for their projects. The final version consisted of 5 closed questions and 2 open-ended questions. The first two questions were yes/no questions reflecting the use of the course internet site in general and the database in special. The next yes/no question referred to the use of the course site in general. Two multiple choice questions checked how students utilized the database and what they thought to be the most important contribution of the database. Two open questions inquired of them what they would like to find in a database and if they would like to present their own paper in the database.

In order to validate the questionnaire we conferred with the instructors and applied it to a pilot group of five students. According to the trial results the questionnaire was improved.

The tool
SiteWise LMS was used in building the database and enabling the performance of the students work. The SiteWise platform is a very simple tool and enables quick results. Teachers and students can easily build their own site. They do not have to learn any complicated technology. With simple templates, users are able to insert pictures, texts and links and immediately have it on the web. They can choose whether to open the site to the whole world or to limit it only to the college population or only to teachers who can log in by using their ID number.

QUESTIONNAIRE RESULTS
Out of 60 students in the science courses only 22 replied positively to the questions relating to the use of the database. Therefore only 22 questionnaires were included in the analysis presented below. As mentioned above teachers differed in the emphasis placed on the importance of a database as a source for student's personal work. Only 20% of the students from classes where the teachers did not emphasize the database answered positively to the use of database and their answers were taken into consideration. Furthermore, only 68% from the other classes where teachers emphasized the use of the database used the database and were considered for this research. Database benefits which teachers assessed would be: deciding on a topic for the project; stimulating ideas for activities and achieving a

clear picture on how to develop the project. Those options were posed to the students in the questionnaire. They checked the benefit of "clear picture of the assignment" as the most important benefit, as one can see in table 1.

Table 1. The Database Benefits

	Helped in Finding Topic	**Stimulated Ideas**	**Gave a Clearer Picture about the Project**
Number of Students	1	6	17

The Histogram emphasizes that the students' main appeal of the database were the examples that helped them understand what was expected of them. This factor is higher than the other factors as can be seen in figure 1.
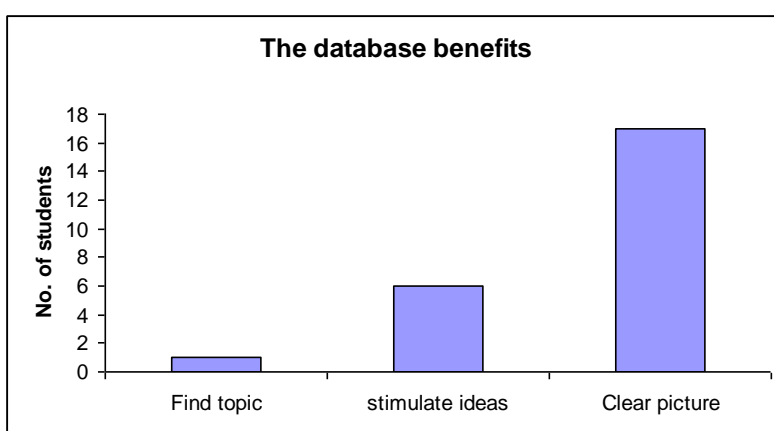

Figure 1. The database benefits

The students view the database more as a source for helping them as a guideline in creating their own project than as a source for topics and ideas. It has to be taken into account that many of them searched the database after they had chosen the topic and had already developed activities.

The questionnaire listed the following as the most important components of the database: activities' description; projects' pictures; subject description and subject description. The results are presented in table 2.

Table 2. The Importance of the Different Components in the Database

	activities descriptions	**projects' pictures**	**subject description**	**subject description**
Number of Students	7	4	9	12

The students pointed out "teaching sequence" as the most important component as portrayed in Figure 2.The second most important component was "subject description". The project pictures showed in the database were not so important.
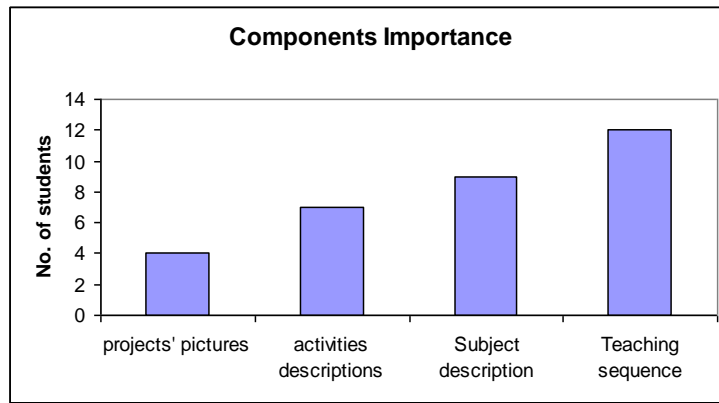
Figure 2. Components importance

Most of them wanted their work to appear in the database. The reasons vary between helping other students and appreciation of their own efforts.

In general their opinion on the database was positive. They described it as useful, interesting, attractive, contribute to finding ideas for individual work, high quality, versatile, useful for future work as a teacher, assists in methodology and explore children's interest. They emphasized that visual aids help to understand how the project is supposed to be and leads them in implementing their ideas.

DISCUSSION
The small number of students who answered the questionnaire was probably the result of two instructors who did not emphasize the importance of the database as an aid in the process of constructing the students' projects. Due to the small sample it was impossible to find differences between the groups. On the other hand, it could be taken that students are not as eager to use exciting projects within easy reach. Another possible explanation is the lack of awareness of the usefulness of such resources on the net. It seems that software preventing plagiarism (http://www.turnitin.com) are one step ahead of those students.

From the answers it is clearly seen that students benefit from existing examples, that they seek a format to present their own projects. They favorite the factors that helped them understand the requirements such as: clear picture; teaching sequence and subject description. Teaching sequence was the basic phase in the project. This is a difficult process without any practice. Therefore the projects in the database provide a good source and many examples. The description of the project and the activities were important also since it is difficult to imagine the outcome using only the guidelines. It is easier to follow an exciting project.

Ziv and Ziv (2001) explains that learning can occur when the material is familiar to them. They can transfer what they have seen in others work to their new subjects. The bases student has learned in viewing the database can be applied to his new project that has similar ideas and concepts.

Another point for discussion is the influence of such database with existing projects on creativity. Going through others' work may decrease creativity and originality. Ziv and Ziv (2001) claim that it may depend on type of cognitive thiking of the person. In some means there is an element of imitating others work even though the student deals with a different subject and different activities.

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CONCLUSIONS

The results point out the importance and necessity of a science lesson plans database. It seems that students look for immediate help and guidance, a quick answer to their current difficulties in completing their assignments. However, they clearly understand the importance of such a database to their future as teachers. They explained that access to such information is much sought after and that is why they are willing to insert their activities into the web site for others' benefit.

The database is as yet not satisfactory since it is in its preliminary step. It does not have enough subjects and there are not enough details on every topic. The students looked for more details in learning sequences and in activities. They searched for specific information as to the objectives of every step in the learning sequence since it is difficult to follow instructions without any concrete example

In reference to plagiarism, it was found that it all depends on definition. The database enabled acquiring ideas from others, developing and improving on them. Existing databases prevent copying a project as it was originally written since all information is available on the net and it is very easy to check replications.

It is recommended to continue investigating use of this database in other courses in order to arrive at a larger sample and acquire inclusive conclusions.

REFERENCES

Bull, G., Bull, G. & Mason, C. (1999). Online geographic in formation systems. Using Real-World Data to Explore Layers of Meaning. Learning and Leading with Technology, 26 (4), 42-45.

Degl'Innocenti, R. & Ferraris, M. (1988). Database as a tool for promoting research activities in the classroom: An example in teaching humanities. Comp. Educ., 12 (1), 157-162.

Eden, L. (1998). Root-knot nematode taxonomic database. [Review of the database Root-Knot Nematode Taxonomic Database]. Electronic Resources Review, 2 (10), 125.

Ennis, D. (1997). Interdisciplinary database activities for fifth graders at Tomas Rivera. Journal of Computing in Childhood Education, 8 (1), 83-88.

Freedman, K. (1998). Children's use of narrative and graphical information in a database: recommendations for development. Journal of Research on Computing in Education, 30 (4), 329-340.

Genusa, A. (2001). Rx for Learning. Retrieved December 25, 2004, from the World Wide Web: http://www.cio.com/archive/020101/tufts.html

Holmes, B. (1998). The database: America's presidents. Learning and Leading with Technology, 25 (7), 6-11.

Kurita, Y., Reeve, J. Loverance, R. (1998). Global Digital Museum: Multimedia Information Access and Creation on the Internet. Proceedings of the Third ACM Conference on Digital Libraries.

Mannino, M. V. (2001). Database application development and design. NY: McGraw Hill Higher Education.

Monahan, S. (1999). Our classmates: what we wondered, what we hypothesized, and what we learned. Learning and Leading with Technology, 26 (6), 10-13.

Takahashi, J., Kushida, T., Hong, J., Rieger, R., Martin, W., Gay, G., Sugita, S., Pastine, M., Bayard, I., Lang, C. (2001). Digital Diamond: Temple University libraries' IMLS grant. The Bottom Line: Managing Library Finances, 14(2), 76-84.

Ziv, A. and Ziv, N. (2001). Psychologia Bechinuch [Educational Psycology]. Israel: Yachdav

M. Shonfeld
Head of IT
Kibbutzim College of Education
149 Namir Rd
Tel-Aviv 62507
Israel
E mail: miri_sho@smkb.ac.il

C. Ma-Naim
Head of Mathematics and Physics Department
Kibbutzim College of Education
149 Namir Rd
Tel-Aviv 62507
Israel
E mail: chana_man@smkb.ac.il