The Distance Education Online Symposium
The American Center for the Study of Distance Education
The Pennsylvania State University
College of Education
403 South Allen Street, Suite 206
University Park, Pennsylvania 16801-5202, U.S.A.

Telephone: +814-863-3764 Fax: +814-865-5878

DEOS Editor: Morten Flate Paulsen
Compuserve: 76436,350
Bitnet: MFP101@PSUVM

DEOS Review Committee: Toni Garcia and Philip W. Pinder

EDITORIAL

This is the second file we have posted via DEOSNEWS on Bitnet. I am surprised and delighted to see that we already have more than one hundred subscribers from several countries. The rapid growth has entailed both anxiety and urged for quality work. So, I hope you find both this and our future articles interesting. We need more quality articles and relevant informa- tion, so please notify me (MFP101@PSUVM) if you have something we could distribute. We will be happy to consider material you feel is appropriate.

This time I have chosen to share with you an article that shows some of my interests and experiences. The simple fact that you all are online, should confirm that you share some of these interests. So, let's go meec!

GO MEEC!

A Goal Oriented Method for Establishment of an Electronic College
By Morten Flate Paulsen

An Electronic College is a computer based system that facilitates written communication among students, faculty, and staff, inde- pendent of time and space. The concept is further described in the book: Paulsen and Rekkedal, The Electronic College [1].

You need a project group to establish an electronic college; a project group with project management skills, personnel manage- ment skills, and technical skills. The project will require a work force, technical equipment, and money - and will take months to accomplish.

This paper is organized around the Milestone Plan shown in figure 1, an approach inspired by the method: "Goal Directed Project Management" described in [2], which I highly recommend for projects like this.

I will emphasize that establishment of an electronic college involves both working with people and technology. It is important to be equally committed to training, support, and motivation of people and technological progress. So, I have made two result paths in my milestone plan: one dealing with people, the other with technology.

People Technology

S		Project start
P1		Define your aim
P2		Procure management support
P3		Define your usergroups
P4		Determine the users' need for information and activity
	T1	Decide the host computer
	T2	Decide the software
	T3	Decide the network
	T4	Decide the workstations
	T5	Design the framework matrix
P5		Design training, support, and motivation programs
O		Start the operation of your college

Figure 1. Milestone plan for establishment of an electronic college

The sequence of the milestones is carefully chosen, but some milestones are interchangeable, if necessary.The rest of this paper describes the milestones in detail. For each milestone, I have included a case example from the TowerNet project, a project I have planned and started to implement with this method.

Define Your Aim

Defining the aim is extremely important for two reasons. First of all, the project group and the management need to agree upon common goals. Without a joint perception of the project aim, the project will hardly become a success.

Secondly, the project-group needs a clear and understandable aim for intramural justification and external marketing. In this process, I have found it truly useful to devise a dazzling project name, by which people easily identify the project.

The TowerNet Aim: The aim of the TowerNet project is to develop a computer conferencing environment that facilitates flexible and effective written communication among students, staff, and faculty - at the four sites of the Adult Education Program at Pennsylvania State University.

Procure Management Support

Management support is crucial for the project. Besides approval of the project aim, management must allocate the necessary resources and display signal effects for project support. Be sure that resources are allocated to all steps described in the milestone plan.

You should discuss the signal effects with your managers. It is seldom enough for managers to support the project in words and print, they must show their support by frequently using the system. That displays the ultimate signal effect.

The TowerNet Management Support: The project is initiated by the professor in charge and some professors are really enthusiastic about the project. This is still not sufficient; we need to procure a more active support from the management.

Define Your Usergroups

The main reason for establishing an electronic college is to provide the users with educational services. To make a successful system, you really need to know who your users are. It is necessary to cluster potential users in usergroups, and decide which usergroups to consider as target-groups.

Some users you should consider are: the system operator, hackers, prospective students, present students, passive students, former students, teachers, guest experts, teaching assistants, former teachers, facilitators, bursar, etc. You will need to add to, omit and cluster these suggested users.

The TowerNet Usergroups: The TowerNet project is designed to serve:

- 100 graduate students, divided into classes
- 4 facilitators, one at each site
- 1 system operator
- 5 faculty members
- 1 staff member

Determine the Users' Need for Information and Activity

It is useful, but sometimes difficult, to distinguish between information and activity in a conferencing system. In this
context, you should think of information as rather static and important facts that the college wishes to distribute to its
users. Information is well suited for "broadcasting" via bulletin boards. Activities, however, are characterized by dynamic group interaction accommodated in conferences.

When you have decided which usergroups you will serve, you must ask yourself: What kinds of information and activities do each usergroup need? This question needs to be repeated frequently, for instance each term.

You should consider information like:

- general information about your college
- information about the programs you offer
- syllabi
- user-manuals
- schedule of classes
- student, faculty and staff rosters

- examinations
- fees

and activities like:

- social chitchat
- system support
- prospective counselling
- teaching
- pedagogical discussions

The TowerNet Need for Information and Activity: We plan to make information and activities like this available online:

Information on bulletin boards:
- The D.Ed. in Adult Education: General Information
- The D.Ed. in Adult Education: Handbook
- Schedule of Adult Education Classes
- The quarterly newsletter
- Faculty and student directory
- Adult Education syllabi
- Examination announcements and former exams

Activities in conferences:

- One conference for each course
- A conference for general administrative discussions
- A "cafeteria" for social chatter

Decide the Host Computer

The host computer is the nucleus of the system. It can be anything, from a tiny pc to a huge mainframe. Deciding what kind of host to use, is mainly a question of capacity. It is necessary to estimate the number of simultaneous users and accumulated users the college should serve.

Another question to consider is whether to utilize computer equipment already installed for other purposes, or to invest in
brand new hardware. The lower initial cost of utilizing a host computer already in use, often has to be weighed against the
security problems of potential student access to other host computer applications.

Some software solutions allow the system to be distributed among several host computers. This might be a valuable feature for colleges located at several sites.

Choosing a host computer means choosing an operating system as well. Open solutions, such as Unix and MS-DOS, will provide a variety of existing and future software solutions. Vendor-specific operating systems usually have just a few suitable software solutions, or none at all. An electronic

college also will need several utility programs and management information systems adjunct to the conferencing system. These arguments support choosing standard, instead of vendor-specific, operating systems.

A reasonable solution for many colleges will be to lease host computer access from a commercial computer service bureau. This is a solution with a low initial cost, and a short implementation period. Another benefit could be access to an existing base of experienced users. On the other hand, leasing access to a host computer tends to make the electronic college very dependent on the service bureau. The college may have difficulties in building a suitable framework, as described in this article. There are also many examples of colleges complaining about the charges they have to pay for using the conferencing system. An electronic college should continually be in operation, even during nighttime, weekends and vacations. This might be a challenge for many colleges.

The TowerNet Host Computer: We plan to employ the university's Center for Academic Computing's IBM mainframe computer, the CMS operating system, and the Center's user support. This is an obvious choice, because students, faculty, and staff already have user accounts and it will not incur any extra costs for the department.

Decide the Software

People often think that the software is the most important part of a conferencing system. I will warn against that notion. The users, the activities, and the information are in my opinion far more important. So, do not over-estimate the importance of the software; look for a reasonable solution that is easy to implement.

You can choose from several different software strategies. The most obvious to consider are: to buy standard software, to adapt some applications available on your host computer, or customize your own application. Which solution to choose is often dependent on what is available for your host computer. The TowerNet Software: We plan to adapt a system, based on Bitnet's e-mail and Netnews' bulletin and conferencing system. We will customize a user-interface and integrate these applications with the REXX programming language. This is not a sophisticated solution. It is, however, obtainable with minor adaptions and no software investments.

Decide the Network

Some important issues to consider when forming the communication networks are: user-friendliness, cost, baudrate, capacity and versatility.

Most public networks are not very user-friendly. This is a major obstacle for prospective students. Unless we can lower this threshold for prospective users, electronic colleges will never become a success among ordinary people.In my opinion, it is crucial to split the communication cost equally among the students. This is possible by using "green" (800) telephone and PDN numbers paid by the college.The college can implement different strategies for reducing communication costs, depending on the chosen conferencing software and framework. The chosen communication network structure will obviously influence the costs as well. The college should support the baudrates used by prospective
students.The capacity of a conferencing system may be measured by the maximum number of

coherent users. This number is equivalent to the number of communication ports installed. One communication port can support only one user at a time. Over a period of time, however, as a rule of thumb, one port can handle from twenty to one hundred users

An electronic college should aim at versatile communication network solutions. Both local and wide area networks should be supported, as well as public telephone and PDN networks.

The TowerNet Network: Pennsylvania State University has Computer labs, linked to the host computer, on the four actual sites. Students who prefer to use their own computers may dial into the mainframe via long distance telephone lines. The latter is not a viable solution because of the communication costs. We need to find a solution that accommodates local dial in nodes to the mainframe computer.

Decide the Workstations

A workstation should consist of microcomputer equipment including a modem and a local printer. It is necessary to have a local word processor and communication software. A widely debated issue is to which extent the workstation hardware and software should be standardized. Standards: Arguments supporting standards are the possibilities
of making sexy user-interfaces, preprogrammed macros etc. User-manuals can be tailor-made and do not have to support lots of different equipment. Student support on telephone hot-lines and within the conferencing system will be easier. All together, fewer prospective students will be excluded due to technological obstacles. On the other hand, standards supported by a few software and hardware vendors will exclude users with other configurations.

The college could offer cheap or free software. This will create an extra workload of distribution. Another problem occurs when the college develops software which they have to support. An even greater problem occurs when this software is issued in updated versions, and all versions should be supported.

standardization <---------- ? ----> pluralism

Figure 2. The dilemma of standardization

Utilities: The workstation should handle local utility programs, supporting an electronic college. Some examples could be software for computer aided instruction, compilers for programming courses and spelling- and grammar checkers for language courses.

The TowerNet Workstations: Students can use their own computers as well as those at the computerlabs. We recommend YTERM communication software for pc-users and Tincan for Mac-users. The communication software is free of charge. We must, though, establish a routine for software distribution.

Design the Framework Matrix

Now when you have decided which usergroups to serve and what kind of information and activity you would provide, you can establish the Framework Matrix. Write down the usergroups along the

horizontal axis and the information and activity structure along the vertical axis. Then consider, for each cell in the matrix, what access privilege the user-group should have to the corresponding information. You should consider these user privileges: No access, read only access, and read and write access. Sometimes it is useful to consider more subtle access privileges like censored and mandatory access.

The TowerNet Framework Matrix

information/activities	users 1 2 3 4 5 6 7 8 9 0 1 2 3
general information	e w r r r r r r r r r r r
handbook	e w r r r r r r r r r r r
schedule of classes	e w r r r r r r r r r r r
newsletter	e w r r r r r r r r r r r
student roster	e w r r r r r r r r r r r
faculty and staff roster	e w r r r r r r r r r r r
syllabi	e w r r r r r r r r r r r
comprehensive exams	e w r r r r r r r r r r r
prog. plan. in adt. ed.	e n n n n w n w n n n n n
issues in adult education	e n n n n n n n w n n n n
rdg col sts/adults	e n n n n n n n n w n n n
international adt. ed.	e n n n w n n n n n w n n
adt. ed. research seminar	e n n n n n n n n n n w n
profsnl. seminar res.	e n n n n n w n n n n n w
administrative issues	e w w w w w w w w w w w w
cafeteria	e w w w w w w w w w w w w

1 = System operator, 2 = Staff, 3 = Professor, 4 = Professor,
5 = Professor, 6 = Professor, 7 = Professor,
8 = Students in course 506, 9 = Students in course 510,
10 = Students in course 560, 11 = Students in course 570,
12 = Students in course 580, 13 = Students in course 588

r=read access, w=write and read access, n=no access, e=establish

Design a Training, Support and Motivation Program

You must never forget that even an excellent technical system is useless without users. The hardest part of the project is often to help and motivate people to use new and unfamiliar technology.

I recommend that you assess each user-group's needs for training, and if necessary, come up with separate training programs for each of them. You also should consider establishing a group of facilitators to work with usersupport. This group could be responsible for making usermanuals, answering a telephone hotline, provide online help, and do on-site demonstrations.

With proper motivation, people are willing to fight considerable technical obstacles. Without motivation, they tend to reject any learning effort. The ultimate motivation is when people see that their managers benefit from frequent system use. So it is extremely important to facilitate system use for the managers.

The TowerNet Training, Support and Motivation Program: We plan three separate course programs for: local facilitators, faculty and staff, and students. First, the facilitators need intensive training in Bitnet, Netnews, Yterm and Tincan. Then the professors and staff will be offered training in Netnews. Finally the students will be offered courses in Bitnet, Netnews, Yterm and Tincan. I strongly recommend that the faculty teach the student courses. The signal effect and impact of this effort will be superior to any other solution.

Our support system will include a telephone hot-line, local facilitators and distribution of user-manuals. The hot-line and user-manual distribution are already existing computer center services. We hope to appoint internship students for local facilitating.

Faculty, staff and students must perceive this project as a priority department initiative. We must continually promote this through words and action in internal notes, seminars and classes.

Conclusion

Until now, just a few electronic colleges have been established. We see yet a growing interest in this field, and I hope this method can be helpful for the establishment of future electronic colleges. This is not meant to be a foolproof method for success, but rather a guideline to avoid some obvious pitfalls during the process. I wish you good luck; you may need it.

References

[1] M. Paulsen and T. Rekkedal, The Electronic College (NKI Forlaget, Oslo, Norway, 1990)

[2] E. Andersen, K. Grude, and T. Haug, Goal Directed Project Management (Kogan Page, London, 1987)

==========

Date: Wed, 17 Apr 91 13:42:41 EDT
Reply-To: DEOSNEWS - The Distance Education Online Symposium <DEOSNEWS@PSUVM.BITNET>
Sender: DEOSNEWS - The Distance Education Online Symposium <DEOSNEWS@PSUVM.BITNET>
From: Morten Flate Paulsen 814-865-5855 <MFP101@PSUVM.BITNET>
Subject: DEOSNEWS #3

The American Center for the Study of Distance Education
The Pennsylvania State University
College of Education
403 South Allen Street, Suite 206
University Park, Pennsylvania 16801-5202, U.S.A.

Telephone: +814-863-3764 Fax: +814-865-5878

DEOS Editor: Morten Flate Paulsen
Compuserve: 76436,350
Bitnet: MFP101@PSUVM

DEOS Review Committee: Toni Garcia and Philip W. Pinder

Top of Page