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Introduction and Background

Cooperative Education (co-op) at Bowling Green State University (BGSU) has been a significant part of all College of Technology (COT) students' academic program for many years. All students in the COT are required to do three separate co-op's, each consisting of 550 clock hours (minimum) of paid work in their major during a semester long experience. Academic credit is four semester hours for each co-op, or 12 semester hours of the total BS degree. Three levels of co-op are done: 289 as a sophomore; 389 as a junior; and, 489 as a senior.

There is a separate co-op office at BGSU, in the COT, which does most of the co-op administration, working with students and employers to arrange and manage most related functions. After all arrangements are made and the co-op is in motion in any of the three semesters (including summer), faculty are provided with student site assignments and associated documentation to use for site supervision, through the co-op office.

Traditionally a faculty member visits the work site where the co-op student is employed, while the co-op is in progress. Significantly, given faculty loads, research and service commitments, and other realities of the dynamic associated with higher education, it is not always true that faculty in a given major will be able to supervise the students in that particular major. It is also true that in some cases it is possible that non-faculty, staff persons, from the co-op office may do site supervision.

Students at BGSU traditionally do a hard copy co-op report which addresses several work related questions. The questions detail the nature of the co-op responsibilities, the organization, how they were supervised at work, management styles, other typical professional work related activities, and various relationships to academic preparation. Hard copy checklists are provided with the reports and given to faculty at some point in the semester, to help guide a review by the faculty member, in concert with the site visit. Students also furnish the co-op office with their resume and other forms which are completed during the co-op process, primarily done via hard copy.

Most co-op sites are remote from the BGSU area, and many are outside the state of Ohio. There have even been growing numbers of sites outside the US. In some cases the distance may be prohibitive to send faculty or staff for traditional physical supervision. Even where the sites are relatively geographically near the BGSU area, depending on numbers of students to supervise, it can require several days of time for faculty to supervise multiple sites. During the summer, several hundred sites are visited by many faculty, requiring a substantial amount of travel time, dollars for lodging and meals, and so on.

The Question.....

Based on the advent of electronic tools such as email, web-sites and courseware systems, the question has arisen, might it be possible to do co-op supervision electronically, and not do a

physical site visit? It has also been suggested that the co-op may provide an excellent opportunity for assessment of academic programs if properly configured, and that the electronic portfolioing of various co-op materials may be an appropriate way to facilitate and perhaps even enhance program assessment. Thus, electronic supervision of co-op might offer many opportunities within the broader venue of portfolioing and assessment.

The remainder of these writings provide a report about an experimental approach for co-op supervision conducted in spring, 2003. The experiment was focused generally on determining the feasibility of electronic co-op supervision. Although not the primary objective of the current work, wherever possible, comparisons were made to the traditional co-op supervision approach. Also, creation of infrastructure appropriate to the task of doing electronic supervision was done as needed, but again, this was not the primary focus. Finally, recommendations for the future, based on this feasibility experiment, were provided.

It must be underscored that the experiment conducted was definitely of a non-scientific orientation. Most electronic supervision work was conducted by the author, with general knowledge of the Chair of the department. The author has been doing electronic delivery of courses, 100% online for the past several years, and has gradually transitioned to doing most other work online. Thus, when co-op supervision was requested of this faculty member (author) it seemed very natural and appropriate to do the supervision electronically, even though most systems remain oriented primarily to traditional, physical site-visit type approaches.

The report is based on a total of six randomly assigned co-op sites. Sites and related information were originally placed in forms by the author to help organize all work, the General Information and Station Development Tracking (GISDT) and Documentation and Assessment Material Status

Tracking (DAMST) documents. These documents were further discussed in the body of the report, organized around several key elements found to be important based on the experiment:

1. Process followed, including step by step analysis and flow chart.
2. Materials generated.
3. Main observations, discussion and recommendations for the future.

Each area is discussed as needed and appropriate in the report that follows. All documents can be viewed at the author's website, referenced note 1.

Process Followed

Every attempt was made to replicate the procedures followed in traditional co-op site visitations. The exception to this was that when it was believed an improvement on the current traditional process could be made based on electronic systems, this was done, and reported as appropriate. All activities were also shown as time based functions for a standard 15-16 week semester.

Weeks one to four

Various general information was provided at the outset from the co-op office. This included site visitation confirmation documents, report evaluation forms, performance evaluation forms, site development forms, among others. Most were provided in the first month of the semester.

Weeks five to six

Hard copy reports were provided in the normal manner at various dates, but generally during the fourth or fifth week of the semester, as they became available from students.

Weeks six to seven

Contact with students and supervisors was established. This was done initially via email only in an attempt to determine who might respond electronically. After a reasonable length of time, contact was made via telephone where necessary. Only one out of six had not replied electronically within a few days, providing a good indication of who was capable of being supervised electronically rather than physically.

When documentation and/or information was provided it was logged in on the two forms (GISDT and DAMST) to assure that it was accounted for and note when provided. As early information was analyzed and assessed, it was noted that email addresses were not always provided. It was also noted that some information provided by the co-op office was provided in electronic format. During these early electronic contacts, all students and supervisors were asked to indicate any concerns with the electronic supervision approach being pursued. It is significant to note that all who replied (five out of six sites) indicated that they had no problem with this approach, and most were rather enthusiastic.

Weeks seven to eight

Electronic folders were set up for each student to organize all information for safe keeping. All initially provided information and feedback was assessed and determined whether to be adequate for electronic supervision, preliminarily. One site was concluded to be in need of physical supervision since neither the student or supervisor responded electronically. Based on phone contacts the site was ultimately supervised in traditional ways.

Weeks eight to ten

Where needed and deemed necessary, documents were converted/created as electronic forms. This was critical to the success of the experiment, and it resulted in several forms becoming available for subsequent use, evaluation and improvement. It was also noted that these forms were requested as electronic files from the co-op office, but to no avail.

Weeks eleven to twelve

An attempt was made to collect all information in electronic format. This resulted in most students providing routine documentation electronically, including the co-op report, their resume and perhaps others. Many students supplied work examples in digital format, proving to be a key factor in determining whether an on-site traditional visit was needed.

Weeks ten to thirteen

On-site supervisors were provided the student performance evaluation form electronically and all but one filled this in and returned it. A modified site development form was created and most also returned this. Several supervisors also provided work examples digitally. The information form was provided a second time to assure that all information was accurate based on initial inputs from all.

Weeks twelve to fourteen

All information was analyzed and follow-ups conducted to gain final documentation from all sufficient to assure adequate assessment of the site. If documentation provided was deemed insufficient for adequate assessment, a physical site visit was conducted.

Weeks fifteen to sixteen

All documentation and information was turned over to the co-op office and/or Chair of the Department as appropriate.

A process flow chart was provided as a graphical depiction of what occurred, as figure 1.

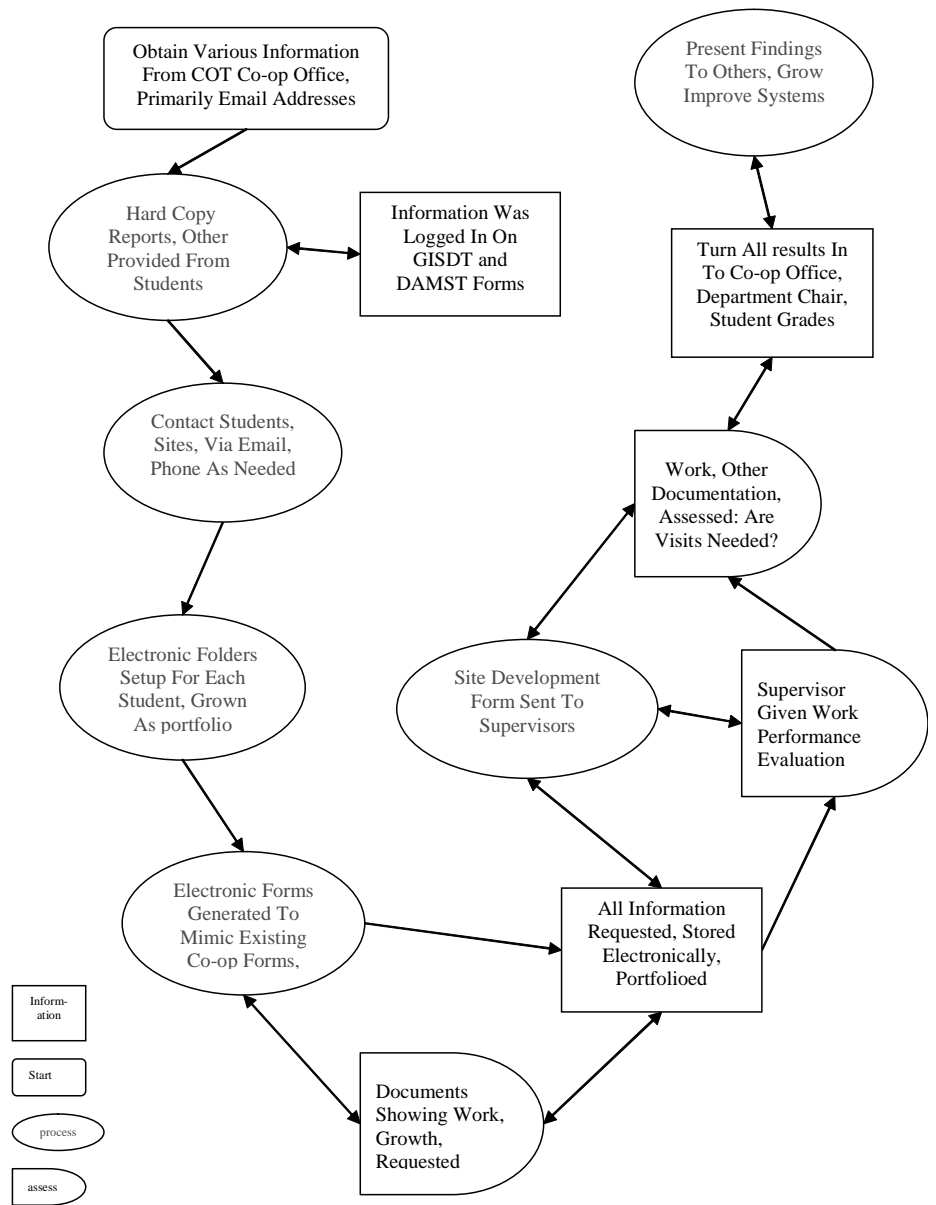
Materials Generated

Several important materials were generated throughout the experiment. These materials were generally in the form of electronic tracking forms, assessment forms, or other types of related systems (see note 1). It is significant to note that these were felt to be required for the successful conduct of the experiment, and that the approaches provided resulted from preliminary analyses of associated work in each form generated, some possibly more obvious than others. It should be underscored that the electronic forms and systems were generated primarily to facilitate an organized and well managed supervision process. Each of these will be discussed in this section beginning with electronic tracking forms, then assessment forms, and others.

Electronic tracking forms

Two electronic tracking forms were required to be drafted for the successful completion of the experiment. These were:

Figure 1. Process flow chart of the electronic supervision co-op experiment.



1. General Information and Station Development Tracking (GISDT)
2. Documentation and Assessment Material Status Tracking (DAMST)

Each of these forms, (see note 1), resulted because information was being collected or made available, and it needed to be organized and managed. Note that all original information collected has been omitted for presentation purposes.

The approaches taken and provided were designed to be comprehensive, and to cover appropriate and related areas of co-op information. The GISDT was the more generic of the two, covering areas such as:

1. Student, supervisor and site general demographics.
2. Co-op level and general areas of responsibility.
3. Main type of assessments conducted or used.
4. Site development type information.

The DAMST, by contrast, was designed to be reflective of when various functions or activities occurred. This was thought to be important since, in some cases when important functions or activities may not occur, it may be a leading indicator of the need for further investigation, and possible physical site visit by a university representative. The DAMST was also designed to assure that when documents were transmitted or accepted by anyone in the process, this could be acknowledged and logged in. Important items/activities/functions shown in the DAMST are:

1. When communications were established with supervisor and student.
2. Was the site visit form completed (hard copy only currently)?
3. Was a physical visit conducted?
4. Was future site development information collected?
5. Was a final report assessed?
6. Was a supervisor evaluation conducted?
7. Various e-documents were also logged in at the DAMST including a resume, work examples, co-op report, performance evaluation, and portfolio materials in other ways.

Both the DAMST and the GISDT had provisions for general comments as appropriate and needed, and each facilitated logging information based on a dating system which provided a fairly robust method of tracking and analysis over time. As an aggregate, the two forms proved to be quite useful in determining if a co-op was under control, or if actions needed to be taken.

Assessment Forms

Two assessment forms were generated, these being the Co-op Performance Evaluation Profile (COPEP), and the Work Site Development, General Assessment Report (WSDGAR). These were designed particularly to mimic the existing forms used in hard copy formats, although modest changes were made to accommodate the electronic approach.

The COPEP form was used to gain information and feedback from the

supervisor on site in a manner consistent with what is traditionally done, except it was done electronically. All supervisors at each of the six sites responded to this request and used the form in a timely manner.

The WSDGAR was used to gain site development information and assess other opportunities which may have been available or developing at the site. These included such areas as graduate internships, faculty consulting and research, and other general feedback which may have not been provided in other venues. Both the COPEP and the WSDGAR were completed in weeks 10 to 13 as shown on the flow chart and discussed earlier.

General Files, Folders

It was found necessary to create an electronic file for each student. This became particularly important as students began to share additional work-related documentation. The work-related documentation was requested and shared to assist in the broader assessment. Ultimately, many folders resembled an electronic portfolio of student work, containing resumes, co-op reports, evaluation forms, power point presentations about work and project activities, various digital pictures and images, standard procedures in excel format, among others.

Main Observations, Discussion and Recommendations for the Future

Several areas surfaced related to the future based on current work, generally revolving around process improvements, existing forms and systems generated, and other related reporting and assessment activities. Each of these areas are briefly presented and discussed, and where appropriate, recommendations made for the future. Also the ultimate question of feasibility of supervising co-ops electronically is addressed as the final area of discussion.

Process observations

The process could have been better facilitated and carried out if persons in the co-op office were invited to be part

of the team, up front, and if all documentation and information were organized in ways which were better oriented to facilitate electronic supervision. This could include:

1. Having email addresses and other information (resumes, co-op reports, site visit forms, etc.) in a format to be shared electronically.
2. Conveying all information electronically to the faculty as early as possible.
3. Making certain that the student and supervisor understand that the supervision process will be done electronically.
4. Having all forms and documents organized and available at a mutually agreed-to electronic site for all to access and use.

The main recommendation is that additional trials be conducted, with the up-front involvement of staff and others related to the co-op office. It would seem important to select various trial groups/sites which may offer particular challenges and opportunities for further analysis, to include distance, alignment of faculty and student disciplines, among others.

Existing forms, other opportunities

Existing forms should be continuously improved based on input from all involved. Other possible forms to be developed/required could be:

1. A weekly/bi-weekly work log to be initiated and provided by the student.
2. Conversion of existing co-op report assessment forms to electronic.
3. Checksheets/lists of all important functions/requirements to assure completion by all involved.

The main recommendation is that forms continue to be trialed and developed but with a broader group of users. Feedback needs to be sought from staff and faculty, as well as students and supervisors in the field. Note that the forms as presented (see note 1) are blank, all information collected was purged to protect the identities of students involved.

Other related reporting and assessment activities

It would seem important to consider development of various additional elements of the process, but more associated with assessment. These are detailed below in the remaining parts of the report.

It may be appropriate to place more emphasis on project deliverables specific to the co-op, similar to what surfaced in the electronic supervision experiment. It was natural to want to know more about what the student had accomplished, and seeing actual examples of the work, digitally shared, was a very natural way to accomplish this. It is also true that this raised issues related to proprietariness, which will require further study. But with appropriate adjustments and handling many if not all of these concerns appeared to have been adequately addressed.

The experiment suggests that it is important to be planning for eventual mature portfolio development. Systems should be prototyped to facilitate students to develop websites where they can display the same materials which were placed in folders for the experiment, but to be posted electronically by the students. These tended to be items which were project specific and included various formats such as power point, still photos and others, but all digital. A main emphasis in the future may be the design, development and support of web sites by students and others to appropriately display these for all to review and assess.

Similar to the previous recommendations, a electronic site should be configured where faculty, staff and others can conduct and house documents for and with students. The site must also host chats and allow other document exchange functions in fairly

seamless ways. While Blackboard may seem to be the logical choice for this, since persons external to the university cannot access the site, due to lack of an appropriate BGSU identification number, etc., this will not work currently. Chat was not used in the current experiment, primarily due to the inability of external persons to log in, but this could be an extremely useful method for communicating during the supervision process.

All programs should be contacted in the COT to communicate what has occurred, and to solicit ideas and feedback related to assessment. The power in electronic portfolio and use of co-op as one of the anchors in assessment, programatically, ought not be understated. This would appear to be a critical element in future assessment paradigms, particularly using an electronic vehicle like is being described here.

One additional observation was that none of the students supervised were majors within the direct discipline the author works in (quality systems). However, the author knew several of the students since most had taken at least one of the author's courses, and this prior knowledge of (and by) the students may have had a positive influence on how the student engaged in the electronic supervision process.

The ultimate question: Is electronic supervision feasible?

The question which was set out to be addressed was related to feasibility of conducting co-op site supervisions electronically. Based on the experiment conducted and reported, it appears that the use of electronic tools for supervision of co-ops is both doable and appropriate. The electronic approach appears to offer many opportunities, even while requiring additional development and analysis. Given potential linkages to assessment

and electronic portfolioing, it would appear that use of electronic supervision may even enhance the aggregate experience for all involved.

Beyond the electronic portfolioing and broader assessment issues and opportunities which appear to reinforce the feasibility of electronic supervision, cost may offer additional reasons to move this direction. While it was beyond the scope of the current work, given that most faculty currently have computers which could be used to supervise electronically, it may be that savings could be realized due to less travel required. This also assumes that all faculty, students and organizations have appropriately configured PC hard and software to enable electronic interaction beyond academia.

Several previous points also suggest savings due to being able to add more sites for supervision to faculty based on reductions in driving time needed. Based on the limited experiment reported, the amount of time to supervise electronically appears to be roughly the same as physical on-site visits, although far more convenient and flexible. Much of the time consumed in the current approach was also of a one time developmental nature. But when chats, maintenance of information, review of student logs of work (suggested for the future), and perhaps other new activities and functions are added, whatever economies of time, and therefore possible savings, thought to be possible based on electronic supervision will likely be minimal.

References

The forms, and entire paper, can be viewed at www.bgsu.edu/colleges/technology/qs

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