Paperless Accreditation:
NCATE is Ready. Are We?

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This report outlines a case of a Upper-Midwestern School of Education’s 2-year preparation for an accreditation visit and their efforts to develop a completely electronic document center. The School of Education (SOE) is an NCATE-accredited (National Council for Accreditation of Teacher Education, 2005) university that prepares K-12 and graduate educators for licensure in a Midwestern State. Many concerns, obstacles and basic principles have been made clearer by this endeavor and this report outlines those issues in some detail.

Electronic accreditation review is still a new idea and not yet embraced by the majority of schools. Any management of electronic media beyond one’s own files on an individual machine can require a larger infrastructure in support. It is certainly not an easy transition and what is required or how to proceed is not self-evident. This report of one such case will hopefully offer some ideas for improving the process and probably of success for schools considering this option. One day very soon, perhaps, an electronic review will be the accepted norm.

For an accreditation review, of course, the document center ideally provides all of the appropriate documentation to support excellence throughout the program. Considering the number and variety of documents suitable to this challenge, any given document center must certainly be unique to the institution and the time. This report does not address the problems and difficulties or successes that may have arisen in identifying or gathering that documentation. This report will focus more specifically on the electronic issues and nature of the product.

What is an Electronic Document Center?

Similar to an electronic portfolio for teachers (Aschermann, 1999), the document center is the portfolio for the institution. Artifacts are collected and organized to demonstrate and document the performance and achievements of the institution. Standards that govern the program can provide a framework for arranging and presenting the contents of the document center (NCATE, 2002; NCATE, 2003). While ten years ago an electronic accreditation review may have been an experimental novelty (Polis, 1994), today’s trend is toward an electronic document center (EDC) (Salzman & Zimmerly, 2002; NCATE 2005) although still not required by NCATE. Essentially, an EDC means that both the artifacts themselves are electronic (word processed documents, PDF documents, graphic files, web site, digitized video clips, etc.) and the delivery mechanism or access system is electronic. Review and examination of materials throughout the document center (DC) is then done via computer.

It can be considered somewhat incidental whether the EDC is in fact on-line (accessible through the Internet) or instead viewable on a local hard disk, CD-ROM or other media, or both. As you’ll read below, there are issues affecting the delivery mechanism but these are still peripheral to whether a DC is electronic or not. In an ideal EDC, no paper is used. Many faculty may still see a VHS tape as technology but it is at least an outdated medium and video material should ideally be made available through the same computer interface as other media. Materials are therefore stored in an electronic format either from their original creation or converted by scanning or digitizing the tactile or paper media into an electronic format. These files are then arranged and stored electronically on a computer.

There are, then, numerous obstacles and issues involved in creating a complete EDC. The production of materials in appropriate media formats is only one hurdle. The development and maintenance of the delivery mechanism, a modern-style hyper-media delivery system, as well as the management of both the site and the accreditation project are important concerns. A delivery or access system is necessary for viewing the materials. With hundreds, if not thousands, of files they must be organized in a manner that makes sense to the accreditation review team and are browsed easily and efficiently by most anyone. This might very likely be the Internet and an Internet browser tool (like Netscape or Microsoft’s Internet Explorer) but not necessarily. Other tools can of course be developed if a programming staff is on hand to write an appropriate software interface but this is not usually available. So, the most readily available tool for hyper-media is often an Internet browser. Whether the EDC is actually placed on-line can be considered incidental.
EDC Director

In this case, the EDC Director was the technology professor – a one-person department – because no one else was technically literate. With consultation with SOE, the EDC Director developed an Internet-based system to be accessed by the standard browser tools mentioned above. The site was also made available on both Macintosh and Windows platforms. To design and develop an accreditation document center, it has been thought that a specialist may be unnecessary and that there may be many individuals at an institution suitable for the task (Zelazek & Garten, 1999). But, an electronic document center (EDC) involves other issues and a technical specialist may indeed be necessary. More on the role and responsibilities of the EDC Director will be discussed below.

Technical – The Overall Format

The dual-platform feature of the EDC was not a difficulty as the Internet is already dual-platform. Making the EDC like a giant website, whether on-line or not, and accessible with a browser tool already allows for both Mac and PC access. Basically, the SOE gathered materials in electronic format and converted materials not already in electronic format by scanning them into a computer, and created a series of web pages with hyperlinks for accessing those artifacts. Use of the EDC can then be just like using virtually any web site.

The cross-platform nature of HTML web pages can solve some problems. But, there are other issues about conflicts between the platforms that will be addressed below.

In this reported case, the SOE used exclusively a PC with Windows XP for developing and managing the EDC. About 50 percent of the faculty personally used Macintosh machines for their own work in developing and submitting documents to the DC.

The old programmer’s adage that the program must be “user-proof” is very applicable here as the EDC must allow for reviewers who may not be particularly computer-literate or even competent with technology. It would be beneficial for the user-interface to be designed in a way that allows the simplest operation with maximum visual clarity. The design hopefully promotes meaningfulness for the standards or principles that the DC represents; this must be clear to the accreditation reviewers. This means, among other things, that a simple point-&-click interface must be readily available throughout the EDC pages.

Figure 1 illustrates the style of how documents are presented on the screen in the document center (EDC). Figure 1 shows only a segment, of course, of an elaborate series of Internet pages for the various programs and standards and elements (sub-standard #1) that must be addressed in the EDC. Note the standards that are described (in bold) as distinct from the actual artifact descriptions (a, b, etc.) which inform the reviewers about what the document is and why it is presented in evidence. The document is accessed simply by clicking the “CLICK HERE” hyperlink.

<table>
<thead>
<tr>
<th>I-A</th>
<th>PROGRAM AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STANDARD – IA: Statement of Standard</td>
</tr>
<tr>
<td>A - #1</td>
<td>Description of the specific standard being addressed. Sometimes this is one sentence but may involved two or three.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
<th>LINK</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Artifact description stating what the document is.</td>
<td>CLICK HERE</td>
</tr>
<tr>
<td>b</td>
<td>Description indicating the document’s purpose here.</td>
<td>CLICK HERE</td>
</tr>
</tbody>
</table>

Figure 1. Sample segment of EDC artifacts accessible via “CLICK HERE” links.

Figure 2 is intended as a slight modification on the EDC layout and design shown in figure 1 above. The primary difference is simply that the hyperlinks are informative and indicate the kind of document being accessed. This can be useful for the accreditation reviewers in addition to the EDC project coordinator so they will know what application will be invoked by clicking. This can not only contribute to some peace of mind (knowing what the computer is trying to do) but can also be helpful in trouble-shooting any failed links.
Regardless of the nature of the hyperlink, the program, standards and elements should be distinguished by color shading and the use of colored text. Color, as a navigational clue, can be as important and useful as text labels, if not more so. Color can establish a theme that, after brief exposure, will help to familiarize the reviewer with the particular area being viewed or assist in finding another.

Figure 3a illustrates this use of color in a black and white medium by shading the rows with and setting the text as black or white in contrast to the shading. The colors throughout a given standard (I, II, III, etc.) should be consistent and differ from colors used in another standard.

Figure 3b illustrates the use of color to distinguish between the various standards and program areas. The colors throughout a given standard (I, II, III, etc.) should be consistent and differ from colors used in another standard.

Figure 3a. Illustration of color by shading in black and white.

Figure 3b. Illustration of the use of different colors by standard and program area.
High contrast between text and background shading will improve clarity and make it easier to read. Of course, which colors are used is entirely an arbitrary choice as there are no accepted color themes for educational standards, NCATE or otherwise.

In general, overall display, which includes the text, the colors, the table-layout, etc., can be created using a simple web page composer tool. This can include something as simple and straightforward as the Netscape Composer tool or the more involved Microsoft FrontPage composer or DreamWeaver. The specific composer tool doesn’t really matter and will inevitably require some basic knowledge of HTML so that the underlying code can be occasionally manipulated manually and directly using a simple editor.

The electronic documents should be segregated into separate folders, one for each standard. The hyperlinks will also be individually created once the artifact’s Indicator and Description are completed in the EDC and the electronic document is available in the corresponding folder. Figure 4 illustrates, with a very limited scope, the hierarchical relationship among EDC web pages and corresponding folders functioning as containers for the EDC artifacts.

![Figure 4. Abbreviated illustration of the hierarchical relationship within the EDC. Artifacts are stored in folders by standard and element.](image)

The artifacts are stored in the various folders and are accessed from the web page for that standard. Also, in figure 4, the entire assembly represents part of only one program area such as a typical undergraduate program or perhaps a Masters Degree program, etc. The same table of contents page shown at the top might also lead to each of the various program areas or, instead, intervening menus might be provided depending on how it is setup.

Once the artifacts are arranged into the folders and the corresponding EDC web page is linked to it, then that HTML file and the artifact file(s) will need to be uploaded ("posted") to the EDC’s Internet site. Any freeware FTP program (file-transfer protocol) is sufficient and recommended for this step in the procedure.

It is not recommended that one use an automatic “publishing” from within a composer tool as the means for posting documents to the web. This process tends to hide the details of the transaction from view. Automated publishing, is viewed by many as a convenience but seems to purposefully automate the task for those who do not wish to or are not able to understand well enough to manage it directly. A simple FTP program will expose the process and allow one to view and manage all files and folders clearly and directly at the web site.

**Technical – Generating Electronic Documents**

While building the EDC web pages and “posting” the artifacts to the Internet is a long and tedious part of the process, the production of electronic artifacts is no less involved. Generally, faculty with the assistance of staff will gather, collect, generate and produce the various artifacts for the DC. They can then be submitted to the persons
involved in developing the EDC. The separation or arrangement of duties and roles for those involved in the development of the EDC will be discussed further below. In any event, support staff will be necessary both to aid faculty in document collection and preparation and also to serve directly in building the EDC.

A variety of file formats will be likely as it was in this case for the SOE. Obviously, it would be best to select a single word processing format to use in the EDC, consistent with the utility that will be available on the machines used by the visiting accreditation team. The SOE utilized three primary formats: word processed documents, Acrobat Reader documents commonly called PDF documents, and the URL’s (addresses) of existing web sites. To a lesser extent, raw graphic files were also included. It is also reasonable to anticipate the use of both plain text and graphic files.

Focus and Highlight

Half way through document collection it was determined that more should be done to target or highlight certain material in order to focus the accreditation team to specific areas of artifacts. This is not an easy thing to do in an electronic document system. If the target is a web site then a specific page URL within the site could be used. If that page has an anchor or named location within it then it may be possible to link directly to an internal part of that web page and thus focus on a highly specific area. Otherwise, one must likely accept and use a web site the way one finds it.

For documents generated within the school, there is some control. The SOE decided to use a yellow highlighter to literally highlight sections of paper documents in order to focus attention on that material. Scanning in color then maintained the highlighted color. For documents still in electronic format, the highlighting feature of Microsoft Word allowed some similar highlighting of specific material but not everyone used this feature.

In any event, linking within the EDC to a specific document still does not necessarily place the highlighted area within the initial screen view. Bookmarks within Word documents can function much like anchors or named locations in web pages and thereby allow direct linking to specific sections of material. But, this would be even more time consuming and require specific skills not available for most faculty. So, this option was not used at all and the problem of focusing attention on specific areas of artifacts remained. The easiest solution was to include some direction in the artifact description to better direct the accreditation team.

Technical – Production and Process

A dedicated computer (PC) was used as the primary work station. It is imperative to maintain one primary work site to avoid duplications and gaps between conflicting work stations. Netscape Composer was used 80% of the time. Less than 5% of updates or changes were done with Microsoft’s FrontPage but specialty features of FrontPage were avoided to keep the HTML code clean and constructed simply. The other 15% of the time, the HTML code was manipulated directly using Microsoft WordPad.

Submissions

The EDC Director prepared specific systems to help the SOE submit materials. One method was a dedicated email address so documents could be submitted as attachments to emails. The faculty was basically familiar with how to do this so this proved to be a convenience. The artifact attachments went directly to the project email address and could be accessed at the work station.

A web site was developed that outlined submission procedures in detail. The SOE faculty were acquainted with the page through a number of workshop sessions. In spite of this, throughout the first year and half most did not use and were generally unfamiliar with the prescribed submission process. Overall, the faculty was inexperienced with or not well-versed in the use of technology, how Internet browsers work, and the subtleties of URL’s, passwords, bookmarks and more.

All submissions were to include specific information required to complete the artifact posting and for monitoring submission traffic. As mentioned, workshops provided instructions and hardcopy fliers provided procedures. For tracking artifacts through the submission and posting process, the web site provided an on-line document submission form. Another option included cut-n-paste text that could be added to the body of an email submission. Thirdly, one could print a PDF form for submitting the information with any paper submissions.
In spite of this support system, the first year included countless errors and critical omissions that caused errors and generally slowed the process. Submissions in error were returned for correction and posting was slow. As deadlines neared, faculty began to learn the process and postings progressed.

Files

One problem area among many was the submission of artifacts with poor or useless filenames. Filename problems included at least the following:

a. missing filename extensions (using filename stem only)
b. the use of more than one period in the filename
c. the inclusion of spaces within the filename
d. a mix of capital and lowercase letters
e. extra long filenames

The last problem was exemplified by one file submission with more than 70 characters in the filename stem. This extreme was not an oversight and was not viewed as unusual by the person submitting the file.

Another problem was the general over sizing of many files as a result of scanning. A paper document might be placed on a scanner and converted to a graphic image. Scaled to view on the screen the faculty person or their assistant doing the work may not recognize that the file is actually much larger. That is, a “page” may be 20 by 25 inches or so and yet still appear to be only 4 by 5 inches because of the smaller viewing area. The image should be resized so that 4 by 5 inches, for example, is the full 100% size. To be more technical, the file may be 15mb when it only needs to be 800K. Faculty and staff had no notion of file sizes and no knowledge of how to modify such attributes. Continuing this problem across several thousand documents can create a very big problem. This issue will be discussed further in the management section below but in this case the SOE retained the many oversized files. Once the problem had spread throughout the many electronic materials, fixing the problem was no longer a real option.

Overall, the extreme lack of technical literacy on the part of the SOE faculty contributed greatly to the many problems of getting materials submitted and posted efficiently. Having only one educational technology professor (EDC Director), was not a sufficient compensation for a considerable lack of techno-literacy among the other faculty, staff and administration.

Backups

Of course, any electronic file system must include a backup system. As files are uploaded daily to the site, the online site itself functioned as the first level of backup. That is, the so-called original set was maintained on the work station computer, so the online version was essentially a second copy. A third backup included occasionally downloading from the internet version to an office computer for storage there. Lastly, CD’s were occasionally burned containing the complete system to date.

One can never have enough backup copies so we recognize that this system included some risk. For example, the only up-to-date file sets were on the work station and online. The second machine and the CD’s were not regularly or frequently maintained. If the work station had crashed then the online version would have been immediately downloaded to update the second computer. Nevertheless, this constitutes, from a traditionally conservative point of view, a deficiency during the EDC development. Numerous backups of the final version were prepared on CD-ROM.

No real problems were encountered in this case due to insufficient backups. This was perhaps due as much to the EDC Director’s availability and supervision than any technical support mechanism.

Posting Files Online

Of course, files have to be uploaded to the Internet web site. This is typically called publishing or posting. Some composer tools provide an automated publishing feature and allow direct editing of files on the web site. That is, one can grab a file directly off the Internet, modify it and publish directly back to the site – all in one process. Unfortunately, this can confuse or confound the process of maintaining the original files in the departmental worksite. Instead, the SOE’s approach was to work directly on the worksite files, simply save the changes to hard disk, and then upload the new files and modifications to the web site. Then, with the use of a dedicated FTP program (file transfer protocol) to upload the files, a greater degree of clarity was maintained. That is, an FTP program allows one to examine each and every folder and file of the web site directly.
Final Format

The primary use of the EDC was directly online. The home page URL was provided to the reviewer and they were able to browse any files or areas as desired. The SOE provided a conference room to the reviewers and therein a range of PC’s and Macintosh computers with online access so the group could examine the EDC.

In past accreditation reviews, computer equipment and some materials were provided by the SOE to the review team at their hotel for after-hours work. In this case, the full EDC was made available on CD-ROM disks so the entire EDC could be examined off-line directly on CD.

Due mostly to the oversized nature of many files resulting from oversized scanning (discussed earlier) the complete EDC was larger than would fit on one CD-ROM and DVD-ROM was not available. The EDC was split up and placed on different disks based on NCATE standards.

Platform Conflicts

Either platform, Macintosh or Windows (PC), was able to access the EDC online as the primary presentation medium, HTML Web Pages, is already cross-platform compatible. The individual files consisting mostly of Microsoft Office formats were also cross-platform.

The production of CD’s was done on PC’s and were therefore consistent with that format. However, burning a CD to be readable by either format was deemed unreliable. That is, a CD burned on a PC might not be completely functional on a Macintosh because of a number of technical reasons not discussed here. So, the entire EDC was transferred to a Macintosh Computer hard disk where CD’s could be created specifically for the Macintosh platform. The review team could then select the particular CD-ROM system of their choice.

Management

The planning for the selection of artifacts and who will judge their evidentiary value for accreditation are outside of the scope of this paper. Such programmatic considerations are typically under the direction of the Department Chair or, in this case, the Dean of the SOE. In any event, it is sufficient to note that a school will commit to a process of data selection and collection.

The issue is what to do with the documents as they are collected or designated for the EDC. The document center cannot be a kind of large, public “dipsy-dumpster” that permits anyone to dump their materials into it. Aside from the issues of controlling and directing document selection, which is presumably under the guidance of the program, artifacts must be technically organized and stored in the electronic realm. Getting the materials from the source to final posting is a critical path and managerial issues lie along the entire journey.

A Collection Center

Artifacts were submitted to a central repository for processing. A singular location served as the site for gathering documents and for creating the electronic media. In this case of a web-based EDC, a dedicated email address served as the conduit to a single computer used to store submitted materials. The machine functioned as the primary work center for the development of the HTML web pages.

A guiding principle in the development of the website was to create a mirror image of the site on the workstation computer. Files and folders were posted to the Internet server exactly as arranged on the workstation. The set of files on the workstation was deemed the originals and all backups, copies, and postings stem from there.

It can be important to have a controlled system, a reliable mechanism for tracking submissions. On numerous instances, discrepancies arose between what was reportedly submitted and that which was posted. Ultimately, materials or correction instructions had to be resubmitted.

Director/Coordinator

The one person designated to coordinate and technically build the EDC was the one technology professor in the SOE. The technical responsibilities of such a task demanded the scrutiny and skills of the technology specialist. Nevertheless, there were numerous problems with this role as discussed below.

Assistants

Two students were hired, one year each, to assist the Director throughout the two year development of the EDC. Responsibilities included scanning paper materials, retrieving artifact contributions and posting documents to the EDC. While they were assigned as assistants to the EDC Director, considerable problems arose in this area of management.
The assistants were lightly trained with no prior experience. They were selected more because of their availability than their aptitude by the office manager (an accreditation officer) and the dean. In addition to general EDC development and management, this factor made close contact with the technology director all the more important. However, the assistants instead reported to the office manager rather than the technology director.

Authority

It is critical to have a sound and respected management team with clear authority and a clear management structure accepted by virtually everyone. The office manager was not technically knowledgeable and regularly misunderstood the specific work of the assistants. The assistants performed discrete tasks through memorized procedural rituals. Nevertheless, the office manager seemed to value this role and acted to protect it. There were many problems because of this confusion of authority. For example, on more than one occasion the office manager distributed unofficial, unapproved and erroneous announcements to the department declaring the EDC status and inviting faculty to take various actions with submissions. On other occasions, the office manager redirected the work load of the assistants with serious consequences for EDC development.

Even when this problem of authority and control was questioned and later challenged, the dean failed to enact changes. As the sole university administrator with any enforceable power and authority, the dean really sets the stage for structure or chaos, responsibility versus interference, and of course success or failure. A great deal of good will seems to have been lost in this and other conflicts in management. The technology director and professor, originally assigned as the lead responsibility for EDC design and development, was not empowered to carry out that role without considerable conflict.

With extensive experience dealing with NCATE reviews, the dean naturally served as the leader of document center content. That is, prescribing evidentiary materials that would be necessary and appropriate to support all aspects of the program. There seemed to be no conflict or confusion about that role and that authority.

Foresight and Planning

Lack of training and knowledge in the use of computer technology was a considerable problem among the faculty and staff. Their lack of sound habits, protocols and computing discipline carried over to all electronic material management and production. With only one knowledgeable technology professor, the need for foresight and planning throughout the department is greater.

Protocols, procedures and various tools to facilitate the development and submission of electronic materials were provided and outlined by the EDC director at the beginning. These were reviewed in subsequent workshops and maintained throughout the 2 year process. However, factors combined to undermine the effectiveness of these tools. Faculty ignored the protocols, failed to understand and learn procedures and generally procrastinated creating additional work for the director and causing considerable delay. Additionally, the lack of a supported authority structure seemed to undermine any sense of urgency or legitimacy in the technical director’s guidance and leadership.

Foresight and planning can be the critical first step in a successful EDC program. "The first step of providing evidence for the Continuing Accreditation on-line sets the tone for preparing documents and exhibits electronically. " (Harry, Brown, & McCullogh, 2001, p. 9). For the SOE, this seemed to be lacking in spite of an experienced dean and a considerable investment in an independent accreditation consultant. Certainly a greater sense of team identity with clearer roles would have greatly improved the efficiency and quality of the final product. Perhaps, better trust in the technical advice of the technology expert would also have improved both the process and the product.

Final Recommendations

One of the factors missing from the accreditation visit is some concern for the amount of time a given school devotes to preparation for their accreditation visit. If school A passes with near perfect results, they are to be commended. If school B passes with a recognized limitation or two, they may be pleased but plan to spend more time in preparation next time.

But, what if school A spent literally twice as many faculty-hours in preparation as school B? More to the point, school A might spend many thousands of faculty hours (as was done in this case study) gathering documents if not creating documents and, in a sense, living exclusively for the sake of the document center. This is contrary to the real purpose of the institution. That is, the purpose is to deliver a quality educational experience and documenting that is a secondary mission.
The analogy that seems appropriate is how a student might get a very high score on a final exam by memorizing all of the answers but get far less from the overall course experience than another student who more literally embodied what the course intended yet missed a few more answers on the test. The real point in the course is better represented in the latter student who will continue to benefit from the experience in the future.

There are problems in schools focusing on the accreditation process (Adams, 2004). Schools can erroneously place the real delivery of the quality educational experience behind their efforts to document it. The accreditation process should consider the amount of faculty-hours devoted to the preparation for the accreditation visit. This argument is based on the premise that (a) it is possible to compromise the quality of an institution and it’s program by an extreme preoccupation with documentation and illustration of how standards are being met; and (b) still conceal or fail to reveal in that demonstration the preoccupation and exclusivity in creating it.

Finally, a competent technology leader should be available to direct the design and production of the EDC and should be given the authority to direct the use of that technology. The entire team structure should be recognized and accepted by everyone and enforced by the dean.

References

Adams, A. (2004). Teachers College Record, Date Published: October 31, 2004


