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Piloting a Digitized Evidence-Based Assessment System

Abstract

One of the most difficult challenges facing university-based teacher education programs is to document program effectiveness. Demands for supporting data come from a number of different constituencies including state legislators, hiring officials and parents, and state officials. The American Association of State Colleges and Universities (AASCU) survey (Wineburg, 2006) identified that institutions are besieged by the demands for data and frustrated by the time and energy required to collect and retrieve evidence. A primary recommendation emerging from the AASCU findings focused on the proactive development of institutional data systems that guide program progress and demonstrate the achievement of educational outcomes for both teacher quality and student learning. The purpose of our paper is to report on the development of a pilot effort in Pennsylvania to digitize practice-based evidence for documenting teacher candidate and program quality. [*excerpt*]

Keywords

educational assessment, education programs, American Association of State Colleges and Universities, digital assessment

Disciplines

Education | Educational Assessment, Evaluation, and Research

Piloting a Digitized Evidence-Based Assessment System

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One of the most difficult challenges facing university-based teacher education programs is to document program effectiveness. Demands for supporting data come from a number of different constituencies including state legislators, hiring officials and parents, and state officials. The American Association of State Colleges and Universities (AASCU) survey (Wineburg, 2006) identified that institutions are besieged by the demands for data and frustrated by the time and energy required to collect and retrieve evidence. A primary recommendation emerging from the AASCU findings focused on the proactive development of institutional data systems that guide program progress and demonstrate the achievement of educational outcomes for both teacher quality and student learning. The purpose of our paper is to report on the development of a pilot effort in Pennsylvania to digitize practice-based evidence for documenting teacher candidate and program quality.

University-based teacher education programs are faced with the challenge of proving their effectiveness (Finn, 2003; Paige, 2002) under NCLB legislation (2001). While many of the specialty areas standards have developed frameworks and recommendations for collecting evidence to document teacher preparation program effectiveness, little research exists that addresses technology-based organization for creating an appropriate data retrieval method. Leaders in some states (notably Louisiana, Virginia, Ohio, South Carolina, Georgia as well as California State University, Texas A & M University and City University of New York) are now working with program constituents to build and pilot technology that will retrieve data and also allow national data sharing (Wineburg, 2006). However, the need for operationalizing data collection

efforts state by state is important for developing local assessment cultures for producing quality teachers and measuring the effectiveness of individual programs (as recommended by Wineburg , 2006). Our work describes the process being developed and piloted in Pennsylvania for designing a digital system to collect and retrieve a variety of evidenced-based data for documenting program effectiveness.

As a result of the 2005 21st-Century Pennsylvania Technology Summit, an Electronic Major Program Review Task Force was established. The Pennsylvania Task Force included representatives from state institutions, state affiliated institutions, and private institutions, all with varying degrees of technology aptitude and major program review experiences. The Pennsylvania Department of Education (PDE) charged this task force to investigate various products which could evaluate and support institutional electronic portfolios. However, the task force realized early that this was the solution and decided it was in their best interest not to rush towards the solution until the process was captured. In other words, the task force needed to determine the state's minimum functionality requirements before proceeding with PDE's charge.

In January of 2006 the task force convened in order to create a timeline which included; creating, disseminating, and analyzing a survey to determine institutional needs, capturing the electronic major program review work flow, and designing a decision-making matrix to align with the workflow. As the data show, due to the amount of time and costs, 63% of the surveyed institutions believed that a shift to a computer-based model would be useful. The Task Force also learned that data storage and back-up was a concern to many institutions. We used this information to justify our decision to initiate the process of recording the electronic major program review work flow.

In order to ensure that the work flow would be transportable to other institutions and to meet PDE's mandates, the task force agreed to simplify and capture Pennsylvania's minimal functional requirements in a comprehensive work flow. The work flow is now in its seventeenth revision. These revisions stemmed from extensive, ongoing communication with members of the Task Force, other higher education contacts, and PDE officials. The Task Force feels strongly that the proposed workflow does in fact capture the minimum functional requirements. Consequently, the workflow is an asset when discussing institutional needs with various portfolio vendors and/or instructional technology departments.

In order to ensure clear comprehension of the attached work flow, the task force has created a key. For example, the upper left corner of each page of the workflow captures a new perspective of the process – based upon the identified user targeted including: candidate (student), instructor (college faculty member), program development personnel (PDP – group who designs teacher education program), certification officer (liaison with PDE to advise education departments of regulation changes), pre-visit reviewer (outside professional), and on-site reviewer (outside professional), the numbers and letters in the boxes are labeled to identify where and how the process flows (these will also serve as a reference on the decision matrix). A brief description of the workflow process for each identified user follows:

Candidate Workflow

- Candidate creates artifact
- Candidate uploads artifact
- Candidate associates artifact with standard/guideline
- Candidate provides rationale
- Instructor reviews artifact and works with candidate to create a sufficient artifact, sufficient rationale, sufficient support for said standard/guideline
- Revision process continues until candidate meets instructor's recommendations

- System stores artifact

Instructor Workflow

- Candidate submits artifact
- Instructor reviews artifact to determine if revisions are necessary
- Instructor and candidate work together through revisions
- Instructor reviews the degree of support the artifact provides for said standard / guideline – instructor supports candidate with the revisions
- Instructor reviews rationale to determine if it sufficiently supports artifact – instructor supports candidate in the revisions
- Instructor may provide any additional comments to the artifact
- Instructor approves the artifact
- System stores artifact by program into portfolio with aligned standard/guideline, submitter, course, and semester

Program Development Personnel (PDP) – *would have worked hard BEFORE the students' artifacts even entered the picture if programs are already in place.*

Program Development Personnel Workflow

- PDP determines which standards/guidelines map to each course
- Based on these mappings, PDP notifies instructors of the need for course syllabus
- Instructor submits syllabus for PDP review
- PDP reviews proposed syllabus and works with instructor to make necessary revisions
- PDP maps course to align with other guidelines (SPAS, INTASC....)
- PDP works with instructor to determine agreement
- System stores syllabus by course and semester

Certification Officer (CO) Workflow

- CO selects the 4 best artifacts for each standard/guideline and instructs system to create self study draft report organized by standard/ guideline and lists supporting artifacts/rationales
- CO checks for problems
- There are three problem areas:
 - Course / syllabi
 - Are there syllabi?
 - Are there artifacts?
 - Is the objective clear? Has the objective been met with the artifacts?
 - Artifact
 - All artifacts must have rationales
 - Artifact shouldn't be used more than 4 times
 - Standard/guideline
 - What standards/guidelines need artifacts?
 - Use the best of the 4 artifacts
 - Each standard / guideline shouldn't have more than 4 supporting courses

- What standards/guidelines still need mappings?
- Ready to be viewed by CO; first by program, by standard/guideline, by course

Pre- Visit Review

- Reviewers can view program just as CO does
- Review team members have ability to add internal (review team only) or external (review team + institution) comments to artifacts
- Reviewer determines if standard / guideline needs onsite review or needs more information
- Reviewer asks institution for additional information
- Reviewer flags standard as needing onsite review
- Reviewer instructs system to apply comments and create a preliminary report for use during onsite review
- Review team chair examines these preliminary reports

On-Site Reviewer

- Using preliminary report as a guide, reviewer conducts on-site interviews and makes additional comments to artifacts
- Reviewer determines if even more information is needed – may elicit this information from institution
- Reviewer indicates the finding is *met*, *met with concern*, or *not met*, adds comments to the finding and marks artifacts which support the finding

There are two types of reviewers – *Program Reviewer* and *General Standards Reviewer* – these processes parallel one another and duties are outlined below:

Program Reviewer

- Reviewer comments to peers about any concerns or material in their domain
- Reviewer has system create a draft report using this additional information
- Reviewer has system create notes of the 4 general standards (design, field experiences, exit criteria, and faculty)
- Reviewer works to modify report to submit to general standards reviewer

General standards reviewer

- Reviewer comments to peers about any concerns or material in their domain
- Reviewer has system create a draft report using this additional information
- Finally both reviewers submit report to team chair
 - Any questions or comments from team chair must be addressed
- Team chair edits and synthesizes report
- Team chair submits report to PDE liaison

Finally, the PDE liaison is able to comment and work with each institution's contact person in order to streamline the process; to save time, energy, and money. Rejoinder process would be modified to include electronic correspondence once off-site, similar to the pre-visit workflow. We have yet to capture this process in a workflow as we are waiting for more substantial feedback from PDE.

The work flow visually describes the process in a thorough manner, but if education departments are in fact investigating various service providers, a decision matrix must be proven out to show the consistency with which the system worked. The attached decision matrix does in fact assist institutions as they try to determine which service provider meets their needs. The reliability of the Task Force's decision matrix was confirmed as seven different service providers were investigated. This proven out process required each task force member to choose a service provider they had experience with or were familiar with. Then the Task Force reconvened to share the results and draw conclusions in regard to how well the decision matrix worked, the areas of the decision matrix which needed to be added, removed, or reworded. Finally, a simple, uncomplicated decision matrix aligned with the PDE approved work flow can serve as a communication tool between educators and technology experts.

At this point, the work flow has been shared with various PDE officials, the PA State Deans and Chairs, and other higher education faculty who have expressed interest at three different state meetings. Teacher preparation departments are using the decision making matrix to meet their needs. Some of the departments are building their own data system with their instruction technology departments, some departments are building wraparounds to supplement current course management systems, some departments are taking this initiative to a higher level and seeking support from their entire institution, and some departments are investigating commercial providers to find the right match.

Currently at Gettysburg College we are working with *Foliotek* and sharing our workflow in order to use their current product to meet our needs. During the Spring 2007 semester our education department will work closely with *Foliotek* consultants in order to

refine their current electronic portfolio process to meet our institutional needs. We plan to invite students to participate in the pilot program Fall 2007.

Our work provides one model for examining how to digitally evaluate the effectiveness of teacher preparation programs. As programs are challenged to document qualified and effective teachers, it becomes more important to explore measures which can increase program effectiveness, yet reduce the time required for data entry and evidence retrieval. This comprehensive, digital method of evaluating candidate and program effectiveness grants all stakeholders the time to reflect, revise, and improve teacher preparation programs. Consequently, a digital format will allow institutions to share appropriate evidence with interested constituencies. Having the evidence organized in an easy to retrieve, digital format, facilitates program conceptualization, planning, assembly, analysis, interpretation, and use of evidence for accountability and program improvement that programs can be improved as recommended by Wineburg (2006).

Our work examines Pennsylvania's effort to capture a comprehensive work flow for teacher preparation stakeholders to use as they analyze various service providers. There is much potential for institutions to use our decision matrix as they analyze various commercially produced software products for digitizing evidence-based practice, but as our experience shows, there are many challenges to overcome at the institutional level, particularly in the area of funding and support for developing and choosing appropriate digital systems. Using our model and decision matrix, institutions may decide to develop a "home-grown" program to digitize evidence. With an increasing emphasis on accountability, teacher education faces increased scrutiny for aligning teacher certification with learning standards and our work offers options for using digital

methods to inform assessment practice while meeting the needs of teacher candidates, higher education faculty, program reviewers and accrediting agencies.

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Appendix A Pennsylvania Task Force Survey Results

**Electronic Portfolio and Competency Tracking Task Force Survey
 Pennsylvania Department of Education: 21st Tech Summit 2006
 (Summary of the results.)**

Survey Overview:

Population: 97 institutions that are reviewed under the PDE - 43 responded

1. How many teacher certification preparation programs does your institution certify through PDE?

Responses	N	%
0	1	2.33 %
1-10	17	39.53 %
11-20	16	37.21 %
20+	9	20.93 %

2. Beyond the normal operating budget, what additional costs did your institution incur for the last Teacher Preparation Major Program Approval process?

Comments varied but the cost ranged from \$1,000-\$115,000. Some figures also included NCATE Reviews.

3. Could a shift from a paper-based Teacher Preparation Major Program Approval to a comprehensive computer-based model save your institution money?

Response	N	%
Strongly Disagree	2	4.65 %
Disagree	4	9.3 %
Neutral	12	27.91 %
Agree	16	37.21 %
Strongly Agree	9	20.93 %

4. On the last Teacher Preparation Major Program Approval, how much time did your institution spend? (include total of all personal support)

Responses	N	%
0 < 100 hours	0	0 %
100 < 500 hours	13	30.23 %
500 < 1000 hours	15	34.88 %
> 1000 hours	15	34.88 %

5. A shift from a paper-based Teacher Preparation Major Program Approval to a comprehensive computer-based model would save my institution time?

Response	N	%
Strongly disagree	3	6.98 %
Disagree	10	23.26 %
Neutral	8	16.6 %
Agree	16	37.21 %
Strongly agree	6	13.95 %

6. A shift from a paper-based Teacher Preparation Major Program Approval to a comprehensive computer-based model would be useful.

Response	N	%
Strongly disagree	0	0 %
Disagree	2	4.65 %
Neutral	14	32.56 %
Agree	18	41.86 %
Strongly agree	9	20.93 %

7. Would you be willing to rely on a comprehensive web-based model for the acquisition, review, and evaluation of materials from alumni, students and faculty?

Response	N	%
Yes	15	34.88 %
No	7	16.28 %
Maybe	21	48.84 %

8. Select the groups that you would trust with the storage and backup of your institutions PDE program approval materials (Check all that apply):

Response	N
%	
Your college / university's education department	34
79.07 %	
Your college / university's technology department	28
65.12 %	
A state funded college / university technology department	8
18.6 %	
PDE's technology department	18
41.86 %	
An independent contractor	11
25.58 %	

9. Would you trust the transfer of materials over a secure network between your institution and the PDE?

Response	N	%
Yes	28	65.12 %
No	0	0 %
Maybe	15	34.88 %

10. Would the certification officer be willing to collect candidate artifacts through a web-based mechanism?

Response	N	%
Yes	19	44.19 %
No	4	9.30 %
Maybe	20	46.51 %

11. How does your certification officer collect candidate artifacts (check all that apply)?

Response	N	%
Collected through faculty	38	88.37 %
Collected directly from candidates	32	74.42 %

Appendix B Decision Making Matrix

- **Item:** refers to the specific item number of the PDE certification workflow.
- **Possible:** Respond: Yes, No, Workaround, NA
 - Yes – the workflow works within the system
 - No – the workflow does not work within the system
 - Workaround – The workflow works within the system provided the end user goes through a non-intuitive process or a process that would require significant setup.
 - NA – Not applicable to the software
- **Process:** Refers to the actual process as defined in the workflow
- **How is it done:** Refers to the process performed in the computer based system.

Item	Possible	Process	How is it done
1a		Candidate creates artifact (document, music, presentation, etc.)	
1b		Candidate uploads artifact to the system	
1c		Candidate associates Artifact with guideline	
1d		Candidate gives rational why it supports the standard / guideline	
1e		Instructor Decides if rationale is sufficient	
1f		Instructor decides if it supports said standard guideline	
1g		Instructor decides if artifact is sufficient	
1h		Candidate revises rational based on instructor feedback	
1j		Candidate revises artifact based on instructor feedback	
1k		System stores artifact by program into e-portfolio with correct standard / guideline, submitter, course, and semester	

Item	Possible	Process	How is it done
2a		Candidate submits artifact from the course	
2b		Instructor reviews student artifact	
2c		Instructor decides if the artifact is sufficient?	
2d		Candidate revises artifact	
2g		Candidate revises artifact	
2e		Instructor decides if artifact supports the said standard / guideline	
2f		Instructor reviews artifact with the candidate and suggest changes	
2h		Instructor decides if the rationale is sufficient	
2i		Instructor asks candidate to give a better rationale or inputs instructor's own rationale	
2j		Candidate revises the rationale	
2k		Instructor provides additional comments on the artifact	
2l		Instructor marks artifact as approved	
2m		System stores artifact by program into eportfolio with correct standard / guideline, submitter, course and semester	

Item	Possible	Process	How is it done
3a		Program Development Personnel determines which standards / guidelines map to each course.	
3b		Program Development Personnel notifies instructor of the need for course syllabus	
3c		Instructor submits syllabus and assignments for Program Development Personnel review	
3d		Program Development Personnel determines if syllabus lists standards / guidelines being taught and if the assignments in the course meet the competency address by the standards / guidelines?	
3e		Instructor edits syllabus	
3f		Program development personnel maps course requirements (from PA academic, INTASC, and SPAS standards / guidelines)	
3g		Does Instructor agree with course to requirement mapping	
3h		Instructor modifies mapping	
3i		System stores syllabus by course and semester	

Item	Possible	Process	How is it done
4a		System database of artifacts, syllabi, and standards / guidelines	
4b		Certification Officer selects 4 of the best artifacts for each standard guideline	
4c		Certification Officer checks for problems	
4d		View by Program	
4e		View by specific standard guideline, scheme	
4f		View by course	
4g		Which course still need syllabi	
4h		Remind course instructor about it	
4i		Which courses still need to submit artifacts -Student should put course name in title of the artifact submission	
4j		Does the course meet the stated objectives	
4k		All artifacts must have rationale	
4l		Artifacts shouldn't be used more that 4 times per standard / guideline scheme	
4m		What standards / guidelines still need artifacts	
4n		Standards / guidelines can't have more than 4 artifacts	
4o		Quality check: use the better four of all available artifacts	
4p		Each standard guideline can't have more than 4 supporting courses	
4q		What standards / guidelines still need mappings	

Item	Possible	Process	How is it done
5a		View by program	
5b		View by specific standard / guideline scheme.	
5c		View by course	
5d		One month before review, review team will access site to check all documents that have been approved by officer	
5e		Review team members add any internal or external comments to artifacts	
5f		Reviewer determines whether standard / guideline needs onsite review	
5g		Reviewer determines if more information is needed about a standard or guideline	
5h		Reviewer asks institution for any needed materials	
5i		Reviewer instructs system to take the comments and create a preliminary report for use while onsite doing reviews	
5j		Reviewer flags as needing onsite review	
5k		Review team chair examines preliminary reports	

Item	Possible	Process	How is it done
6a		Reviewer instructs system to take the comments and create a preliminary report for use while doing on site reviews	
6b		Reviewer performs onsite interviews making additional comments to artifacts	
6c		Reviewer determines if more information is needed	
6d		Reviewer elicits more information from institution	
6e		Reviewer makes a finding, adds comments to the finding, and marks artifacts supporting the finding	
6f		Reviewer has the system create a draft report of the program using the finding and collected comments	
6g		Reviewer has the system create notes of the 4 general standards using collected comments	
6h		Reviewer comments to peers about concerns and any material touching their domain	
6i		Reviewer edits the draft report	
6j		Submit to general standards reviewer	
6k		Reviewer submits report to team chair	
6l		Does the team chair have any questions or need additional certification	
6m		Reviewer modifies report	
6n		Reviewer has the system create a draft report of the general standards using the finding, collected comments, and notes from the program reviewers	
6o		Reviewer comments to peers about concerns and any materials touching their domain	
6p		Reviewer edits the draft report	
6q		Reviewer submits report to team chair	
6r		Does the team chair have any questions or need additional clarification	
6s		Reviewer modifies report	
6t		Team chair edits and synthesizes reports to create a final report	
6u		Team chair submits final report to PDE liaison	