FUNCTIONAL SPECIFICATIONS OF A
TEACHER EDUCATION DATA MANAGEMENT SYSTEM
State University of New York

Background

Specifications for a Teacher Education Data Management System (or Teacher Education Candidate & Program Assessment System – TECPAS) were developed on November 16, 2004 in Albany New York. A representative group of twenty-eight faculty, administrators, and institutional researchers from sixteen SUNY teacher education institutions met to discuss the functional needs of a data system which would support both candidate management requirements and program assessment. The event was supported by a U.S. Department of Education’s Fund to Improve Post-Secondary Education (FIPSE) Grant to SUNY.

The goal of the meeting was to identify the key operational and analytical requirements of a computing system that would support effective campus-based teacher education assessment and candidate management. The specification/functional requirements have the potential for assisting SUNY’s teacher education institutions in collaboratively implementing solutions to common system data management challenges/issues. The specifications can also be used to guide independent implementation efforts by interested teacher education institutions.

Access and Security

Faculty and program coordinators/directors should have the same access to TECPAS as they do to other administrative systems at the campus, such as the student information system. At some institutions, this may be through a web portal or through an on-line interface. Access raises several security issues:

1. The interface needs to be secure and only assessable to those authorized to work with the data. Ideally, the system should support varying levels of access depending on the user (i.e., each candidate only sees her/his own record; faculty only see records of their students or advisees; cooperating teachers only see their own assessment input; as appropriate, administrators may see all individual data or only aggregated data). Ideally, access levels for on-campus users of TECPAS would always be identical to the user’s access level in the existing institutional student data management system.

2. Ideally, the TECPAS interface would look and function like existing campus administrative support systems.

3. Access would be through a user ID and password – Candidates, faculty (including adjunct faculty serving as college supervisors), and school-based cooperating teachers/internship supervisors. Ideally, the TECPAS ID number/password would always be identical to the ID number/password for other institutional data management system.

4. TECPAS should have the capability to link to other SUNY information about the student.

5. TECPAS needs to identify matriculated students in programs leading to recommendation for education certification, even if the student is not formally designated as “education majors.” Education programs have a unique NYSED registration number that needs to articulate with the campus’ approved program.

6. TECPAS should have the capability to incorporate the unique identifiers for students used by other systems, such as a NYSED-assigned ID or a national ID (IPEDS). Eventually, this ID number should
link students to certification and employment data maintained by SED; also, any future identifiers linking students to the P-12 system.

Operational vs. Analytical Functionality

TECPAS requires a unique blend of operational and analytical capabilities. Candidate reporting should be from an up-to-date operational data source. Faculty and students utilizing TECPAS need access to the most current information concerning a student’s progress toward program completion. Analytical reports, on the other hand, are better stored in a data warehouse environment, where reports can be assembled over time and information stored in a stable/consistent format.

1. Program-level analysis/reporting requires the ability to assemble consistent sets of data over time. The best environment for doing this is a data warehouse which is updated daily, weekly, monthly, etc.

2. Operational functions should interface real time with other campus databases that store important data for candidate management, e.g., course grades. TECPAS needs to be able to capture many different kinds of data created by multiple areas/offices; and import data on a regular batch basis from various external sources of candidate performance data. Internal sources of data include (see diagram): admissions data (HS average, SAT/GRE scores, etc); basic demographic data (race, gender; family education background, etc); directory information (current address, email, phone number, etc); financial aid data (candidate SES, etc); course grades and other transcript-related data; various GPAs (cumulative, content area, pedagogy, etc); field placement information (urban/high needs, etc); judicial review status; academic integrity status; campus security review status; completion of required departmental/program critical performance tasks, surveys; links to samples of actual candidate work. External data sources for individual candidates (likely to be obtained through SUNY System) include: NYSTCE scores/subscores from NES; NYSED certification and employment history; results of alumni and employer surveys (e.g., EBI, etc).

3. TECPAS must capture all data electronically, when and where it is entered the first time; no data should be keyed in more than once.

4. TECPAS should support input of data from different applications, such as TaskStream, LiveText, iWebFolio, CourseSpace, and Blackboard (e.g., faculty evaluation rubrics containing numerical and/or qualitative data on performance or products of individual candidates; submission and storage of electronic products from candidates).

5. TECPAS should support the import of survey information, both campus-wide (e.g., NESSE) and specific program/department surveys. These data may be linked to individual candidates, or collected anonymously. The system must handle survey information for both individuals and anonymous groups identified and selected in various ways (e.g., by program or other demographic characteristic, randomly, or combination).

6. TECPAS should also accommodate input of data post completion (e.g., NYSTCE scores, alumni survey results, results of post-graduate evaluation of candidate performance by employers, etc).

7. TECPAS should store candidate contact information; records of informed consent; and employer contact information (e.g., for non-teacher education post-graduate programs). Link to Alumni Foundation databases for some data might be desirable.
Candidate Management/Reporting

1. TECPAS needs to track performance of individual students against program standards over time at defined checkpoints. Real-time candidate report must identify assessment standards, observable measures for each, and display if the standard has been met/not met.

2. Candidate-level reporting for undergraduate transfers and graduate students entering initial programs must be as complete as that of native undergraduate candidates. TECPAS must allow electronic transcript evaluation with calculation of content GPA and entry/importation of other relevant data (e.g., NYSTCE scores) for transfers and entering graduate students.

3. TECPAS should utilize whatever degree audit functionality exits in the institution’s operational system, e.g., Banner CAPP or equivalent in PeopleSoft, etc.

4. Meeting some standards will depend on a course instructor entering assessment data on critical performance task(s) defined by departments/programs. The system must have the capacity to prevent faculty from entering overall course grades into Banner (or other student data management system) at the end of the semester if assessments of critical performance task(s) within the course are not entered first (e.g., a course grade for student teaching should not be finalized until the faculty supervisor and cooperating teacher have completed the online student teaching performance rubric). [This may require more discussion as TECPAS cannot slow normal administrative processing on campus, e.g., issuing student grades.]

5. Candidates, faculty, and college administrators should be able to view the appropriate up-to-date candidate-level record(s) online at any time.

Program Analyses/Reporting

1. TECPAS must have ad hoc reporting capability with a variety of standard reporting tools, e.g., Cognos, Access, Discover, etc.

2. TECPAS needs the capability to mine data and drill down through parameterized characteristics to individual students. Need capability to aggregate and disaggregate data by program and candidate characteristics (e.g., transfer vs native, candidates who failed a practicum experience vs those who did not).

3. TECPAS needs the ability to select subsets of individuals based on candidate characteristics, and random samples of defined sizes within defined subsets, for analyses within TECPAS and for export to other analytical applications.

4. TECPAS needs the capacity to link, sort, select and export data from various sources within TECPAS in format(s) suitable for subsequent statistical analyses by SPSS or other applications.

5. TECPAS needs the capacity to backfeed data from TECPAS into institutional student information systems, (i.e., backfill Banner).

6. TECPAS needs the capacity to report progress of individual candidates and groups of candidates over time on related assessments (e.g., performance on early to late practicum and student teaching assessments of INTASC skills).
### Candidate Level Reporting

**Name**

**Student ID**

**Demographic & Academic Information**
- Age, gender, race, SES, program, transfer credits, credits earned, GPA...

**Performance Report**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Time (Checkpoints)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>C…</td>
<td>C…</td>
</tr>
</tbody>
</table>

| 2        | A                  |                  |
|          | B                  |                  |
|          | C…                |

| 3        | A                  |                  |
|          | B                  |                  |
|          | C…                |

| 4-999?   | A                  |                  |
|          | B                  |                  |
|          | C…                |

---

### Program Level Reporting

**Candidate Group 1**

**Candidate Group 2**

**Candidate Group 3**

<table>
<thead>
<tr>
<th>Mean Score ± SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>200 250 300</td>
</tr>
</tbody>
</table>

**Performance Criteria**

<table>
<thead>
<tr>
<th>Total</th>
<th>Subarea 1</th>
<th>Subarea 2</th>
<th>Subarea 3</th>
<th>Subarea 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>220</td>
<td>250</td>
<td>270</td>
<td>260</td>
</tr>
</tbody>
</table>

---

### Options for Design of Candidate and Program Data Management Systems

**Sources of Data**

- **Banner (Oracle, PeopleSoft, HomeGrown)**
  - Candidate Personal & Demographic Information
  - Course Grades, Financial Aid (SES)
  - GPA (cum, content major, pedagogy, gen ed, etc)
  - SAT, HS GPA, GRE
- **NES/SUNY**
  - LAST scores & subscores
  - ATS/W scores & subscores
  - CST scores & subscores
- **Field Placement Office**
  - School characteristics
  - Urban/Rural
  - Diversity
  - SES
  - Completion
  - High Needs
  - English Language Learners
- **Dept/Faculty Web Interface for Data Entry (BlackBoard, CourseSpace, etc)**
  - ST Performance Ratings
  - Teacher Work Samples
  - Unit/Lesson Plan Rubrics
  - Admissions/Candidacy Ratings
  - Other Critical Performance Tasks
- **Candidates Portfolio Software (LiveText, iWebfolio, TaskStream, Homegrown)**
  - Candidate Work
- **EBI/SUNY**
  - Alumni/Employer Survey (EBI)
  - Other
- **NYSED/SUNY**
  - Certification History
  - Employment History
- **Misc**
  - Judicial Review, Academic Dishonesty, Professional Reviews
  - Transcript Evaluations
  - Surveys of Individuals & Groups