A 5 Year Study on Faculty Adoption of Internet Integration: Uses, Motivators, and Hindrances – What do they mean?

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Study Setting
# Sample Size and Response Rates

<table>
<thead>
<tr>
<th>Year</th>
<th># Survey Participants</th>
<th>Faculty Population</th>
<th>Survey Participation rate</th>
<th>% of Self-Reported Internet Instructional Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>YR1: 1998-99</td>
<td>179</td>
<td>297</td>
<td>60%</td>
<td>37.99%</td>
</tr>
<tr>
<td>YR2: 1999-00</td>
<td>143</td>
<td>294</td>
<td>49%</td>
<td>58.74%</td>
</tr>
<tr>
<td>YR3: 2000-01</td>
<td>122</td>
<td>287</td>
<td>43%</td>
<td>73.77%</td>
</tr>
<tr>
<td>YR4: 2001-02</td>
<td>140</td>
<td>271</td>
<td>52%</td>
<td>82.14%</td>
</tr>
<tr>
<td>YR5: 2002-03</td>
<td>120</td>
<td>275</td>
<td>44%</td>
<td>85.83%</td>
</tr>
<tr>
<td>Total</td>
<td>704</td>
<td>1424</td>
<td>Ave = 49%</td>
<td>Ave = 67.70</td>
</tr>
</tbody>
</table>
Faculty Distribution for Each Year

Discipline Distribution

- Arts
- Business
- Education
- Beh. Sci
- Sciences

Discipline: some statistical evidence suggests there is a change in the discipline over the 5 year period at 5% confidence interval.

Status Distribution

- Tenured
- Ten-Track
- Term

Status: little statistical evidence to suggest that this changes over the 5 year period at 5% confidence interval.
Faculty Distribution for Each Year

- Over the five year period, the average self-reported age of the survey respondent was fifty years.
- Mean faculty age did not change over the 5 year period at a 10% confidence level.

<table>
<thead>
<tr>
<th>Year</th>
<th>Age Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-99</td>
<td>49.01</td>
</tr>
<tr>
<td>1999-00</td>
<td>48.93</td>
</tr>
<tr>
<td>2000-01</td>
<td>49.67</td>
</tr>
<tr>
<td>2001-02</td>
<td>49.17</td>
</tr>
<tr>
<td>2002-03</td>
<td>51.62</td>
</tr>
</tbody>
</table>
Laptop Initiative Began Fall 2000

- Faculty and full-time students supplied with laptop computer and standard set of applications as part of tuition / fees
- Technology-enhanced learning environment
- Campus-wide wired and wireless networks, some classrooms with individual connections
- WebCT and technology tools available
- Training by Instructional Technologist
Faculty Adoption Over Five Years

Faculty Use Data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>nonuser</td>
<td>19%</td>
<td>14%</td>
<td>7%</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>expected</td>
<td>43%</td>
<td>27%</td>
<td>20%</td>
<td>7%</td>
<td>2%</td>
</tr>
<tr>
<td>current</td>
<td>38%</td>
<td>59%</td>
<td>74%</td>
<td>82%</td>
<td>86%</td>
</tr>
</tbody>
</table>
Uses
Top Valued Tools

- **email** communications with students (CSPSMail)
- the online posting of **syllabi** (CMSyl)
- providing **links** to websites (CCSLink)
- **distribution** of handouts and assignment pages (CMHmwk)
- **electronic collection** and return of assignments (CMAttch)
- requiring Web resources in **research** (CCSSSrc)
- student-to-student **emails** (CSSSSMail)
Faculty Use Over Five Years

Percentage of Faculty Using Internet Tools

- CSPSMail
- CMSyl
- CMHmwk
- CCSLink
- CSSSmail
- CMForm
- CMATst
- CMWeb
- CCStest
- CCSSrc
- CCSftp
- CCsvLab
- CCSRead
- CSChat
- CSOffc
- CCSLink

## Communication Supplement Tools

% Faculty Using...

<table>
<thead>
<tr>
<th>Tool Description</th>
<th>Tool Code</th>
<th>98-99</th>
<th>99-00</th>
<th>00-01</th>
<th>01-02</th>
<th>02-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor-to-student email</td>
<td>CSPSMail</td>
<td>76.22</td>
<td>78.52</td>
<td>87.27</td>
<td>84.13</td>
<td>88.99</td>
</tr>
<tr>
<td>Online office hours</td>
<td>CSOffc</td>
<td>47.86</td>
<td>41.04</td>
<td>31.82</td>
<td>26.19</td>
<td>34.23</td>
</tr>
<tr>
<td>Student-to-student email</td>
<td>CSSSMail</td>
<td>65.22</td>
<td>53.73</td>
<td>56.88</td>
<td>55.91</td>
<td>59.09</td>
</tr>
<tr>
<td>Chat rooms and bulletin boards</td>
<td>CSChat</td>
<td>31.85</td>
<td>32.59</td>
<td>46.36</td>
<td>32.54</td>
<td>32.71</td>
</tr>
<tr>
<td>Provide downloadable files</td>
<td>CCSftp</td>
<td>10.22</td>
<td>13.24</td>
<td>11.61</td>
<td>13.71</td>
<td>21.10</td>
</tr>
</tbody>
</table>

Bold indicates > 50% usage over all 5 years
## Course Mgmt Supplement Tools

<table>
<thead>
<tr>
<th>Tool Description</th>
<th>Tool Code</th>
<th>98-99</th>
<th>99-00</th>
<th>00-01</th>
<th>01-02</th>
<th>02-03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posting of syllabi</td>
<td>CMSyl</td>
<td>74.83</td>
<td>72.93</td>
<td>84.68</td>
<td>78.57</td>
<td>84.55</td>
</tr>
<tr>
<td>Distributing handouts and assignment pages</td>
<td>CMHmwk</td>
<td>68.53</td>
<td>64.44</td>
<td>80.91</td>
<td>77.60</td>
<td>78.18</td>
</tr>
<tr>
<td>Posting grades</td>
<td>CMGrade</td>
<td>21.01</td>
<td>17.04</td>
<td>37.50</td>
<td>37.40</td>
<td>50.89</td>
</tr>
<tr>
<td>Posting lecture notes or slides</td>
<td>CMPPT</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>47.58</td>
<td>52.25</td>
</tr>
<tr>
<td>Collect and return assigns electronically</td>
<td>CMAttch</td>
<td>53.19</td>
<td>54.48</td>
<td>74.55</td>
<td>73.60</td>
<td>75.68</td>
</tr>
<tr>
<td>Online exercises w/ submission form</td>
<td>CMForm</td>
<td>16.18</td>
<td>11.03</td>
<td>18.75</td>
<td>8.94</td>
<td>8.11</td>
</tr>
<tr>
<td>Offering online practice tests</td>
<td>CMSTest</td>
<td>28.99</td>
<td>24.44</td>
<td>36.61</td>
<td>27.20</td>
<td>34.23</td>
</tr>
<tr>
<td>Giving online tests</td>
<td>CMATst</td>
<td>7.25</td>
<td>10.95</td>
<td>16.07</td>
<td>21.60</td>
<td>25.23</td>
</tr>
<tr>
<td>Offering a web-only course</td>
<td>CSWeb</td>
<td>10.37</td>
<td>16.18</td>
<td>17.86</td>
<td>16.94</td>
<td>20.72</td>
</tr>
<tr>
<td>Tool Description</td>
<td>Tool Code</td>
<td>98-99</td>
<td>99-00</td>
<td>00-01</td>
<td>01-02</td>
<td>02-03</td>
</tr>
<tr>
<td>-------------------------------------------------------</td>
<td>-----------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Providing links to websites</td>
<td>CCSLink</td>
<td>81.82</td>
<td>64.66</td>
<td>81.25</td>
<td>73.39</td>
<td>76.36</td>
</tr>
<tr>
<td>Assign readings of online journals</td>
<td>CCSRead</td>
<td>37.68</td>
<td>28.89</td>
<td>28.57</td>
<td>27.42</td>
<td>21.82</td>
</tr>
<tr>
<td>Requiring Web resources in research</td>
<td>CCSSrc</td>
<td>63.83</td>
<td>54.89</td>
<td>57.14</td>
<td>60.80</td>
<td>67.89</td>
</tr>
<tr>
<td>Using Virtual Labs</td>
<td>CCSVLab</td>
<td>17.65</td>
<td>11.11</td>
<td>14.29</td>
<td>13.60</td>
<td>14.81</td>
</tr>
<tr>
<td>Provide downloadable files</td>
<td>CCSftp</td>
<td>10.22</td>
<td>13.24</td>
<td>11.61</td>
<td>13.71</td>
<td>21.10</td>
</tr>
</tbody>
</table>
Least Valued Tools

- offering **online** office hours (CSOffc)
- using **chatrooms and bulletin boards** (CSChat)
- collecting **online answers** of assigned Web site readings on a Web form (CMForm)
- giving online or practice **tests** (CMATst, CMStest)
- providing a **web-only course** (CMWeb)
- assigning readings of regularly published **online journals** (CCSRead)
- using **virtual lab** for simulations or animations (CCSVLab)
- giving students necessary **software** for course via an FTP site (CCSftp)

At 5% confidence interval
Motivators
(weighted by importance rating of all respondents)

- Improve quality
- Aid commun.
- Aid dissemination
- Profess. Growth
- Aid self-learning
- Market pressure
- Admin. pressure
- Student pressure
- Tech. push
- Aid distance ed

Legend:
- 99
- 00
- 01
- 02
Improving communication between instructor/students and students/students both in and out of the classroom and

Professional growth, intellectual curiosity, personal interest

At 5% confidence interval
Hindrances
All respondents – Year 1 v. Year 5

- Not Teach Style: Year 1 vs Year 5
- Computer Overuse
- Lower productivity
- Reduces quality
- Lower community
- No university incentive
- Need specialist
- See application
- Lack software
- Lack of support
- Need peer mentor

Comparisons between Year 1 and Year 5 for different factors.
More isolation
Not a priority
Risk of dataloss
Don't like e-assess
Lack skills
Corrupt info
Non-User Faculty - Hindrances

- **Technical skills** needed to use the Internet are currently beyond the instructor’s capabilities and, at this point in time, the instructor does not wish to acquire them.

- Instructor’s current classroom management and **teaching styles** have proven effective over the years.

- Instructor needs a **faculty mentor** to use the Internet in my classes.

*At 5% confidence interval*
Non-User Faculty – *Lesser* Hindrances

- Internet use decreases student productivity
- Possess an interest, but Internet specialists needed to staff a multi-media center responsible for creating Internet complements for courses based upon content material provided
- The lack of reliable technical support from the university discourages use of the Internet

At 5% confidence interval
### Student Preferences for Each Year

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>view grades</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>practice tests</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>get lectures</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>get syllabus</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>email from prof</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>get assigns</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>submit assigns</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>take tests</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>get software</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>online office hours</td>
<td>11</td>
<td>14</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>
Observations
2003 Faculty Uses v. Student Wishes

1. Professor-to-student email ✓ student #5
2. Posting of syllabi ✓ student #4
3. Distributing ✓ student #6
   handouts/assignments
4. Links to websites student #16
5. Collecting assignments ✓ student #7
6. Web resources in research student #13
7. Student-Student email student #12
8. Posting lecture notes ✓ student #3
9. Posting grades ✓ student #1
Thoughts

- Match faculty use against student preferences and compare net benefits of each tool
- Choose those tools of most value given instructor’s technical background, subject area, and professional goals
- Faculty lean toward effective tools
- Students lean toward efficient tools
Further Research Questions

- Diffusion theory (Rogers)
  - How to define/identify the adoption groups using collected data on features used and years of use?
    - Innovators (3 years use prior to 1998 survey)
    - Early Adopters (use of >1 feature by 1998 survey)
    - Early Majority (1-2 year use by 2000)
    - Late Majority (after 2000)
  - Do faculty in these groups differ in motivation and/or hindrances and how can policies and programs match current adoption level culture?
Further Research Questions

- Technology Acceptance Model (TAM-Davis)
  - Perceived usefulness = individual’s belief that using a technology aids job performance
  - Perceived ease of use = individual’s belief that using a technology is easy and free of effort

- Do typical usage metrics of frequency of use and amount of time spent using a technology apply to this situation?
  - # features used
  - # years features are used
  - Combination equation of #features and #years