Educational Technology

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2014/2015 EDUCATIONAL TECHNOLOGY

WHITE PAPER
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About

The Educational Technology Roundtable was created as an interdisciplinary group in the spring of 2013 to discuss the current use of educational technologies at St. John Fisher College and to identify common themes regarding the needs and uses of technology looking into the future. The Roundtable is made up of representatives from each of the five schools, Lavery Library, and OIT. The creation of the Educational Technology White Paper by the Roundtable aligns directly with goal one of the College’s 2012-2017 Strategic Plan, which includes a number of tactics addressing pedagogical and student support intended to promote effective teaching and learning. The seventh tactic called for the development of an educational technology plan that would inform the College’s planning and budgeting processes. This white paper is not intended to make specific planning and budget recommendations for specific technologies, but to share the common trends and discussions from faculty across campus that may help to inform future planning decisions as appropriate.
Current State

The following content aims to provide evidence of the current state of educational technology use on campus. This includes both the use of services, classroom spaces, and education technologies. Educational technologies are defined as both hardware and software tools used in the design, delivery, and assessment of courses at St. John Fisher College. Wherever possible, we have tried to show the trends in usage over time to provide a reference point for evaluation.

Services

Below you will find a summary of services related to the support and training for educational technology use offered by OIT and the Educational Technologist, including individual support through one-on-one consultations and group training through workshops.

The OIT Help Desk offers support to faculty, staff, and students on a variety of technologies and services. It is the main point of contact for assistance related to technology on campus. Below is a summary of the OIT Help Desk tickets received since the fall of 2013 through the fall of 2014.

![OIT Help Desk Tickets](image)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Help Requests</td>
<td>5477</td>
<td>5052</td>
<td>5962</td>
<td>4870</td>
<td>6477</td>
<td>8044</td>
<td>6562</td>
</tr>
<tr>
<td>Purchase Requests</td>
<td>73</td>
<td>66</td>
<td>120</td>
<td>89</td>
<td>104</td>
<td>108</td>
<td>90</td>
</tr>
<tr>
<td>Project Requests</td>
<td>17</td>
<td>43</td>
<td>146</td>
<td>13</td>
<td>105</td>
<td>116</td>
<td>43</td>
</tr>
</tbody>
</table>
Consultations are defined as meetings held either one-on-one or in a small group of usually three or fewer. The training session focuses on a specific topic determined by the requester and customized to match his or her specific needs. These sessions can include technology training sessions, as well as discussion on pedagogical topics including course design, delivery, and assessment techniques. Only appointments that last longer than 30 minutes are tracked below. Phone, email, or face-to-face conversations shorter than 30 minutes are not tracked. The category labeled “All Other Technologies Combined” includes Qualtrics, tablets, phones and apps, Google Docs, Microsoft Office Suite, Turning Point, Turnitin, Vision 8, and many others. These technologies individually account for less than 5% of the consultations provided, but as a whole account for the largest category of service and support offered through consultations.

<table>
<thead>
<tr>
<th>Consultations – Technology Training Sessions</th>
<th>2013-09</th>
<th>2014-01</th>
<th>2014-06</th>
<th>2014-09</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard</td>
<td>24</td>
<td>24</td>
<td>10</td>
<td>29</td>
<td>23%</td>
</tr>
<tr>
<td>Smart Board</td>
<td>14</td>
<td>21</td>
<td>0</td>
<td>13</td>
<td>13%</td>
</tr>
<tr>
<td>Online Course Development</td>
<td>9</td>
<td>14</td>
<td>15</td>
<td>5</td>
<td>11%</td>
</tr>
<tr>
<td>New Employee Training Sessions</td>
<td>0</td>
<td>5</td>
<td>12</td>
<td>12</td>
<td>8%</td>
</tr>
<tr>
<td>Collaborate</td>
<td>9</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>5%</td>
</tr>
<tr>
<td>ePortfolio</td>
<td>7</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>5%</td>
</tr>
<tr>
<td>All Other Technologies Combined</td>
<td>37</td>
<td>42</td>
<td>25</td>
<td>31</td>
<td>36%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>112</td>
<td>73</td>
<td>94</td>
<td>379</td>
</tr>
</tbody>
</table>

Technology training workshops are held on a given topic for a large group of attendees. Session topics are general in nature but can be customized for department or classroom requests. Workshops can be delivered to a given department or group of faculty or open for anyone on campus to attend. Workshops also include presentations to specific classes on a given technology topic students will be using within the course offering.

![Technology Training Workshops](chart.png)
## Educational Technology Usage Highlights

<table>
<thead>
<tr>
<th>Technology</th>
<th>Description</th>
<th>Fall 2014 Usage</th>
<th>*Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard</td>
<td>The course management system is the online platform for the dissemination of content, communication among class members and the submission and grading of student work.</td>
<td>71% of all courses actively used at least one tool in Blackboard.</td>
<td></td>
</tr>
<tr>
<td>Blackboard Collaborate</td>
<td>The web conferencing tool used for synchronous communication, including audio, video, screen sharing and whiteboard functionality. Collaborate is used primarily in fully online courses.</td>
<td>15 courses actively used Collaborate.</td>
<td></td>
</tr>
<tr>
<td>Echo360 Lecture Software/Personal Capture</td>
<td>Lecture capture tool available in a variety of classroom spaces on campus to record live class sessions for later viewing by students and faculty. Personal recording software available on faculty office computers to create pre-recorded videos for students to watch outside of class time.</td>
<td>Over 62,000 views of Echo360 recordings (lecture and personal recordings) throughout 2014.</td>
<td></td>
</tr>
<tr>
<td>Ensemble</td>
<td>Video management software that allows for the storage, organization and sharing of video materials with users.</td>
<td>Usage statistics not easily tracked.</td>
<td></td>
</tr>
<tr>
<td>EvaluationKit</td>
<td>Electronic course evaluation tool, integrated directly into Blackboard.</td>
<td>Used for all campus and online course evaluations.</td>
<td></td>
</tr>
<tr>
<td>ExamSoft</td>
<td>Computer-based exam management software used within the Wegmans School of Pharmacy to administer all course exams.</td>
<td>Used by 100% of WSOP courses and faculty.</td>
<td></td>
</tr>
<tr>
<td>Google Sites (ePortfolios)</td>
<td>The platform used by students and faculty to create electronic portfolios of their course work and achievements. ePortfolios can be shared with those inside and outside the Fisher community.</td>
<td>Usage statistics not easily tracked.</td>
<td></td>
</tr>
<tr>
<td>Google Drive</td>
<td>Part of the Google platform that provides access to tools like Google Docs, Spreadsheets, Forms, etc.</td>
<td>Usage statistics not easily tracked.</td>
<td></td>
</tr>
<tr>
<td>Vision Classroom Management Software</td>
<td>Vision classroom computer management software gives instructors the ability to share student screens with the whole class, as well as monitor student computers in a classroom lab environment.</td>
<td>Usage statistics not easily tracked.</td>
<td></td>
</tr>
<tr>
<td>Qualtrics</td>
<td>The campus supported survey tool available for faculty, staff, and student surveys if monitored by a faculty member. Surveys can be administered to both internal and external audiences.</td>
<td>951 users with a total of 4,393 total surveys administered.</td>
<td></td>
</tr>
<tr>
<td>Student Response Systems</td>
<td>Student response systems, also known as clickers, provide the instructor the ability to collect, evaluate, and record responses live in class.</td>
<td>Usage statistics not easily tracked.</td>
<td></td>
</tr>
<tr>
<td>Turnitin</td>
<td>Turnitin provides faculty with a web-based plagiarism prevention service, class management tools, and digital grading. Submitted papers are compared for matches or similar text in the repository, and results are made available in an easy-to-read Originality Report.</td>
<td>154 instructor accounts were available on the system in 2014.</td>
<td></td>
</tr>
</tbody>
</table>

* compared to Fall 2013 usage, see Appendix A: Detailed Usage Statistics
Institutional Trends & Current Projects

Based on the findings from the Fall 2013/Spring 2014 Educational Technology Whitepaper, the members of the Educational Technology Roundtable compiled the below list which identifies institutional priorities for the integration and implementation of educational technology campus-wide. The priorities have been categorized into those that the Roundtable felt are currently occurring on campus readily and those that will become more commonly used by the majority of faculty over a 1-2 year and 3-5 year timeframe. The purpose of these priorities is to help guide the discussion on future educational technology initiatives. The focus on the Fall 2014/Spring 2015 Educational Technology Whitepaper is to collect and share the exciting work that is currently taking place on campus that overlaps with the trends identified in the 1-2 year and 3-5 year timeframe.

One - Two Year Timeframe

ACTIVE LEARNING CLASSROOMS & TECHNOLOGY-ENABLED LEARNING SPACES

Active learning classrooms and technology-enabled learning spaces can be defined as areas on campus specifically designed and built to encourage collaboration among students and faculty in a variety of ways. Spaces like these often includes flexible furniture design, the ability to transition from large group to small group work easily, multiple types of projection to support group work, and ready access to technology to support collaborative learning activities. Below are a variety of examples of these types of spaces and techniques used on campus.

- **Learning Commons within Lavery Library**
  The Lavery Library Learning Commons, established in 2012, offers an outside-of-class space with PC and Mac computing, project collaboration spaces, supporting technologies for media creation, and end-to-end support for student and faculty research. Among these services, the library and OIT partner to provide technology help, research help, citation assistance, and a digital platform for sharing research products, Fisher Digital Publications.

  **Point of Contact: Melissa Jadlos, Director of Lavery Library**

- **Interactive Whiteboard Technology in the WSOP Classroom 132**
  Currently in the School of Pharmacy, interactive whiteboard technology is available in one of the classrooms. The technology allows for students to interact with the boards and the classroom material. There are five boards in the classroom—one at the front, and four on the sides. Many possibilities exist when using this technology, and faculty teaching in this classroom have employed different techniques. One benefit of this technology is that the material that would usually just be projected on the front board is now projected to many, allowing students to see better without necessarily facing the front of the classroom. The setup has allowed us to rearrange the classrooms into round and oval tables that can facilitate group work. A second benefit of the interactive nature of the whiteboards is to allow for innovative and productive group work. Digital pens associated with each board allow the students to write and draw. This has been used in two major ways: (1) On a white screen, students can draw diagrams, write lists and/or brainstorm when prompted by faculty. (2) Students can fill-in templates/worksheets projected by faculty from the front of the room. For example, we have used this method to project blank graphs or pictures and asked students to work in groups to draw graphs or label diagrams. Group work has also been assigned where students fill in charts or answer questions projected on the boards. This also allows for students to then explain their answers to the class while referring to their board. This technology presents a few challenges. First, there is a learning curve for both faculty and students. After using it a few times, students seem to feel comfortable with the technology. Another limitation is that with a class of eighty students, not everyone gets to work at the board. Groups who sit near a board get the advantage, but groups in the middle of the room either have to join another group or end up completing the activity on paper. Overall, the technology is a great benefit and has resulted in positive feedback from students.

  **Point of Contact: Dr. Melinda Lull, Wegmans School of Pharmacy**
Integration of Student Response Systems in Undergraduate Nursing

The Wegmans School of Nursing uses TurningPoint technology and the Student Response System (SRS), or clickers, throughout courses in the undergraduate curriculum as a mechanism for classroom assessment and aiding students’ test taking skills for application of higher cognitive level test questions. Students begin using the SRS system in their first semester of the nursing program in Nursing Leadership and Patient Centered Care I (NURS 304), Health Assessment (NURS 313), Introduction to the Discipline and Practice of Professional Nursing (NURS 300), with culminating use of the SRS in their final semester in the NCLEX-RN Review (NURS 400) course. For example, in Pathophysiology and Applied Pharmacology II (NURS 428) and Nursing Leadership & PC III (NURS 446), the use of clickers has been fully integrated. In NURS 428, clicker questions accompany every topic. The use of clickers in this way is designed to assess student knowledge, increase understanding of the content, and assist in course examination preparation. In NURS 446, clicker questions are directly related to the online testing platform in nursing, ATI, specifically to help improve scores on the Leadership ATI exam. TurningPoint technology has also been used in the Health Assessment Lab (NURS 313) for test review/preparation to assess the understanding of key concepts. Questions are embedded within lecture and not posted to Blackboard ahead of time in order to ensure the questions assess an accurate representation of student’s understanding of the key concepts during the class period.

Points of Contact: Tara Sacco, Susan Carlson, Dr. Laura Markwick, Wegmans School of Nursing

Alternatives to Traditional “Clickers” for Student Engagement

The web-based tool of Poll Everywhere is an effective blending of education and technology that easily can be infused into any course. Using personal electronic devices, students are able to engage with each other and the content, while the instructor can display the results from all students in real-time. The software allows for both open and closed question types, offers a variety of display options, and is easily inserted into a PowerPoint presentation. While the basic service doesn’t allow for tracking of individual student responses, for an additional fee, instructors can more formally use the software to track and grade individual student performance.

When used to spark discussion, the question is posed and responses are entered. The class is able to see the variety of responses, trends in opinion, and the instructor can then facilitate exploration. The visual anonymity of the responses often encourages students to be more honest with their answers and allow for entry into more sensitive topics. Another common option is the use of a quick, “check for understanding” slide that can assist in pacing of material. If the students seem to grasp the concept, the instructor moves on to new information. If there is still a lack of understanding, the instructor can revisit and clarify ideas before moving on.

Point of Contact: Dr. Emily Dane-Staples, School of Arts & Sciences

LEARNING ANALYTICS

There is a growing interest among many institutions and faculty within higher education to better utilize the vast amount of data automatically generated from the growing number of student touch points with educational technologies. The mining of this kind of data can bring to light trends, opportunities, and areas for improvement related to retention, program development, course design, and the needs of students in order to achieve outcomes. Below are examples of some of the projects currently taking place on campus within this area.

Blackboard Analytics Project

The School of Arts and Sciences and the Ralph C. Wilson, Jr. School of Education collaboratively submitted a proposal and received strategic funding for the purchase of a metrics reporting add-on system, Blackboard Analytics. This tool works in our current Blackboard environment. Purchasing Blackboard Analytics will allow for the collection, analysis, and storage of assessment information by expanding a current system used on campus and eliminating possible
redundancies of data collection systems. Blackboard Analytics is also capable of connecting with the Banner system (Fish’R’Net) to create a comprehensive analysis of student learning across the college. This allows for the analysis of college-wide student learning outcomes that will provide evidence to inform and support strategic initiatives.

Blackboard Analytics will allow faculty, administration, and assessment leaders to review and report the results of student learning outcomes gathered at the course level across schools to support program development and meet the expectations of professional accrediting agencies. This is of particular importance for the communication of student learning outcomes in the general education “core” curricula. The system also allows the Ralph C. Wilson, Jr. School of Education to collect and analyze student work for ongoing monitoring of accreditation standards for the new Council for the Accreditation of Educator Preparation (CAEP) and professional reviewing agencies (SPAs) accreditation.

Blackboard Analytics is an efficient method for faculty to assess student learning and correlate instructional strategies with outcomes to provide a broad reporting view. It allows for aggregate cross-course goal performance and longitudinal internal benchmarking of student learning outcomes. The data can be analyzed cumulatively across course, programs, and years.

**Points of Contact: Dr. Catherine Sweet, School of Arts & Sciences and Dr. Caroline A. Critchlow, Ralph C. Wilson Jr. School of Education**

- **ExamSoft**
  The Wegmans School of Pharmacy has implemented technology program ExamSoft to inform curriculum improvements and track student progress on meeting program learning outcomes. Throughout the pharmacy curriculum, students are given computer-based exams and performance evaluations in which each test item is individually coded to the accreditation standards, program outcomes, and level of Bloom’s Taxonomy that is being addressed. The resulting learning analytics are mined to drive evidence-based change at multiple levels. At the program level, reports on the density of coverage and student performance on outcomes inform when and how material is presented. At the faculty level, exam data analysis is used to identify areas of weakness in student comprehension of material as well as ways to improve the quality of the exams themselves. Faculty engage in a peer-review process that carefully studies the quality of the 10,000+ question databank they have constructed over the past three years. At the student level, each student runs a longitudinal report on him/herself and reflects on his/her performance on key outcomes at the mid-point of the semester. This reflection serves as a basis for a thoughtful conversation between student and faculty advisor.

  The benefits to adopting this program are many, but there have been challenges as well. The School of Pharmacy has had to adopt a laptop requirement for all incoming students, which does create an expense for the School. Exams are taken on the computer, but are not taken online; therefore, a live Internet connection is not required during an exam. Students must, however, connect to the Internet to ultimately upload their responses for grading. The transition from paper to computer was a cultural change for both students and faculty. Once the initial adjustment was made, the benefits far outweighed the challenge of implementation. Exams are more quickly graded, faculty can easily create and distribute exams from any physical location, and test data can easily be disaggregated to generate useful reports. Overall, the learning analytics provided by the adoption of this technology effectively and efficiently serves faculty, students, and administration.

  **Point of Contact: Dr. Jane Souza, Wegmans School of Pharmacy**

- **Typhon Student Tracking System**
  Customizable for any type of allied health educational program, Typhon Group’s AHST Student Tracking System functions as a complete and secure electronic student tracking system, including comprehensive clinical skill logs and
reports, an evaluation and survey component for assessments, management of student rotation scheduling, student electronic portfolios, student and supervisor biographic databases, clinical site database, curriculum mapping, and secure document management. The student tracking system was initiated during the summer and fall of 2013 in the Wegmans School of Nursing graduate program. This tracking system allows the students to electronically enter their clinical experiences, thus allowing faculty to identify the clinical experiences students have procured to meet learning and program outcomes. Students enter into the system the types of patients they care for and what types of interventions they are recommending for patient care. The tracking system also allows the students, preceptors, and faculty to complete their evaluations in the system so data is more user-friendly, accessible, and meaningful. Reports are generated each semester from the system and reviewed by the graduate faculty for assessment.

Point of Contact: Dr. Laura Markwick, Wegmans School of Nursing

ATI Testing

ATI Nursing Education (Assessment Technologies Institute®) provides technology-based educational assessment, remediation, and testing for students in the Wegmans School of Nursing throughout the undergraduate curriculum. ATI testing online offers programs that are instrumental in improving faculty, student, and program outcomes. Faculty are able to use the programs and learning analytics from student testing to augment curriculum, revamp courses, participate in faculty development, improve student testing outcomes, and lower attrition rates. The Wegmans School of Nursing faculty is committed to preparing graduates to be successful in passing the NCLEX-RN licensing exam. The faculty of the Wegmans School of Nursing selected the testing resources of ATI based on review of psychometric data and current evidence-based research on NCLEX-RN success. All undergraduate pre-licensure nursing students participate each semester in the ATI testing program through select courses and complete a comprehensive predictor exam in their last semester. ATI is a web-based testing process designed to assess and reinforce knowledge gained during the term and develop critical thinking skills in preparation for mastering the NCLEX-RN exam upon graduation. Based on comparative benchmarks, ATI practice and proctored assessments validate student strengths and identify areas in need of improvement for focused remediation. To facilitate mastery of knowledge necessary for success in the program, and on the NCLEX-RN exam, students have access to online ATI products such as:

- Practice tests in the Learning System RN
- Nurse Logic 2.0 modules for developing prioritization, decision-making and test taking skills
- Practice and proctored assessment results
- Individual Performance Profiles to create focused-reviews for remediation
- Online and print resources for remediation
- “How to” tutorials and documents to instruct students on how to use the ATI resources

Point of Contact: Dr. Char Smith, Wegmans School of Nursing

MOBILE APPS & TABLETS

With the increasing access to mobile devices in every day life and a growing number of these devices on campus, including smart phones, tablets, and apps, the use of these tools inevitably has transitioned into the educational environment as well. These types of tools provide a variety of affordances to the educational environment, including easy access to resources while on the go. Below are examples of how these devices have been used to improve teaching and learning experiences across campus.

Use of Tablets with School of Education Curriculum

Currently in the School of Education, 30 Apple iPads are available in the Tech Room (RW202) and 8 are also available in the Dean’s Office for faculty use. Dr. Jim Schwartz retained these iPads through a capital fund request for the Inclusive Education department. Currently, Dr. Schwartz uses those devices in his professional development school (PDS) course. The course focuses on teaching Inclusive Childhood Education candidates to teach mathematics to
children. Each week the candidates examine a new mathematics topic, providing a research-based perspective on how children learn that topic in mathematics. The candidates apply what they have just learned by spending 45 minutes working with small groups of children to provide instruction in that mathematics topic. During this instructional time, the candidates use iPad mathematics apps to help build children's fluency and problem solving. Sometimes the candidates split their small groups into even smaller groups in order to differentiate their instruction. While they work directly with one or two students, another one or two are independently engaged in the iPad apps to work on their fluency or problem solving.

In addition to the iPads in the Tech Room and the Inclusive Education Department, the Literacy Program has retained approximately 30 iPads through the First Niagara Grant that Dr. Kathy Broikou and Dr. Joellen Maples were awarded for their work with School #58 in the Rochester City School District. In Dr. Maples’s EDUC 418 undergraduate literacy course, candidates provide an after-school literacy clinic for middle school students. As part of candidate’s lesson planning, they must incorporate the use of the iPad into their lesson. Candidates use storyboard creations, filming, and a Smart Board app to enhance their technological pedagogy in order to build on general functionality available with off-the-shelf educational apps. Candidates use the iPads with the students weekly throughout the semester and borrow the iPad for the semester to build their knowledge of apps and uses for the iPad in the classroom.

**Point of Contact:** Dr. Jim Schwartz, Dr. Kathy Broikou and Dr. Joellen Maples, Ralph C. Wilson, Jr. School of Education

**TRANSFORMATIVE LEARNING DESIGN MODELS**

Transformative learning design models would include courses taught fully online, in a hybrid format, or using the flipped classroom method as well as alternative teaching strategies that use similar techniques found in online, hybrid, or flipped classes to significantly alter the classroom environment of a traditional course.

- **Use of Podcasts and Vodcasts**
  Faculty in the Wegmans School of Nursing use pod/vodcasts and the ECHO360 lecture capture system for a variety of educational offerings and courses. In the RN/BS online program, traditional face-to-face lectures are transitioned to asynchronous pod/vodcasts that allow students access to course content via the Learning Management System, subject matter expert presentations, and consistent content delivery. In the traditional baccalaureate nursing courses pod/vodcasts are used for modified flipped classroom delivery as well as review of key concepts and preparation for testing. For the content related to burn care in Pathophysiology and Applied Pharmacology II (NURS 428) and Medical-Surgical Nursing II (NURS 423), one faculty member has more than ten years of burn care experience. Therefore, content on burns for each of these courses is covered in a podcast that students view prior to class, and each course’s instructor leads in-class activities related to the content. This course design, using a modified flipped classroom format, highlights faculty subject matter expertise. In Nursing Leadership and Patient-Centered Care I (NURS 304), students have their health teaching project presentations vodcasted, affording them the opportunity to self-assess their delivery to identify opportunities for improvement in presentation skills.

**Points of Contact:** Tara Sacco, Dr. Christine Boev, Dr. Lori Dambaugh, Wegmans School of Nursing

- **A Flipped Classroom Model within the Accounting Curriculum**
  With advances in technology, flipping the classroom has become more popular among high school and college instructors, though utilization of the flipped classroom model within the college accounting curriculum is only recently emerging. In addition, the emphasis for accounting instructors to develop signature pedagogies and identify technology advances in the classroom has been supported in the Pathways Commission report. A “modified” or semi-flipped classroom model was implemented in a 300-level accounting course, in which the instructor identified 11 content areas to flip. Students watched the lecture material outside of class, which allowed them to view it as many times as necessary and at their own pace. This allowed for the inclusion of more active learning, such as students working in designated teams to discuss problem sets, construction of concept maps, and the utilization of clickers in the classroom during the
in-class portion of the course. Based on the findings from this course experience, a series of best practices related to the identification of potential courses, the use of organizational guides, technology selection and considerations, how to spend class time and discuss the flipped classroom model with students are provided.

**Point of Contact: Lynn Mucenski-Keck, School of Business**

- **VoiceThread as a Tool to Engage Students in Reading**
  In Emergent Media and Web Culture (COMM 367) and other classes, VoiceThread allows students to comment on a question suggested by the reading. VoiceThread allows students to post in a choice of formats: text, audio only, or video. Furthermore, a VoiceThread app allows them to comment from their phones if they choose, freeing up any limitations on location from which they may participate. The single screen format of the interface encourages the students to interact with other students’ comments, as it visually represents a single conversation. This presentation also simplifies and speeds up the ability to review all the submissions, even a few minutes prior to class. (Note: while a webcam or smartphone is necessary for video participation, anyone can make text contributions.) This engagement functions as a form of a flipped classroom, in that class time can be spent on discussion rather than lecture; the work in VoiceThread encourages prior familiarity with the reading.

  **Point of Contact: Jeremy Sarachan, School of Arts & Sciences**

- **Librarian Support in Hybrid and Online Course Experiences**
  Librarians have been providing increasing levels of support for hybrid, online, and distance courses, with individualized support coming in multiple formats through conversation between course instructors and liaison librarians for each discipline. The basic support by the librarian in these courses involves a course instructor including the librarian in a Blackboard course. Within Blackboard, the librarian can create a library resources area wherein he or she provides support such as video tutorials, self-assessments, and discussion boards. Librarians often use Blackboard Collaborate to meet with students enrolled in fully online or distance courses for the purpose of research help. Collaborate allows the librarian to screen share and demonstrate the research process step-by-step, allowing students to perform searches with the librarian available to troubleshoot problems. Beyond Blackboard, Lavery Library’s website offers video tutorials on basic search strategies, with many including short self-assessment quizzes hosted in Google Forms.

  **Point of Contact: Christina Hillman, Assessment & Online Program Librarian, Lavery Library**

- **Online and Hybrid Courses in Education**
  Faculty in the School of Education from a variety of programs have experimented with various forms of hybrid courses for a number of years. In addition, the School of Education has one fully online course, GRDG 690: Literacy Capstone. Dr. Joellen Maples designed the course in summer 2013. The course has been offered online every fall, spring, and summer semester since that time. The course incorporates various forms of Blackboard technologies such as discussion board, reflection journal, and grading online, as well as tools like Echo 360 and Collaborate. Lavery Librarian Kathi Sigler has also created a week of module lectures for the course to help instruct students on writing their literature reviews. At the end of the semester, students participate in a live online presentation of their research using the web conferencing tool Collaborate.

  **Point of Contact: Dr. Joellen Maples, Ralph C. Wilson School of Education and Kathi Sigler, Lavery Library**

- **RN/BS Online Program**
  The RN-to-BS degree completion program integrates a variety of technologies to serve a diverse student population and is delivered in a fully online format. The program features a primarily asynchronous model of content delivery using the Blackboard Learning Management System. The design of each course varies and is specific to the course content and objectives, but classes can include vod/podcasts created through Echo360, web-based learning objects, videos, discussion and/or voice boards, blogs, and wikis. Many of the courses include synchronous student presentations via the Collaborate web conferencing system. Students are also able to upload video assignments using Ensemble. Outside of
the classroom, Collaborate is used for student/faculty conferences and for virtual meetings between students and advisors.

*Point of Contact: Dr. Pam White, Wegmans School of Nursing*

**EPORTFOLIO**

ePortfolio technology allows students create a holistic story of their experiences at Fisher over time in a website that can be shared with others. The portfolio is created and owned by the student, while faculty in a variety of courses and programs have encouraged or required its use within their specific disciplines. ePortfolios in general encourage the development of skills such as goal setting, academic and career planning, self-evaluation, and reflection. Below is a variety of ways that ePortfolios are being used currently at Fisher.

- **ePortfolio Use with Teacher Candidates**
  In Foundation in Education (EDUC 103), teacher candidates created an ePortfolio specific to their major(s) and certification area(s). Within the ePortfolio, students dedicate sections relating to courses in their program. The first opportunity to showcase their work occurred in Educational Technology (EDUC 204). Candidates authored a web page of adaptive and accessibility technology resources, discussing and evaluating the range of augmentative and alternative communication (AAC) devices and systems available for individuals with learning or communication difficulties. They also selected pieces of "every day" technology and critiqued them in regards to their use and implementation as an educational technology, as well as highlighted tools that are currently making an impact in classrooms. The ePortfolio can be added to throughout the candidate’s program, as instructors in future classes dedicate pages that relate to their course content, projects, and papers. The end result will be a product that could potentially be used in an interview that highlights the teacher candidate’s individuality, technology skills, and work throughout the entire program.

  *Point of Contact: Dr. Susan M. Schultz, Ralph C. Wilson Jr. School of Education*

- **E-Value for Pharmacy Student Portfolios**
  The Wegmans School of Pharmacy uses the E-Value software to help organize the education of its students. The program is especially used for the experiential portion of the education. The program provides a wide variety of functionality, including the optimization of experiential schedules, evaluation of students, evaluation of preceptors, instructors and courses, the ability to disseminate coursework for experiential course activities, a data warehouse for contact information, site information, and agreements and documents. In addition, E-Value includes a virtual portfolio for student use called MyFolio. Students may upload copies of certificates, permits, particular class assignments, and their curriculum vitae to create an online portfolio. Immunization records may also be stored here for easy access.

  *Point of Contact: Andrea DiGiorgio, Wegmans School of Pharmacy*

- **Use of ePortfolios with First Year Programs**
  In the summer of 2013 a learning circle was funded to investigate the use of ePortfolios. Participants in the learning circle were drawn from across campus and included any faculty or staff interested in exploring the use of ePortfolios in their various programs and/or settings. Members of the group reviewed scholarship on best practices in the field of ePortfolio use and developed a common working template for all of the various programs. In terms of the First Year Programs in particular, piloting the use of ePortfolios in these programs (Learning Communities and 199s) was a natural fit as a portfolio assignment has been a requirement for both the LCs and 199 courses since the inception of each program. Traditionally, these portfolios have been paper-based and completed using a three-ring binder. In the fall of 2013, 15% of LCs opted for using ePortfolios, and in the fall of 2014, the number of LCs using ePortfolios increased to 36%. In our Research-based Writing Program, a similar pattern was found, beginning with very few 199 faculty using ePortfolios in the spring of 2014 to rising between an estimated 30-40% using them in the spring of 2015.
The initiative to support the use of ePortfolios springs from an assumption that this assignment, beyond added convenience and ease of use and beyond meeting students where they are in terms of greater comfort with electronic manipulation of their environment and their learning, facilitates student learning. Specifically, we are assuming the use of the ePortfolio template, which purposefully organizes the ePortfolio to facilitate students’ awareness of the interconnection among the various aspects of their college experience, will increase the student’s ability to make connections between many otherwise separate experiences, including their studies in the FYP, other elements of the core, the college-wide learning goals, their individual major, and co-curricular and extra-curricular activities. This, in turn, supports student learning and growth by facilitating student metacognitive awareness of not only what they have learned in isolated classes but also how this activity connects other elements of their learning and being as a student at Fisher.

To determine if our assumptions about this learning are correct, the FYP is also participating in a study to compare the metacognitive level of reflection that is achieved from students of traditional portfolios to students’ level of metacognitive reflection when completing the electronic version of the assignment. We are looking for not only differences between this metacognitive awareness of learning that has occurred and connections between types and areas of learning, but also awareness of connections with future success in life and especially in their professional careers. Based on the results, we will be in a position to answer the question of whether incorporating ePortfolios with integrated opportunities for metacognitive reflections may be warranted or if there are other, unexpected reasons that justify further support and resources devoted to ePortfolios as a tool for learning in the FYP and, potentially, beyond. 

Points of Contact: Dr. Barb Lowe, School of Arts & Sciences

Three - Five Year Timeframe

SIMULATION & GAME-BASED LEARNING

This area highlights online tools and resources, in addition to physical simulation locations, that support the experiential learning activities possible in a simulated or gaming environment. These environments allow students to gain experience with real-world problems in a safe environment where they can learn from errors and practice new skills. Below are a series of examples where this type of educational experience is currently taking place.

- **Shadow Health Clinical Simulation**
  Shadow Health, a digital clinical simulation experience, is used in a variety of nursing courses at the graduate and undergraduate level to engage students with conversation-based learning, practice critical thinking, apply clinical reasoning skills, and engage in self-reflective dialogue about professional practice. In the system, students interact with a virtual patient. They can ask the virtual patient questions in order to improve the student’s communication skills and perform physical examination skills. Students document their findings in the software program’s electronic medical record, which helps to improve students’ written communication and clinical documentation skills. There are questions within the simulation scenarios that pertain to lifespan issues as well as quality and safety concerns for patient care.
  
  Point of Contact: Dr. Laura Markwick, Wegmans School of Nursing

- **Simulation and Skills Lab**
  The simulation program at the Wegmans School of Nursing Simulation Center is committed to being on the “cutting edge” and is effectively integrating the use of simulation in all the clinical courses in the undergraduate nursing program. The goal of the program is to use simulation to positively impact learning outcomes and student confidence at the bedside in clinical practice. Wegmans School of Nursing students participate in a variety of simulated experiences with high-fidelity computerized simulators that enhance their learning and assist them in transitioning into the nursing workforce. These learning experiences allow students to gain valuable insight into realistic patient scenarios they will
experience in their practice and assist them in the journey from novice to expert clinical practice. Additionally, the Learning Resource Center (LRC) in the Wegmans School of Nursing is designed to provide guided instruction for junior and senior nursing students, as well as resources for graduate students. The LRC facility contains two major nursing laboratories, Nursing Skills and Health Assessment, where students hone their psychomotor and critical thinking skills applied to various nursing procedures and assessment skills.

Tablets were recently integrated into the simulation and skills labs for student use. Tablets are used by the students to access: 1) skills videos for review of psychomotor skills, 2) a survey tool to provide student feedback evaluating their lab experiences, 3) an Electronic Medical Record to document their care during simulations, and 4) video capability to record their performance when completing skills testing for competency assessment by faculty.

Points of Contact: Joanne Weinschreider, Director Simulation Center; Teresa Brache, Director Learning Resource Center, Wegmans School of Nursing

TeachLivE: Simulated Classroom Experience for Teacher Preparation

The TLE TeachLivE™ Lab is a mixed-reality teaching environment supporting teacher practice in classroom management, pedagogy, and content. TeachLivE, developed at the University of Central Florida, is currently being implemented across 42 campuses in the United States and growing to include multiple school districts and international partners. Each partner utilizes the TLE TeachLivE™ Lab in a unique manner depending on the needs of their students, teachers, professors, and community stakeholders. The TLE TeachLivE™ Lab provides pre-service and in-service teachers the opportunity to learn new skills and to craft their practice without placing “real” students at risk during the learning process.

In the School of Education, three professors have consistently integrated TeachLivE into their coursework. Dr. Michelle Erklenz-Watts, associate professor in the Inclusive Ed. Department, has used TeachLivE in her EDUC 302 Curriculum, Instruction and Assessment in Social Studies. She has utilized this instructional tool to expose Fisher students to a classroom with diverse needs without few confounding factors (e.g., interrupting phone calls, noise from the hallway, students getting out of their seats) so they can focus on the specific skills she would like them to develop. Students have developed their questioning skills as well as their response to minor behavioral infractions (e.g., shouting out or use of cell phones during instruction). While TeachLivE is not an exact replication of a classroom experience, it provides a subset of the activity and actions happening in a classroom today so that our students can develop skills and dispositions that will better prepare them for when they are in front of a real classroom. After each student has a session, she is then able, on the spot, to give the student feedback on how they can better ask or respond to a student; or, even in the middle of a lesson, she can pause the session and debrief—something she would never be able to do during a real classroom visit. This allows the Fisher students to change their responses/actions immediately. Some of the situations that arise would never come up in course discussions, given that they are context specific to a student’s response in the classroom. Fisher students report that they have much more confidence going into the classroom because they feel they have a more extensive background for particular situations.

Another professor who uses TeachLivE in her courses on a consistent basis is Dr. Susan Schultz, associate professor in the graduate special education program. In GSED 508 Classroom Management Childhood, teacher candidates conducted parent conferences using TeachLivE. The TeachLivE system provides the ability to set the intensity level, so teacher candidates could work with simulated parents who were agreeable and partners in the process, parents who "shut down," and parents who become argumentative. Each simulated parent presents a different family situation and dynamics, which provide discussion points for working with a variety of families. Also, in GSED 500 Critical Issues in Special Education, Dr. Schultz used TeachLivE to provide practice interviews for teacher candidates who will soon
begin their searches for employment. This provided them with the opportunity to practice interviewing and refine their skills based in the feedback they received.

Finally, Dr. Joellen Maples, associate professor in the graduate literacy program, uses TeachLive in her undergraduate Literacy Instruction: Middle Childhood and Adolescents (EDUC 418) course with students to develop a content area lesson with a focus on integrating literacy. Students then present their lessons to the high school avatars to practice delivering literacy content while also working on their classroom management skills. Students provide feedback for one another while also receiving feedback from their instructor. Students participate in a similar simulation in the graduate course, Literacy Instruction in the Content Area (GRDG 534 and GRDG634), in which students work one on one with an adult avatar practicing literacy coaching. Students write a case study of a 7th to 12th grade adolescent whom they interview and then interact with the adult avatar as a literacy coach for that student to practice the diplomacy, content knowledge, and coaching skills needed to work with a content area teacher as a literacy specialist.

*Point of Contact: Dr. Michelle Erklentz-Watts, Dr. Susan Schultz and Dr. Joellen Maples, Ralph C. Wilson, Jr. School of Education*

➤ **The Use of iPads with ExamSoft™ Rubrics for Evaluation of Student Performance in Simulated Patient Scenarios**

Starting in September of 2013, ExamSoft™ implemented the use of rubrics as an assessment tool for student performance. This technology has been utilized in Concepts in Pharmacy Practice I (PHAR 5137) and Concepts in Pharmacy Practice II (PHAR 5237), occurring in the student’s third professional year. These courses guide students to apply and employ their therapeutic knowledge and pharmaceutical care skills that they have developed in previous courses in the domains of pharmacotherapy, professional communications, patient assessment, education, and pharmacy practice. These courses are designed to integrate all aspects of pharmaceutical care in a simulated practice environment in a systems-based approach. The course consists of didactic workshops, simulated patient interactions, seminar preparation and presentations, and basic physical assessment training. The simulated patient scenarios are a major part of this course and include videotaping as an assessment tool for evaluation, feedback, and professional growth.

The use of ExamSoft™ rubrics using iPads as the tool for evaluation of student performance is utilized in the simulated patient scenarios. These scenarios challenge the student in the domains of professionalism, communications, and pharmaceutical care. Standardized patients are employed by the school to portray patients with a variety of disease states that require counseling on their conditions and on any medications or devices they may utilize to treat their disease or condition.

The standardized patients utilize a rubric created to assess the student’s professionalism, communication skills, and their effectiveness in teaching patients about their medications or devices. The standardized patients (SPs) vary in age and sex, depending on the cases developed by the faculty. The age range of the SPs is 30 to 60 years old. Students are evaluated 10 times throughout the school year, with the difficulty and weight of topics increasing throughout the semester and year. The most common challenges associated with this technology were the initial learning curve (common to most new technologies), response time, saving the evaluations, documenting comments.

Most of these challenges have been overcome with continued use and experience. To date, over 15 patient encounters have been evaluated using ExamSoft rubrics on the iPads, which equals the evaluation of approximately 1200 individual student interactions. This documentation of student performance demonstrates we are assessing and meeting ACPE and WSOP program learning outcomes that were not being captured and documented before. The use of ExamSoft™ rubrics with iPads as the technology tool has provided a significant benefit to teaching and student learning at WSOP.

*Point of Contact: Anthony Corigliano, RPh, Wegmans School of Pharmacy*
INTEGRATION OF TECHNOLOGICAL DEVICES INTO CLASSROOM ACTIVITIES

With a growing number of technological devices entering the market beyond that of mobile devices, and the increasing immersion of these devices into our daily lives (i.e., wearable devices like the Apple Watch), it will become an increasingly difficult task to prevent access of these kinds of devices to the learning environment of the classroom. One possible solution is to better integrate devices of this nature into the learning experience instead of preventing student access to these tools when they enter the room. This type of approach will give students exposure to the best approaches to engage with personal devices and the cautions of distraction in certain situations.

SmartPen use in IBL Mathematics
The students in Principles of Real Analysis I (MATH 421) were all issued LiveScribe WiFi SmartPens. Students use the pens to write up their homework and problems for presentation. Whatever the student writes with the pen is then uploaded directly to Evernote, an electronic notebook and note taking tool. The instructor can then look at their work before it is due and give the student pointers by annotating the images directly on their Evernote notebooks, which are shared with the instructor. The students submit their assignments for grading through Evernote as well, so they maintain a digital archive of all their assignments when the class is over. The instructor also maintains a digital archive of all assignments for course/department assessment purposes. Furthermore, since the instructor requires the students to give a series of in-class presentations during the semester, students can display what they’ve written in class using Evernote’s web interface easily for this purpose. Overall, the project is working well, though there are some troubles, including the learning curve for students to become familiar with both the LiveScribe Pen and the Evernote software.

Point of Contact: Dr. Ryan Gantner, School of Arts & Sciences

3D Printing as Teaching Tool
The recent advent of consumer-grade 3D printers has enabled us to bring this technology to the classroom. In a nutshell, students are challenged to find problems with a technology-based solution, design a prototype using vector graphics software, and apply the in-house printed artifact to solve the problem. A major advantage of 3D printing is the ability to produce many iterations of the object in a short amount of time. This allows the student to improve their design by adding, subtracting, or modifying elements of their object immediately after they are fabricated. The inclusion of this tool stimulates creativity and develops problem-solving skills. It also provides the student with first-hand experience in the use of 3D design tools and printers, and skills that are applicable in several fields.

Point of Contact: Dr. Fernando Ontiveros, School of Arts & Sciences

CLASSROOM AND LAB LEARNING DESIGN

Just as technologies and teaching strategies evolve over time, so should the spaces in which these interactions take place. This area includes ideas related to alternative learning spaces that allow for new types of learning interactions to take place.

The Fisher MakerSpace
Planning is underway in establishing a MakerSpace on the Fisher campus. Such an environment would serve multiple programs, departments, and schools. Specifically, a MakerSpace offers tools within a collaborative-oriented environment that empowers students to experiment and create, embracing the notion of constructivist learning to its fullest extent. While the contents of any given MakerSpace may vary, we’re looking to have Arduino and Raspberry PI kits for electronic and coding-based physical computing, 3-D printers, a sewing machine, pottery wheel, soldering stations, table saw, drill press, CNC router, and laser cutter. Digital Cultures and Technologies, Biology, and Mathematical and Computing Sciences have already committed to the project, with further possibilities for many other disciplines.

Points of Contact: Dr. Mike Boller, Dr. Fernando Ontiveros, Dr. Barney Ricca, Jeremy Sarachan and Dr. Wendi Sierra, School of Arts & Sciences
In summary, the above examples are only a subset of the many innovative and exciting educational technology related projects taking place on campus. Many of the projects included within this report have been funded and supported as institutional initiatives. The College funds technology innovation through various methods, including strategic initiative requests, learning circles, department operational budgets, construction budgets, capital budget requests, and grant funding. The strategic initiative process provides funding for a two-year period for approved initiatives to assess if an innovative technology has improved teaching and/or learning. Strategic initiatives and capital budgets requests are submitted to and approved by the Long Range Planning & Budget Committee.
Future Trends to Consider


The likelihood of wearable technologies being seen and used within the classroom is becoming a reality. Products like the Apple Watch or Google Glass may be the most well known wearable technologies, but many new innovations in this arena will continue to enter the market and will need to be evaluated through an educational lens. As students enter the classroom environment with these devices embedded in their clothes, prescription glasses, or watches, the practicality of limiting their use during class time may become impractical, and policies will have to be reconsidered.

Adoption of more adaptive and personalized learning environments increases as the capabilities of content delivery tools are able to track the progress of individual students. The use of this data can potentially be used to deliver content to specific students based on their individual needs, preferences for learning format, and at times when they are most likely to be successful with specific course materials. New tools and content with such adaptive components allow for high levels of individualized attention and feedback in the learning process.

Finally, the Internet of Things allows for greater connectedness of everyday items with our digital lives. Any mechanical device that includes a sensor or computer chip may be connected to the Internet and include the capability to track and report on usage. These may range from equipment as refrigerators and microwaves to sound systems and health tracking devices.” How to apply these devices and technologies into educational settings is still under development, but some early advances can be seen in the use of wireless projects that connect with computers in a lab setting to track usage.
Appendices

Appendix A: Detailed Usage Statistics

Blackboard

Blackboard is available to all courses and faculty. However, each faculty has the choice of how to utilize the technology for her or his specific course activities. The depth of use of Blackboard varies greatly across faculty, departments, and schools. Active courses are defined as those that use at least one of the tools available within their course.
**Blackboard Collaborate**
Blackboard Collaborate is used as the primary tool for synchronous communication among students in fully online courses. Collaborate is used frequently for office hours, student presentations, and guest speakers in these classes. The use of Collaborate has grown in direct relation to the number of online courses offered by the College. Collaborate is also used for collaboration outside of online courses among those at a distance, such as the participation of faculty from remote locations to faculty assembly meetings, faculty and staff within School of Education at each of the site locations, and the communication with online students for advising and other purposes. There are currently 10 meeting rooms created for these types of situations.

**Echo360 Lecture, Software & Personal Capture**
Echo360 is used in a variety of ways across campus, from the automatic recording of class lectures for student viewing after class, to the recording of mini-lectures for online, hybrid, or flipped classes, to the recording of ad hoc captures in a variety of classrooms on campus. As shown in the charts below, Echo360 has seen a steady growth on campus, as evidenced by the total number of times users have viewed Echo360 recordings year after year. The significant increase in Echo360 views is in part due to a large increase in software/personal capture usage among faculty.

**Qualtrics**
Qualtrics is an online survey tool used by faculty, staff, and students who are specifically supported by a faculty member. Surveys can be administered to members within or outside the Fisher Community. The following table reflects the usage from January 1, 2014, through December 31, 2014. Qualtrics has seen significant growth during this time in both the number of users and the number of surveys administered.
TURNITIN

The use of Turnitin has increased continuously since it was first used at Fisher in 2003. Furthermore, there was a significant increase in usage in 2014 in the overall number of instructor accounts, number of submissions, original reports generated, and the amount of users of GradeMark, Turnitin’s built-in grading functionality. This increase is partially attributed to the integration of Turnitin within Blackboard that allows for the seamless creation of Turnitin assignments and grading of said assignments directly within a Blackboard course. In addition, the use of Turnitin outside of the Blackboard integration also increased from 2013 to 2014.

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