



## 2012 Departmental Impact Grant Final Report

# Animal Sciences

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## HyFlex in a Large Second-Writing Course



This project implemented the Hybrid-Flexible (HyFlex) instructional model in a large lecture course, which also serves as both a second-writing course and a GEC course. Students chose whether to attend lectures in-person or synchronously online.



Office of  
**Distance Education  
& eLearning**

# Summary

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## Overview

The 2012 Animal Sciences Impact Grant project implemented a Hybrid-Flexible (HyFlex) instructional model in ANIM SCI 2367, a 100-person course that both fulfills major requirements and serves as a second-writing course. The HyFlex model involved holding in-person class at regularly scheduled times, and also live-streaming that class via CarmenConnect. Students chose their attendance mode. Writing activities were conducted in a variety of forms, both in-person and at a distance, on paper and electronically.

The goals of implementing the HyFlex model were:

- To maximize use of limited classroom space, an imperative sharpened by the conversion to semesters.
- To improve student experience and enjoyment of the course while having a neutral or positive impact on their learning.
- To develop another model of engaged, but higher capacity writing instruction, so that Animal Sciences students could meaningfully fulfill requirements without needless delay.
- To lay the groundwork for and assess the suitability of future fully online versions of the course, which would enable greater flexibility for instructors.

## Outcomes

The project was a success. ANIM SCI 2367 was taught in HyFlex form during Fall 2012 with few complications. Students performed as well or better than normal, while expressing a preference for the HyFlex model. Most activities and assignments functioned as well in the HyFlex model as in-person, while only a few were not as successful. A significant number of students chose to attend via CarmenConnect each class period. The 100-person course could have been scheduled for a smaller room.

## Process analysis

The Impact Grant process worked well. The financial assistance and matching money from the Department enabled the team to explore a new educational model in a depth that would not have been possible without release time. The support by ODEE personnel complemented the technical support provided by departmental staff, allowing the instructor to maintain pedagogical focus.

## Result, in a sentence

The HyFlex Model, using already existing ODEE services, lets students decide whether to attend in person or synchronously online and provides an equally effective learning experience while reducing the requirement for large lecture spaces.

## **Project Committee**

### **Animal Sciences project leads**

- **Jeanne Osborne**—Pilot Instructor
- **Henry Zerby**—Faculty lead

### **Animal Sciences project contributors**

- **Michael Chakerian**—Information Technology and Infrastructure Support
- **Cheryl Deisch**—Financial Officer
- **Dr. Warren Flood**—Assessment Consultant, FAES
- **Michelle Hendrick**—Communications Specialist
- **Benjamin Wenner**—Animal Sciences PhD Student and Teaching Assistant

### **ODEE project lead**

- **Tom Evans**—Instructional Designer, ODEE Digital Scholarship

### **ODEE project contributors**

- **Robert Griffiths**—Director, ODEE Digital Scholarship
- **Henry Griffy**—Grants Support, ODEE Digital Scholarship
- **Joni Tornwall**—Training and Instructional Design, ODEE Digital Union

# Executive Summary

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## Problem

Due to institutional resources constraints and course changes, the class size of the Animals in Society course (ANIM SCI 240/ANIM SCI 2367) was expected to increase in Fall 2012, while available classroom space became scarcer. With the changed status of the course to fulfill a second writing Gen Ed (in addition to the Social Sciences Gen Ed that the quarter version fulfills), the course was expected to and did fill to capacity (100 students, with four 25-student recitation sections). In future semesters, it is expected that enrollment numbers will require an increased number of offerings each year to meet the demand.

## Opportunity

To address these concerns, the instructors adopted the HyFlex (Hybrid-Flexible) instructional model for the Animals in Society lecture. Based partly on the success of the implementation of this model in Statistics 145 (Dr. Jackie Miller), this model provided several strengths that supported the goals of the course. First, the HyFlex instructional model provides students the flexibility to choose how they will attend lecture (face-to-face or anywhere synchronously online) on a daily basis. Additionally, lectures were recorded for review by students, as well as for those students not able to attend during the regularly scheduled lecture time (i.e., attending asynchronously online). Unexpectedly, an additional strength was the opportunity to use this platform to pre-record lectures and provide these students for review and response prior to days on which students had potential conflicts with attendance (e.g., the Wednesday, on which a course-relevant conference was held, providing students the opportunity to attend; and the Friday before Spring break).

Different from the Statistics experience, this high demand/high enrollment course with a diverse student population posed the problem of continuing to engage students in their learning process, to meet the intensive demands of a writing course, and to provide the opportunity for student interaction and dialogue regarding the many issues, questions, and debates related to the subject of the course—the past, present, and future roles of animals in our global society. An additional opportunity was to adapt the activities and assessments of the course for anytime/anywhere access in pedagogically appropriate ways.

The nature of the course and subject matter are best served when a community of learners is established. To accommodate the need for a diverse and inclusive community, a HyFlex instructional model was employed as a scalable solution meeting the enrollment demand and responding to student access preferences. Through the innovative uses of technology and creative changes to pedagogy, the course experience maintained the small class feel and met or exceeded previous expectations for student success and satisfaction.

Each of these problems and opportunities was addressed in different ways:

## **1. Changing instructional modes**

Traditionally, instructors of Animals in Society, have delivered content via traditional lecture and used recitation as a venue for discussion and peer interaction. This traditional model, while generally successful, missed opportunities to improve student experience. The requirement that all 100 students attend in the same room at the same time both limited some students' ability to participate and put strain on the classroom resources. Some students must attend courses on West Campus immediately before or after this class, and there are not enough 100-person classrooms, especially after semester conversion.

### Solution

We developed a HyFlex (Hybrid-Flexible) instructional model for Animals in Society lecture

- Simultaneously delivered lectures to in-person students and students attending via CarmenConnect
- Adapted selected course activities to fit anytime/anywhere access
- Developed course management processes and instructional best practices for handling students accessing course material from multiple media

## **2. Providing opportunities for student engagement with peers, instructors, and content in a large enrollment course**

The traditional instructional model of in-person lecture provides limited student engagement with the course content and only at the time when students first see/hear the material. Students have not collectively participated to the level desired to ensure student success and learning, which has in turn hampered the instructor's' ability to assess course progress toward deep conceptual understanding.

Further, recitation activities could be more consistently aligned with the lecture material so that students can engage more fully with course content via guided interactions with peers and instructors.

### Solution

We provided students with opportunities to:

- Engage actively with content at the time when they first see and/or hear the material
- Respond and ask questions synchronously or asynchronously across the entire learning community of the class
- Benefit from continual comprehension-checks toward course concept goals
- Participate in learning activities seamlessly integrated between lecture and recitation

### **3. Enhancing written and oral communication course content**

Animals in Society has traditionally been offered as a GEC course with little opportunity for written and oral communication. To address these shortcomings, the course has been enhanced to qualify as a second-writing course.

#### *Solution*

Reflective writing assignments and an oral communication component have been added to the course. Students now:

- Work in groups in and out of class to develop a presentation using a predefined presentation methodology (e.g. Ignite; PechaKucha)
- Have the opportunity for collaborative and/or peer mediated learning and assessment

### **4. Providing anytime/anywhere content engagement**

As a result of becoming a second writing *and* a Social Sciences Gen Ed. course, demand for the course was expected to increase at the same time that availability of large classroom spaces on the Columbus campus was expected to decrease, particularly at times preferred by students. Both expectations proved accurate.

#### *Solution*

We provided students with more flexible attendance options, including the opportunity to:

- Choose one of three lecture attendance modes for any given lecture (face-to-face, synchronously online, or asynchronously online when unable to attend class due to an excused absence)
- Access course materials anytime/anywhere, while continuing to require face-to-face recitation attendance

## **Project Goals and Objectives**

The overarching goal of this project was to develop a community of learners in a large enrollment, high demand course. To achieve success, we had several critical needs:

- To support anytime/anyplace learning, providing a means by which a majority of students could actively engage with content, peers, and the instructor regardless of attendance modality (face-to-face, synchronous online, asynchronous online).
- To support anytime/anyplace processes for peer feedback, discussion, and debate.
- To provide a meaningful oral communication component involving collaborative work manageable within the constraints of large enrollment and course time.

### **Project objectives contributing to project goals**

#### **Learning Goal 1: Support anytime/anyplace learning**

- We took several steps to achieve this goal. Investigate the HyFlex instructional method for students to participate in the lecture component by multiple modalities (f2f; online synchronous; online asynchronous).
- Incorporate a method by which a majority of students could respond to questions, provide opinions, or interact with the instructor when prompted during lecture.
- Increase opportunities for students to ask questions and interact with the course instructor during lectures.
- Develop a process to assess active student participation and engagement during content delivery in the context of greater student enrollment and larger lecture size.
- Identify best practices based on assessment of student participation.
- Provide online activities to reinforce course concepts addressed in lecture and/or recitation utilizing Quality Matters™ criteria.
- Provide students anytime access to archived lectures.

After research, we chose to use CarmenConnect to capture, broadcast, and archive lectures and Poll Everywhere to provide students with a system to participate remotely. The implementation of these tools was guided by the pedagogical input of team members.

**Learning Goal 2: Support anytime/anyplace processes for peer feedback, discussion, and debate.**

- Develop an anytime/anywhere topic/issue related discussion venue for students to engage with each other and the instructor.
- Organize small (4-5) student work groups that interact in and out of class for assignments and peer feedback, as well as serving as a peer resource for information sharing.
- Identify best practices based on results of efficacy comparison.

Using the Carmen (D2L) learning management system, we implemented discussion forums and topics related to each recitation, placing students into small work groups. Discussion topics were assessed for participation grades.

**Learning Goal 3: Provide a meaningful oral communication component involving collaborative work**

- Provide a venue and/or method to support out of class group discussion and work for the oral presentation assignment.
- Provide technical support for student development of oral presentation assignment.
- Utilize technology and presentation methodology to allow all students to actively participate in the oral presentation assignment.
- Provide a method for student delivery of the oral presentation assignment that supports student learning while addressing the time constraints of the course and the number of students enrolled.
- Develop a method for peer, instructor, and guest feedback to student groups on oral presentation assignment.



## Impact Grant Assessment Highlights

- Attendance: Perception
  - Start: 79% planned to attend mostly/always in-person
  - End: 72% reported attending mostly/always online
- Attendance: Actual
  - Start: 20-40% of students attending regularly online
  - End: 60-70% of students attending regularly online
  - 49% of students attended more than 75% of lectures online
  - 64% attended more than 60% of lectures online for the term
- Perception of Technology
  - 84% agreed technology helped them actively participate in the course
  - 17% thought technology hindered interaction with the instructor
  - 56% agreed technology helped create a sense of community
  - 52% agreed that technology helped students engage with their peers
  - Greater than 85% of students expressed satisfaction and comfort with technology
  - Greater than 90% agreed that technology helped them understand and connect with course content
  - Greater than 90% indicated that instructional technology made the materials and activities more interesting, and was not distracting
- Student Performance
  - 85% of students agreed that the technology used in the course helped them achieve their learning goals
  - There was no correlation between mode of attendance and overall grade
  - There was no correlation between mode of attendance and grade on writing assignments that required knowledge of lecture content
  - There was no significant relationship between number of unexcused absences and percent online attendance

During the last class of the pilot, students were given the opportunity to provide open-ended feedback regarding the course. Question 9 asked, "Was the option of attending class remotely valuable to you? Why or why not?" The following responses represent a sampling of comments, ranging from frequently expressed to expressed by one or two students.

Students who used the option to attend remotely reported frequently that:

- It was convenient, simple, provided flexibility, helped manage unpredictability of schedule, saved time and allowed to "get home during the day for lunch"
- It eased issues with limited time between classes or with work schedules
- And it increased attendance ("probably 5x's higher than it would have been w/o Adobe [Connect]"; made me attend much more than I probably would have", "I would have skipped a lot more if it wasn't [offered online]").

In addition, individual students who attended remotely commented that:

- They enjoyed watching lecture with friends—suggesting potential to develop small learning pods in future iterations
- Remote attendance was useful on those occasions where they had a conflict even though preferred face-to-face, they attended class even though traveling
- Remote attendance provided a cost savings (gas)
- They were surprised by how much ended up attending class this way
- Remote attendance helped them attend despite weather issues
- Remote attendance provided comfort and ability to focus (one student commented that they are uncomfortable in a crowded classroom; another remarked that in the classroom, dim lighting and tight space "usually makes me fall asleep")

Several students remarked that the remote attendance option should be implemented more widely:

- "Greatest thing to have available"
- "Made my day less miserable"
- "Attending online but live gives best of both worlds: don't procrastinate like pre-recorded online course, still had to keep up with class pace, but could be home/off campus"
- "BEST INVENTION EVER!!!"

Students mentioned a number of issues and suggestions:

- Cited need to make sure had access to technology (wireless access) in order to attend
- Fear that attending remotely might result in instructor not receiving participation response
- Having students attend remotely changed the lecture technique of the instructor
- The option was valuable, however they attended in person because they knew they would not pay attention if they attended via computer

One student noted that the option was nice but not necessary.

# Project Goals and Objectives Outcomes

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## Project process goals

### Goals achieved

- Student perception that technology utilized aids learning
- Student perception of course and student course satisfaction are the same or greater than historical
- Student use preference - lecture attendance measures and mode preference
- Student performance on the final writing assignment, integrating course concepts, is the same or greater than historical data
- Accessibility is addressed in development of course materials
  - We plan to continue to address accessibility as new components are designed/implemented
- Use of comprehension checks
  - Response to participation questions is robust regardless of attendance mode (some anecdotal indication that students attending via CarmenConnect provide on average more robust responses, perhaps due to fewer time constraints)
- Lecture/recitation/online activity alignment
- Group project methodology preference

### Goals partially achieved

- Best practices document created
  - One document was created to assist with technology set-up for lecture.
  - We will assess the course during Summer 2013 (following 2 semesters of teaching with the HyFlex model) to establish and document best practices for the course, e.g., how to verify attendance, how to post and use recorded lectures, how to enhance use of back channel to ask questions and student response to lecture questions
- Student engagement with course content at point of access
  - Student response rate to questions posed using the Poll Everywhere lecture response system decreased over time. Currently, we plan to consider incentivizing students to participate.

## Goals not achieved

- HyFlex model does not provide additional instructional burden
  - Additional time was required to assess student responses to lecture participation questions for those students attending via CarmenConnect.
  - Additional time required to set-up technology immediately prior to lecture (this decreased as familiarity of the instructor with the technology improved).

## Goals not actively pursued

- Online course components and course support materials adhere to Quality Matters guidelines
- Group work (technology facilitation)
  - Students provided in-class time to work on group project

## Learning Goal 1 and related objectives (anytime/anyplace learning)

### Goals achieved

- Student feedback indicates sufficient opportunities to interact with and question instructor during lecture component of course
- Anytime/anyplace access to lecture component of course is provided to and utilized by students
- A majority of students demonstrate understanding of concepts and ability to use concepts to analyze issues related to course content
- Students attain core competency goals of the course regardless of modality utilized (f2f, online synchronous, online asynchronous)
- Student satisfaction with the course will not be impacted by modality utilized by the student (face-to-face, online synchronous, online asynchronous)
  - 88% of students agreed/strongly agreed instructional technology enhanced satisfaction

### Goals partially achieved

- A community of learners exists
  - 56% of students report that technology helped create a sense of community
- When at least 90% of students achieve course standard of competency for participation in online discussion
  - Student participation in online discussion group work was less than desired (average participation = 86%), however quality of responses improved with repeated opportunities

### **Goals not achieved**

- When greater than 75% of students utilize one or more methods of participation in the lecture to respond to questions, provide opinions or interact with the instructor when prompted
  - Start of term – 60-70%; end of term – 30-40% use Poll Everywhere course response system

### **Learning Goal 2 and related objectives (peer feedback, discussion, and debate)**

#### **Goals achieved**

- Contributions during discussions in recitation
- Student members of workgroups are actively engaged and equally responsible for participation in group activities
  - 88% of students agreed/strongly agreed that group members contributed to in-class group work assignments
- Student evaluation of the workgroup concept demonstrates that students value the process
  - 82% of students agreed/strongly agreed that the group activities contributed to learning

#### **Goals partially achieved**

- Students engage with peers in anytime/anywhere topic/issue related discussion and feedback
  - Online post activity
    - Student participation in online discussion group work was less than desired (average participation = 86%), however quality of responses improved with repeated opportunities; student participation during in-class discussion
  - Contributions to questions posed in lecture
    - Response rate decreased from acceptable (60-70%) to less than desired (30-40%) through the duration of the term

## **Learning Goal 3 and related objectives (oral communication with collaborative component)**

### **Goals achieved**

- Group members contribute equally in development and presentation of oral project
  - As measured by student peer evaluation of group members
- Students link oral communication activity to course goals
  - 80% of students found that the oral presentation group assignment developed *oral communication skills* and 66% of students agreed/strongly agreed that the oral presentation group assignment helped them gain a greater *understanding of course concepts*

### **Goals partially achieved**

- Students perceive the oral communication component to be a valuable activity
  - 63% of students agreed/strongly agreed that the oral presentation group assignment was valuable for enhancing understanding of course concepts.

## 2012 Impact Grant Pilot Experience

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### Students affected by pilot

During Autumn Semester, 2012, 102 students completed the ANIM SCI 2367 ("Animals in Society") course in which the HyFlex model was utilized.

### Anticipated number of students affected by new course design in 2013

The HyFlex model continues to be implemented in ANIM SCI 2367. There are 93 students enrolled in the course in Spring 2013. Enrollment is anticipated to continue to be  $100 \pm 5$  students each semester the course is offered (Autumn and Spring).

In addition, plans are underway to explore utilizing the HyFlex model in ANIM SCI 4597 ("Contemporary Animal Use Issues"). This course is offered in Autumn, Spring and Summer semesters, 100 students per semester.

### Approximate time spent by Animal Sciences and FAES faculty and staff on the project

Team Member	Approximate Hours
Jeanne Osborne	400
Michael Chakerian	150
Benjamin Wenner	150
Henry Zerby	20
Michelle Hendrick	40
Cheryl Deisch	5
Warren Flood	20
<b>Total</b>	<b>785</b>

### Approximate total cost (not including ODEE staff time)

Resources	Cost
Poll Everywhere License	\$700
Laptop computer	\$1,490
Shure ULX system – audio hardware, omnidirectional microphone	\$1,004
USB Interface and cable	\$112
J Osborne Release	\$7,500
<b>Total</b>	<b>\$10,806</b>

Additionally, after the pilot, the team used some additional funds to enhance the HyFlex model and disseminate results at professional meetings

<b>Resources</b>	<b>Cost</b>
Extra microphone pack (back-up)	\$560
American Society of Animal Science Conference – J Osborne travel	\$1,895
American Society of Animal Science Conference – M Chakerian	\$1,545
<b>Total</b>	<b>\$4,000</b>



## 2012 Impact Grant Experience

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### Impact Grant Project Implementation Process

The pilot implementation for the enhanced "Animals in Society" course occurred during Autumn 2012. As noted above, the pilot involved the introduction of two primary learning technologies: CarmenConnect, which was used to provide remote access to lectures and access to recordings of lectures; and Poll Everywhere, which was used to enable students to respond to instructor questions and participate in discussions, whether attending in person or remotely. Both tools entailed additional technology, such as audio equipment to capture the lecture and software in the classroom to enable the instructor to manage the online discussion. In addition, several enhancements were made to the Carmen course. In addition to the use of technology to enhance the course, this was also the first offering as a semester (rather than quarter) course. As a result, there was quite a lot of "just in time" organization/reorganization that occurred despite a robust organizational strategy.

Prior to the first day of class, the classroom in which the course was to be taught was evaluated for compatibility with the hardware/software chosen by instructional technology team members. Additionally, practice sessions and clear, step-by-step instructions were designed for the instructor in order to improve comfort and ensure successful deployment of the instructional model and technology.

Prior to implementation of the first "live" CarmenConnect lecture, two steps were taken to improve the likelihood of success. First, the second lecture of the semester (during the first week) was delivered and recorded using CarmenConnect. Students were told this was happening at the beginning of the test lecture, but not provided the option to attend that lecture remotely. Second, students were introduced to all the technologies that would be utilized in the course via a "Course Safari" on the course Carmen site. This was made available to students after the test lecture, to be completed before the next class meeting. In the Safari, students worked stepwise through the various course technology components after first reviewing the course syllabus. The technology components including not only CarmenConnect and Poll Everywhere, but also Carmen-based features used in the course: Quiz, Discussion, Dropbox, Survey, and accessing a video-link. Once the Safari was completed, students were granted access to the course lecture and recitation materials, and the option to attend remotely was made available.

At the outset of the course, Michael Chakerian and members of the Office of Distance Education and eLearning (ODEE) support team were present to assist the instructor, Jeanne Osborne, in setting up the hardware, accessing and setting up the virtual classroom in CarmenConnect, and making sure that there were no technology issues with the physical classroom space. The set-up process included putting on the Shure Mic pack and over-the-ear omnidirectional wireless microphone, managing the computer's audio device default, logging into Poll Everywhere for the questions that would be used that day, uploading the PowerPoint presentation, setting up the CarmenConnect classroom (testing sound, setting

the audio gain control, turning on the microphone, starting the lecture recording, and sharing the screen), and setting up the instructor's iPad to verify the CarmenConnect classroom was shared and monitor the Poll Everywhere back channel.

Minor issues with sound quality, particularly when the lecture included a video clip or DVD, were managed in consult with ODEE Classroom Services support staff. During each lecture, the Poll Everywhere backchannel was monitored, initially by Michael Chakerian. Approximately 2/3 of the way through the course, the instructor's comfort with the technology increased, and Michael did not attend lectures as frequently; but monitored the CarmenConnect classroom remotely and was available via cell phone if there were any issues. When he was not in the classroom, the Poll Everywhere back channel was monitored by either the graduate student assistant assigned to the course (Benjamin Wenner) or by the Instructor, Jeanne Osborne. By the last 3 weeks of the semester, Michael Chakerian was no longer attending and Jeanne Osborne managed set-up for each lecture comfortably. Minor issues were managed with a phone call to Michael, or with the assistance of Benjamin Wenner. Time required to set-up and be ready to present the lecture decreased from 15 minutes at the beginning of the term, to approximately 7 minutes by the end of the semester.

Lecture delivery proceeded as usual, with two caveats. First, when questions were asked either by students attending in-person or online they needed to be repeated by the instructor, so that all students could hear the question regardless of how they were attending class, and so that it would be captured in the recording. The person monitoring questions asked the questions raised via the backchannel. Second, the questions asked by the instructor needed to be pre-configured in Poll Everywhere polls, rather than spontaneous. This required forethought and planning by the instructor, and was not as effective as desired; however, this is an area that can be further refined following the initial experience.

At the conclusion of each lecture, students responded to a lecture-based participation question. Students attending in person submitted their responses in writing on an instructor-provided form. Students attending online submitted their responses via e-mail with a prescribed subject line. Each response submitted via e-mail was acknowledged by the instructor upon return to her office.

Feedback from students regarding their anticipation of, and experiences with, the technology in the course was collected at multiple points through the course via Carmen surveys. The first survey questionnaire was administered as part of the Safari, and focused on students' anticipated use of and comfort with technology. Two survey questionnaires were administered at approximately 1/3 and 2/3 through the course, and were focused on whether there was a change in students' perceptions and use of technology. The final Carmen survey questionnaire was administered the last week of the class and focused on students' assessment of frequency and ease of use, as well as value to the students. Additionally, open-ended feedback was gathered via a feedback instrument administered to students in the final class of the course.

## **Reflections on the grant process—what went well**

The success of this project greatly exceeded the instructor's expectations, primarily as a result of the strong collaboration between the team assembled in Animal Sciences, the College of Food, Agricultural, and Environmental Sciences, and the Office of Distance Education and eLearning. The experiences and sharing of Dr. Jackie Miller also contributed to the success of this project: much of the learning from her implementation of the HyFlex model in Statistics 145 informed this project. Many of the technological glitches that were experienced by her were ameliorated in this project as a result of sharing her experiences. Additionally, the cooperation and collaboration of Classroom Services in working through some of the classroom-specific challenges was invaluable and contributed to the smooth implementation of the HyFlex model in Autumn semester (as well as Spring semester in a different classroom).

## **Reflections on the grant process—what did not go well**

Variations in wireless connectivity provided challenges for some students—they worked through this issue on an individual basis; however the time of day the class is taught (Wednesday and Friday afternoons) appears to be a high-use time for wireless access and thus may be exceeding capacity in some locations on campus.

A plan to gather more detailed feedback from students via a UCAT managed focus group(s) did not occur due to changes in personnel and personnel shortages within UCAT during Autumn 2012. We would have preferred to have more detailed feedback from students regarding their experiences with the HyFlex model, and may pursue this with students in future classes.

## **Unanticipated Risks that Negatively Impacted Project Success**

- The presentation of video clips and DVDs during lecture caused an issue with sound and video quality for students attending online. The sound quality was corrected to some extent by adjusting the audio gain control within CarmenConnect and the program volume level on the classroom system. The video quality remained choppy, but students adjusted admirably.
- A minority of students chose to attend class only for the final five to ten minutes of class—long enough to get the participation question for the day and submit it within the required timeframe. This issue was managed by the instructor spot-checking the CarmenConnect log-in and -out times and requesting explanations from students who were not shown to be logged in for the full class period. There were two problems that became evident in this process: 1) the extra time required for the instructor to cross-check participation responses with CarmenConnect attendee records (this is a time-consuming process that does not appear to be searchable); 2) apparent inaccuracies in the CarmenConnect log—some students provided evidence of attending the full time even though the log did not reflect this.

- Consistent with the findings of Jackie Miller, the students did not participate in the polls to the degree desired. Participation was around 60% at the beginning of the term, but dropped to approximately 30% by the end of the term. The reasons for this drop may relate to semester fatigue, or may reflect reduction in novelty of the technology. A focus group with students may help resolve this issue.
- In the switch from the CarmenConnect Pilot (Autumn semester) to Carmen Connect implementation by the University (Spring semester), there were functionalities that changed or had to be re-implemented (e.g., password for guests). The Carmen Connect team was very responsive.

### **Key lessons learned**

In addition to the technical challenges previously noted, a primary issue concerned the attendance patterns of students. As noted above, a small percentage (<5%) of students to log in for the last 5-10 minutes of class, submit a response to the participation question, and expect credit for attending the full class. This was managed by spot-checking the attendance log for CarmenConnect and sending a message to students that did not attend for the full lecture period requesting an explanation. For the most part, either the student provided an acceptable explanation or apologized and did not repeat. Instructors implementing the HyFlex model should be prepared to respond to similar student behavior.

An additional challenge is that some students attending online are multi-tasking (e.g., texting on cell-phones, checking e-mail) as evidenced by incorrect or inappropriate responses to the participation question. While multi-tasking occurs with students attending in person, it more difficult to do so without being noticed by the instructor (although not impossible, particularly with a large classroom). To enhance the students' educational experience in the class by discouraging these ineffective behaviors, the instructor is considering ways motivate students to attend fully, pay attention, and participate. Additionally, finding better ways to promote the learning community for the lecture component of the class will be explored. These will be priorities in moving forward.

## Next steps

- Continue to utilize Adobe (Carmen) Connect for future offerings of ANIM SCI 2367
- Address issues with student multi-tasking and late log-in/early log-out
- Further integrate the lecture component and the recitation activities; consider ways to include steps of the writing and discussion activities that are occurring in recitation into the lecture
- Consider whether other course response systems (e.g., Top Hat Monocle) will be a better solution for developing a learning community within the lecture
- Explore opportunities to teach the course via CarmenConnect with in-person recitation at regional campuses (particularly for Animal Sciences majors to enhance articulation to the Columbus campus)
- Work with Registrar to determine if students can enroll with an attendance preference thus reducing classroom size requirement
- Consider HyFlex model for other courses in Animal Sciences, FAES, University Second Writing

## Suggestions for future recipients

Take advantage of the resources available throughout the university to enhance your project. For example, the Course Design Institute offered by the University Center for the Advancement of Teaching is valuable for considering how to design and address course goals and develop learning experiences that will support these goals. The ODEE Digital Union also provides several short-course and workshop opportunities that are designed to address particular topics important for teaching and student learning.

Don't take anything for granted. Check out your teaching space and practice with the technology you will be using. That will increase your comfort as well as make the process much smoother for you and your students.

Don't assume that your students are well versed in the use of the technology you are incorporating. Give them means to explore the various tools you will be using in a non-threatening (i.e., *not* the first day of class) environment. Those who know what they are doing will breeze through quickly; those who do not will appreciate the opportunity to practice and ask questions.

## Three words to describe working with the ODEE Team

1. Collaborative
2. Supportive
3. Enlightening

## Ah-ha moment of the grant process

The Ah-ha moment of the process occurred just before the start of Autumn semester and was captured in a blog post by Jeanne Osborne. The title of the post says it in a nutshell: "Hear All About It: Instructor admits, 'This isn't going to be as bad as I thought it would be!' (aka, there is a great team for this project and it is going to be a great learning experience for everyone involved!)". A snippet from the blog post highlights the 'ah-ha'-ness of this moment (*italics added for emphasis*):

Today was my first hands-on experience with CarmenConnect. We met in the classroom in Smith Lab that I will actually be using this fall and took a couple of hours to play with CarmenConnect (not too bad – even I could get the hang of navigating the system). We also had time to check out a few glitches that I have experienced with my presentations and talk about teaching pedagogy and ways to be even more effective with some of the teaching strategies I have used in the past. It was quite a fun afternoon and went a long way to making me more comfortable not only with the technology, but also with the idea of using technology to enhance teaching and learning. I have never been a great fan of incorporating technology into the classroom for the sake of being "cutting edge" or the need to be the first to try the next new thing. But, as a result of the discussions and work we have done as a team (Animal Sciences and Learning Technology), *I am becoming even more convinced that we can use the technologies we have discussed to deepen student learning, address the learning goals we have established for the course and for the Animal Sciences program, and enhance the long-term success of our students.* This project will provide us the opportunity to take a good look at the learning process and student preferences with regard to how they participate in class. If previous projects of the Impact Grants program are any indication, I think we will find that the effort and collective wisdom of this team will result in a course that meets our goals.

## Working with the ODEE staff

### Strongly Agree

1. I am satisfied with the communication I received from the ODEE staff.
2. I am satisfied with the grant project contributions I received from the ODEE staff.
3. I have learned the skills necessary to continue related work on my own.
4. I found the ODEE staff approachable.
5. The lessons learned during this pilot will guide future course design.

## Department Chair Statement of Impact

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May 1, 2013

The outcome of the Animal Sciences 2012 Impact Grant by Jeanne Osborne and Henry Zerby has been a success based upon the information and experience gained by teaching ANIM SCI 2367 using the HyFlex model, and the student-generated data gained from this experience. From an Administrative perspective the funds from this grant allowed execution of the project that we likely would not have been able to do without the grant. The HyFlex approach to teaching will accommodate some non-traditional students, as they will be able to enroll and participate in courses that could not occur without the remote access. In addition, this model will also appeal to our current and next generation students who simply enjoy the use of communication technology wherever possible. The student interaction encouraged by this platform also accommodates the “night-owl” class participation that can occur after the instructor has gone to bed, which is desirable. Given the increased use by private industry of virtual meetings, multi-office and multi-continent locations, and around the clock networking, this type of teaching will prepare our students to be successful in their future careers. I can see more courses being taught using this (or related) technology in the future and I hope we will gain greater student engagement from doing so. I am very pleased that Jeanne and colleagues have already submitted two abstracts about this teaching experience that will be presented at the national ASAS meeting in July, and I imagine that one or more manuscripts will be submitted in due time. We are grateful for the support of the ODEE.

—Dr. Ronald Kensinger; Chair, Department of Animal Sciences

### **Approximate time spent by ODEE staff on the revision project**

170

### **Reflections on the grant process—what went well**

Jeanne Osborne and the Animal Sciences team were amazing project partners. They were committed to the project no matter the challenge or obstacle. The team members were great collaborators who met regularly to work on course development and training. What impressed me greatly about the team was how each member dived into his or her responsibilities and took pride in their contributions to the course. Throughout the grant, the team members blogged frequently about their journey.

At the beginning of the grant, Jeanne confessed that she was highly technophobic. Michael Chakerian was a great partner on the team as he is very skilled at meeting Jeanne on her level to explain processes, train technology, and actively troubleshoot when necessary.

Everyone on the team really joined together to create an amazing student experience through this course transformation. There was so much cohesiveness between our teams that we didn't really see ourselves as separate entities working together, we were one team. In the end, we learned a lot about the student experience and effectiveness of the HyFlex model.

One key benefit that really helped out the team was the input and guidance from Classroom Services on campus. They helped us solve an audio issue and choose an inexpensive yet highly effective sound device to capture the sound system's audio and route it back through the computer over CarmenConnect.

### **Reflections on the grant process—what did not go well**

We didn't face many negative experiences throughout the grant period. One limitation that we encountered was sub-par video performance when playing a video through CarmenConnect. In some cases, Jeanne would have to make her DVD available to students that were unable to hear or see the video adequately. When sharing a screen within CarmenConnect that semester, there were a number of add-on browser permissions that needed to be clicked through in order to share. By clicking through the permissions, the audio is reset and needs to be turned on again. During one class, that step was overlooked. To mitigate any further missteps, a detailed step-by-step process manual for CarmenConnect setup was developed and is revised whenever there are process or classroom infrastructure changes.



### **Three words to describe working with the Animal Sciences Team**

1. Remarkable
2. Motivating
3. Enjoyable

### **Ah-ha moment of the grant process**

An ah-ha moment began on the first day of class when 105 students plus 5 people from our project team all gathered in the 100 seat room in Smith 1009. As students tried to get comfortable in the aisles and on the floor, it became evident that a solution was desperately needed to help mitigate this issue. After a month into the semester, about half of the students were now attending the class via CarmenConnect. As I would look about the room, there were available seats everywhere and people attending comfortably online. It was then that I realized how important and valuable this mode of lecture delivery is.

### **Changes to our processes from this grant experience**

There isn't much change that needed to occur as a result of this grant project. Some opportunities for improvement would be to involve the classroom support technicians early on in the planning phases to test the rooms. This would have helped prevent some of the audio issues that occurred as a result of browser add-on requests.