

Indiana State University — Anatomy Lab Course

Key Findings



Transitioned station-based anatomy exams to a digital format



Increased faculty efficiency and equity in grading assessments



Identified opportunities for improvement with category tagging

The anatomy course at Indiana State's College of Health and Human Services caters to students pursuing a variety of degrees, including Physical Therapy, Occupational Therapy, and Athletic Training. When the college opened additional course sections to meet growing demand, instructors were teaching multiple sections and grading hundreds of paper-based exams. In 2015, the anatomy faculty adopted Exemplify for iPad and soon began to reap the benefits of digital assessment.

BACKGROUND

Indiana State University was founded in 1865 as the Indiana State Normal School in Terre Haute, specializing in the education of elementary and high school teachers. In 1965, the Normal School was renamed Indiana State University in recognition of its continued growth and has since expanded to include seven colleges with 175 graduate and undergraduate programs.

The College of Health and Human Services at Indiana State University offers 36 degrees



across its four departments, including the Department of Applied Medicine and Rehabilitation. The undergraduate program in this department is interprofessional in nature, with students on different degree paths learning side-by-side in shared prerequisite courses.

The anatomy lab course offered through the Department of Applied Medicine and Rehabilitation covers anatomical structures from all human body systems, but emphasizes the musculoskeletal system. The lab course is offered in multiple sections and geared toward students who plan to pursue graduate degrees in Physical Therapy (PT), Occupational Therapy (OT), Athletic Training (AT), or Physician Assistant Studies (PA).

CHALLENGE

In the 2013-2014 academic year, demand for the musculoskeletal anatomy course in the College of Health and Human Services was at an all-time high. The Department of Applied Medicine and Rehabilitation offered over a dozen sections of the lab to accommodate a growing number of PT- and OT-track students, AT majors, and nursing students.

As the number of lab sections grew, so did the number of exams to grade, which presented a problem; course instructors were still administering assessments via paper and pencil. With multiple sections that each comprised 25 students and up to 100 items per exam, the grading workload had become unmanageable.

Heather M. Adams, Instructor at the Department of Applied Medicine and Rehabilitation, has been teaching anatomy courses at Indiana State since 2012. In her first semester, Heather recalls teaching multiple lab sections a day and devoting any spare time to grading. With around 100 exams to review in a single batch, it was difficult for Heather to provide individual students with meaningful feedback or keep track of commonly missed questions.

To meet the demands of increased enrollment in these anatomy labs, faculty knew that a transition to digital assessment was the way forward. But not

“When I was first hired, it was not atypical for me to teach four sections of lab in a day, so I would be in class from 8:00 a.m. until 4:00 p.m. During that time, if I was not in class, I was grading.” *

— Heather M. Adams
Instructor, Department of Applied
Medicine and Rehabilitation

just any computer-based solution would do. Assessments in these lab courses are delivered in a series of stations with marked anatomical models, and students rotate through these stations answering questions that correspond to the numbers on each model.

The experiential aspect of these exams would require that students use portable devices like tablets, since laptops would be cumbersome to carry from station to station. And as faculty were no strangers to unreliable WiFi connectivity on campus, the assessment solution they chose would also need offline options to prevent interruptions during exam sessions.

Indiana State Anatomy Lab Course

“Mark-the-Model” Assessment

How It Works:

1

Instructor sets up stations with anatomical models, labelled by question number.

2

Students make timed rotations through each station and identify marked models.

3

At the end, students have time to navigate back to any questions and revisit stations.

ADOPTION AND START UP

Department faculty applied for a grant to purchase a set of iPads and narrowed their search to exam solutions that offered an easy-to-use application for tablet devices. Exemplify for iPad checked all the boxes, and in late 2015, the department made the decision to adopt ExamSoft for assessment in its anatomy lab course.

With several years of experience as an anatomy lab section instructor, Heather was responsible for managing the initial upload of exam items into ExamSoft’s faculty portal. With the help of a graduate assistant, Heather created a foundational item bank that section instructors could use to create exams within the portal. Since anatomy lab exams center on the identification of anatomical models, instructors would be able to reuse most of these items from exam to exam.

Anatomy instructors decided on a fill-in-the-blank format for exam items, which would allow them to assess students’ ability to provide the correct names and spellings of anatomical parts. Instructors activated exam features that would best fit the format of these station-based, mark-the-model assessments. For instance, instructors enabled forward and backward navigation to allow students to quickly revisit any stations before submitting an exam.

RESULTS

To prevent any exam interruptions due to unstable WiFi connectivity, instructors activated Exemplify's offline assessment mode. A reliable connection is not necessary for exams delivered in the offline mode; students only need internet access to download the exam and upload the exam file once the exam session is complete. To further combat academic dishonesty, Exemplify uses complete device control in the offline mode. This ensures that students cannot access any other programs on the device while the exam file is open.

Switching to ExamSoft for digital assessment has allowed instructors to grade more fairly and efficiently, provide more comprehensive feedback to individual students, and identify areas of the curriculum where their sections may be struggling.

Anatomy instructors have saved substantial time grading — especially those who teach multiple lab sections in a semester — by reviewing student answers for several exams at once. The ExamSoft portal compiles answers from multiple instances of an exam, creates a list of answers for each fill-in-the-blank question, and arranges these answers from most common to least common.

These answer lists make it easy for instructors to decide how much variability in spelling they want to allow for a given question and automatically select the answers they want to accept across every exam. The names of students who submitted each answer are completely hidden from instructors, which helps to ensure equity in the grading process.

Once instructors have finished grading, they can send Strength & Opportunities Reports to each student. The ExamSoft portal allows faculty to choose how much exam content they want to include in these reports, so students can see the questions they missed without revealing the answers to every exam item.

Heather uses item tagging in her anatomy courses to help inform her teaching methods and identify areas of the curriculum where students may need added support. Heather tags each question to musculoskeletal categories (e.g., "upper limb vessels") so that she can observe section-wide performance by these categories. If a large number of students provide incorrect answers to items in a particular category, Heather will cover this subject area again in her classes.

"I absolutely love that when I go in to grade, I get a list of answers that students picked, and I can just go right down and check off which ones I want to accept. It makes the grading process very streamlined, and I think it's a lot easier to grade from a fairness standpoint."

— **Heather M. Adams**,
Instructor, Department
of Applied Medicine and
Rehabilitation

As the demand for the anatomy lab course began to grow, faculty at Indiana State made it their mission to find and implement a digital solution that could streamline their unique assessment process. In the six years since, they have been successful in their efforts with the help of ExamSoft's flexible assessment platform.

When the Spring 2020 pivot to remote learning forced the anatomy lab course online, faculty and students couldn't continue with a station-based, mark-the-model assessment format, but were able to maintain their database through an ExamSoft grant program. The lab course has returned to a hybrid learning model as of Spring 2021, but there are too many students in a single exam session to safely deliver assessments on campus.

Instructors are eagerly awaiting the safe return of in-class assessment and look forward to diving back into Exemplify for iPad. It is the ingenuity and dedication of Heather Adams and her fellow instructors who ensured the seamless transition to digital assessment in the anatomy lab course. Now that they have discovered a solution that works, there's no turning back.

** This organization received consideration for participating in this Case Study.*

"I think the beauty of ExamSoft is it can be useful for anyone. Yes, we're using it in a different sort of way, but I think that speaks to its flexibility. Even if you feel like you don't fit the typical testing mold, you can still make these solutions work."

Heather M. Adams, Instructor, Department of Applied Medicine and Rehabilitation



ExamSoft is the digital assessment platform that helps institutions achieve higher levels of course, program, and student success. With an intuitive testing application, ExamSoft makes it simple to create, administer, and grade exams, and generate detailed performance reports from the results — all to provide educators with a complete and accurate view of student learning.

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