FRONT RANGE COMMUNITY COLLEGE

Digital Course Solution Improves Student Success and Increases Instructor Efficiency

Professor Miller felt that her students were not spending enough time practicing or reviewing anatomical concepts outside of class. She was looking for a solution that would provide them with opportunities to practice on their own and motivate them to do more. With *Connect Anatomy & Physiology,* she was able to post required assignments and additional practice opportunities for her students, all with instant feedback and automated grading. As a result of the learning opportunities provided, more students are earning A's and B's and fewer students are earning C's and F's. Pass rates for her course have also increased 11%, from 75% to 86%.

Institution Profile

Front Range is the largest community college in Colorado, serving more than 25,000 students each year. Founded in 1968, FRCC offers associate degrees and more than 100 certificates. It is the number one transfer institution for the area colleges and universities, including the University of Colorado at Boulder and Colorado State University.

Implementation

Course Description:

This course focuses on the integrated study of the human body and the histology, anatomy, and physiology of the following systems and topics: endocrine, cardiovascular, hematology, lymphatic and immune, urinary, fluid and electrolyte control, digestive, nutrition, respiratory, reproductive and development. This course includes a mandatory hands-on laboratory experience involving experimentation, microscopy, observation, and dissection. This is the second semester of a two-semester sequence.

Digital Product in Use:
Connect® Anatomy & Physiology

Course Name:
Human Anatomy and Physiology

Course Type:
Lecture and lab

Credit Hours:
Four

Textbook in Use:
Anatomy & Physiology: The Unity of Form and Function, by Saladin, 5e

Instructor Name:
Anita Miller

Enrollment:
48/year (instructor total)
350/year (university total)

Case Study Term:
Spring 2011

"Students don't practice anatomical and conceptual information enough at home. Connect *allowed me to give them an additional practice pool with feedback built in.*

During class discussions, students are glad to have the visual labeling exercises on Connect *and appreciate the extra practice. They respond positively to all* Connect *exercises."*

- Professor Anita Miller

Course Grade:

- 40% of the final grade is based on four exams
- 16% of the final grade is based on lab practicals
- 12% of the final grade is based on quizzes
- 8% of the final grade is based on in-class exercises
- 8% of the final grade is based on labeling exercises in *Connect Anatomy & Physiology*
- 6% of the final grade is based on animation quizzes in *Connect Anatomy & Physiology*
- 7% of the final grade is based on the final exam
- 2% of the final grade is based on peer assessment
- 1% of the final grade is based on one lab notebook assessment

Implementation of McGraw-Hill *Connect*

Professor Miller requires her students to use *Connect Anatomy & Physiology,* giving three or more required assignments per week on average. Typically, she assigns one labeling assignment with a variety of figures that come directly from the textbook and two animation assignments per chapter where students are required to immediately apply what they learned in the accompanying animation by answering a series of related questions. 14% of the final grade is based on the assignments in *Connect.*

Professor Miller appreciates the ability to assign more work for her students and give them additional learning opportunities outside of the required homework without adding to her grading time. *Connect* automatically grades each assignment and gives students built-in feedback, and Miller no longer has to spend valuable class time reviewing homework. She has also found the Student Performance report in *Connect* particularly helpful in identifying students who are struggling and having detailed information available to address their individual needs.
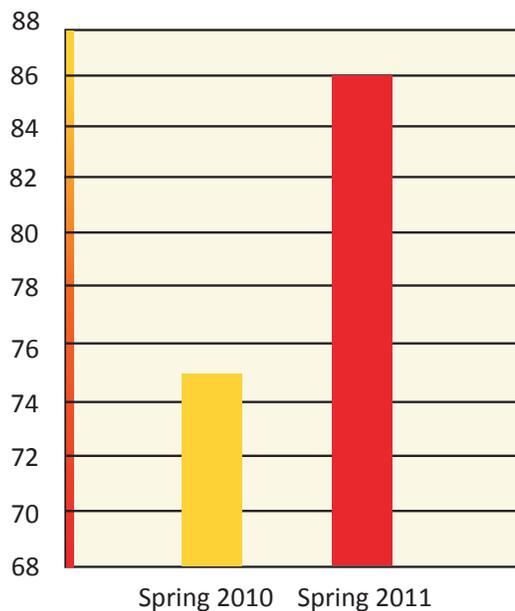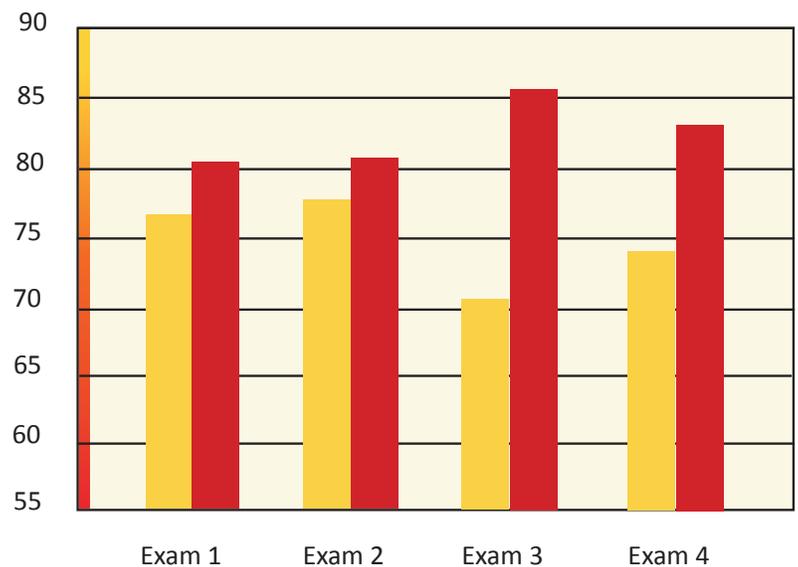
Figure 1 - Pass Rates

Figure 2 - Exam Averages

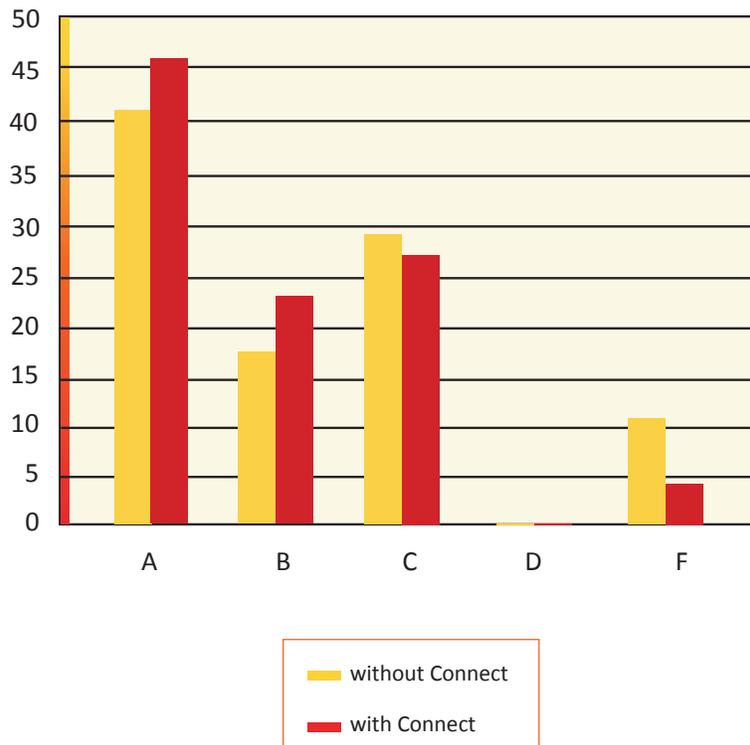Legend: without Connect, with Connect

Results Achieved

Professor Miller found that with *Connect Anatomy & Physiology,* her students were actually going beyond the required assignments and spending time on the extra practices activities, particularly with the visual labeling exercises. She also saw a significant increase in pass rates for her course (see Figure 1). In Spring 2010, the pass rate for the course was 75%. **In Spring 2011, with the use of *Connect,* her students had an 86% passing rate, the highest passing rate for the course that she had ever seen.**

Exam score averages also show improvement thanks to the interactive and applied learning opportunities that Professor Miller's students receive with *Connect* (see Figure 2). The biggest improvements came later in the term, in exams three and four, which speak to the cumulative effect of building conceptual knowledge.

Her final grade distribution shows more A's and B's and fewer C's and F's after the implementation of *Connect* (see Figure 3). Professor Miller reports, "With exams, the overall increase in grades is obvious for the class using *Connect.* With the practical assessments, improvement is also visible. The high level of performance for students with an A shows that the good students know what to study for exams, whereas the lower achievers need more help, which *Connect* provides them."

Figure 3 - Grade Distribution

Legend:
- without Connect (yellow)
- with Connect (red)

Conclusion

Professor Miller is very happy with *Connect Anatomy & Physiology*. The improved student outcomes have proven to her that *Connect* motivates her students to do the additional work necessary to truly learn and understand the course content. She will continue to use *Connect* in her Anatomy and Physiology courses and looks forward to further integrating more of the exercises and animations into her curriculum.