You can't teach wildlife and fisheries online, can you?

A Comparison of Student Learning and Satisfaction in Two Online and Face-to-Face Courses

Natural Resource Management
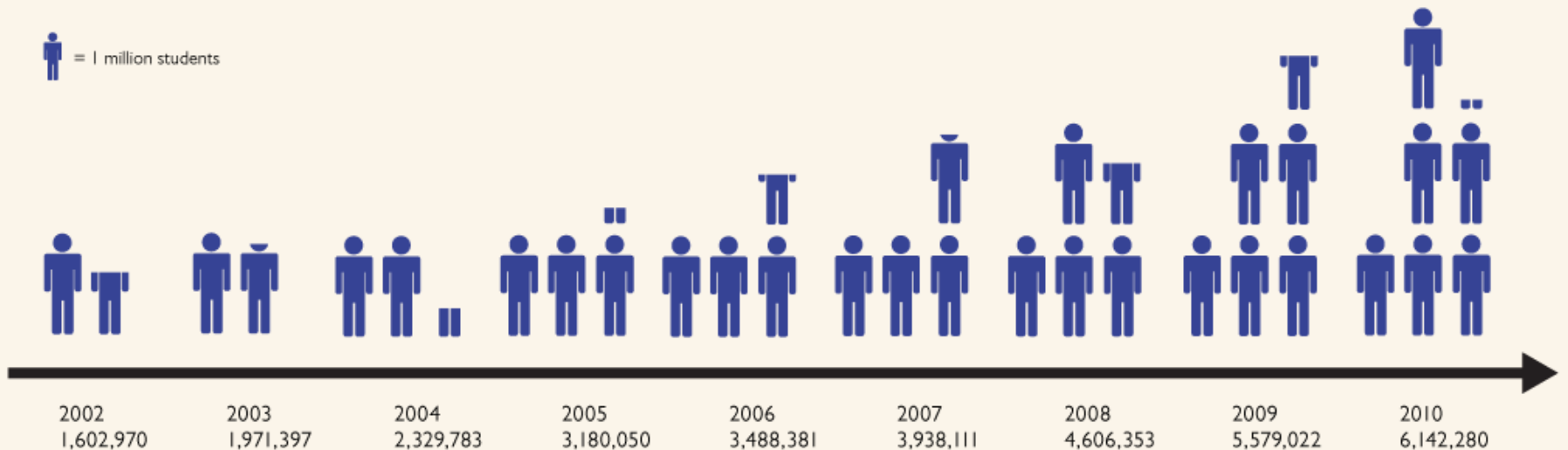
South Dakota State University

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Background

- Number of students taking courses online increasing and growth expected to continue.

- 31% of students take at least one online course.

Number of Students Enrolled in At Least One Online Course:

= 1 million students

2002	2003	2004	2005	2006	2007	2008	2009	2010
1,602,970	1,971,397	2,329,783	3,180,050	3,488,381	3,938,111	4,606,353	5,579,022	6,142,280

Background

- Sloan Consortium 2011 report:

    – The growth rate for online enrollments far exceeds the 2% growth in the overall higher education student population.

    – Enrollment for most fully online programs in most disciplines are growing annually.

http://sloanconsortium.org
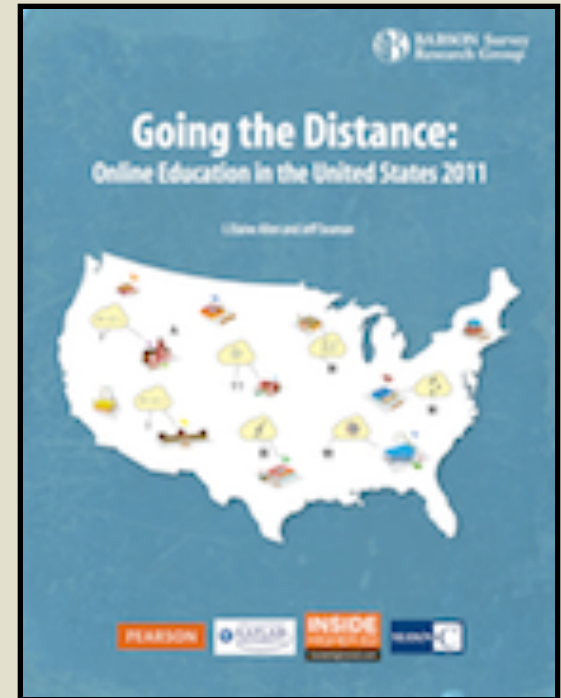
Background

- Natural resources management education also increasing in online presence.

  – Professional science masters programs.

  – At least one fully online M.S. and one B.S. in wildlife and fisheries degree in the U.S.

  – South Dakota State University offers a fully online A.A. in general studies with an emphasis in wildlife and fisheries sciences.

Questions

- How does online education compare to traditional face-to-face education?

- Can students learn just as well in online classes, particularly when the subject is "hands on"?

- Can science be taught effectively online?

- Can you teach wildlife and fisheries science and management online?

What does the literature say about online education in general?

- Depends on who you ask!

  – U.S. Department of Education meta-analysis (Means et al. 2009)

  – Critiques of meta-analysis (Smith Jaggers and Bailey 2010)

What about online *science* education?

- Concerns that there will be **<u>less</u>** learning

  - Lack of hands-on experience may create learning deficits (Carr 2000)

  - Could be just as good (Schoenfeld-Tacher et al. 2001)

- Getting better at providing "at home" lab activities.

What about online education in the *natural resources disciplines*?

- NOTHING! (as far as we can find)

- Bottom line: More rigorous study needed!

The Objective

- Determine whether student learning and satisfaction is similar in online and face-to-face (F2F) for two introductory courses in the wildlife and fisheries curriculum.
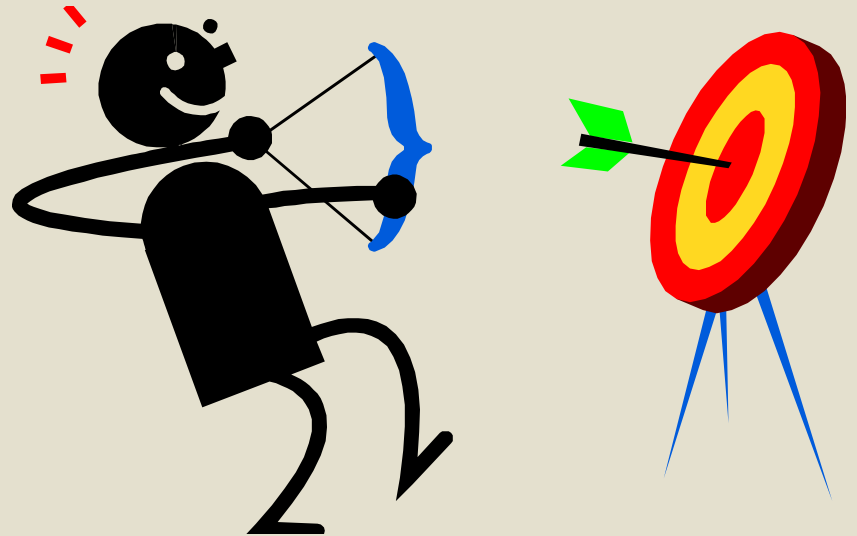
What factors influence student learning?

- Time on task (Means et al. 2009)

  – Life factors (work, childcare, course load)

- Previous experience with online education

- Learning style?

- Positive experience
  – Overall satisfaction with the course
  – Perceptions of student-faculty interaction
  – Perceptions of student-student interaction

Study Design

- Pseudo-experiment designed to test:
  - Level of learning
  - Student satisfaction
  - Factors related to both

Course	Fall 2011	Spring 2012
WL 220	F2F	Online
WL 230	Online	F2F

Study Design

- Students allowed to enroll either online or F2F, depending on preference or needs
  (36 students per section)

- Online and F2F courses adapted to be as similar as possible

  – Content (reading, lecture materials)
  – Assessments (quizzes and assignments)
  – Instructor "presence" (in-person v. online)
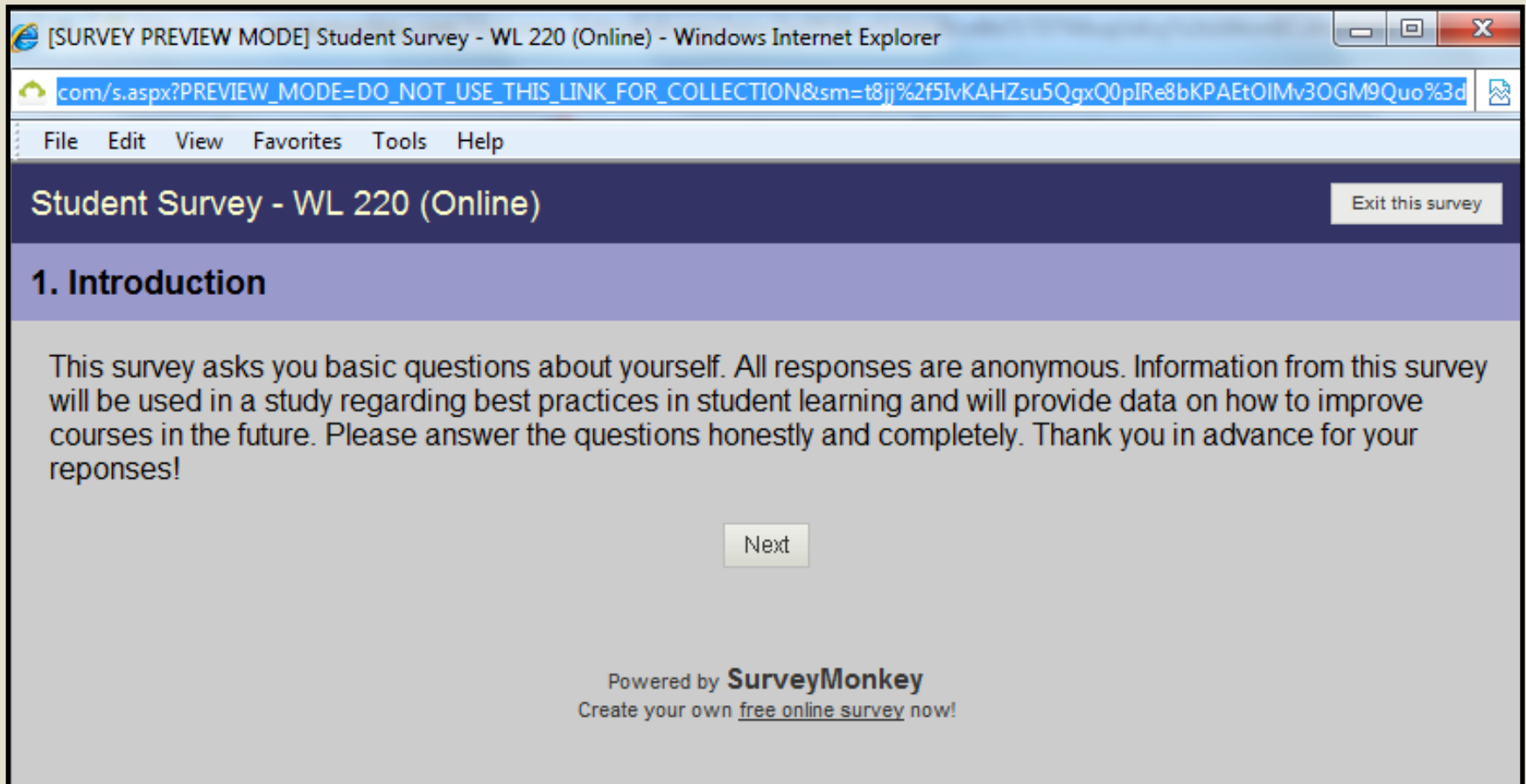
Data Collection

- ## Student learning:
  - Overall course performance
  - Performance on different types of assessments (e.g., quizzes versus application assignments)
  - Activity log (submitted biweekly)

- ## Student satisfaction:
  - eIDEA survey

- ## Instructor time on task
  - Activity log (daily)

Data Collection

- ## Other influential factors
  - – Demographics, learning style, life challenges

Results: Demographics

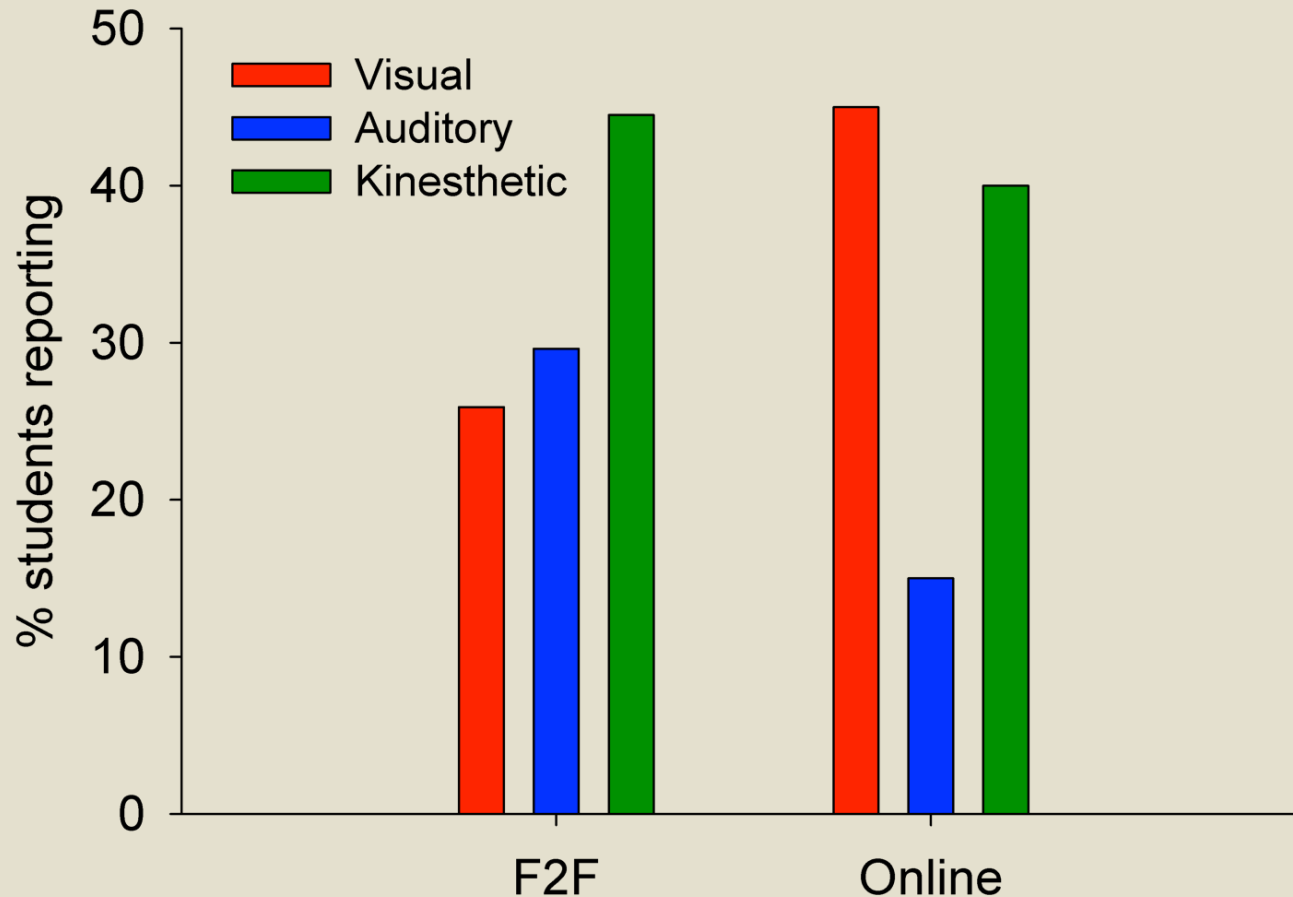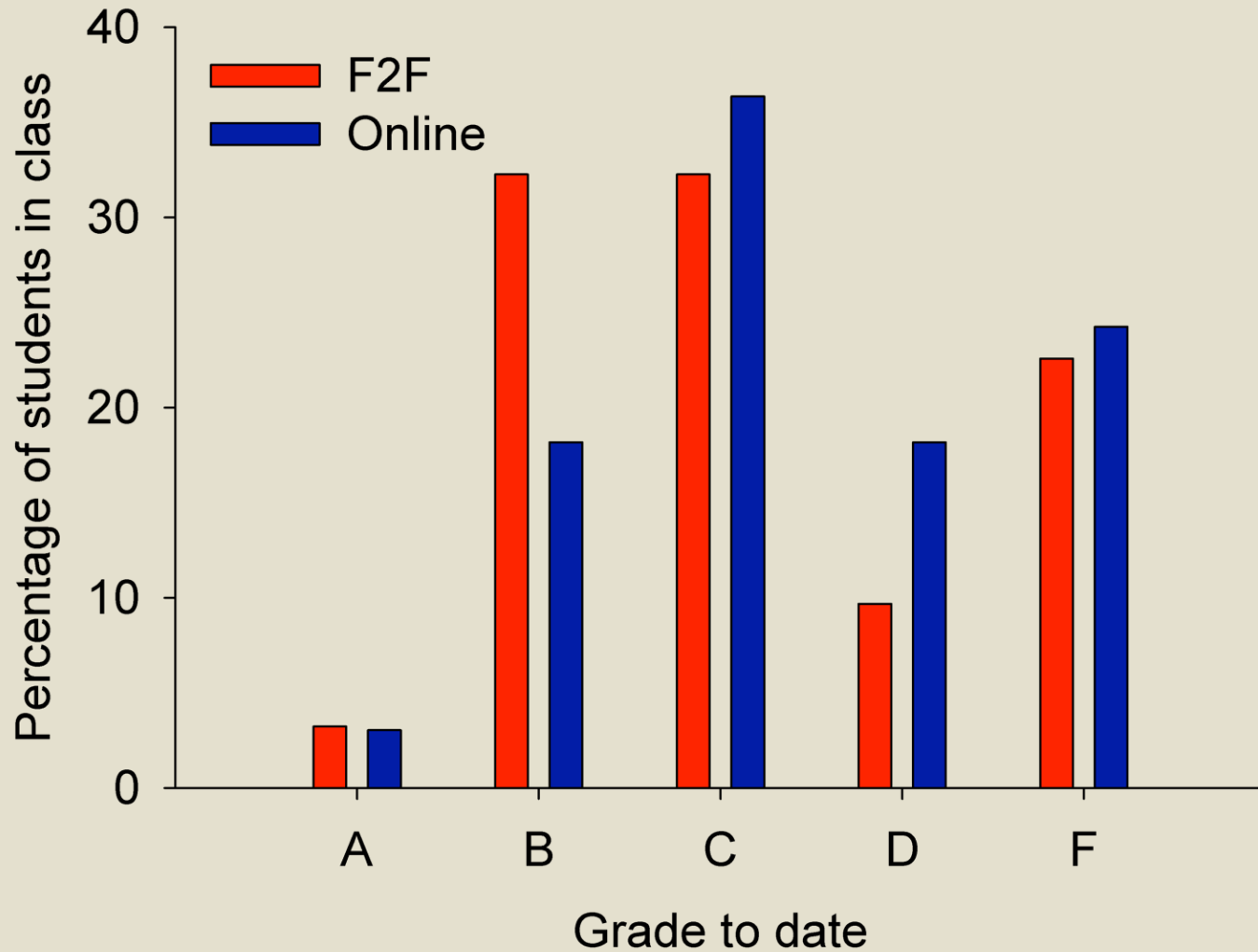|	WL 220		WL 230	
	F2F	Online	F2F	Online
% over the age of 23	**9.7**	**17.7**	**10.7**	**40.0**
% taking < 12 credit hours	**0**	**5.8**	**0**	**10**
% working >30 hours/week	**2.4**	**8.8**	**0**	**15**
% reporting childcare responsibilities	**0**	**2.9**	**0**	**10**
% reporting previous online course experience	67.5	67.7	**53.6**	**65.0**

Results: Demographics
WL 220 Learning Styles
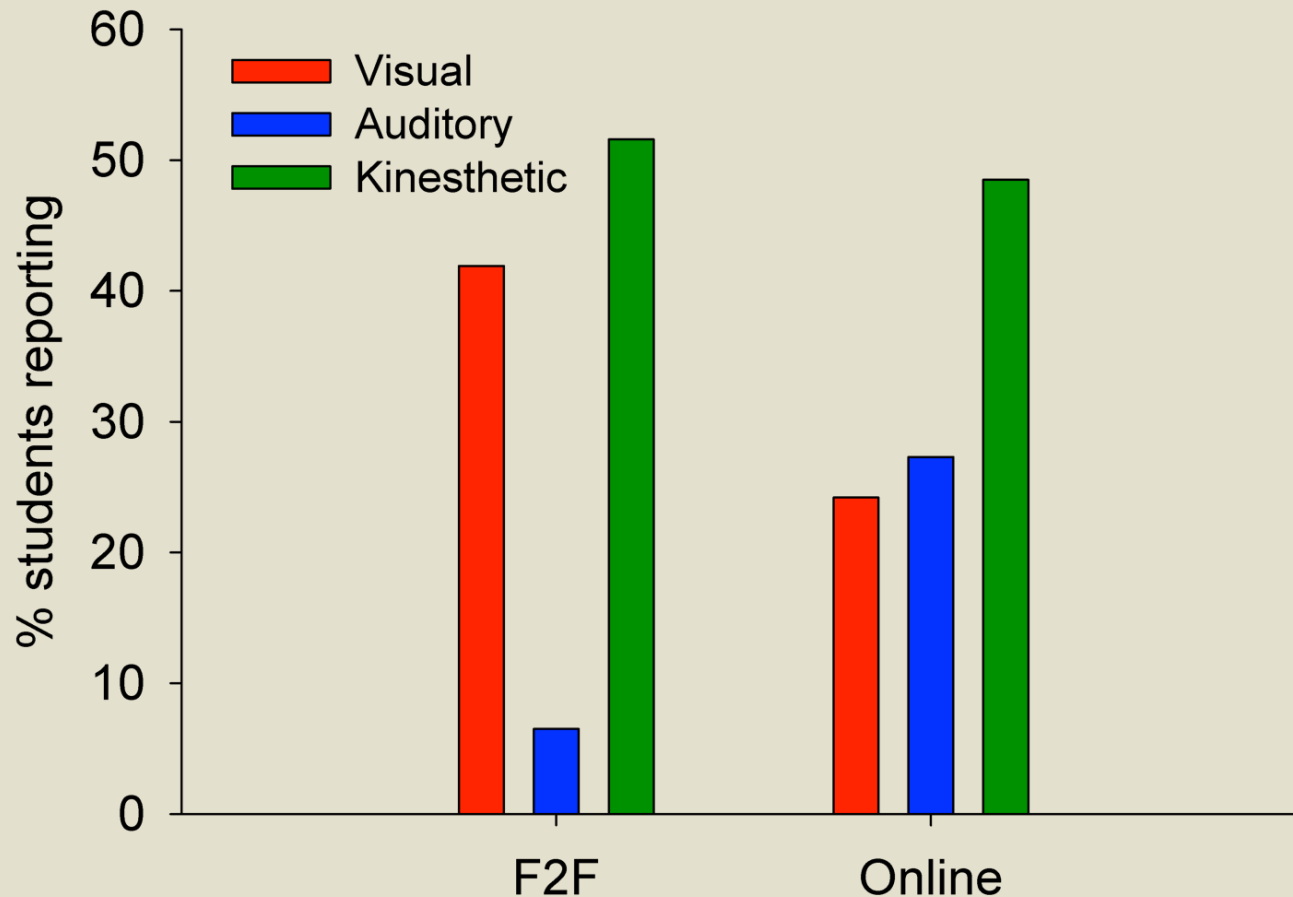
Results: Demographics
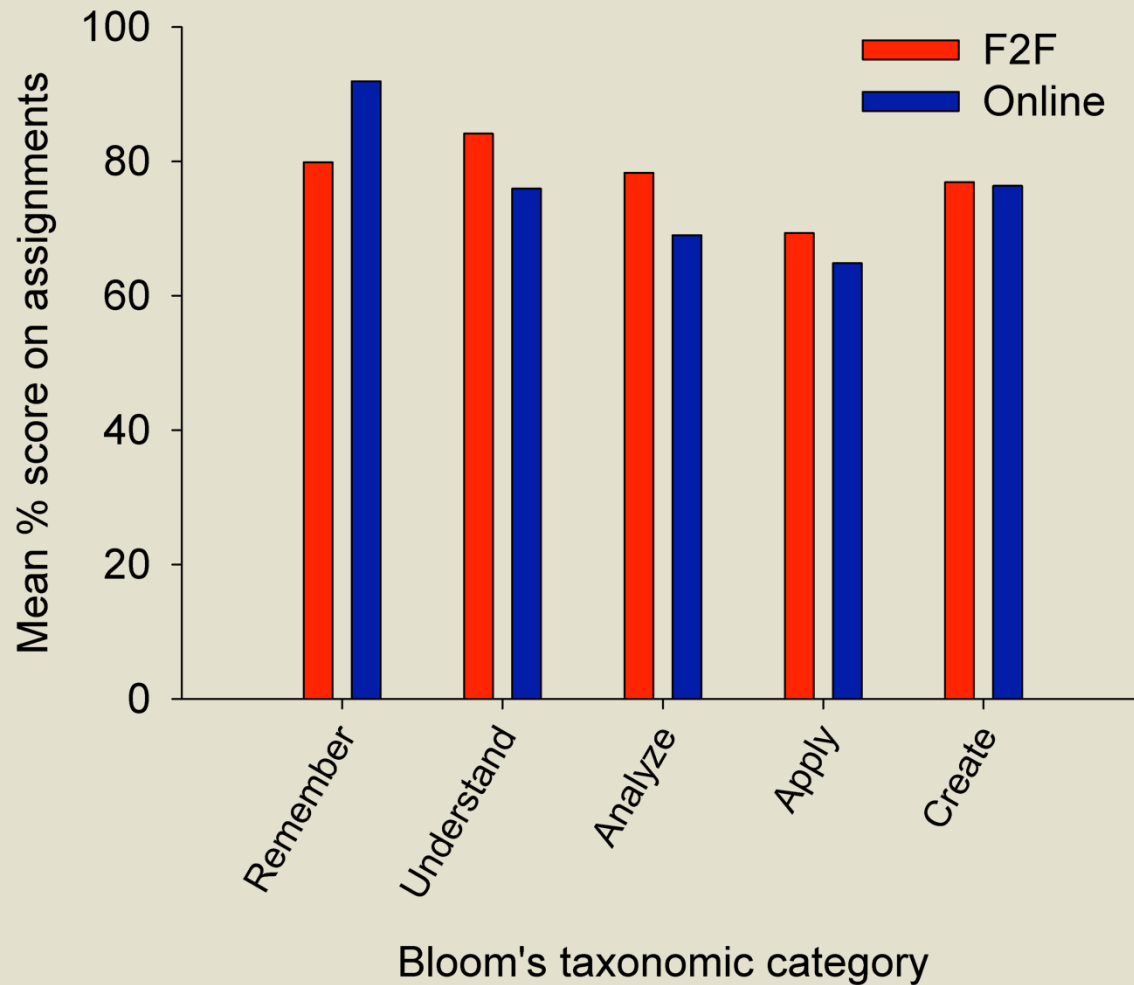## WL 230 Learning Styles
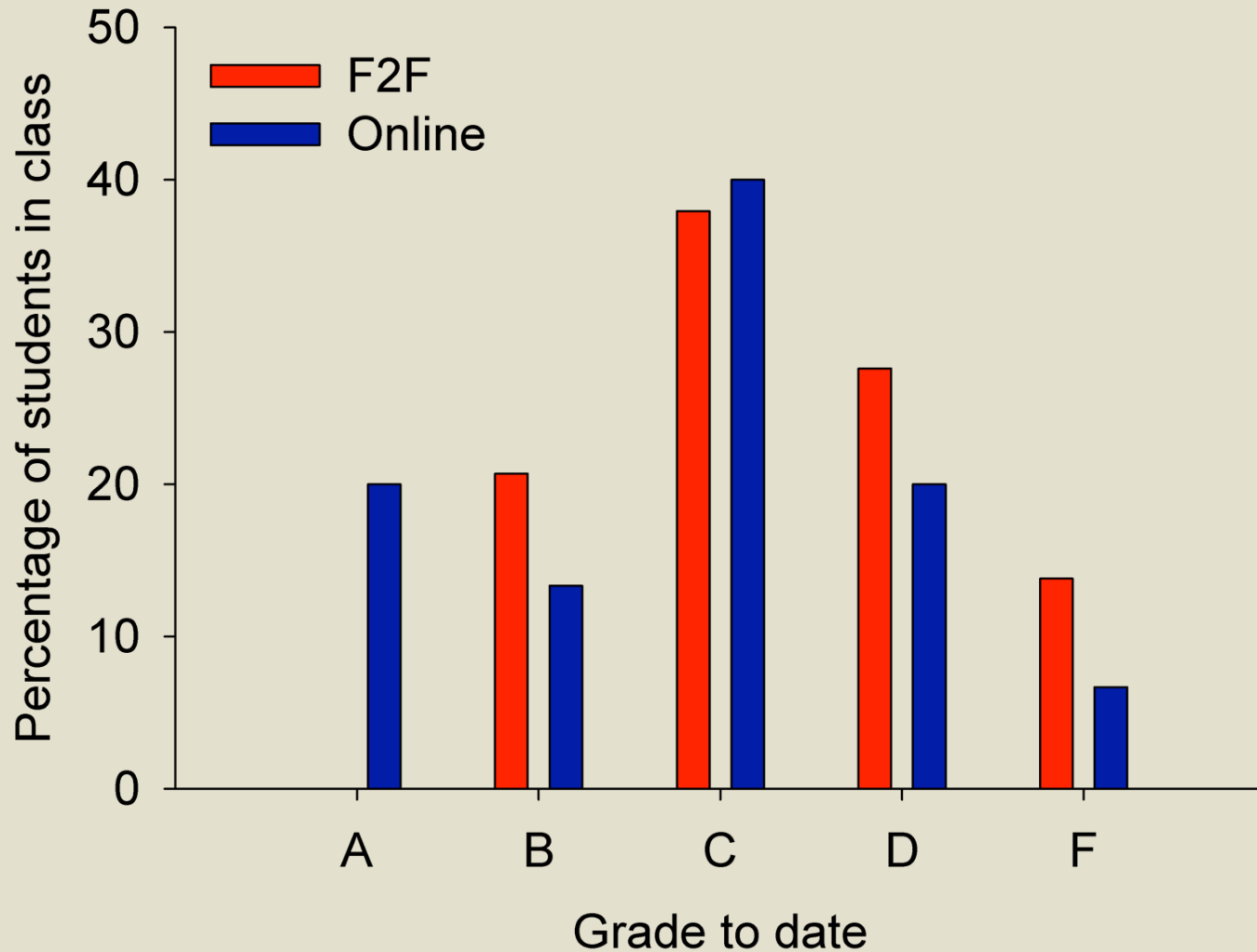
Results: Overall Grades
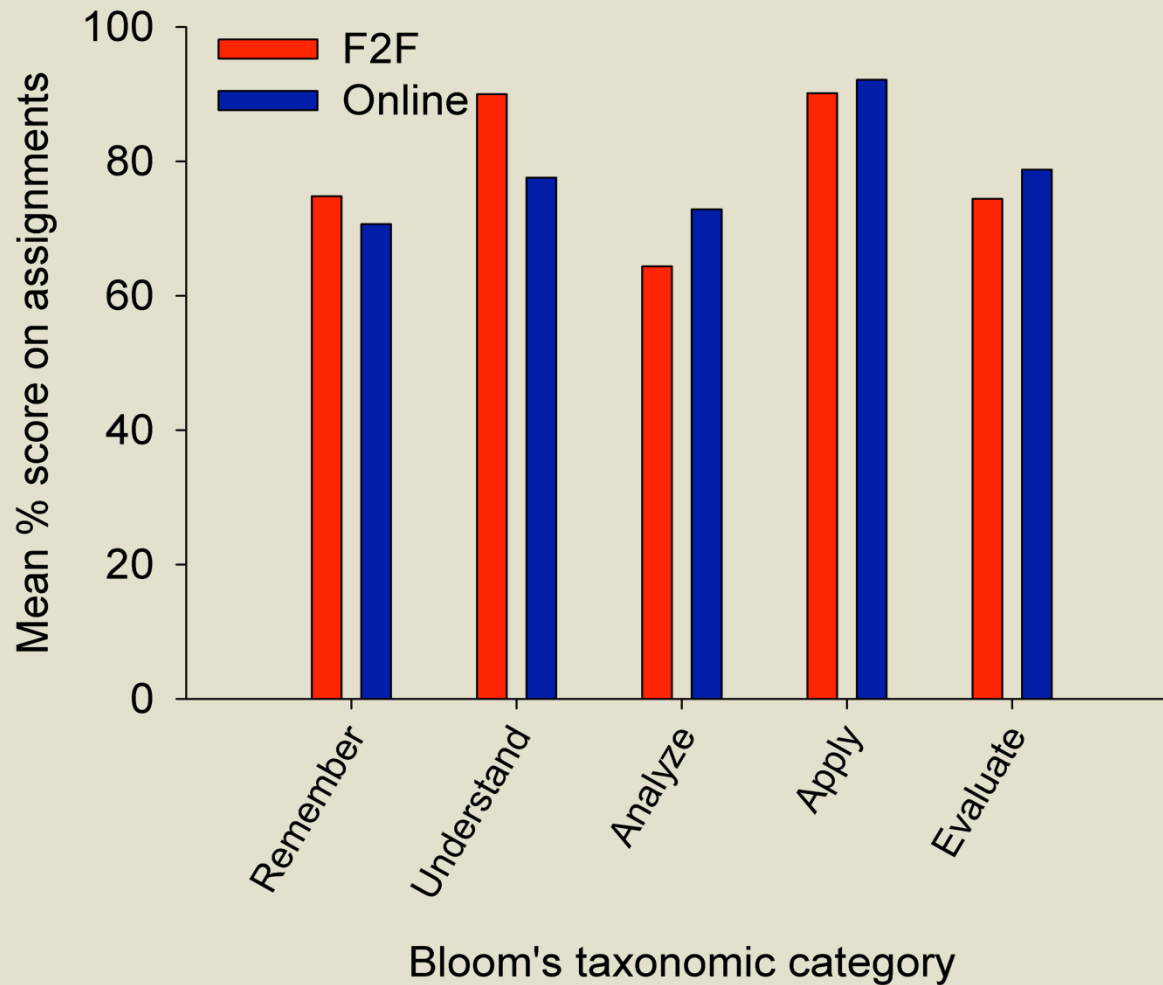WL 220

Results: Scores by Taxonomic Group
WL 220

Results: Overall Grades
WL 230

Results: Scores by Taxonomic Group
WL 230

Results: Student Time on Task

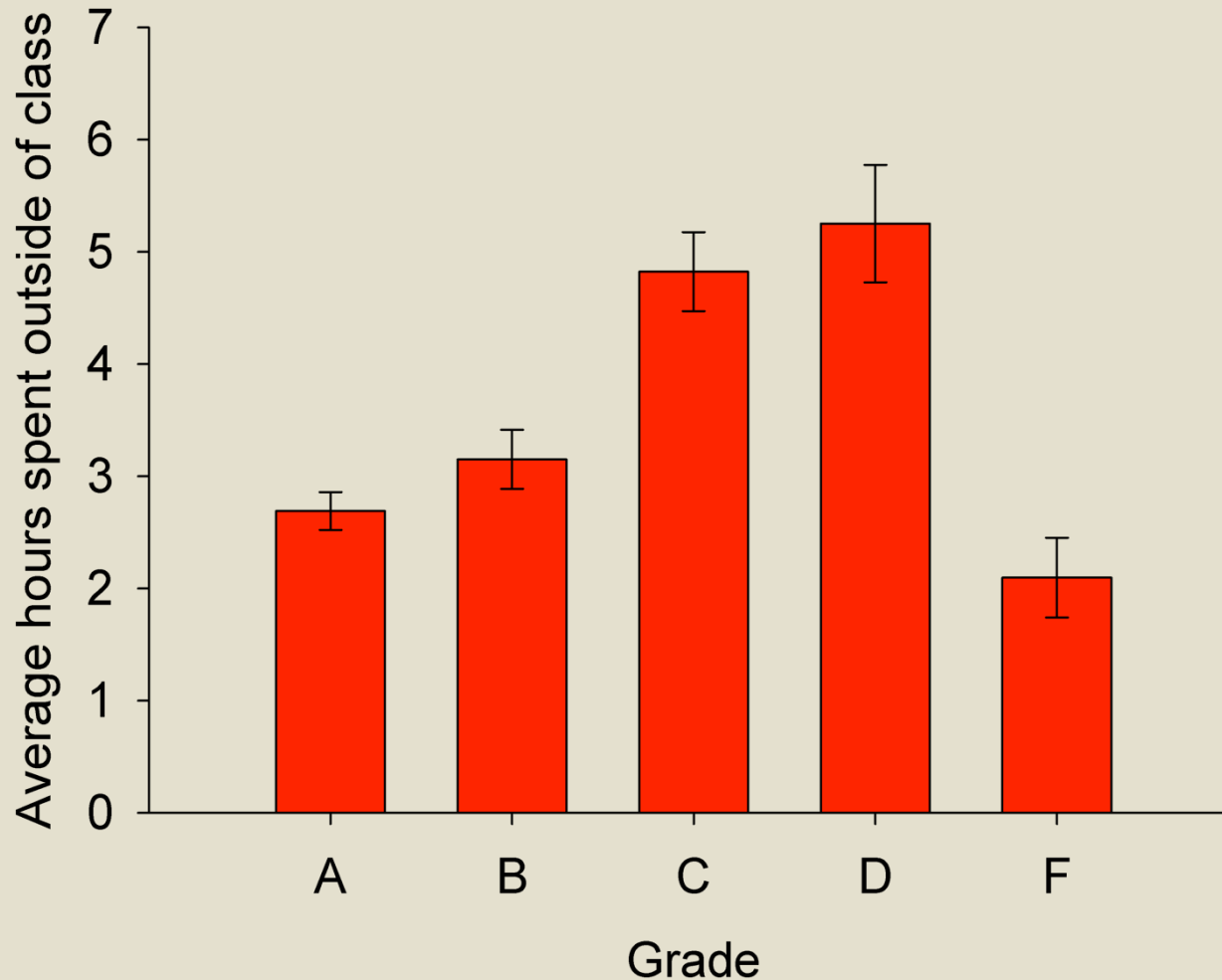| Online		F2F	
WL 220	WL 230	WL 220	WL 230
4.53 (0.19)	**5.21 (0.27)**	**3.41 (0.15)**	**1.75 (0.15)**

Results: Student Time on Task
(Relationship to Overall Course Grades in WL 230 Online)
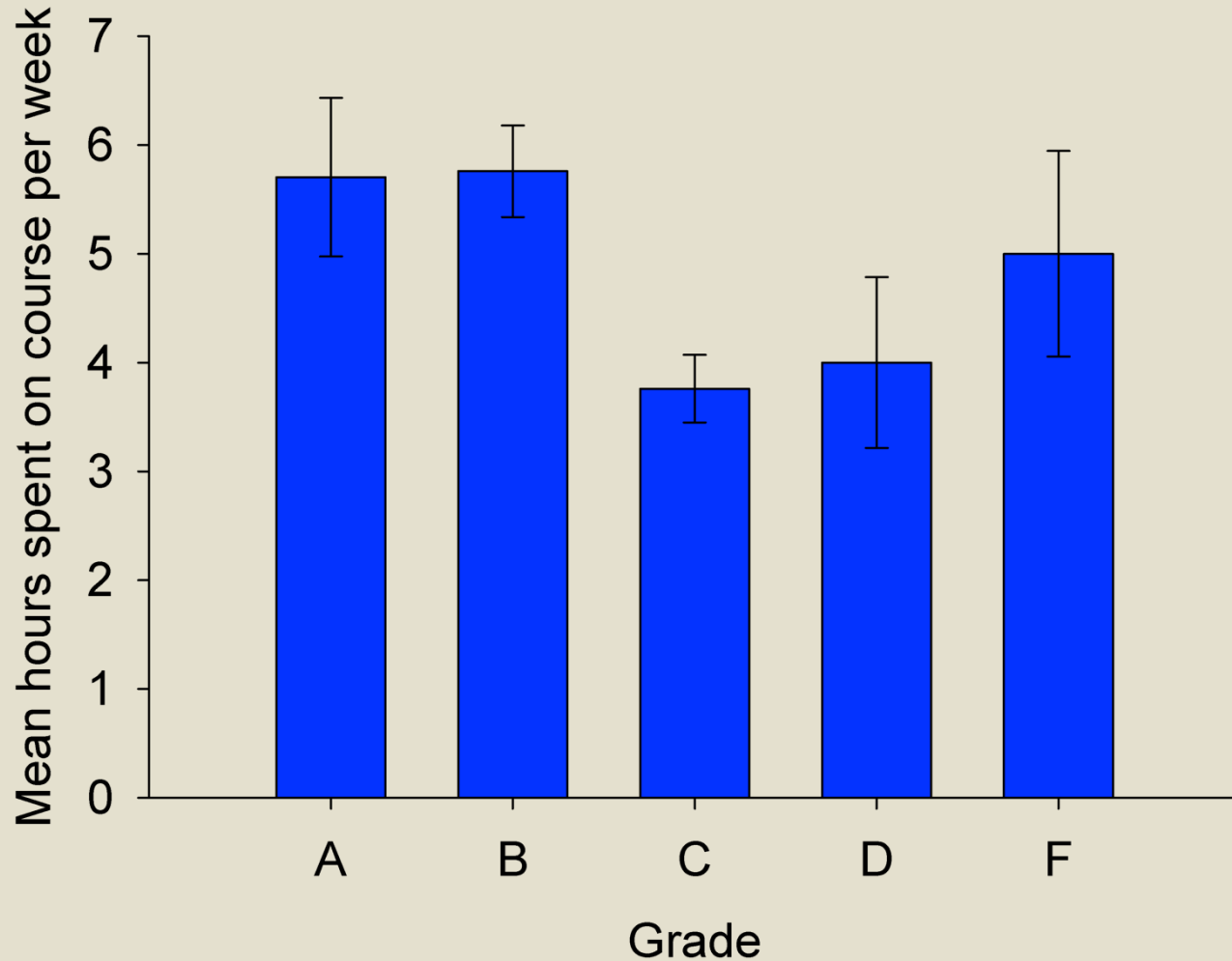
Results: Student Time on Task
(Relationship to Overall Course Grades in WL 220 F2F)

Results: In-class Attendance
(Relationship to Overall Course Grades in WL 220 F2F)
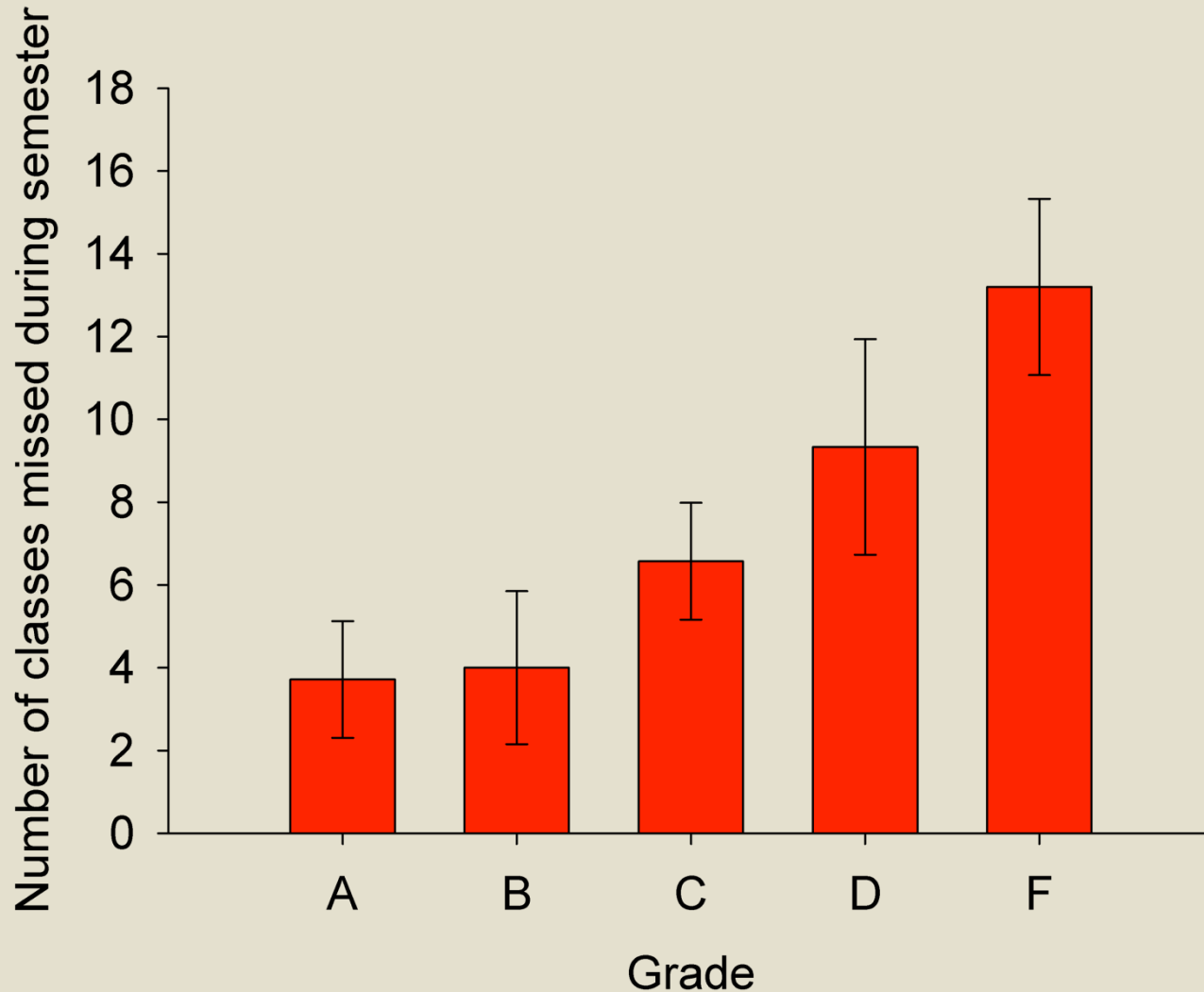
Results: Instructor Time on Task

	WL 220		WL 230	
	F2F	Online	F2F	Online
Average hours spent per week	**6:50**	**8:48**	**7:41**	**6:12**
Hours spent per student	**1:45**	**2:08**	**2:07**	**3:18**

Results: Student Satisfaction

	WL 220 (F2F)	WL 230 (Online)
Student review of progress on relevant objectives	3.9	3.9
Student review of instructor	4.3	4.0
Student review of course overall	4.1	3.9

Discussion

- More study is needed:

  - More semesters of data

  - Longitudinal comparisons (e.g., How do students fare in the 400-level courses?)

- Preliminary analyses show similar overall performance in online and F2F environments, but performance on certain taxonomic tasks may differ between environments.

Discussion

- Emphasize to students the importance of time spent on learning activities, particularly for the online environment.

- Instructors in online environments **_may_** invest more time to students than those in F2F courses.

- Satisfaction is fairly similar in both environments, but students often comment that they miss the in-person interaction. *Could this be replicated in an asynchronous online course?*

Literature Cited

Carr, S. 2000. Science instructors debate the efficacy of conducting lab courses online. The Chronicle of Higher Education 46:47.

Means, B., Y. Toyama, R. Murphy, M. Bakia, and K. Jones. 2009. Evaluation of evidence-based practices in online learning: a meta-analysis and review of online learning studies. United States Department of Education, Washington, D.C.

Schoenfeld-Tacher, R., S. McConnell, and M. Graham. 2001. Do no harm – a comparison of the effects of on-line vs. traditional delivery media on a science course. Journal of Science Education and Technology 10:257-265.

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