

Case Study: Biology 1406

Catalog Description:

BIOL 1406 Biology for Science Majors I (4)

This is a Texas Common Course Number.

Prerequisite: One of the following must be met: (1) Developmental Reading 0093 AND Developmental Writing 0093; (2) English as a Second Language (ESOL) 0044 AND 0054; or (3) have met Texas Success Initiative (TSI) Reading and Writing standards.

An introductory survey of contemporary biology for students majoring in the sciences.

Topics emphasized will include the chemical basis of life, structure and function of cells, energy transformations, and molecular biology and genetics. (3 Lec., 3 Lab.)

Coordinating Board Academic Approval Number 2601015103

Results of Faculty's Attempt to Improve the Course

Fall 2001 ABC% (35.04%) Retention % (51.45%)

Fall 2002 ABC% (45.27%) Retention % (61.89%)

Fall 2003 ABC% (46.81%) Retention % (63.76%)

Fall 2004 ABC% (51.15%) Retention % (65.54%)

Excerpts from the Faculty Meetings

The "1406 Group": First meeting, 4:15 p.m. on Wednesday, February 6, 2002.

In attendance: Mike Bell, Ray Canham, Adriana Cobo-Frenkel, Stacie Emery, Marlis Herring, Sara Perez-Ramos, Becki Williams.

Question: What do the group believe are the causes of the poor student success rate in BIOL 1406 (34% A, B, and C grades in Fall 2001)?

Answers from the group (**in bold** when suggested by more than one member):

"External" causes:

1. Students in the course are taking too many developmental courses.
2. This is a first semester course for many students, with no prerequisites.
3. Students receive no, or poor, advising prior to registering.
4. **Students lack study skills and do not form study groups.**
5. **Students are more apathetic and less motivated than in the past.**
6. The choice of a major in science is often arbitrary.
7. **Increasingly, students have poor reading/English language skills.**
8. The proportion of marginal students is increasing.
9. College is a last-minute decision; jobs come first.

10. Students do not take advice from faculty or advisors seriously.
11. **Students work too many hours for the college load they are taking.**
12. Students have excessive outside responsibilities.
13. Social problems (drugs, alcohol, etc.) are now more common.
14. Tardiness and absences have increased.
15. Students are confused by too many resources.
16. **Students do not anticipate standards different from those of high school.**
17. Students are disoriented, and do not know what is needed to succeed.
18. Working in high school and college has become the norm.
19. Students do not expect to be able to understand complex material.
20. Students do not listen to instructions/do not follow directions.
21. Students have poor math skills.
22. Students have short attention spans.

“Internal” causes:

1. **The lab manual is often confusing.**
2. The textbook is hard to read and contains too much material for a first course.
3. **The course begins with an excessive amount of chemistry.**
4. The course is not enjoyable because of its intensity and emphasis.

Tasks, before next meeting:

1. Ray will seek historical data on success rates in the course; have they declined?
2. Faculty teaching the course will seek student input on the value of the textbook, preferably by means of a brief, anonymous questionnaire.

The next meeting will be at 4:15 p.m. on Wednesday, February 20.

The “1406 Group”: Sixth meeting, 4:15 p.m. on Wednesday, April 17, 2002.

In attendance: Ray Canham, Adriana Cobo-Frenkel, Stacie Emery, Marlis Herring, Sara Perez-Ramos, Becki Williams.

Adriana presented copies of another Biology text, by Raven and Johnson, that she had received. Most of the group were familiar with it, and did not favor it over Solomon.

Solomon was selected as the text of choice by a majority of the faculty who teach BIOL 1406 between the last meeting and the current one. There remained the question of whether to also utilize the BlackBoard “course” constructed by the publishers, in that there seemed to be a misunderstanding on the scope of the free trial that was promised.

The written offer from Fritz indicated that only 150 students would be included, whereas up to 500 might be registered for the course in the fall. Ray had indicated to Fritz that we would like to have that decision reconsidered. However, the group decided to use the Blackboard course with only one or two faculty if the company could not be convinced to include all of the students in the free trial. The faculty also decided that they would request a training session be held after the first week of July.

It was decided to continue to use the present lab manual in the coming year, while an in-house manual was being written by Stacie and then published. New labs would be incorporated into the course as they became available.

Becki discussed some ideas on the benefit of allowing students extra time to complete tests, and on the benefit of re-testing (with a new test over the same material) if performance was poor. Adriana mentioned that she would try pop-quizzes—a technique mentioned in a previously as a way to improve attendance--in her classes next year.

The group decided not to schedule further regular meetings. The following is a summary of the major steps approved in past meetings that will be taken to address the problem of poor student performance with a view to increasing student success (% passing with A/B/C):

1. The textbook will be changed. The new text should be more readable, and its introduction, together with the accessory materials, is expected to lead to changes in the way the course is presented by the faculty.
2. The present lab manual will be replaced within a year by an in-house publication that should reduce confusion in the lab and emphasize material considered most relevant by the faculty.
3. The course will be restructured with respect to its introduction (by a more holistic approach) and overall content (omitting organ systems).
4. An experimental Learning Community will be offered that will combine CHEM 1405 and BIOL 1406, and a schedule notation will encourage other students to consider taking CHEM 1405 before BIOL 1406 and to complete TASP math and reading requirements before taking the course.

Progress towards the goal will be monitored in the Fall and Spring semesters.

[Addendum, 4/18/02: Fritz Shantz phoned to indicate that the BlackBoard course will be provided free to all registrants in BIOL 1406/1407 next year. Therefore it will be available to all faculty and all classes, rather than just one or two.]

The “1406 Group”: Report of Fall 2002 results in BIOL 1406, January 9, 2003

We now have the data for success rates (% of A, B and C grades) in our courses, including, of particular interest to us, BIOL 1406. The result of our efforts may be showing in a success rate of 45% in Fall 2002, compared to one of 34% in Fall 2001. While not an overwhelming percentage in itself, and while a one semester change may not be representative of a trend, 45% is certainly a change in the right direction. I would like to continue our meetings with a view to further improvement.

“Making Connections” and the Science Corner

Efficiency

The efficiency of providing learning experiences for students at the right time and the right place motivated those involved in the “Making Connections” Projects to rethink traditional models. Instead of one professor in one office working with one student at a time, office hours are now provided in open areas in locations adjacent to classrooms and laboratories. For example, the Science Corner currently provides 28 hours of tutoring for chemistry students, even though there are only 3 full time chemistry professors, with a total of 15 office hours available. Not only are more hours of tutoring available in the Science Corner, faculty report an increase in the number of students taking advantage of tutoring. Many students are reluctant to “interrupt” professors in their offices. Drop-in spaces set up a neutral, less intimidating space where all faculty, full time and adjunct can meet students. In addition a community of learners is created that takes advantage of the fact that students learn best when they teach others.

Replication

A project similar to “Making Connections” can be easily replicated at other institutions. By moving tables, chairs, and a room divider into a hallway formerly occupied by 8 study carrels, the Science Corner was created. Interested faculty, staff and students should identify space adjacent to academic areas that is suitable for student/faculty/tutor activities. The proximity to labs, resources, faculty, and other students is important. Invite full time faculty to conduct one or more office hours per week in this location. Identify others who can assist students; volunteers (former students, retirees), adjunct faculty who would likely welcome a place to meet with students, and tutors (consider relocating tutors from central locations). Don’t be afraid to start small. As more students and faculty realize the benefit, they will join the effort. Consider scheduling some “formal” activities as well; special tutorials on subjects that students routinely find difficult (graphing data from the enzyme lab), and workshops to address specific topics.

Richland College Cooperative Learning

Richland College offers workshops that provide strategies and practical hands-on experience in utilizing cooperative learning, a paradigm for teaching, learning and community building in which individuals are active participants in their learning process. Research shows that cooperative learning results in higher achievement, increased retention, greater use of higher level reasoning, higher self-esteem, and increased social and collaborative skills. The **Cooperative Learning** initiative at Richland College was developed to provide faculty, staff, and administrators with the theory and practice to incorporate cooperative learning principles and activities in the classroom, work groups, and other learning environments. All Richland faculty, staff, and administrators are eligible to participate. Currently ~250 faculty, staff and administrators have participated in one or more workshops listed below:

January 1996	College-wide Awareness Session (Roger Johnson)
Spring/Summer 1996	Foundations (Roger Johnson/Edythe Holubec)
Fall 1996/Spring 1997	Advanced (Roger Johnson/Edythe Holubec)
Fall 1996/Spring 1997	Foundations (Roger Johnson/Edythe Holubec)
Fall 1997	Review Session (Edythe Holubec)
Spring 1998	Nuts and Bolts , (Edythe Holubec)
Spring/Summer 1998	Foundations (Edythe Holubec)
Fall 1998	Foundations (Edythe Holubec and RLC Facilitators)
January 1999 Johnson)	College-Wide Academic Controversy Session (Roger
January 1999	Advanced (Roger Johnson and Edythe Holubec)
Fall 1999	Academic Controversy (David Johnson and Edythe Holubec)

Beginning Spring 2000, workshops facilitated by Richland College faculty

Spring 2000	Foundations
Fall 2000	Back To School Workshops Foundations
Spring 2001	Back To School Workshops Foundations, 2 series(Weekday and Saturday)

Advanced

Fall 2001

**Back To School Workshops
Advanced Workshop**

Spring 2002

**Back To School Workshops
Foundations**

2 – 90 minutes sessions with Adjunct Faculty
2- 2 hour sessions with PSS

Fall 2002

**Back To School Workshops
Foundations, 2 series (Weekday and Saturday)
Advanced 2- 2 hour sessions**

Spring 2003

**Foundations
Advanced 2- 2 hour sessions**

Fall 2003

Back To School Workshops
90 minute session with Adjunct Faculty
Advanced 2 hour session
Cooperative College 2 hour Session

Each workshop series (except Back To School) involves 15- 18 hours of instruction. Back To School workshops involve 2 - 3 hours and are offered several times during the week before classes start to help faculty/staff continue successful use of cooperative learning.

A Look at Rubrics

? <i>Analytic Rubric Example</i>		
ANALYTIC CRITERIA	SCORING SCALE	SCORE
FIRST CRITERION	4. Describe Exemplary Performance on 1 st Criterion 3. Describe Proficient Level of Achievement on 1 st Criterion 2. Describe Basic Level of Performance on 1 st Criterion 1. Describe Inadequate Level of Performance on 1 st Criterion	_____
SECOND CRITERION	3. Describe Advanced Level of Performance on 2 nd Criterion 2. Describe Adequate Level of Performance on 2 nd Criterion 1. Describe Inadequate Level of Performance on 2 nd Criterion	_____
THIRD CRITERION	4. Describe Exemplary Performance on 3 rd Criterion 3. Describe Proficient Level of Achievement on 3 rd Criterion 2. Describe Basic Level of Performance on 3 rd Criterion 1. Describe Inadequate Level of Performance on 3 rd Criterion	_____
	3. Describe Advanced Level of Performance on 4 th Criterion 2. Describe Adequate Level of Performance on 4 th Criterion 1. Describe Inadequate Level of Performance on 4 th Criterion	
STUDENT NAME _____	Total Score	_____

? <i>Advantages and Disadvantages of Analytic Rubrics</i>	
?	ADVANTAGES --Analyzes each component --Identifies needs and strengths --Provides more detailed information about student performance
?	DISADVANTAGES --Time needed to develop rubric --Time needed for use

This article appeared in Liberal Education, ” Vo. 89, No.1 Winter 2003 , a publication of AAC&U, Washington, D.C.

Institutional Transformation at Richland College

By Ray Canham and Carole Lester

Raymond P. Canham is dean of mathematics, science and the behavioral sciences,

Academic Enrichment

In 1997, the college created the Office of Academic Enrichment, bringing together existing programs introduced over a period of many years into one administrative area and providing a testing ground for new programs. This consolidation had advantages for both the college and the students. The college benefited because all of the special programs, which are cross-disciplinary in nature, could be promoted, assessed, and strengthened through one office under the year-round direction of one administrator. The centralized administrative structure also allowed faculty development opportunities that encouraged broader participation in the unique pedagogies common to each of the programs. The advantages to students included an increased emphasis on the existing programs, an expansion of the number of classes offered within them, and the opportunity to experience new learning challenges as additional programs were developed.

Each instructional program in Academic Enrichment encourages innovation in the curriculum, active student participation, and the use of pedagogies that enhance student success. The programs now include honors, global studies, mind-body health, learning communities, service learning, fast track, and the newest of our enrichment programs, peace studies. While classes are usually identified as belonging to just one of these programs in the course schedule, they are often designed and taught with more than one model in mind.

Richland's *honors program* is the longest-running enrichment program. For over twenty years its seminar-based classes have encouraged students to formulate interesting questions, tolerate diverse points of view, become more effective listeners and critical thinkers, and draw meaningful connections between educational and life experiences. Some classes are team-taught, involving faculty from different disciplines who demonstrate to students (and to themselves) the benefits of bringing together those with different ways of thinking through the questions under discussion. Honors classes are open to all Richland students who have been assessed as ready for regular college coursework.

The primary purpose of the *global studies program* is to help prepare students to succeed in our increasingly diverse society. Classes are based upon the following dictum: Because we function in several communities at the same time—home, work, and school—each of us plays a significant role in the search for answers to problems that are directly connected to major global issues. These include ecological balance, social and economic justice, intercultural understanding, democratic participation, and the impact of technology. These and other issues are the themes of global studies classes. These classes also allow students the opportunity to relate service in the community to work in the classroom by providing the option of participating in service learning projects through a variety of local agencies.

Mind-body health refers to the integration of the mind (our thoughts, attitudes, and emotions) and the body (our physical self) in having an impact on our overall health and well-being. Classes designated mind-body health are taught within the traditional curriculum. Some by their very nature deal directly with mind-body health (e.g. Yoga), while others have mind-body health as a core theme or approach (e.g. Writing for Wellness), but all provide opportunities for students to explore the “inner landscapes of their lives.”

Most of the *learning communities* offered at Richland College are theme-based classes that cross traditional departmental lines. The typical community college student is a commuter who comes to the campus, takes a number of isolated classes, and then returns home. Learning communities provide these students with an opportunity to learn within a supportive community of engaged students and involved faculty. They normally involve two or more faculty from different disciplines teaching an outcomes-based class that offers six to twelve hours of credit in transferable coursework. With guidance from a faculty team using collaborative learning techniques, students become active rather than passive learners. Learning communities provide students an integrative experience and increase the collaboration of students with each other and with faculty during the learning process.

The *service learning* methodology integrates required service in the community with academic instruction as it focuses on critical, reflective thinking and civic responsibility. Service learning projects involve students in organized service that addresses local needs while developing their academic skills and sense of civic responsibility.

The *fast track program* allows students flexibility in managing class schedules and their other commitments. Classes are scheduled primarily in four-week blocks in such a way that students can earn their Associates degree in twelve months taking day classes or in twenty months taking evening classes. The fast track articulation agreement with the University of Texas at Dallas promotes easy transfer to our neighboring four-year university.

Peace studies is the most recently introduced enrichment program. Its curriculum is intended to cultivate students’ capacity to work towards appropriate stewardship of the earth, to develop their desire to create just societies, and to enable them to sustain healthy human relationships that overcome violence through conflict resolution. In connection with the peace studies program, Richland has planted seven peace poles, of more than thirty that are ultimately planned, in celebration of the more than ninety languages known to be the native tongues of Richland College students.

Quality Enhancement Plan

During preparation for Richland’s re-accreditation in the spring of 2002, it became apparent that there needed to be a more concentrated, collaborative effort directed towards increased student success at the college. As we looked at all college operations and considered how to promote student learning, some areas seemed to invite transformation. Through the formation of Quality Enhancement Planning (QEP) teams, we considered the student experience from the moment of intake until graduation and decided upon ways to make positive changes. Teams of faculty, staff and administrators from across the campus met regularly and suggested improvements that addressed the needs of both students and the institution as a whole. The immediate outcomes included greater efforts at “intrusive advising,” monitoring of student performance, and expanded use of innovative teaching techniques such as collaborative learning. The result of these and other changes was a

demonstrable improvement in student retention and academic performance—within one semester of implementation.

From a QEP team suggestion, one change involved the tutoring center, formerly known as the Center for Independent Study. It became the Center for Tutoring and Learning Connections, a change not in name only. The CTLC began offering study-skills and content-specific “connections” workshops for a variety of core courses. These workshops, conducted for small groups of students by highly qualified content specialists, are designed to connect all of the elements associated with being a successful student, both in and out of class. Workshop topics such as critical thinking and problem solving are made subject-specific, and, when combined with others such as test anxiety and time management, help provide students the tools they need to succeed in all of their courses.

The science faculty, still seeing an unmet need, then created the Science Corner in a space adjacent to the science laboratories, where they could provide drop-in tutoring for students in science courses. Faculty in accounting and economics, foreign language, and history and government then also began specialized tutoring centers. These efforts served not only to impart additional knowledge to students who utilized the facilities, but also to more fully integrate the student body into the life of the college. As in the case of the learning communities described previously, our population of commuter students has become more involved with the faculty, each other and the college as a whole by spending more time on the campus engaged in worthwhile learning activities.

The key element in all of these efforts was that faculty, staff and administrators came together to examine the way in which the college operated on behalf of its students and to improve those services that they found wanting. The Richland community is convinced that this latest transformation in the way the college operates to promote student learning will be long-lasting and meaningful. Richland College has had a reputation for being an innovative and ever-changing institution throughout its thirty-year history. Rather than creating an atmosphere of weariness or concern, continuing transformation is celebrated at Richland as a wholly appropriate way for the college to serve its students and its broader community for the decades to come.

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