International Perspectives on University Teaching & Learning" Symposium Orlando, FL. May 30 - June 1, 2018

An Innovative Integration of Online and Traditional Teaching in International Cooperative Courses

Min Zhong

Department of Biological Sciences, Auburn University

What is international cooperative course?

Sino foreign joint education

Professional courses in English

Teaching system innovation

High-quality undergraduate / graduate studies

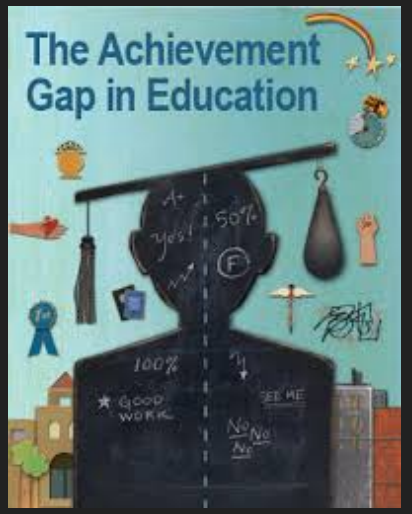
Education travel cooperation

International academic exchange forum

International workshops

Barriers

- Language
- Culture
- The gap between the instructors' expectations and students' competencies



Course Type

- Undergraduate level
- Graduate level
- Professional seminar

Collaborative Institutes

- Auburn University
- Ocean University of China
- Qufu Normal University
- Tianjing Huanhu Hospital
- Beijing University of Civil Engineering and Architecture

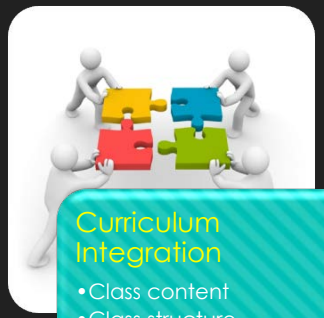
Six Cooperative Courses

Class	Type	Level	Enrollment	Hours	Cooperation
Cell Biology	Elective	Undergraduate, senior-level	40	36	Bilingual, online + traditional
Marine Biology	Required	Undergraduate, senior-level	> 50	36	English, online + traditional
Evolutionary Biology	Elective	Undergraduate, senior-level	120	24	English, traditional
General Biology	Required	Undergraduate, entry level	10	36	English, traditional
Pharmacology	Required	Undergraduate, senior	100	36	Bilingual, online + traditional
Clinical Pharmacy Seminar	Required	Graduate / Professional level	8	10	English, online

Key Points of Success

Course Planning

- Course schedule
- Location
- Online class planning

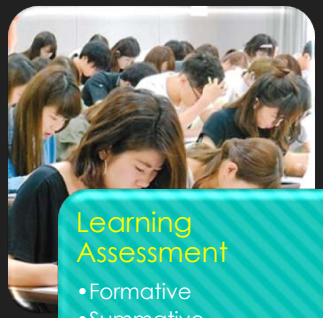


Curriculum Integration

- Class content
- Class structure
- Teaching strategies
- Assessments

Teaching Implementation

- Online teaching
- Foreign professor teaching
- Local professor teaching
- Technical support
- TAs



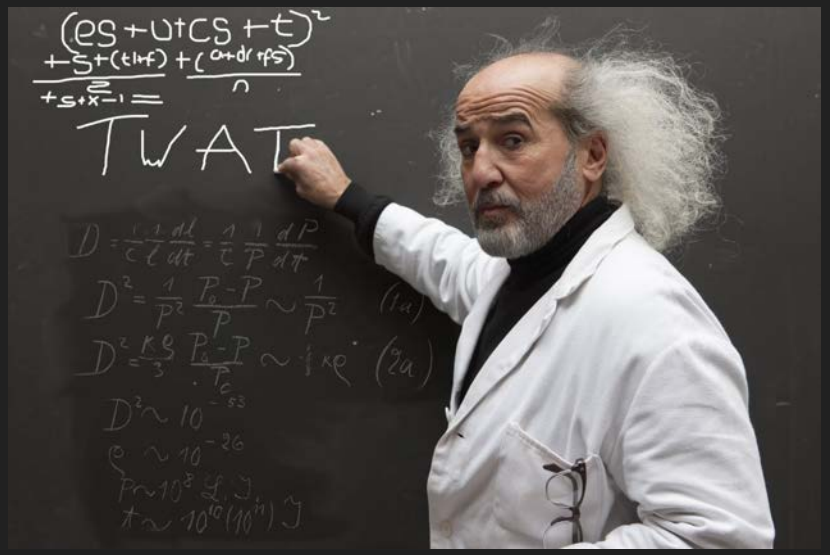
Learning Assessment

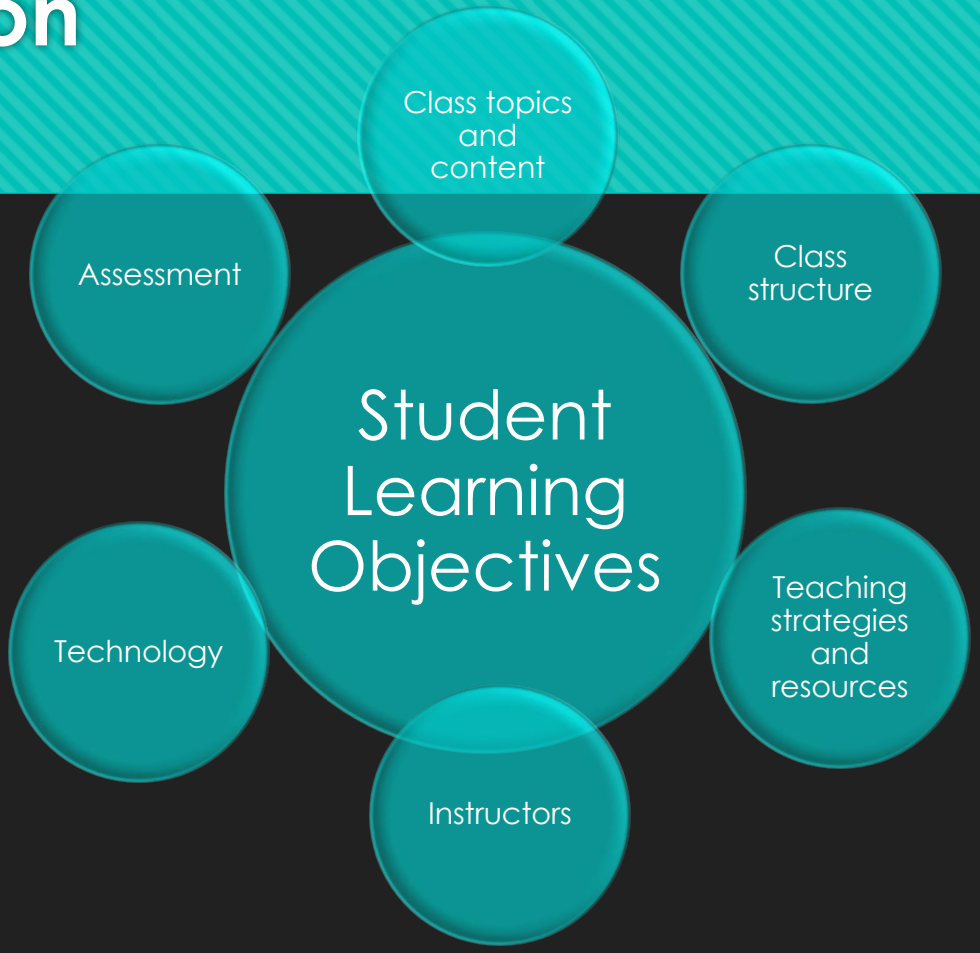
- Formative
- Summative

Curriculum Internationalization

- Coursework transforming with international elements
  - Technology
  - Instructors
  - Pedagogy
- Global knowledge and awareness
- Cross-cultural competence

Curriculum Integration





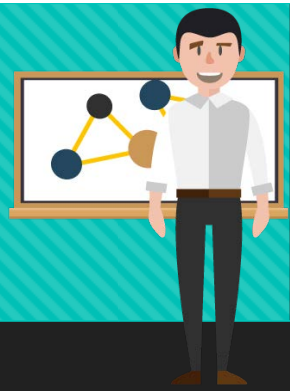
Benefits of Curriculum Integration and Internationalization

- For students:
  - Improving students' learning motivation and class participation
  - Helping them to overcome language and culture barrier.
  - Extending students' understandings about the real world and help them to adapt to the diversity.
  - Introducing students to a wide range of career options and opportunities.
  - Connecting students and their learning to the larger community.
- For teachers:
  - Allow the flexibility of curriculum and teaching
  - Offer teachers a way to better assess student's learning and potential ability.

Class Structure

Class preparation	• Curriculum integration • Study materials delivery
Foreign professor teaching	• Online class teaching • Traditional class teaching • Formative assessment
Assessment for foreign teaching	• Summative assessment
Local professor teaching	• Local professor teaching
Assessment for the whole course	• Summative assessment

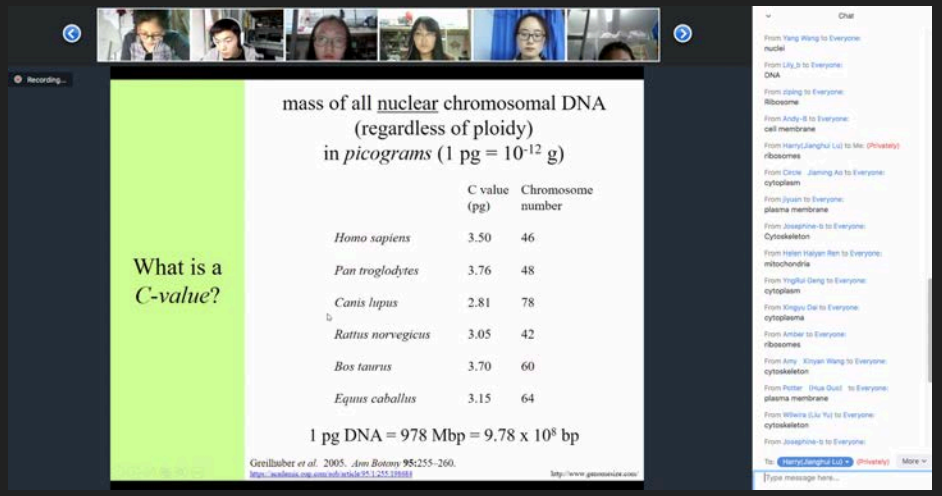
Teaching strategies



- Overcome language and culture barrier
- The interactive pedagogy of active learning
- TAs

Students Preparation

- Preview note
- Textbook / chapter reading
- Chapter objectives
- Online classes
- Pre-class assessment



Learning Assessments

Formative – monitoring student learning

- Knowledge-based assessments
- Motivation survey
- In-class Q&A interaction

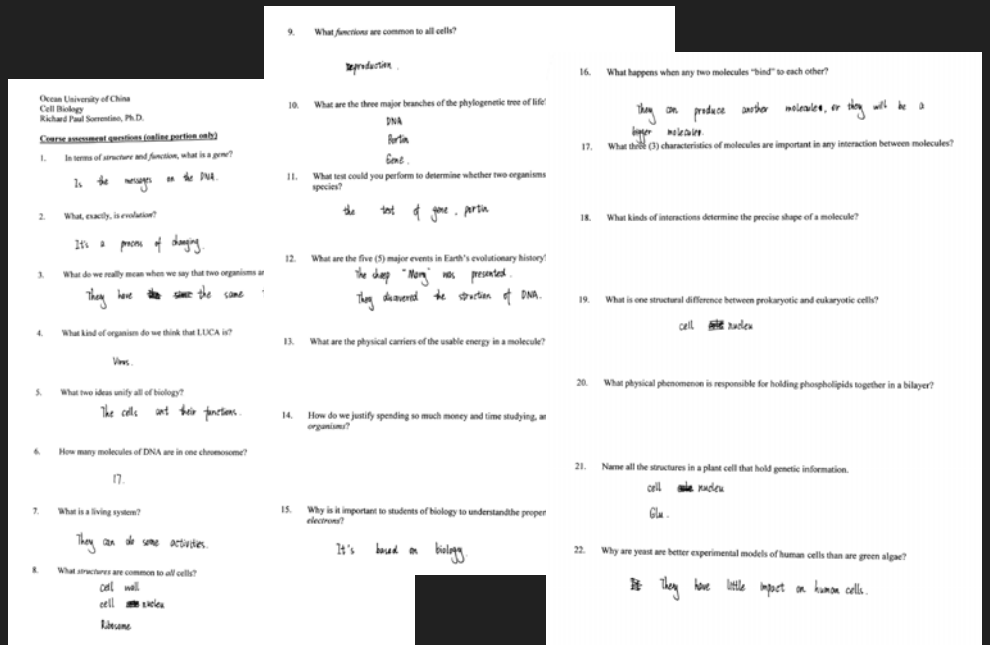
Summative - evaluating student learning

- A small symposium
- A final exam
- A self-Efficacy survey

Evaluation of the Importance of Online Classes

- Course assessment —Knowledge-based

Before online classes

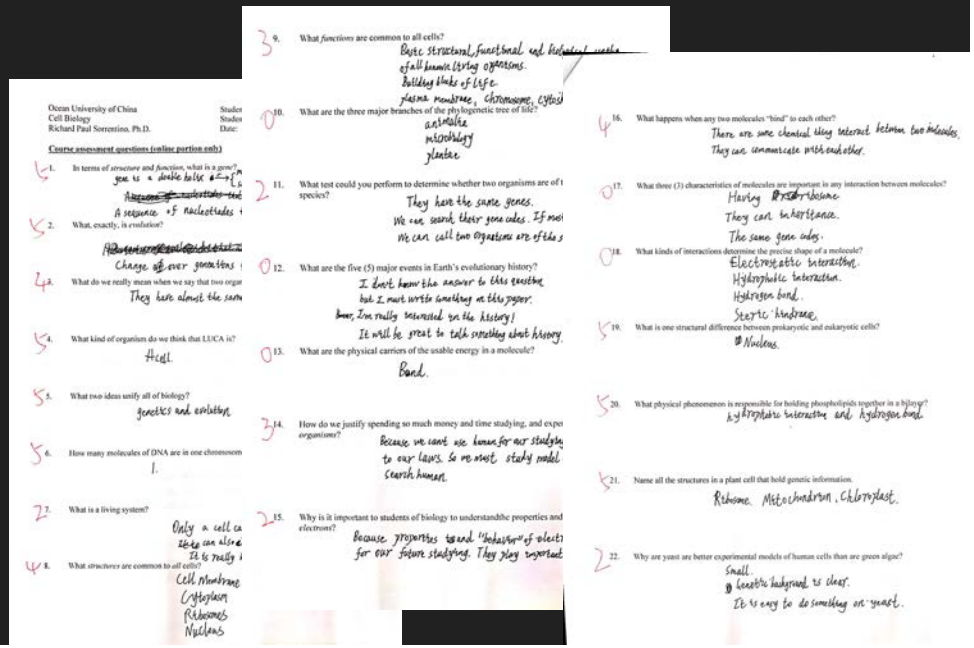


Ocean University of China
Cell Biology
Richard Paul Sorrentino, Ph.D.

Course assessment questions (online portion only)

1. In terms of *structure* and *function*, what is a gene?
   Is the messages on the DNA.
2. What, exactly, is *evolution*?
   It's a process of changing
3. What do we really mean when we say that two organisms ar
   They have ~~the~~ same the same
4. What kind of organism do we think that LUCA is?
   Virus.
5. What two ideas unify all of biology?
   The cells cant their functions.
6. How many molecules of DNA are in one chromosome?
   17.
7. What is a living system?
   They can do some activities.
8. What *structures* are common to *all* cells?
   cell wall
   cell ~~nucleus~~ nucleus
   Ribosome
9. What *functions* are common to all cells?
   Reproduction.
10. What are the three major branches of the phylogenetic tree of life?
    DNA
    Protin
    Gene.
11. What test could you perform to determine whether two organisms species?
    the test of gene, protin
12. What are the five (5) major events in Earth's evolutionary history?
    the theory "Mony" was presented.
    They discovered the structure of DNA.
13. What are the physical carriers of the usable energy in a molecule?
14. How do we justify spending so much money and time studying, a organisms?
15. Why is it important to students of biology to understandthe proper electrons?
    It's based on biology
16. What happens when any two molecules "bind" to each other?
    They can produce another molecules, or they will be a bigger molecule.
17. What three (3) characteristics of molecules are important in any interaction between molecules?
18. What kinds of interactions determine the precise shape of a molecule?
19. What is one structural difference between prokaryotic and eukaryotic cells?
    cell ~~and~~ nucleus
20. What physical phenomenon is responsible for holding phospholipids together in a bilayer?
21. Name all the structures in a plant cell that hold genetic information.
    cell ~~and~~ nucleus
    Glu.
22. Why are yeast are better experimental models of human cells than are green algae?
    ~~It~~ They have little impact on human cells.

After online classes

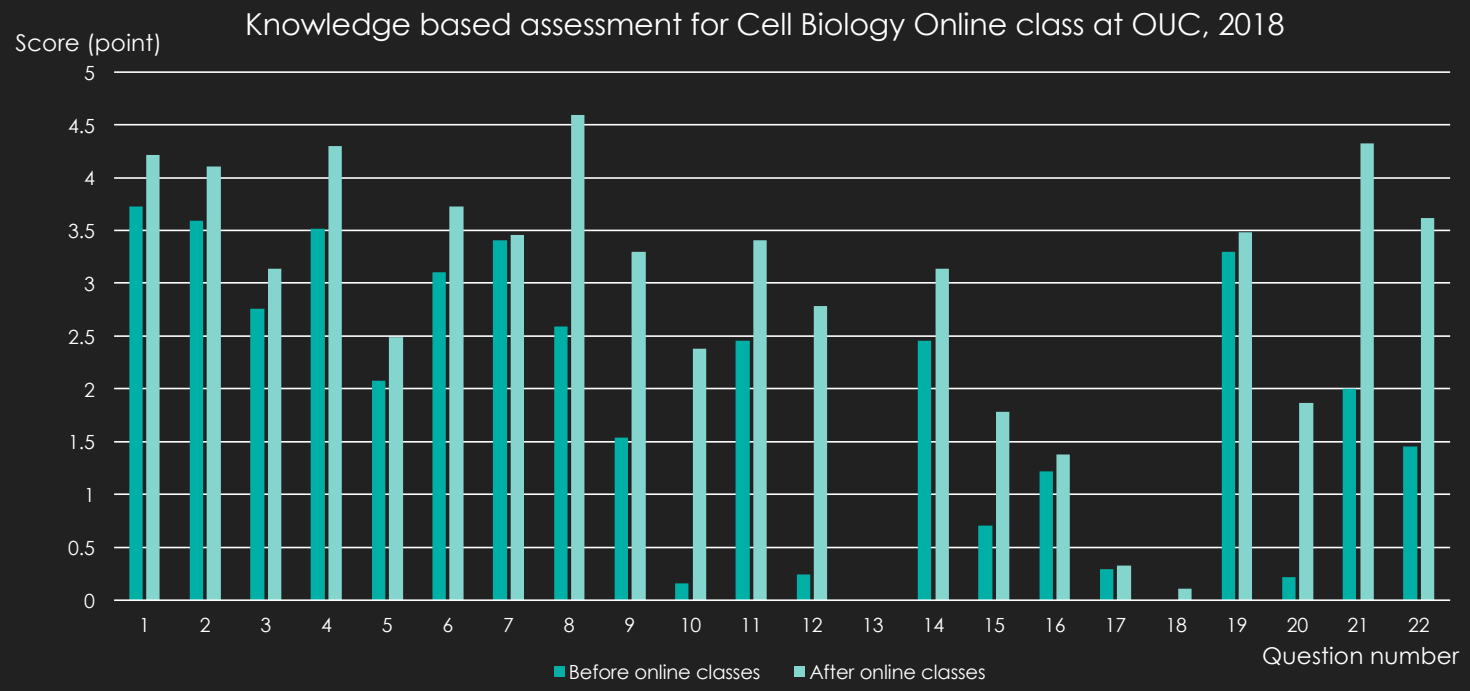


Ocean University of China
Cell Biology
Richard Paul Sorrentino, Ph.D.

Course assessment questions (online portion only)

1. In terms of *structure* and *function*, what is a gene?
   ~~Antigene~~ ~~nucleotides~~ ~~and~~
   A sequence of nucleotides
2. What, exactly, is *evolution*?
   ~~Reproduction~~ ~~of~~ ~~cells~~
   Change of over generations
3. What do we really mean when we say that two orga
   They have almost the sam
4. What kind of organism do we think that LUCA is?
   Herpes.
5. What two ideas unify all of biology?
   genetics and evolution
6. How many molecules of DNA are in one chromosom
   1.
7. What is a living system?
   Only a cell ca
   It can also e
   It is really
8. What *structures* are common to all cells?
   Cell Membrane
   Cytoplasm
   Ribosomes
   Nucleus
9. What *functions* are common to all cells?
   Basic structural, functional and ~~biological~~ needs
   of all known living organisms.
   Building blocks of life.
   plasma membrane, chromosome, cytosi
10. What are the three major branches of the phylogenetic tree of life?
    animalia
    microbiology
    plantae
11. What test could you perform to determine whether two organisms are of t species?
    They have the same genes.
    We can search their gene codes. If mos
    We can call two organisms are of the s
12. What are the five (5) major events in Earth's evolutionary history?
    I don't know the answer to this question
    but I must write something on this paper.
    ~~but~~ I'm really interested on the history!
    It will be great to talk something about history
13. What are the physical carriers of the usable energy in a molecule?
    Bond.
14. How do we justify spending so much money and time studying, and expe organisms?
    Because we want we human for our studying
    to our laws. So we must study model
    search human.
15. Why is it important to students of biology to understandthe properties and electrons?
    Because properties and "behavior" of electr
    for our future studying. They play important
16. What happens when any two molecules "bind" to each other?
    There are some chemical thing interact between two molecules.
    They can communicate with each other.
17. What three (3) characteristics of molecules are important in any interaction between molecules?
    Having ~~the~~ shape
    They can inheritance.
    The same gene codes.
18. What kinds of interactions determine the precise shape of a molecule?
    Electrostatic interaction.
    Hydrophobic interaction.
    Hydrogen bond.
    Steric hindrance.
19. What is one structural difference between prokaryotic and eukaryotic cells?
    ~~0~~ Nucleus.
20. What physical phenomenon is responsible for holding phospholipids together in a bilayer?
    hydrophobic interaction and hydrogen bond.
21. Name all the structures in a plant cell that hold genetic information.
    Ribosome. Mitochondrion, Chloroplast.
22. Why are yeast are better experimental models of human cells than are green algae?
    Small.
    ~~0~~ Genetic background is clear.
    It is easy to do something on yeast.

Evaluation of the Importance of Online Classes



- 22 questions
- Calculate average score per question
- $p < 0.01$

Evaluation of the Importance of Online Classes

- Survey after the first online class

1. Are you interested in online classes?

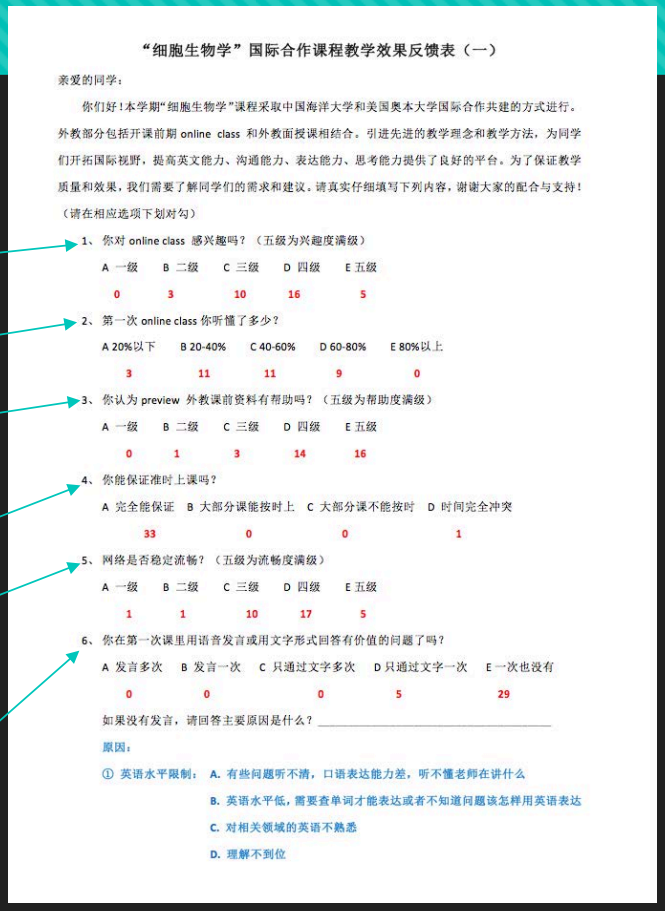
2. How much did you get from the first online class?

3. Is the preview note helpful?

4. Can you make sure to attend the online class on time?

5. Is your Wifi good during the online class?

6. Did you interact with the instructor during the first online class?



“细胞生物学”国际合作课程教学效果反馈表（一）

亲爱的同学：

你们好！本学期“细胞生物学”课程采取中国海洋大学和美国奥本大学国际合作共建的方式进行。外教部分包括开课前期 online class 和外教面授课相结合。引进先进的教学理念和教学方法，为同学们开拓国际视野，提高英文能力、沟通能力、表达能力、思考能力提供了良好的平台。为了保证教学质量和效果，我们需要了解同学们的需求和建议。请真实仔细填写下列内容，谢谢大家的配合与支持！

（请在相应选项下划对勾）

1、你对 online class 感兴趣吗？（五级为兴趣度满级）

A 一级 B 二级 C 三级 D 四级 E 五级

0 3 10 16 5

2、第一次 online class 你听懂了多少？

A 20%以下 B 20-40% C 40-60% D 60-80% E 80%以上

3 11 11 9 0

3、你认为 preview 外教课前资料有帮助吗？（五级为帮助度满级）

A 一级 B 二级 C 三级 D 四级 E 五级

0 1 3 14 16

4、你能保证准时上课吗？

A 完全能保证 B 大部分课能按时上 C 大部分课不能按时 D 时间完全冲突

33 0 0 1

5、网络是否稳定流畅？（五级为流畅度满级）

A 一级 B 二级 C 三级 D 四级 E 五级

1 1 10 17 5

6、你在第一次课里用语音发言或用文字形式回答有价值的问题了吗？

A 发言多次 B 发言一次 C 只通过文字多次 D 只通过文字一次 E 一次也没有

0 0 0 5 29

如果没有发言，请回答主要原因是什么？_____

原因：

① 英语水平限制： A. 有些问题听不清，口语表达能力差，听不懂老师在讲什么

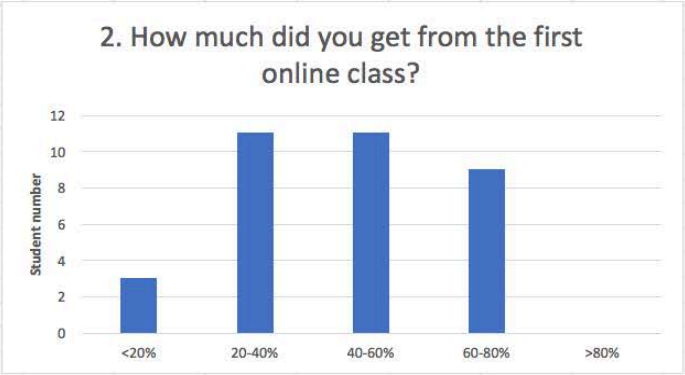
B. 英语水平低，需要查单词才能表达或者不知道问题该怎样用英语表达

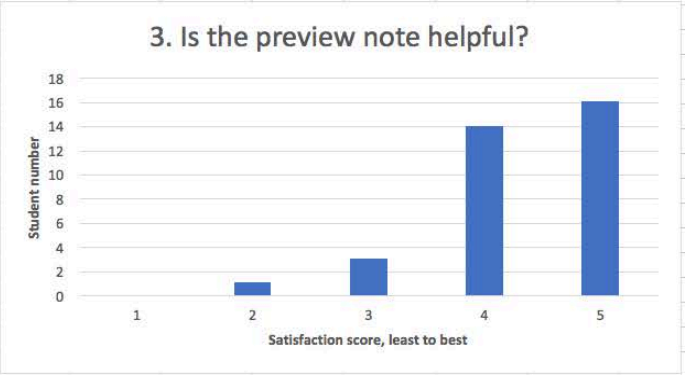
C. 对相关领域的英语不熟悉

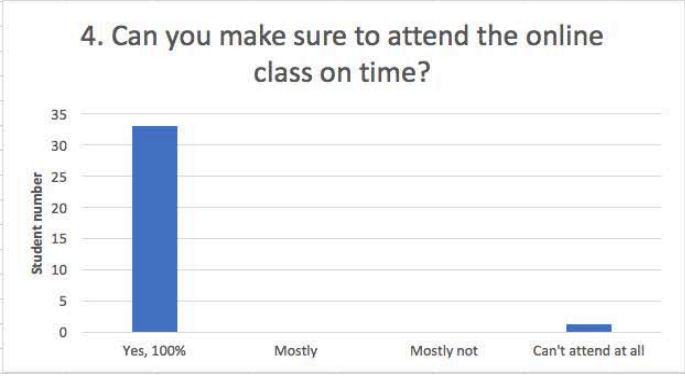
D. 理解不到位

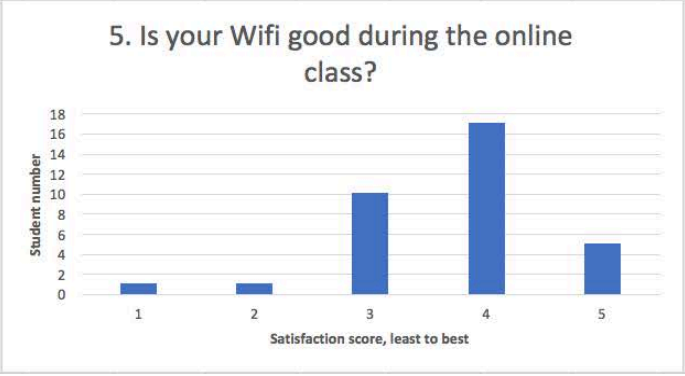
Evaluation of the Importance of Online Classes

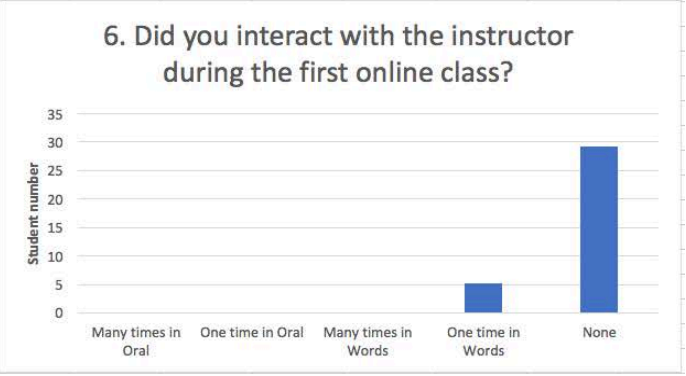
- Improve students' motivation and interests











Evaluation of the Foreign Teacher's Classes

- A small symposium

Preliminary Results

- Engage students in:
  - class preparation
  - interests
  - study motivation
  - strategies for learning
  - involvement of some in-class activities.
- Improve receptivity and overcome the barriers of language and culture
- Improve learning outcomes.
- Increase in student interest and an improvement in long-term performance in upper level courses.

International Cooperative Course as a trend

- An emerging trend in high level education in China
- An innovative pedagogy and course framework
- An effective module to enhance class internationalization as well as the global collaborations of professional courses.

International Cooperative Course as an issue

- Teacher cooperation
- Curriculum re-design
- Class time coordination and re-scheduling
- Effectiveness of online classes
- More Effective assessment strategies
- Finding qualified professors

Acknowledgement

- Department of Biological Sciences, Auburn University
- Cooperative Chinese Institutes
  - Ocean University of China
  - Qufu Normal University
  - Tianjing Huanhu Hospital
  - Beijing University of Civil Engineering and Architecture
- OUC Short-term Expert Foundation
- OUC undergraduate Teaching Quality and Teaching Reform Fund