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Spring 2017

INFORMATION LITERACY- MATH 129 PRECALCULUS MATHEMATICS I REDESIGN (Final report)

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INFORMATION LITERACY

MATH 129 PRECALCULUS MATHEMATICS I REDESIGN

Faculty: Dr. Wu Jing

Librarian: Mrs. Jinong Sun

BACKGROUND

- STUDENTS
  - Major in math, computer science, chemistry, biology, etc.
  - Early college high school students
- Faculty (It took a village to get here☺)
  - Applied for Information Literacy fellow in 2009
  - Applied for Information Literacy fellow in 2010
  - Applied for Information Literacy fellow in 2016!!!
- Librarian
  - Nine-year experience of Information Literacy Librarian

Time Line

- 12/13/2016---12/14/2016: Initial workshop
- 01/13/2017: Revised course syllabus completed
- 01/16/2-17 --- 01/19/2017: Pre-test (online)
- 02/16/2017: Library Instructional Session given by Mrs. Sun in Library Conference Room
- 02/16/2017--- 04/14/2017: Post-test (online)
- 03/30/2017: Information Literacy Writing Project Topic Due
- 04/27/2017: Information Literacy Writing Project Due
- 05/17/2017: Final workshop

Why & Why

Why this course?

- One of the most important courses for science majors
- Information literacy is critical to science majors

Why this writing project?

- Cover all five ACRL standards
- Improve science major students' writing skills
- Improve science majors' ability of obtaining needed information
- Relation with mathematics

Redesigned Assignment : Writing Project

- **Selection of Topics:**
  - Essay of a famous mathematician including his/her mathematical contributions
  - History and application(s) of a topic covered by this course (e.g. equilibrium price, compound interest, line of best fit, rate of change, etc.)

- This writing project is designed to apply the ACRL'S information literacy standard 1, 2, 3, 4, 5. Students need to select a topic from the list below. Students are required to search and locate reliable information for their topic and write a 2-3 pages paper on their topic using the information they found for their topic. The paper should be formatted in APA (6th edition) style. Students are expected to search information from FSU library resources including books, databases, and journals http://libguides.uncfsu.edu/journals) as well as reliable online websites. (preferred domain: edu, gov, and org).

Redesigned Assignment:

- Student provided instructions and timeline
  1. Deadline for submitting topics for approval (03/30/2017)
  2. Deadline of paper submission (04/27/2017)
  3. Detailed required about paper format, length, and reference

- Collaborated with Mrs. Sun to developed the rubrics for essay
- Librarian's contact info was given for one-to-one assistance

Information Literacy Session

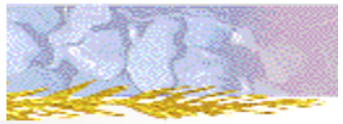
- The IL session were developed by Mrs. Sun, then provided in conference room of the Library (75 minutes session)
- The content of the BI session was customized for the writing project: all of the search examples (books, journal articles, websites) were using the writing project's topics
- Students well-attended and engaged during the session
- In-class search exercises – every student get hands on practices on searching database
- Received very positive comments and evaluation from students: 19 out of 21 students (90%) evaluated the session as "Excellent" and 2 out of 21 (10%) evaluated as "very good"
- Post-test (online) after session

“In your research, what will you do differently after today’s session?”

Typical Answers:

- “I will definitely try our database first before researching at other sites”
- “Use database and the citation from now on”
- “ I will be using those templates and the pre-cite source options”
- “Use the other databases and use educational website more often”
- “Use library more”
- “Start using the online resources from library”
- “I will use the Chesnutt library database to find articles to support my paper”
- “I will use the library and its research materials more often”
- “I will use the online database much more to help me with my research”

Today's Class Objectives



- Learn how to navigate Chesnutt Library's Web Page
- Learn how to find print and electronic books using the Library's online catalog
- Learn how to identify and search relevant databases to find articles for your assignment
  - Academic Search Complete
  - Credo Reference
- Be able to evaluate Internet resources and find reliable websites
- Be able to cite the resources you use in order to avoid plagiarism.

In- Class Search Exercises During the IL Session

2017 Spring Math 129 Library Instructional Session

In –Class Exercises Sheet

02/16/2017

Name:

1. **Book Search**
   Write ONE title of books you found on your possible topic
   Title:_____

2. **Database Search:**
   Conduct search @ Academic Search Complete
   Title of Article (ONE) on your possible topic:
   _____
   Conduct search @ Credo Reference
   Title of Article (ONE):
   _____

3. **Journal Search**
   Write down ONE journal title you found via journal finder
   Journal Title: _____

4. **Google Search**

Key word gov **# of hits:**_____
Key word edu **# of hits:**_____
Keyword org **# of hits:**_____

"keywords" **pdf # of hits:**_____
"keywords" **doc # of hits:**_____
"keywords" **ppt # of hits:**_____

Pre-Test & Post-Test

Problem	Pre-Test	Post-Test	Improved
#1	78%	96%	+18%
#2	57%	96%	+39%
#3	74%	91%	+17%
#4	43%	74%	+31%
#5	91%	100%	+9%
#6	96%	96%	0%
#7	96%	87%	-9%
#8	74%	87%	+13%
#9	52%	70%	+18%
#10	96%	100%	+4%

Pre-Test & Post-Test

Problem	Pre-Test	Post-Test	Improved
#11	96%	96%	0%
#12	78%	78%	0%
#13	78%	78%	0%
#14	83%	91%	+8%
#15	100%	100%	0%
#16	43%	78%	+35%
#17	52%	74%	+22%
#18	96%	91%	-5%
#19	96%	100%	+4%
#20	100%	91%	-9%

How confident do you feel in your abilities to determine the extent of information needed?

	Pre-Test	Post-Test
Very Confident	9%	57%
Confident	57%	39%
Not very confident	30%	4%
Not confident	4%	0%

How confident do you feel in your abilities to assess the needed information effectively and efficiently?

	Pre-Test	Post-Test
Very Confident	35%	61%
Confident	48%	39%
Not very confident	13%	0%
Not confident	4%	0%

How confident do you feel in your abilities to evaluate information and its sources critically and Incorporate selected information into one's knowledge base?

	Pre-Test	Post-Test
Very confident	35%	52%
Confident	43%	43%
Not very confident	9%	4%
Not confident	13%	0%

How confident do you feel in your abilities to use information effectively to accomplish a specific purpose?

	Pre-Test	Post-Test
Very confident	39%	61%
Confident	52%	39%
Not very confident	9%	0%
Not confident	0%	0%

How confident do you feel in your abilities to understand the economic, legal, and social issues surrounding the use of information, and access the use information ethically and legally?

	Pre-Test	Post-Test
Very confident	30%	48%
Confident	52%	43%
Not very confident	13%	9%
Not confident	4%	0%

Syllabus Revisions---Student Learning Outcomes

Before

- **Student Learning Outcomes**
- Upon completion of this course, students will be able to:
- Use the properties of real numbers and complex numbers, and basic rules of algebra.
- Solve linear or other equations and inequalities encountered in elementary calculus.
- Find the equations and plot the graphs of lines and circles.
- Understand the basic concepts and properties of functions and their graphs.
- Understand and apply the properties of polynomial functions and rational functions.
- Understand and apply the properties of exponential functions and logarithmic functions.
- Graph polynomial, rational, exponential, and logarithmic functions by hand and with calculator.
- Use linear, quadratic, exponential and logarithmic functions to model and solve applied problems.
- Demonstrate the ability to use graphing calculators and mathematical software such as MathXL to solve problems.

After

- Upon completion of this course, students will be able to:
- Use the properties of real numbers and complex numbers, and basic rules of algebra.
- Solve linear or other equations and inequalities encountered in elementary calculus.
- Find the equations and plot the graphs of lines and circles.
- Understand the basic concepts and properties of functions and their graphs.
- Understand and apply the properties of polynomial functions and rational functions.
- Understand and apply the properties of exponential functions and logarithmic functions.
- Graph polynomial, rational, exponential, and logarithmic functions by hand and with calculator.
- Use linear, quadratic, exponential and logarithmic functions to model and solve applied problems.
- Demonstrate the ability to use graphing calculators and mathematical software such as MathXL to solve problems.
- Obtain necessary level of information literacy and information competency skills – identify, navigate, evaluate, and use information effectively and ethically from reliable resources.

Syllabus Revisions --- Student Learning Outcomes

Before

After

- In this semester, this course introduces a new component as of Information Literacy (IL) to help students develop skills on identifying, navigating and using scientific information effectively and ethically from multiple reliable sources. This is a collaborated project with FSU Chestnut Library. The guideline of this project is a framework provided by Association of Colleague of Research Libraries (ACRL) which consists of the following five Information Literacy Competency standards for High Education. These standards serve as student learning outcomes by the end of this course.
- **S1:** The information literate student determines the nature and extent of the information needed
- **S2:** The information literate student accesses needed information effectively and efficiently
- **S3:** The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system
- **S4:** The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.
- **S5:** The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

Syllabus Revisions--- Grading Policy

Before

- Attendance ---------- 5%
- Homework ---------- 20%
- Tests---------- 45%
- Assessment Quiz---------- 10%
- Final Exam ---------- 20%

After

- Attendance ---------- 5%
- Homework---------- 20%
- Tests ---------- 35%
- Information Literacy Pre-/Post-Test ----------5%
- Information Literacy Writing Project --------10%
- Assessment Quiz----------10%
- Final Exam ----------15%

Topics Selected

Mathematician	# of Students
Benjamin Banneker	2
Rene Descartes	1
Annie J. Easley	1
Albert Einstein	1
Fibonacci	2
Sophie Germain	1
Katherine Johnson	3
Isaac Newton	2
Emmy (Amalie) Noether	1
Pythagoras	3
Srinivasa Ramanujan	1
Alfred Tarski	1
Dorothy Vaughan	1
J. Ernest Wilkins Jr.	1
Chongzhi Zu	1

Student Writing Project Results:

Achieved

Majority of students have obtained necessary information literacy skills that were reflected through the following elements in their writing papers:

- APA format
- Quality of resources
- List of References
- Plagiarism (No wikipedia)

Need to improve

- In-text citation
- Essay of a famous mathematician including his/her mathematical contributions

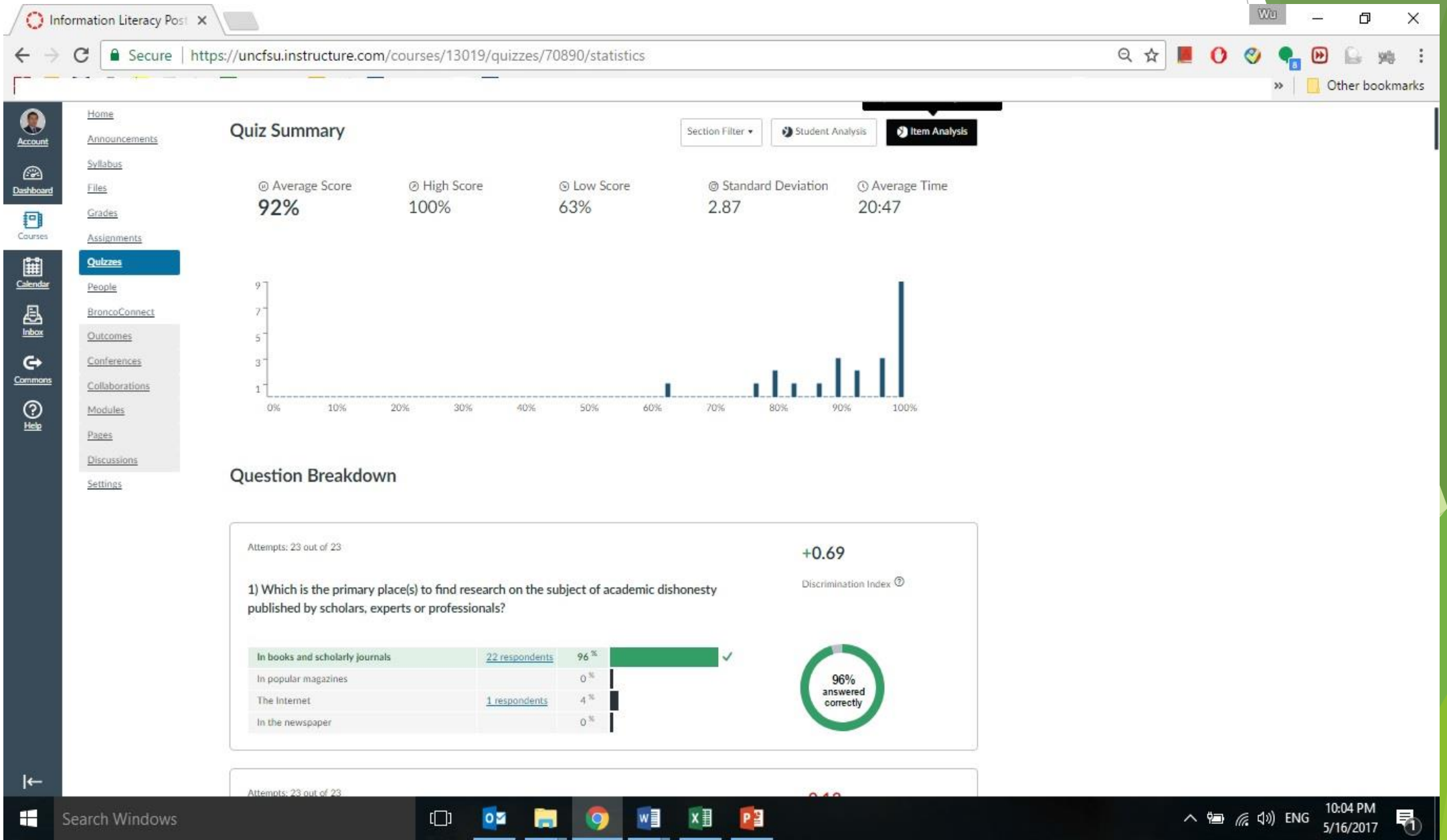
Challenges:

- Science students are not good at writing
- A few students didn't complete the project

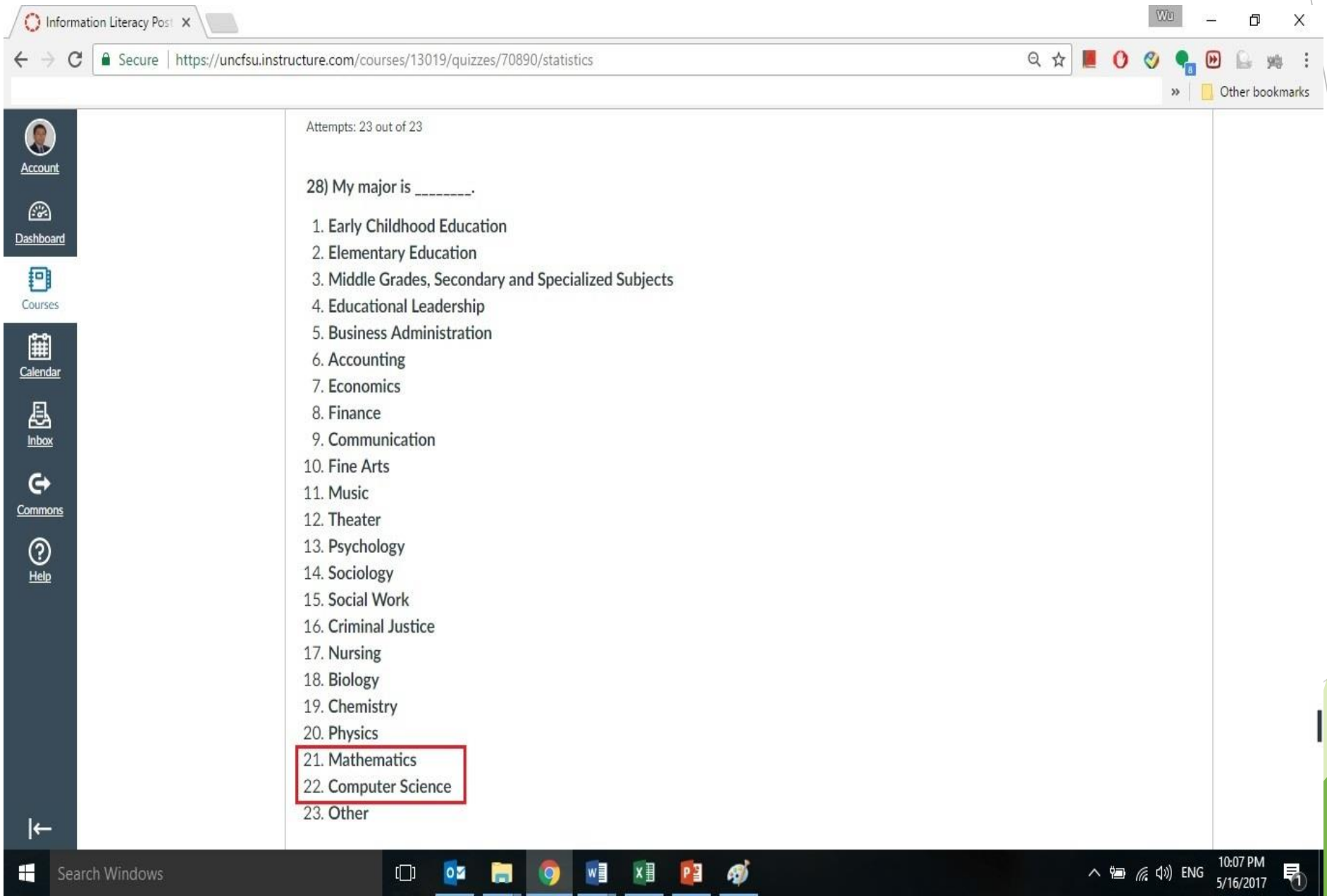
Benefits:

- Students
  - Writing practice
  - Information literacy skills
  - APA format
  - Mathematicians
- Faculty
  - Databases at FSU library
  - APA format

Suggestions



Suggestions



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