The Many Faces of Research at Marymount

FEBRUARY 26, 2020: 9:30 -11:00 AM

BALLSTON CONFERENCE CENTER

MARYMOUNT UNIVERSITY

Overview of Topics for the Workshop

- Is it research?
- Research from IRB perspective:
  - What projects must have IRB review?
  - Research with students and research about students
- Responsible Conduct of Research Training
- Panel Discussion: Research activities, working with students

Is it Research?

Research is a systematic investigation designed to develop or contribute to generalizable knowledge.

- Answering a research question
- Collecting data in an organized and systematic way
- Analyzing the data in a methodologically appropriate way

Generalizable: Activities designed to draw general conclusions, inform policy, or generalize findings beyond a single individual or an internal program.

Boyer's Model of Scholarship/ Research

Scholarship of:

- Discovery: building **new knowledge**
- Integration: Making **New connections** across existing knowledge
- Teaching and learning: **advancing knowledge** about how to teach
- Application: Advancing and Applying knowledge to **new situations**

Responsible Conduct of Research

CITI Program (available free of charge to students and staff from IRB CITI training site- consider requiring it!)

- Research integrity and research ethics
- Authorship
- Plagiarism
- Mentorship
- Research misconduct
- Conflict of interest
- Data management
- Financial responsibility
- Human subjects protection (basic introduction)

IRB and SOTL Research

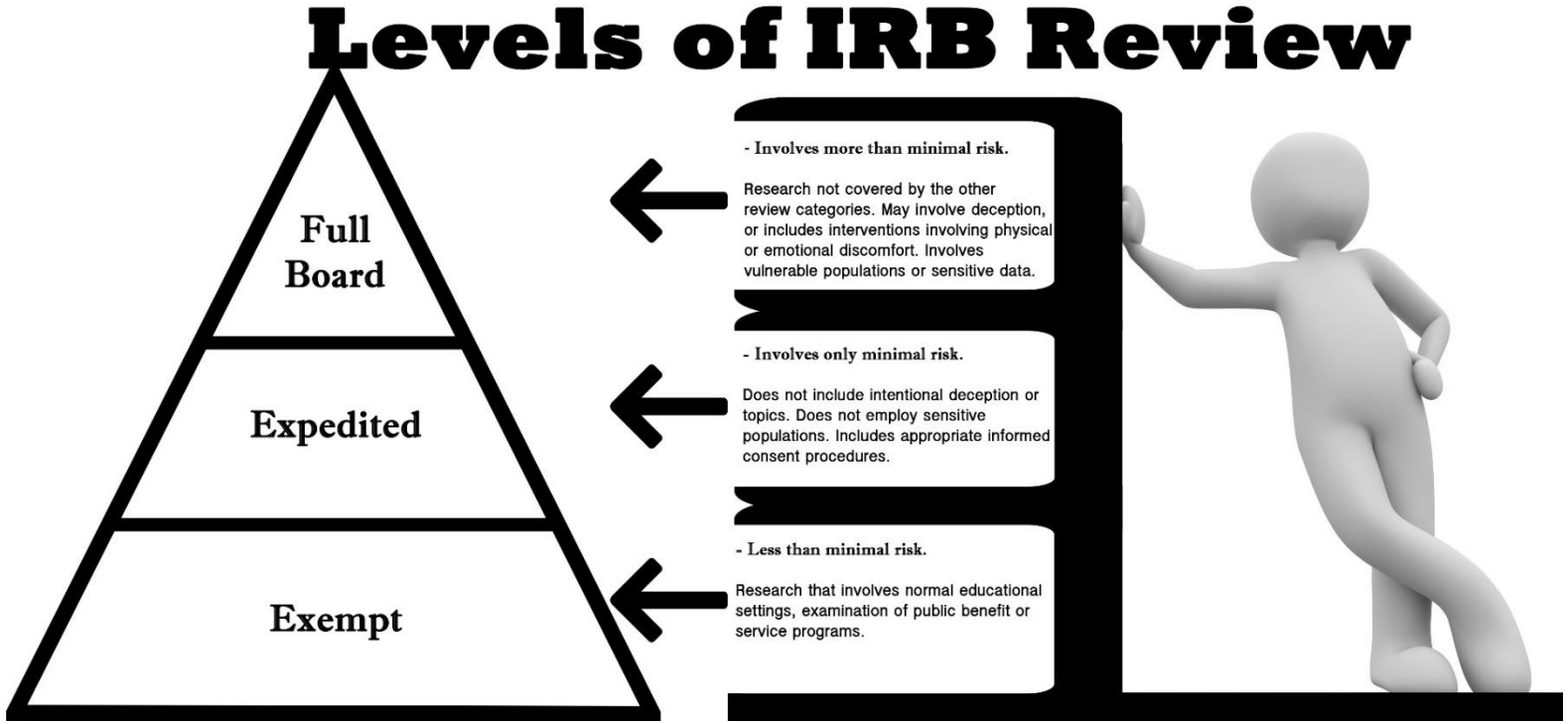
Amanda L. Farrell, IRB Chair
OSP Workshop
February 26, 2020

MU Interest in the Scholarship of Teaching and Learning (SOTL)

- OSP Survey
- It can be done…but carefully and thoughtfully
- What are some areas of your teaching/pedagogy or student learning that you might want to explore as research?
- Intention matters in how you approach this

IRB Applications--Reminders

- Faculty MUST serve as PI
- Levels of Review
- Faculty Assurance Form**
- Realistic timeline
- Use your IRB reps!



What can you do (rather easily)?

- Adding questions to your course evaluations to assess area of interest (usually exempt)
- Secondary data analysis of previous classes** (this is where intention matters)
- Data collection during a course
  - Can be expedited or exempt, depending on the methods
  - Avoiding coercion
  - Protecting participants
  - Gaining consent

Real MU Examples! (Materials blinded or used with permission)

- Adding Questions to a Course Evaluation (Exempt)
- Developing a Baseline for a SOTL Project (Exempt)
- Assessing Effectiveness of a Pedagogical Tool (Expedited)

Adding questions to course evaluations (Exempt)

- Data will already be anonymous and aggregated
- Allows for student perceptions across two classes
- Waiver of informed consent available
- Empirical support/validation

1. **Abstract:** Describe in a few paragraphs the **purpose** of your research, your research **methods / design**, and the anticipated **goals or outcomes**. Please list any materials you plan to use and **upload copies of materials** (e.g., surveys, questionnaires, interview questions, focus group questions) to Mentor as part of your exempt application.

[Discipline] educators must bridge the generational divide for the purpose of leveraging the Generation Z nursing student attributes and learning outcomes. Generation Z students are populating our undergraduate classrooms and are defined between the ages of 7 and 22 years old (PEW, 2019). It is estimated that 95% of Generation Z students have access to a smartphone device, and nearly 45% are connected online continuously (PEW, 2018a). Early literature identifies Generation Z students are driven by technology and are competitive, realistic, and goal oriented (Roseberry-McKibbin, 2017). The literature supports the use of videos, computers, access to the internet and software applications that are frequently used in education to promote student acquisition of course content and student learning outcomes (Friberg & Creasia, 2016). Shatto and Erwin, (2016) found that student created videos on a course topic, created an atmosphere of student engagement which promoted critical thinking and communication. Higher student engagement and satisfaction has been demonstrated with the use and integration of online technology such as visual recording technology (Johnston, Barton, Williams-Pritchard & Todorovic, 2018).

The purpose of this project is to assess the student value and impact of integrating visual recording technology into [COURSE]. The project involves a student to self video him/herself and complete a 3-4 minute "elevator speech" that includes the synthesis of content learned in [COURSE] based on [Discipline] professional values and standards.

Methods: Secondary data analysis of [COURSE] student evaluation of ([COURSE] sections assigned to me) [COURSE] course administered by The Office of Planning and Institutional Effectiveness (PIE) at MU including instructor added questions and student comments about the course. Only [COURSE] sections that I am currently teaching will be included in the secondary data analysis. I plan to compare the evaluation ratings and comments between the [COURSE A] section and my [COURSE B] (traditional) section. The [COURSE B] section was not assigned the video project.

The following questions have been added to the student course evaluation for my accelerated [COURSE A] students:

1. My student created video helped me critically think about the [Discipline] professional values and standards.
2. The student created video helped me begin to establish my [Discipline] professional identity.
3. I was satisfied with the student created video project as a useful active student learning strategy.
4. I felt a strong sense of community with my fellow students after watching the student created videos.

2. Subject Selection: Describe your recruitment process and explain how you will assure that subject selection is **equitable and fair**. **Upload all recruitment documents** to Mentor as part of your application (e.g., scripts/narratives to be read, content of recruitment flyer or email). If using previously collected data, explain why, how, and by whom the data were collected.

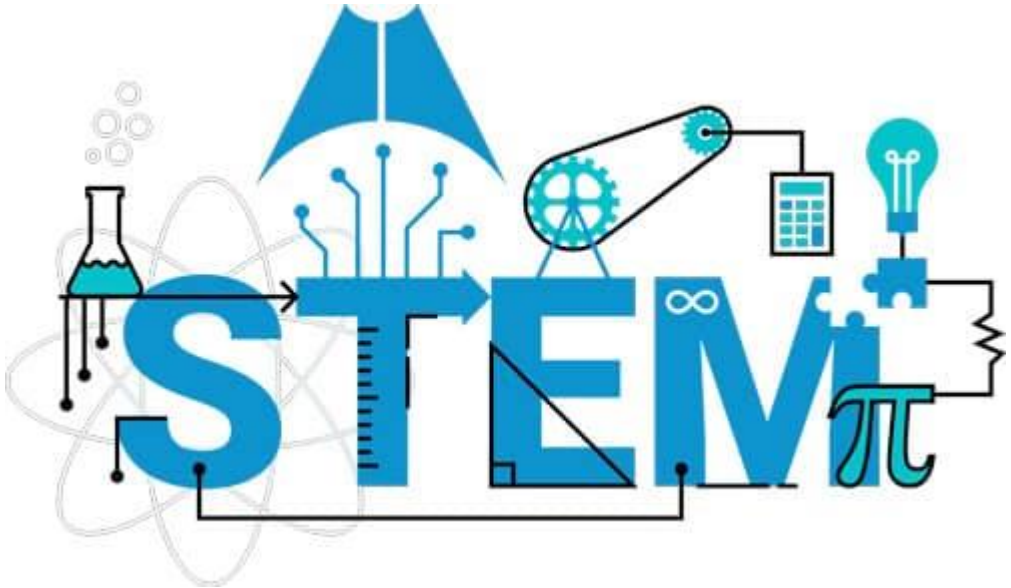
Only my students currently enrolled in [COURSE A] and [COURSE B] will be sent the end of semester course evaluation survey by Marymount University PIE with the added instructor created questions. This survey is voluntary with no student identifiers attached to it. PIE adheres to the Statement on Confidential Data and Information and the Family Educational Rights and Privacy Act (FERPA).

2a. If your project includes **MU students** or another potentially vulnerable population (e.g., non-English speaking participants), explain how you will assure they will not feel coerced to participate. To qualify as Exempt, the consent process must assure participants do not experience undue pressure to participate. It is the burden of the researcher to assure that MU students will not perceive that they will be rewarded for participation, or punished for non-participation (e.g., a faculty member who has responsibility for grading students should not be aware of which students consent to participate in a study until after grades are submitted).

All PIE data is reported in aggregate form to protect the participant population. Only Marymount University students registered in my [COURSE] sections may participate in the student evaluation of the course including my custom four questions. Participation in completing the student evaluation is voluntary.

Data from Courses in Progress (Exempt)

- Baseline for a future project
- No grades collected, but pre- and post-test
- Minimize coercion by partnering with colleagues from other departments
- Minimize bias and coercion by not looking at data until after the semester closes
- Consent



2. Subject Selection: Describe your recruitment process and explain how you will assure that subject selection is **equitable and fair**. **Upload all recruitment documents** to Mentor as part of your application (e.g., scripts/narratives to be read, content of recruitment flyer or email). If using previously collected data, explain why, how, and by whom the data were collected.

All undergraduate Marymount University students who are at least 18, who are not considered vulnerable, and who are registered for Astronomy (ASTR 101) and Physical Science (PSC 103) in the spring semester of 2020 and beyond. There are approximately 26 students registered in each course.

2a. If your project includes **MU students** or another potentially vulnerable population (e.g., non-English speaking participants), explain how you will assure they will not feel coerced to participate. To qualify as Exempt, the consent process must assure participants do not experience undue pressure to participate. It is the burden of the researcher to assure that MU students will not perceive that they will be rewarded for participation, or punished for non-participation (e.g., a faculty member who has responsibility for grading students should not be aware of which students consent to participate in a study until after grades are submitted).

All students will take the PSVT:R examination both at the beginning of the course (within the first month) and at the end of the course. Students will be provided with a consent form describing the project and the short, 10 minute PSVT:R examination they will be taking. Only those students who sign consent forms will have their data used in the study. Students will be assured that their participation in the study will have no impact on their grades. The PI will be available to answer student questions about the consent forms, but will exit the room before students provide their consent. Consent forms will be collected and sealed in an envelope by PI Hicks, PI Langran (neither of whom teach the courses in question) or a suitable student worker. The envelope will be securely stored in PI Langran's office until the conclusion of grade submissions for the spring 2020 semester. Data analysis will only begin after final grade submissions.

3a. Explain how you will protect against / minimize **all** identified risks. You must demonstrate here that there is **no greater than minimal risk** to subjects and that **risks are reasonable in relation to benefits of the research.**

Since PI Bubar is the instructor of the courses, there is a possibility that students may feel compelled to participate. To avoid this perception PI Bubar will not be present when students are filling out their consent forms. All consent forms will be placed in a sealed envelope and stored in PI Langran's office until final grades are submitted so that PI Bubar will not know who consents in participation until AFTER grades are submitted. PI Bubar will be present while students complete the PSVT:R test in order to answer potential questions, but answer sheets will also be sealed in an envelope upon completion and stored in PI Langran's office until spring grades are submitted. PI Bubar will not have access to either consent forms or data until final grade submission. Since PI Bubar will not know which students are participating and will not know test results until after grades are submitted there is no way for students' grades or relationship with the instructor to be impacted. Students will be assured that use of their data in a research study is entirely voluntary and that there is no penaly or loss of benefits if they choose to not participate. Students will also be assured that their grades are not impacted by their choice to participate or not. The informed consent form emphasizes these points.

Research from Courses in Progress (Expedited)

- Evaluating the effectiveness of pedagogical tools
- Validation and support
- Comparative and looks at outcome data (grades)
- Also uses data analytics and metrics from software
- Again, partnering with someone outside your department for coercion and bias reduction
- Coding by co-PI to avoid identification of students
- Review of data after semester closes
- Consent

Section 2. Research objectives are clear with valid end goals based on disciplinary standards

2.1 Purpose of Research: Briefly describe (in one to two paragraphs) your research topic or question, the objectives of the project, and the role of human subjects in the project.

Panopto is an online video platform that records and streams video content that is then stored and saved onto a learning management system (Canvas) for repeat student views. This tool is used and subscribed to by Marymount University and has multiple key features that include interactive quizzes, discussion boards, word indexing, lecture capture, remote mobile recording and video analytics. Using this video platform in class lectures may enhance learning comprehension of curriculum particularly for hands-on, health courses with skills assessments. HPR 302 (Fitness Testing and Assessment) is a health science class at Marymount University that introduces fitness testing assessment skills to undergraduate Health Science majors that include the measurement of: body composition, blood pressure, flexibility, muscular strength/endurance and cardiorespiratory endurance.
Some research has been done using Panopto software however it mostly pertains to students perceptions of the software (Azhar et al., 2018; Cilesiz et al., 2015 and Peart et al., 2017). Currently there is no existing literature on the use of Panopto for health science majors' comphrehension and application of hands on fitness-testing assessments.

The purpose of this research is to enhance student learning of the curriculum by incorporating a unique tool that allows students to view the hands-on techniques at their own pace, long after the content has been taught in class. Students can take notes and post questions about the content directly inside of the Panopto platform, providing information about the student experiences learning the content. Furthermore, this research will help to determine how effective video software is for learning and retaining skills pertaining to hands on skills such as fitness testing.

[2] According to OHRP, "The expedited review procedure may not be used where identification of the subjects and/or their responses would reasonably place them at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, insurability, reputation, or be stigmatizing, **unless** reasonable and appropriate protections will be implemented so that risks related to invasion of privacy and breach of confidentiality are no greater than minimal."

3.1 Detailed procedures: Explain how you will collect data by describing in step-by-step detail the experience of your research subjects during data collection from start to finish.

Videos of fitness assessments will be available on Canvas (Recorded using Panopto) and students will have access to view them at their leisure. Section A will have access to the body composition assessment and section C will have access to the cardiovascular endurance assessment.

Approxmiately 20 health science students will then participate in a mock exam on 5 different fitness assessments as a practice for their final practical exam. They will given a grade and a check off sheet that will allow them to see where they need to improve for the final. This "fake" grade will only be used for data analysis and will not count toward their final grade in the class. We will only analyze their performance on either body composition assessments or cardiovascular endurance assessments but the students will not know which one is being investigated for research. Students will be observed and "graded" using a check off sheet (see attached).

After final grades have been submitted, Joe (who is proficient in Panopto) will pull the analytics (number of indivdual student views) from the software for analysis and comparison against the grades earned during the mock practical exam. Data will be protected on password protected computers only accessible to the PI's and stored for 3 years upon which time informed consents and other papers will be shredded and electonic data erased from all computer drives. Direct identifers will be coded for analysis and data will be displayed in aggregate form.

3.2 Safety of subjects: If any of your *data collection procedures* expose subjects to risk, explain how this is consistent with the accepted practice within your discipline or field.

Joe P will alert students prior to the mock exam that their data will be used after the end of the semester for a research study. Joe Provenzano will be present to administer and collect informed consents and they will be locked and stored in a CTL office until analysis. If a student does not want to participate we will not use their data . Prior to analysis, students data (name) will be coded in numerical form.

5.2 Explain how you will minimize these risks and protect the welfare of subjects:

On the day of the mock exam Joe P will be present to explain the research, how and when we will use data and the importance of voluntary participation. Professor Allnutt will be present to only grade the mock exams. All data collection will be kept and locked up in the CTL until final grades are submitted with only Joe P having access. If students opt out of participation their papers will be removed for data analysis.

---

[3] According to the federal guidelines "[S]ensitive information includes but is not limited to information relating to sexual attitudes, preferences, or practices; information relating to the use of alcohol, drugs, or other addictive products; information pertaining to illegal conduct; information that, if released, might be damaging to an individual's financial standing, employability, or reputation within the community or might lead to social stigmatization or discrimination; information pertaining to an individual's psychological well-being or mental health; and genetic information or tissue samples." SOURCE: http://www.hrsa.gov/humansubjects/faqs.htm

5.3 Direct Identifiers:[4] Do you plan to collect any direct identifiers of subjects?

- [x] No.
- [ ] Yes. If yes, answer the following 2 questions:

5.3.1 Explain if the direct identifiers will be linked to response. If you plan to de-link the two, how will you do it?[5]

5.3.2 If any subjects will be identified in the findings, explain why this is necessary.

5.4 Indirect identifiers:[6] Will the data include indirect identifiers?

- [ ] No.
- [x] Yes. If yes, answer the following question:

5.4.1 Explain how you will ensure that no one can be indirectly identified by anyone outside the research team (e.g., findings are presented in aggregate).

No names or email addresses will be collected. Subjects will be given a number on their check off sheet for analysis only. No names will be used.

Any questions?

Panel Discussion

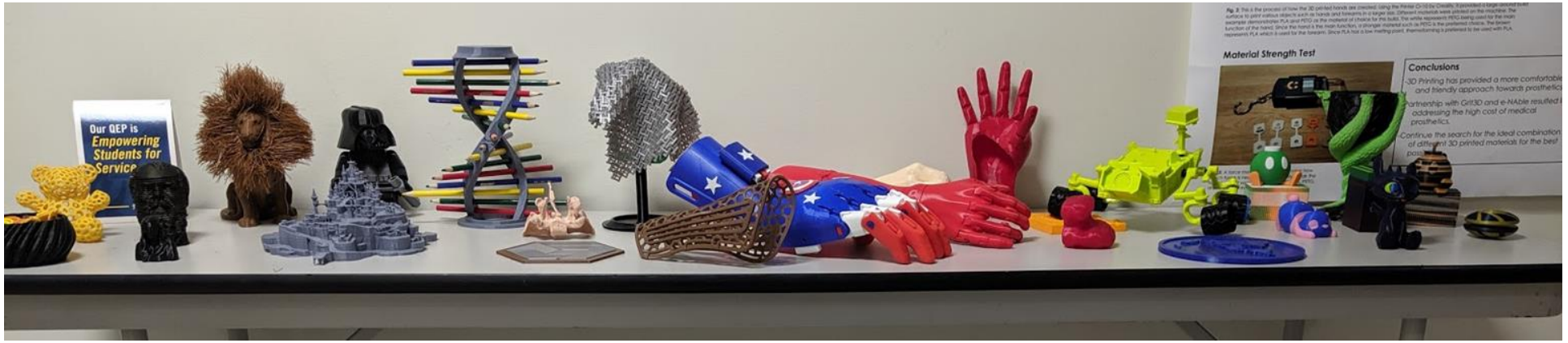
My Research agenda;
Student Roles in my Research.

- Eric Bubar- Associate Professor- Biology and Physical Sciences
- Cathy Elrod- Professor- Physical Therapy
- Cassandra Good- Assistant Professor- History and Politics
- Nathan Green- Assistant Professor- IT, Data science, and Cybersecurity

Physics Research at MU

Research Agenda - a few of the broad categories

1) Chemical analysis of stars using spectroscopy - useful for finding ages of stars, planet-hosting potential, tracing galactic evolution, etc.
2) Using 3D printing/design, computer programming and hobbyist microcontroller electronics to create assistive technologies - includes prosthetic hands, arms and task specific devices
3) Using VR/AR for educational purposes
4) Spatial Visualization as a fundamental competency in STEM and beyond
5) Product development and prototyping



How it started

Method to the Madness

Google forms to collect potential volunteers

https://docs.google.com/forms/d/1o6v-moAq37b2ycMjWmj2Z6TR1h850TxHqi8qqV_Pc-M/edit

Training sessions in lab tech and weekly lab email updates with current lab projects. ALWAYS open for new student project ideas!

Currently working on low-cost bioprinting, creating a range of 3d printable assistive tools, inventing a flexible/comfortable alternative socket for assistive device users (w/ PT in Nicaragua), wearable to detect and "correct" tremors (e.g. Parkinsons), exploring VR/AR (e.g. recreate the Globe Theater in VR, simulate effects of climate change)

Track projects and students on google sites - https://sites.google.com/view/solve3d/home

Moving on Up

~ 50 students volunteer each semester

~ 25 students follow through and complete a small project or piece of work

~ 3-5 who do substantial work get to apply for DISCOVER or outside funding

Take students to present and publish (UMBC Research Day, VA Honors, Construct3D, 3DPAC, makerfaires/local science shows)

Make projects available on summer research website. Typically only choose students who have already been in the lab for a semester or two and shown good work

CONSTANTLY projects going on - some fail, some sputter out and some succeed!