



Innovative Online Teaching Techniques and Methods for Undergraduate Cybersecurity Course



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Course Design - Clear Expectations

- Detailed Syllabus
- Course Calendar - Due Dates and Schedule
- Rubric/Guidelines for Deliverables
- Clear role and responsibilities for Learners

Course Design - Weekly Learning Guide

- Clear Student Learning Outcomes
- Aligned with Course Objectives and Course Content
- Measurable and Understandable Weekly Learning Outcomes
- Clear Weekly Learning Activities
- Clear Weekly Assessments

Course Design - Real World Related Course Content

- Virtual labs - Ethical Hacking Related
- Assignment Exercises relating cybersecurity incidents
- Cybersecurity News Videos
- Exam Questions Relating recent cybersecurity incidents

Course Design - Online Orientation

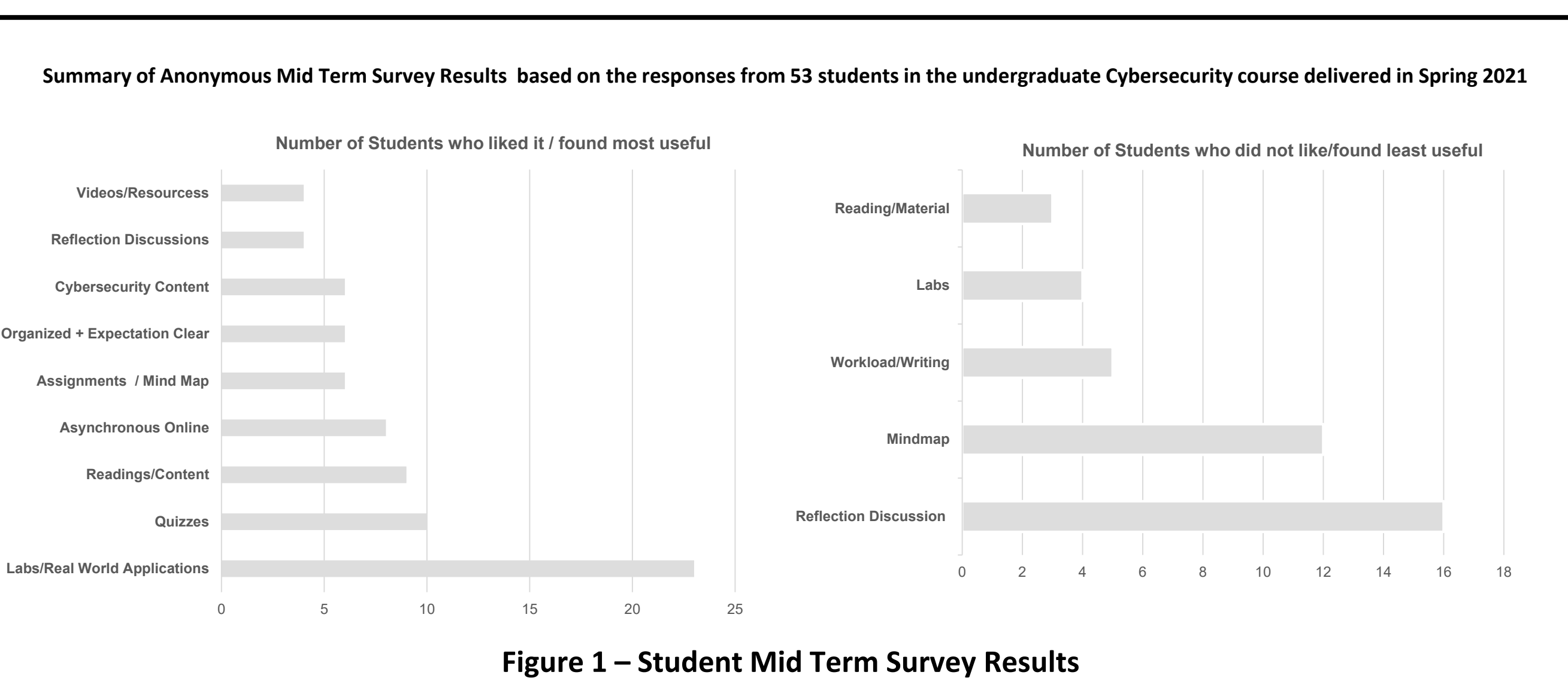
- Establish constant pattern of activity with due dates
- Online Videos break into smaller chunks
- You tube videos aligning to course material
- Clearly laid out Technical Support Information
- Clear expectations for online participations and communication
- Organize folders in LMS clearly
- Clearly explain special technologies to be used online

Acknowledgements

Center for Faculty Excellence – Faculty Champions Program

Introduction

- Online learning has become very important post COVID-19 pandemic
- Effective course design and deployment are critical
- Cybersecurity is an important and popular subject
- Experiential cybersecurity learning is important
- It is important to have strategies and techniques that are effective for online learning



Conclusion

- Designed and delivered undergraduate online course in Cybersecurity
- As per survey results, students seem to like asynchronous online mode of course delivery.
- Students liked virtual lab/experiential learning
- Students liked course material/readings and quizzes that reinforced the learning
- Students did not appreciate the repeat work in the reflection discussions, mind map and assignments

Literature cited

J. Mirkovic, and T. Benzel. "Teaching cybersecurity with DeterLab." IEEE Security & Privacy 10, no. 1 (2012): 73-76.

M. Rahouti, and K. Xiong. "A Customized Educational Booster for Online Students in Cybersecurity Education." In CSEDU (2), pp. 535-541. 2019.

S. Baldwin, Y. Ching, and Y. Hsu. "Online course design in higher education: A review of national and statewide evaluation instruments." TechTrends 62, no. 1 (2018): 46-57.

Course Deployment - Instructor Presence

- Post Constant Announcement
- Participate in threaded discussions
- Answer questions in threaded discussions
- Demonstrate passion and expertise
- Welcome Letter and Checklist a week before semester begins

Course Deployment - Constant and Quality Engagement

- Reflection Discussion on course materials
- Requiring students to answer other student questions
- Balances workload enriching and extending their academic abilities
- Quality online student-student and student-instructor interaction through threaded discussions
- Due dates stated explicitly and repeatedly

Course Deployment - Prompt Feedback

- Useful timely feedback to the students.
- Reinforce important materials, concepts and skills that students can apply during the course

Course Deployment – Building Online Community

- Self Assessment - Beginning and End of Semester
- Constant online quizzes
- Anonymous Mid Term Survey Feedback
- Feedback through Hallway Conversations Forum
- Personalize the discussions
- Make adjustment to course based on feedback

Acknowledgements

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