No student left behind: Enhancing academic performance of students at risk through STAR Mitigation Plan

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Introduction

Teacher's role to encompass student welfare is increasingly needed, especially **students at risk.** In our study, we refer students at risk who have **poor academic performance** [1]. Through students' attendance, behaviour and academic performance, teachers can use such data to act as the early warning signs to identify students at risk of dropping out [2]. Inspired by FEMA Hazard Mitigation Plan [3], we would like to propose a **students at risk (STAR) Mitigation Plan** that aims to:

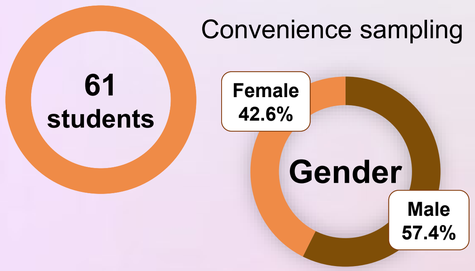
1. Minimize the risk of failure in the course based on the data in the early warning system;
2. Reduce drop out rate;
3. Create a more resilient student community.

Target Participants

SUNWAY UNIVERSITY

Actuarial Science Year 2 students

Convenience sampling

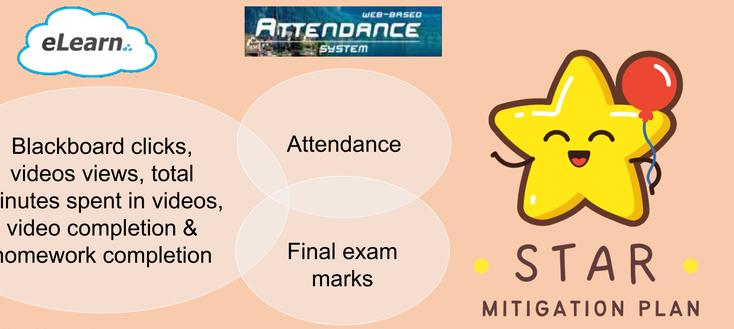


Teaching Strategies Adopted

Phase 1: Preparedness

Timeline

TASKS	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
Data Collection	■	■	■	■	■	■								
Data Analysis & STAR List							■							
Consultation								■						
Problem-Based Learning										■	■	■	■	
Follow-up Consultation														■



Data Collection

Phase 2: Responses

R Studio

Data Analysis

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Principal component analysis (PCA) [4]: Identify behavioural engagement elements impacting students' performance.

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Quadratic Discriminant Analysis (QDA) [5]: Predict students at risk based on the behavioural engagement elements identified in PCA.

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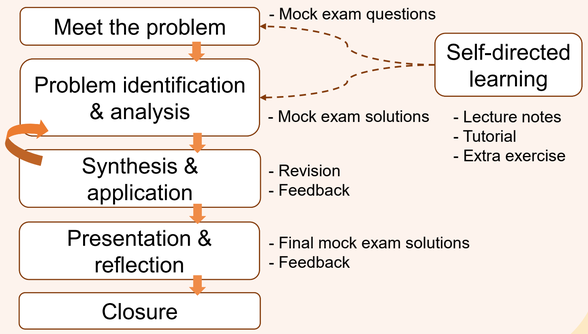
STAR List

Phase 3: Recovery

Problem-based learning provides positive impact on students' academic performance in mathematics [6].



Phase 4: Mitigation

1. **Implement** the plan based on the timeline with the proposed activities;
2. **Monitor** the academic performance of students under STAR list at the end of the semester;
3. **Access** the effectiveness of the STAR Mitigation Plan.

Observable Findings

1. PCA: "Total minutes spent in videos", "Attendance", "Blackboard clicks", "Videos views" have impact on students' academic performance and could act as the early warning signs for students at risk.

2. QDA: 83.3% accuracy in predicting students at risk.

Conclusion and Recommendations

This study only **completed Phase 1 and Phase 2** of the STAR Mitigation Plan. Students at risk are identified based on their **levels of behavioural engagement** with the help of PCA and QDA. We do not consider other factors such as disabilities, health status and social status in identifying students at risk. Although assisting students at risk requires long-term effort and may not be able to reduce the failure rate and drop out rate so quickly [1], there is an urgency for teachers to develop a plan, such as STAR Mitigation Plan, to help students at risks to ensure **"No Student Left Behind"**.

References

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