
Transforming the Healthcare Simulation Spectrum:
**Now, Next and Beyond**

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# Gamifying Pharmacy Resource Management Training Through PRISM - PhaRmacy Interactive SiMulator

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SCAN ME

PRISM Video Tutorial

## Introduction

- A Pharmacy Floor Manager (PFM) appropriately manages manpower resources and resolves operational chokepoints, ensuring smooth operations of pharmacy.
- The current training program consists of a didactic walk-through of a standardized PFM duty checklist before undergoing On-Job-Training (OJT).
- During COVID-19, trainees felt highly stressed and inadequately prepared due to the manpower crunch and operational intensity of an outpatient pharmacy, which processed up to 1050 prescriptions daily.
- The PhaRmacy Interactive SiMulator (PRISM) game was developed to provide PFM trainees with a safe, virtual training platform to hone their resource management skills and Standard Operating Procedure (SOP) knowledge on pharmacy workflow processes.

## Methodology

- PRISM was developed in-house based on the FRamework for AGile Gamification of Learning Experiences (FRAGGLE)1 to launch a Minimum Viable Product (MVP). This framework consisted of 4 phases:

### 1 | Declaration

**PROBLEMS**
- Lack of assessment of trainee's SOP knowledge on pharmacy workflow processes
- Lack of manpower resource management training

**CAUSES**
- Lack of protected training time due to pharmacy operations needs
- Lack of safe training platform
- Didactic training does not enable realistic visualization of patient flow in pharmacy

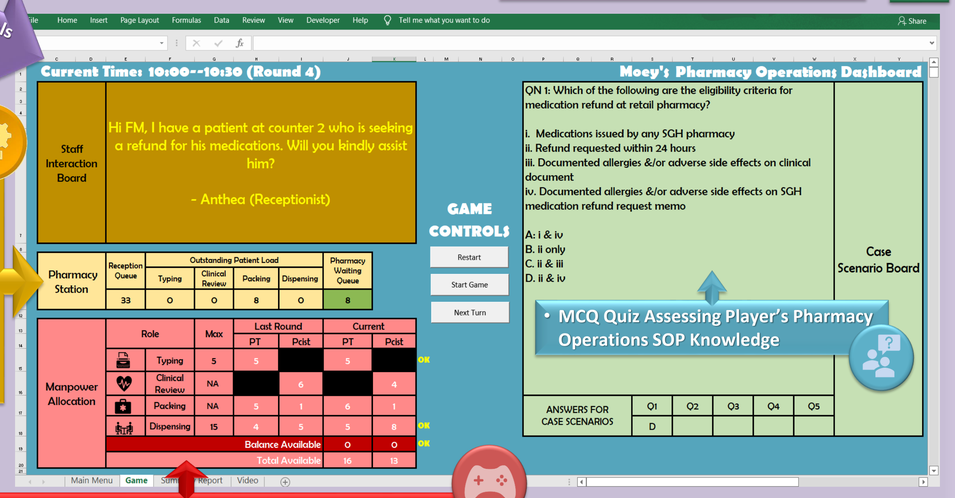
**USER STORIES & ACCEPTANCE TESTS**
- Trainees play as a PFM who manages the pharmacy waiting queue, while resolving ad-hoc pharmacy-related issues
- Based on "role/action" - "feature/achievement" – "reason/time" relationships

### 2 | Creation

- Excel-Based Spreadsheet Simulator Game
- Developed In-House by Pharmacists

•30-mins Time Intervals
•21 Rounds

Simulation Database:
- 2021 Actual Pharmacy Patient Flow Data
- Time-Study Results of Prescription Processing Output At Various Pharmacy Stations




- MCQ Quiz Assessing Player's Pharmacy Operations SOP Knowledge
- Macro Dashboards Enabling Visualization & Correlation of Resource Allocation Strategy to Changes in Patient Load

### 3 | Execution

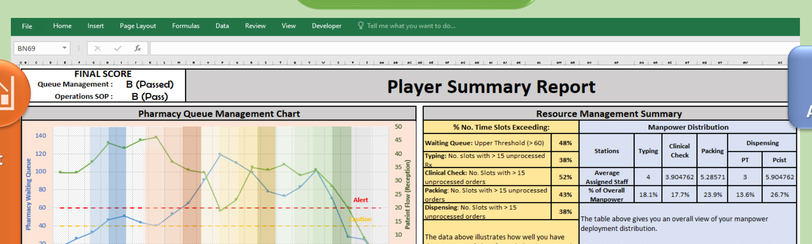
**Alpha Test**
- May 2022 (1 month)
- Address game design & functionality issues identified by development team

**Beta Test**
- Jun 2022 (2 weeks)
- Gameplay experience
- Open-ended survey with 5 players

**Pilot Study**
- Jul – Oct 2022 (3 months)
- Target: 15 Pharmacists
- Evaluate learning outcomes

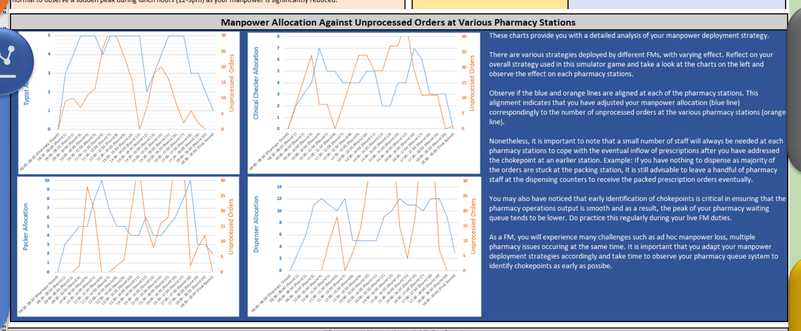
### 4 | Learning

- Visualization of Pharmacy Patient Flow Characteristics (e.g. Peak & Lull Period)
- Visual Illustration of Queue Management

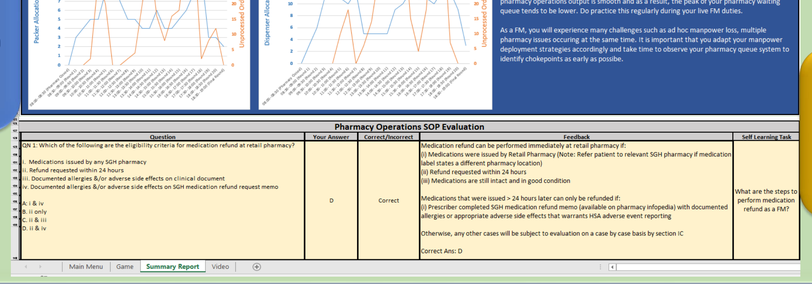



Evaluation of Manpower Allocation Strategy

- Detailed Graphical Analysis of Results Facilitating Feedback
- Identification of Mistakes Made During Simulation Gameplay (e.g. Unidentified Chokepoints)



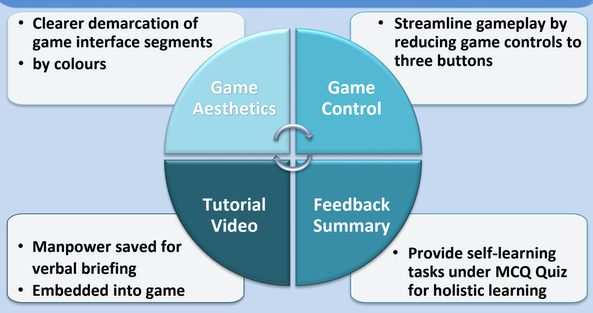

- Players May Choose To Self Review Or Meet A Trainer For Personalized Feedback




- Detailed Operations SOP Quiz Explanation & Self Learning Tasks

## Results

### Alpha Test (Issues Identified & Action Plan)




### Beta Test (Opened-Ended Survey)


### Pilot Study (Interim Results)

- 15 participants completed as of 14 September 2022
  - ❑ Increased understanding of Pharmacy Operation SOP as shown through Quiz Score from 2.80 (baseline) to 4.40 (Post-PRISM) out of a total of 5 points
  - ❑ Increase in self rated 5-point Confidence Scale across various Pharmacy Workflow Protocols and Resource Management Skills post-PRISM
  - ❑ Positive feedback received from participants through survey questions




| Post PRISM Survey Questions | Average Score* |
|---|---|
| 1. I enjoyed the revamped FM training experience | 4.53 |
| 2. I am confident as a PFM after completing the revamped training program | 4.13 |
| 3. The revamped training program provided me with a safe environment to hone my PFM skills | 4.67 |
| 4. The revamped training program provided me with timely and relevant feedback | 4.40 |
| 5. Sufficient time was provided to complete the game | 4.80 |
| 6. I learn and understand better through hands-on simulation than didactic briefing | 4.67 |
| 7. Learning objectives were met after completing the game and feedback from trainer | 4.60 |
| 8. I will recommend this game to my fellow PFM trainees | 4.67 |

**5 being strongly agree; 1 being strongly disagree*

## Discussion

- Majority of the participants found PRISM useful to visualize the effect of utilizing different manpower allocation strategies on pharmacy queue management, which was not possible with the conventional training model.
- Multiple key assessment modules were essential to assess PFM trainees holistically:
  - ❑ PRISM In-Game Scores
  - ❑ Pre- and Post-Game Pharmacy Operations Knowledge Assessment
  - ❑ Live Pharmacy Waiting Time Reports
  - ❑ 360-degree Feedback Regarding Trainee's Performance during OJT
- Considering the limitation of Excel Macro functions, the use of an alternative platform may provide trainees with an even better simulator experience

## Conclusion

- PRISM appears to provide trainees with a more engaging and effective training platform than conventional didactic training model.
- FRAGGLE is a systematic gamification design framework, allowing quick development of MVP with features designed to meet the learning needs of its users.

**References:**
1. Mora A, Zaharias P, González C, Arnedo-Moreno J. Fraggle: a framework for agile gamification of learning experiences. In: De Gloria A, Veltkamp R, eds. Games and Learning Alliance. Vol 9599. Springer International Publishing; 2016:530-539.