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

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Institute of Medical Simulation

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SIMGHOSTS

Validate Quality of Faculty Development Tool under Peer Evaluation in Multi-Disciplinary Simulation and Skills Centre

MDSSC Multi-Disciplinary Simulation and Skills Centre 綜合模擬及技能培訓中心
Safe and quality healthcare through simulation

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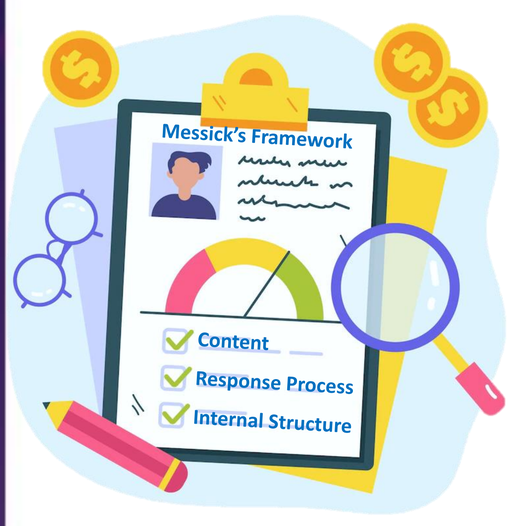
Introduction

Multi-disciplinary Simulation and Skills Centre (MDSSC) has been providing high-fidelity simulation training opportunities for healthcare professionals under Hospital Authority since 2011. Our center passed independent verification and obtained full accreditation in Teaching/ Education standards from the Society for Simulation in Healthcare (SSH) in 2014. With constructive feedback from reviewers during reaccreditation process, we extend our focus from quality of curriculum vetting system to that of peer-review system for simulation instructors. This study aims to validate our evaluation tool to facilitate peer learning for simulation instructors as well as quality monitoring for center management.

Methods

In Fall 2020, Simulation Faculty Development Scale (SFDS-23) was developed by 8 esteemed members with expertise in clinical procedures, simulation education, and hospital administration. Three rounds of panel discussion allowed members to revise sentence structures and wordings for optimal readability and relevance to core competences in which certified simulation instructors should excel. Between Oct 2020 and Feb 2021, 15 simulation instructors were drawn to appraise peer performance using SFDS-23 at the end of the training.



Messick's analytic framework was adopted partially for data analysis:

- Content, or Content Validity, indicates the degree to which description of item assesses what we aim to assess. All questions were screened, reviewed, and modified to achieve standards endorsed by at least 6 out of 8 members.
- Response Process, or Inter-Rater Reliability, demonstrates evidence of data coherence by assessing the degree to which rating scores from two independent raters are consistent. Inter-class Correlation, ICC (3,2) was computed by each set of single-measure, definition of consistency, and two-way mixed-effects model with two raters across 15 simulation instructors.
- Internal Structure, or Inter-Item Reliability, examines the degree to which multiple items are measuring the same constructs reflected by high internal consistency.

Simulation Faculty Development Scale (SFDS-23)

A. General Information

Course name	
Date	
Scenario name	
Partner's name	

B. Simulation Activity

I. Pre-Simulation Briefing

Please ✓ the appropriate boxes.	Yes	No	Covered by others
1. Introduce the faculty, environment and manikin			
2. Establish aims and objectives			
3. Present the flow and logistics			
4. Emphasize the ground rules (confidentiality and fiction contract)			

II. Simulation Activity

Please ✓ the appropriate boxes.	Always	Sometimes	Never	N/A	Comment, if any
5. Engage the learners					
6. React to the trainees response (e.g., provide proper guidance, hints, and emotional support)					
7. Appropriate communication between instructors/confederates					
8. Effective use of confederate/SP (if any) for flow facilitation					
9. Efficient flow control (e.g., give reminders/ prompt at the right time)					
10. Substantial time control					
11. Able to troubleshoot technical issues					

III. Debriefing

Please ✓ the appropriate boxes.	Always	Sometimes	Never	N/A	Comment, if any
12. Create a safe environment (e.g., maintain rapport, concern group dynamics, be open for sharing from different angles)					
13. Systematic flow (e.g., cover all contents needed to address systematically)					
14. Encourage all learners to talk (e.g., actively contribute to discussion)					
15. Maintain genuine curiosity of learner by asking open questions					
16. Accurate observation of learner performance and non-judgmental description of actions					
17. Sensitive to the learners' experiences and emotions being elicited					
18. Direct learner's reflection-on-action					
19. Active listening to learner's comments					
20. Effective use of standardized patient comments					
21. Effective use of observers comments					
22. Give constructive feedbacks (e.g., provide feedback on clinical and teamwork skills, communication patterns, strengths or areas for enhancement…)					
23. Conclude discussion about application of the identified learning points (e.g., summarize takeaway message, elaborate how they can be applied to clinical practice…)					

C. Other comments for the scenario/ educator reviewed

D. Overall comments on the checklist (e.g., design, clarity, applicability of questions… etc)

Name: _____

Signature: _____

Results & Discussion

In view of ill-defined behavioral criterion and lacking of task analysis on best simulation model, Behaviorally Anchored Rating Scale (BARS) is not preferred. Instead, Behavioral Observed Scales (BOS) is our best choice to evaluate "how frequent" instructors perform in required tasks or skillsets. The final version of SFDS-23 consists of 3 categories: i) Pre-simulation Briefing, with 4 dichotomous items (Yes/ No); ii) Simulation Activity, with 7 items rated by frequency (Always, Sometimes, or Never); iii) Debriefing, with 12 items rated by frequency (Always, Sometimes, or Never).

Content Validity

Regarding relevance of item description, 8 members showed unanimous in 18 out of 23 items (S-CVI/UA = .78). Three items for "Engaging learners (Item 5)", "Reacting to trainee response (Item 6)", and "Systematic flow (Item 13)" reached agreement by 6 members (I-CVI = .75, for each); while two items for "Observing learner's performance, accurately, non-judgmental (Item 16)" and "Facilitating learner's reflection-on-action (Item 18)" reached agreement by 7 members (I-CVI = .875, for each). "Average of summary content validity index" was excellent in the entire questionnaire and respective categories (S-CVI/Ave = .93 to 1). Except "Pre-simulation Briefing", "Simulation Activity" and "Debriefing" categories reached acceptable level of universal agreement (S-CVI/UA = .71 to .75).

Inter-rater & Inter-item Reliability

The ICC for overall SFDS-23 was high (ICC = .80, 95% CI = .53 to .98). Regarding ICCs for respective category, "Pre-simulation Briefing" ranked the lowest at .7, followed by "Debriefing" at .81 and "Simulation Activity" the highest at .85. Internal consistency was excellent across all items (Cronbach α = .93). Except "Simulation Activity" (Cronbach α = .72), "Pre-simulation Briefing" and "Debriefing" showed excellent consistency between items (Cronbach α > .92).

Conclusion

Good to excellent content validity, inter-rater reliability, and inter-item reliability indicated Simulation Faculty Development Scale (SFDS-23) a psychometrically sound tool to evaluate quality of simulation instructors on peer-review basis.

Content Validity of MDSSC Simulation Faculty Development Sheet (SFDS-23)

Item no.	Domain	Item Description	Workgroup Raters							Agreement no.	I_CVI
			ES	KP	AL	SS	JH	VC	YW PH		
01.	1	Introducing faculty, environment, manikin	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
02.	1	Establishing aims and objectives	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
03.	1	Presenting flow and logistics	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
04.	1	Emphasizing ground rules	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
05.	2	Engaging learners	X	✓	✓	✓	✓	✓	X ✓	6	.75
06.	2	Reacting to trainees response	X	✓	✓	✓	✓	X	✓ ✓	6	.75
07.	2	Communicating appropriately with other instructor(s)/ confederate(s)	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
08.	2	Using confederate/ standardized patient(s) for flow facilitation	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
09.	2	Efficient flow control	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
10.	2	Substantial time control	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
11.	2	Ability to troubleshoot technical issues	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
12.	3	Creating safe environment	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
13.	3	Systematic flow	✓	X	✓	X	✓	✓	✓ ✓	6	.75
14.	3	Encouraging all learners to talk	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
15.	3	Maintaining genuine curiosity of learner	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
16.	3	Observing learners' performance, accurately, non-judgmentally	✓	✓	✓	✓	✓	X	✓ ✓	7	.875
17.	3	Sensitivity to the learners' experiences and emotional states	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
18.	3	Facilitating learner's reflection-on-action	✓	✓	✓	X	✓	✓	✓ ✓	7	.875
19.	3	Prompting active listening	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
20.	3	Using standardized patient comments effectively	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
21.	3	Using observers comments effectively	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
22.	3	Offering constructive feedback	✓	✓	✓	✓	✓	✓	✓ ✓	8	1
23.	3	Concluding discussion with applicable learning points	✓	✓	✓	✓	✓	✓	✓ ✓	8	1

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