



Game-based assessment: can games themselves act as assessment mechanisms ? A case study.

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Background

Medical education: skills assessment by means of simulations:

- standardized patients ¹
 - - → high cost (training, delivery, managing)
- computer-based ²
 - - → physical examination, medical history
- complex mannequins ³
 - - → other physical examinations



⇒ Need for alternative assessment methods that are economically and logistically feasible

¹ Reznick et al. (1996) Large-scale high-stakes testing with an OSCE: report from the Medical Council of Canada, *Academic Medicine*, Vol 71, pp S19–S21.

Whelan (1999) Educational commission for foreign medical graduates: clinical skills assessment prototype, *Medical Teacher*, Vol 21, pp 156–160

² Kneebone (2003) Simulation in surgical training: educational issues and practical implications, *Medical Education*, Vol 37, pp 267–277.

³ Gordon et al. (2001) Practicing medicine without risk: students' and educators' responses to high-fidelity patient simulation, *Academic Medicine*, Vol 76, pp 469.

Background

number of potential CPR providers in the community ↑



BLS training in the school curriculum



first aid and CPR training in the pre-service teacher programme



large-size classes

effective assessment instruments to evaluate practical skills

Research question

Can a game serve as a valid alternative tool for the assessment of first aid competence ?

Methods

- Participants: - 28 students in the pre-service teacher training programme
 - no medical background
 - no first aid training during the last 12 months
- Course: a first aid and BLS training module (part of a compulsory one-semester course)
(4 x 4hrs/week)

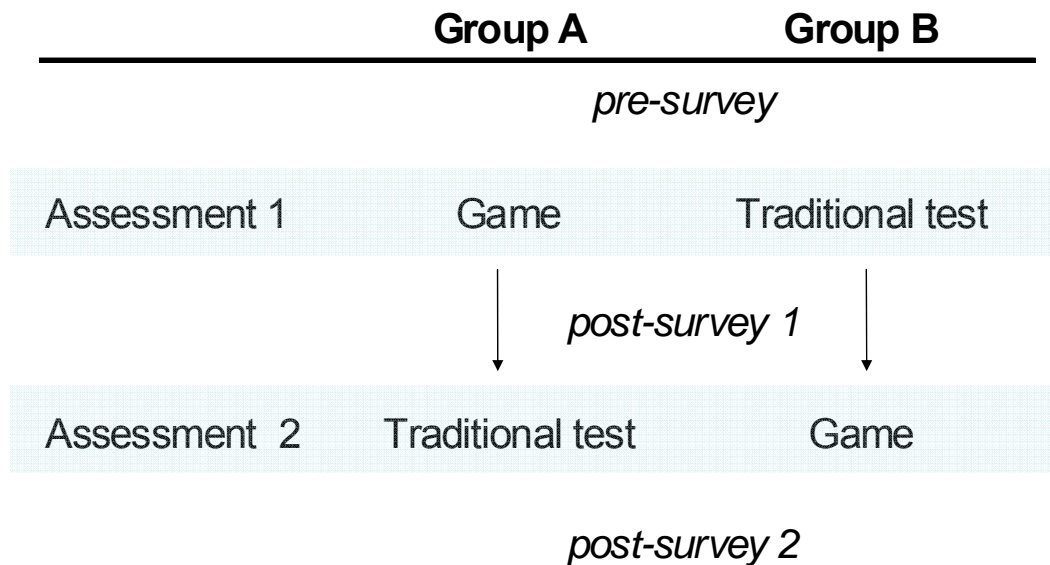
Methods

- Assessment:

	Traditional test	Game-based assessment
differences	paper-and-pencil + skills expert evaluator no immediate feedback	game peers immediate feedback
similarities	individual testing content type of questions and demonstrations use of checklists for skills assessment	

Methods

- Procedure:



Methods

- Pre-survey: measuring preferences on playing games:

To what extent do you like to play: - games?

- strategic games?
- solitary games?
- team games?
- quizzes?

To what extent do you play board- and/or computergames frequently (> once a week)?

- Data analysis: SPSS 16.0 software for statistical analysis

- Descriptive statistics (minimum, maximum, means, and standard deviations)
- Paired samples t-test: comparison of students' scores on the two assessments
- Independent samples t-test: comparison of mean scores of both groups on each assessment method separately.
- Cronbach alpha factor: reliability of the six items of the preference survey

Results

- Assessment scores:

	traditional test	game
Group A (N = 12) game - traditional test	M = 85.11 SD = 12.36 Min = 57.15 Max = 100.00	M = 96.94 SD = 4.16 Min = 87.50 Max = 100.00
Group B (N = 16) traditional test - game	M = 87.94 SD = 11.58 Min = 64.30 Max = 100.00	M = 95.46 SD = 5.25 Min = 82.40 Max = 100.00

$t = -0.62$
 $p = n.s.$

$t = -0.83$
 $p = n.s.$

Results

- Assessment scores:



	traditional test	game
Group A (N = 12) game - traditional test	M = 85.11 SD = 12.36 Min = 57.15 Max = 100.00	M = 96.94 SD = 4.16 Min = 87.50 Max = 100.00
Group B (N = 16) traditional test - game	M = 87.94 SD = 11.58 Min = 64.30 Max = 100.00	M = 95.46 SD = 5.25 Min = 82.40 Max = 100.00

$t = -3.09$
 $p < 0.05$

$t = -2.50$
 $p < 0.05$

Results

- Pre-survey (Cronbach alpha = 0.85)

24 students  ↔ 4 students 



no correlation between preference and game-based assessment outcome

(Pearson correlation = 0.02, $p = \text{n.s.}$)

Discussion

Mean scores: game-based assessment > traditional test

Factors contributing:

- effect of the game
- availability of feedback
- type of assessor
- possibility of oral defence

Limitations:

- number of participants
- specific boardgame

Contributions

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? Questions ?

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