Validation of Game Scenarios for the Assessment of Professional Competence

Hans Hummel, Rob Nadolski, Desirée Joosten, and Liesbeth Baartman

Open Universiteit
welten-institute.org

Introduction

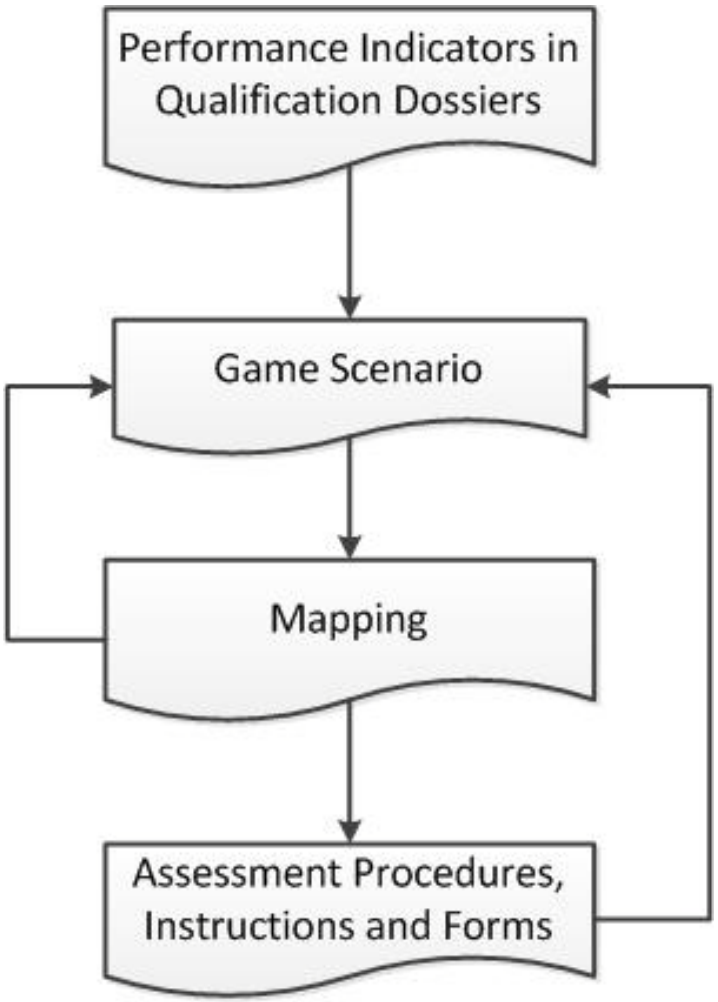
- *High* potential of serious games for acquisition of professional competence
- *Low* empirical evidence on learning effects of serious educational games, results have remained rather scarce
- Therefore such games have hardly been adopted for assessment purposes …

"Serious games will only grow as an industry if the learning experience is definable, quantifiable and measurable“ (Corti , 2011)

- Need for …. validation method that makes transparant *what* a learner is learning from playing the game, to *what degree*, and in *which contexts*
- Need for …. validation method that achieves ‘seamless assessment’ (formative assessment during game play should be (as) unobtrusive (as possible) to the player)
- Will present ….method to validate game scenarios for the assessment of professional competence

Validation method

- Validation methods evaluate whether assessment achieves its purposes, i.e. the fitness for purpose (Van der Vleuten, 2012)
- Interpretative (analysis of performance indicators and activities) and argumentative (evaluate plausibility of interpretations by evaluating to which extend performance indicators are covered by activities and procedures) arguments (Kane, 2006)
- Take into account new demands of competence-based assessment (like acceptability, authenticity, meaningfulness, cognitive complexity, etc.) (Baartman, 2008)


Performance Indicators in Qualification Dossiers
Game Scenario
Mapping
Assessment Procedures, Instructions and Forms

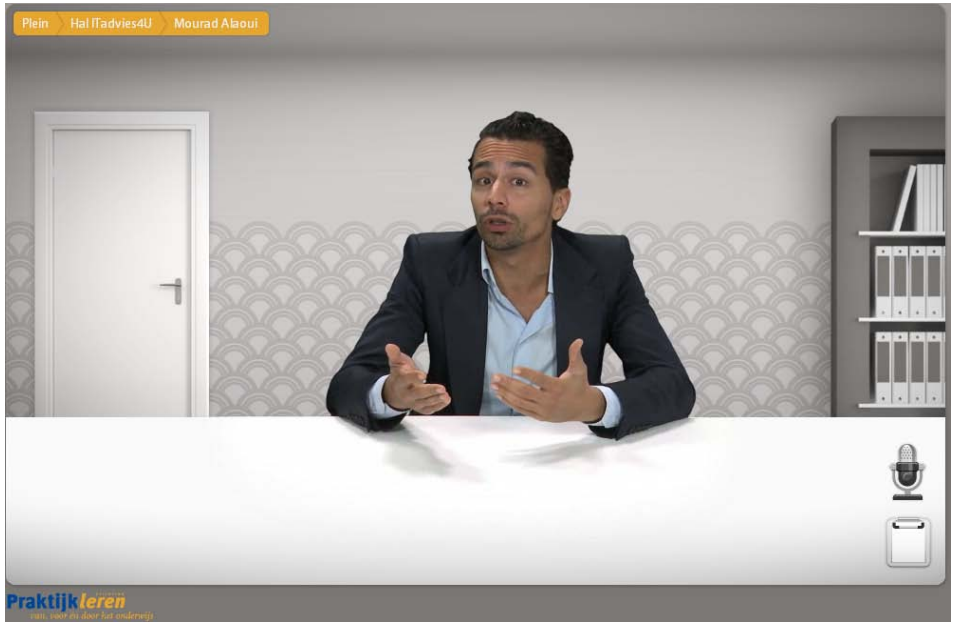
Competences information managers
(step 1)

- Competence based education: “Qualification Dossier” for information managers (secondary vocational)
- Core Task: (1) Develop (parts of) information- or mediasystems;
- Work Processes: (1.1) Analyse the needs of the contractor; (1.2) Make a functional design; (1.3) Make a technical design; (1.4) Develop (parts of) the information- or mediasystem; and (1.5) Realise a test environment.
- Each Work Process is illustrated with some Wanted Outcomes and Performance Indicators.

EMERGO method
(step 2)

- EMERGO approach and toolkit (e.g., Nadolski et al., 2008) is dedicated towards scenario-based games, and has been used for the development of the scenario and game under study.
- The design phase of this approach results in a *detailed scenario* document via the intermediate *framework scenario* and *ingredients scenario*, with each step providing more detail and completeness.

The Galema game



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Activities after introduction (30 min):

1. Carry out a needs-analysis by interviewing experts and studying documents, analyse current IT problems and possible solutions.
2. Write a needs-analysis as output of this activity (3 hours).
3. Use the needs-analysis to distill a functional and technical design of the new system, which are discussed with the teacher in a face-to-face setting (5 hours).
4. Draw up a plan for developing the new system for projectmanagement (2 hours)
5. Tests a first version, and writes a test report about his (all students so far were male) findings (6 hours)

(Total study load of about two days)

Validation Table (step 3)

Performance indicators	Content validation (place in scenario / activity student)	Assessment Information contained in system	Assessment Information contained in documents or by Jonkman
(P1) Collect sufficient information by both interviewing and document analysis.	Virtual talks with employees Galema: Mrs. Galema, Mr. Boekhorst, Mrs. Vos F2F talk with Mr. Jonkman. Must prepare questions.		**F2F talk with Mr. Jonkman: Does student pose relevant and sufficient question?**
(P2) Ask for the ideas and needs of employees to get a good overview of the information need within the organisation	Virtual talks with employees Galema F2F talk with Mr. Jonkman. Must prepare questions.		**F2F talk with Mr. Jonkman: Does student pose questions about opinions, ideas and needs?**
(P3) Consider the wishes of the client in realton with the possibilities when determining the information needs	Make a needs-analysis		**Needs-analysis: Does student weigh the wishes and possibilities?**
(P4) Show plan to relevant others and adjust them when appropriate	Send report talk with Mr. Boekhorst to him Send reports of all talks to coach F2F-talk with Mr. Jonkman: discuss ideas and adjust analysis Send needs-analysis to	Report talk with Boekhorst been send to him? All reports sent to coach? Has needs-analysis been send to Jonkman, coach	**F2F-talk with Mr. Jonkman: Does student respond adequately to comments?**

Results

- Most performance indicators could be mapped on activities in the game scenario
- Some Work Processes could only be partly mapped on the scenario
- Some Performance Indicators could better be assessed beyond the computer program (but still part of the game) by means of a F2F talk with the teacher.
- This validation appeared more transparent, better documented, and could be more effectively compared and organised
- Students and teachers find this more dynamic way of assessment more motivating and effective

Future research

- Still unclear *why* students and teachers like this way of assessment and *how* they exactly develop skills and monitor success?
- How to sufficiently warrant towards fraud on the long run, when larger numbers study the same cases.
- How to prevent that positive effects will be snowed under when the remainder of the curriculum is still classically tested?
- How to generalize results within the domain of system management towards other domains and educational levels?

Questions?