Mini Games for Professional Awareness in Introductory Psychology

Hans Hummel, Rob Nadolski, Jannes Eshuis & Aad Slootmaker

Faculty of Psychology and Educational Science, Open University of the Netherlands
hans.hummel@ou.nl
rob.nadolski@ou.nl
jannes.eshuis@ou.nl
aad.slootmaker@ou.nl

Abstract: Main problems with the current course *Introduction to Psychology* in our university is that students consider the content as too theoretical and insufficient in providing professional practice. Potential solutions are expected to come from mini-games that have proven to enable more active and contextualized learning. In the context of course revision, the developmental research project that feeds this paper entails the design, development and evaluation of such mini-games. In this short paper on work in progress we argue why and describe how these mini-games provide students with practical, rich and safe learning environments as well as active engagement with study specialisations and career profiles (section 1). Of core importance to our design approach is to develop an overarching pedagogical scenario that connects authentic cases from practice to learning activities in education which can be represented through mini-games. At the basis of our game play lies a multi-facetted problem family that is to be analysed and treated from the four main psychological perspectives that are offered as specialisations in our Master program Psychology. Competences practiced through practical assignments within the game (planned are about 16 mini-games that will each take 1-2 hours) are how to communicate with patients, how to conduct tests and therapies in actual practice, how to build and analyse client files, how to deal with practical dilemmas, useless information and unexpected events, amongst others. Besides describing the game design (section 2), this paper presents the experimental research design (section 3). For both effectiveness and cost-efficiency reasons, we intend to answer two research questions that appear to be relevant for advancing our knowledge about serious gaming in education by comparing experimental variants of mini-games on their learning effect: Does the inclusion of *more active learning* foster improved professional awareness?; and Does the inclusion of *more situated knowledge* foster improved professional awareness? At the time of the ECGBL2016 conference first prototypes of the mini-games will be available for demonstration and discussion.

Keywords: mini games for learning, professional awareness, experience psychology, pedagogical scenarios, authentic cases

1. Theoretical background

The current course *Introduction to Psychology* lacks sufficient motivating and experiential activity to adequately prepare students for their future study and career. For instance, 51% of students (n = 76) that filled in a survey so far (strongly) disagree that the course provides opportunity to practice what has been learned. That problem –unfortunately still- is not uncommon in most higher and vocational education. Current psychological practice does require both students and professionals to integrate factual knowledge into situated practice, and to actively explore, collaborate and integrate various psychological perspectives when treating their clients. More experiential learning through meaningful and playful practice has been shown to positively influence students' professional awareness (Boersma, ten Dam, Volman & Wardekker, 2010; Meijers, Kuijpers & Gundy 2013; Sherman, Sebora & Digman, 2008). Positive effects of acquiring more transversal (or 21st century) skills on both professional insight and (as a consequence) involvement during academic and professional careers, have been reported. When students have a more concrete idea of their own interests and preferences, they can better engage with future careers. Serious games for acquiring (complex) professional skills provide a learning context that simulates the context in which students will apply their learning. In that way, learning activities become more motivating, and increase the likelihood that acquired skills will actually transfer to real-world situations (Herrington, Oliver & Reeves, 2003). Such gaming or playful learning in context is recognized as an activity that can stimulate intrinsic motivation (Garris, Ahlers, & Diskell, 2002; Ryan & Deci, 2000). Several studies indicate that workplace-based games enhance students' motivation to learn and lead to better learning results when compared with traditional learning (Connolly, Boyle, E.A., MacArthur, Hainey, & Boyle, J.M., 2012; Tsai et al., 2015; Wouters & van Oostendorp, 2013). Active learning puts the learner at the central stage and

actively involves the learner in pre-structured learning activities, aiming for self-directed learning (Freeman et al., 2014). Situated (or contextually "rich") learning provides the learner with pre-structured and meaningful experiences to experience consequences of actions through "rich media" presentation formats (Herrington, Oliver, & Reeves, 2003). As with active learning, a "richer" context is assumed to contribute to more sustained and self-directed learning. Both learning paradigms limp on the ideas that motivation initiates and sustains learning if adequate learner support is given (Hattie & Timperley, 2007), and that initial motivation arises from given tasks or experiences (Mory, 2004; Ryan & Deci, 2000).

2. Game play design

Mini-games (so called case-based interactive practicals (CBIP)) will be included in our new course *Introduction to Psychology* to cater for more active and situated learning (Michael, 2009; Ritterveld, Cody & Vorderer, 2009). Our university has ample knowledge in developing games for skill-based learning via our own EMERGO approach and toolkit. This has already been proven successful for realising more experiential ways of acquiring professional competences in various domains (Nadolski *et al*., 2008). However, such games have neither been explicitly applied to support the acquisition *of more situated knowledge and insight about the master program itself* (study), nor to acquire *more involvement with the master program and future specialisations thereafter* (profession). According to our university's New Educational Model (NOM), the function of the introductory courses should not just be to offer knowledge on an introductory level, but also to serve as a roadmap indicator and guide for future study and professions to improve throughput.

A literature study and focused interviews with domain experts were carried out to determine most representative case leads and actual challenges (with professional methods to address them), on which representative game scenarios could be based. Content experts and game designers then collaborated on elaborating these pedagogical scenarios, having a multi-facetted problem family to be analysed and treated from various psychological perspectives as core. Our Master program Psychology offers clinical psychology, labour and organizational psychology, health psychology, and lifespan psychology as specialisations.

For instance, son Philip suffers from post-traumatic stress (insomnia, feelings of depression) after a scooter accident that continue to hamper his attendance and performance at secondary school, and have led to a game addiction. Practices from both Clinical Psychology (e.g. Cognitive Behaviour Therapy and EMDR) and Health Psychology (e.g. Intervention Mapping for development of Public Health Campaigns) will be applied to this particular case. Furthermore, students will experience that other cases (mother, father, grandma) and therapies are often inter-related.

Figure 1: Some screen dumps illustrating game play

The student will be asked to get to know and analyse the family as in the role of "junior psychologist" under the supervision of a rather generic "senior psychologist" (or game guru). He will provide the student (or gamer) with assignments and feedback between mini games. Each mini-game concentrates on a specific professional that will ask the "junior" to study information, carry out part of the work, and / or experience techniques themselves, and will provide feedback. Skills / competences practiced through practical assignments (designed are about 16 mini-games that will each take 1-2 hours to study and that each have 4-8 assignments) are partly specific for the specialisation at hand but also partly generic, e.g. how to communicate with patients, how to conduct tests and therapies in actual practice, how to build and analyse client files, how to deal with practical dilemmas, useless information and unexpected events.

The left hand top side of Figure 1 presents a screen with the guru in the middle and various specialists in the periphery (some accessible, some hidden, depending on game progress). At the right hand top side the student is interviewing the medical specialist (Clinical Psychology perspective) about her job profile. Screen dumps on the lower side of Figure 1 illustrate progress on cases (members of the family under study) and analysis of more generic skills parameters. For instance, carrying out clinical psychology assignments will contribute more to the "diagnosis" parameter in this "student dashboard" than carrying out health psychology assignments that often doesn't have a client, but a population focus. However, the student will be left unaware of the psychology specialisation for each mini game. After about 75% of completed game play, it will be revealed to the student how much time (quantitative) and result (qualitative) was spend and obtained on which specialisations. This indicates personal interest and raises awareness about personal preference.

3. Experimental research design

The game variants for experimentation differ on A. activity (e.g., the amount of structure / freedom to study) and B. context (e.g., media "richness" of the resources provided). We will measure and compare their effectiveness in terms of learning effects (on professional awareness), e.g., their abilities to indicate what professional roles are available for graduated psychologists (also using profile, dashboard and notetaking information) and the amount of detail they show in their description of activities attached to those roles (Hoekstra, 2011).
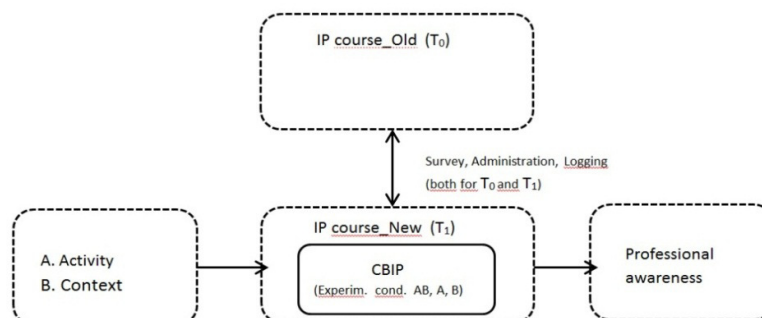

Figure 2: Graphical summary of the research methods

Figure 2 depicts the general setup of our research, the triangulation of methods and main variables involved. The experimental core lies in comparing the effects of three experimental game variants (A, B and AB) on professional awareness scores (with an expected cohort of N = about 375). It is expected that participants in the AB condition (high activity, context rich) will gain most professional awareness through game play.

References

Boersma, A., ten Dam, G., Volman, M., & Wardekker, W. (2010). "This baby…it isn"t alive": Towards a community of learners for vocational orientation. *British Educational Research Journal*, *36*(1), 3-25.

Connolly, T.M., Boyle, E.A., MacArthur, E., Hainey, T., & Boyle, J.M. (2012). A systemic literature review of empirical evidence on computer games and serious games. *Computers & Education, 59*(2), 661-686.

Freeman, S., Eddy, S.L, McDonough, M., Smith, M.K., Okoroafor, N., Jordt, H., & Wenderoth, M.P. (2014). Active learning increases student performance in science, engineering, and mathematics. PNAS, vol 111 (23), 8410-8415.

Garris, R., Ahlers, R. & Driskell, J. (2002). Games, motivation, and learning: a research and practice model. *Simulation & Gaming, 33*(4), 441-467.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77*, 81-112.

Herrington, J., Oliver, R., & Reeves, T.C. (2003). Patterns of engagement in authentic on line learning environments. *Australian Journal of Educational Technology, 19*(1), 59-71.

Hoekstra, H. A. (2011). A career roles model of career development. *Journal of Vocational Behaviour, 78*(2), 159–173.

Meijers, F., Kuijpers, M., & Gundy, C. (2013). The relationship between career competencies, career identity, motivation and quality of choice. *International Journal for Educational and Vocational Guidance, 13*(1), 47–66.

Michael, J. (2006). Where's the evidence that active learning works*?. Advances in Physiology Education, 30*(4), 159-167

Mory, E. H. (2004). Feedback research review. In D. Jonassen (Ed.), *Handbook of research on educational communications and technology* (pp. 745–783). Mahwah,NJ: Lawrence Erlbaum.

Nadolski, R. J., Hummel, H. G. K., Van den Brink, H. J, Hoefakker, R., Slootmaker, A., Kurvers, H., & Storm, J. (2008). EMERGO: methodology and toolkit for efficient development of serious games in higher education. *Simulations & Gaming, 39*(3), 338-352.

Ritterveld, U., Cody, M., & Vorderer, P. (2009). *Serious games: Mechanisms and Effects*. Routledge, New York, NY, USA.

Ryan, R.M., & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*, 68-78.

Sherman, P. S., Sebora, T., & Digman, L. A. (2008). Experiential entrepreneurship in the classroom: effects of teaching methods on entrepreneurial career choice intentions*. Journal of Entrepreneurship Education, 11*, 29–42.

Tsai, F.-H., Tsai, C.-C., & Lin, K.-Y. (2015). The evaluation of different gaming modes and feedback types on game-based formative assessment in an online learning environment. *Computers & Education, 81*, 259-269.

Wouters, P., & van Oostendorp, H. (2013). A meta-analytic review of the role of instructional support in game-based learning. *Computers & Education, 60*(1), 412-425.