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Do Anonymity and Choice of Role help to Motivate and Engage Higher Education Students in Multiplayer Online Role Play Simulation Games?

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Abstract: The aim of this paper is to report on two preliminary findings from an empirical study in progress that examines the degree to which different structural properties of multiplayer online role play simulation games (MORPSGs) motivate and engage students in higher education. This paper focuses on the degree to which the provision to choose a role and the anonymity of players in MORPSGs motivate and engage students in higher education. While the initial results seem to indicate that anonymity of players helps to both motivate and engage students, allowing players to choose the roles they would play seems to produce the counter-intuitive result of decreasing motivation and engagement.

Introduction

Role play simulation games, like games and simulations, are a recommended technique for learning in Constructivist theory because they can provide a social context in which authentic problems are encountered, they are experiential and can achieve the objectives of deep learning, higher order thinking and understanding complex phenomenon (Eshet & Hammer, 2006 (Hebrew); Isomäki & Marttunen, 2001; Jasmine, 2010; Bonk & Dennen, 1999; Shapiro & Leopold, 2012; Dingli, Khalfey and Leston-Bandeira, 2013; Babacan, 2011).

Given the increasing use of games and simulations for educational purposes generally (Gibson et. al., 2014; Mayer, Warmelink and Bekebrede, 2013; Ireland, Kaufman and Sauvé, 2006), and more particularly role play simulation games (Linser, 2011a), it would be useful to re-evaluate their online use to better understand their potential and implications in motivating and engaging students. In the current competitive environment of higher education, the level of motivation and student engagement in the learning process are prominent issues (Bonk & Zhang, 2006; Rao & Stupans, 2012; Abdul Jabbar & Felicia, 2015; Stevens, 2015).

Yet despite being used across many disciplines in higher education, and unlike games and simulations, there are very few empirical studies which examine their effectiveness or the level to which role play simulations motivate and engage students. Nor are there any clear definitions of role play. At most, studies on role play simulations offer anecdotal evidence (Shaw, 2010; Raymond, 2010; Schnurr et al. 2014) and simply assume that the concept of role play either needs no definition because it is clearly understood or that it is simply too difficult to define (Shapiro & Leopold, 2012). Moreover, terms like role play, role play simulation, role playing game, role play simulation games, role-based learning, scenario based learning and other similar terms, are used interchangeably in different studies and even within the same study (Tompkins, 1998). The absence of a clear definition and the multiplicity of terms, as Sauve and his colleagues (2007) argued in relation to simulations, makes it very difficult to compare results of different studies.

Based on the definitions of games and simulations provided by Salen and Zimmerman (2003) and Sauvé and his colleagues (2007) respectively, we propose to define a 'role play simulation game' as *a dynamic artificial environment representing a simplification of a social system (real or fictional) in which participants interact as roles with given characteristics, objectives and relations (social rules) and within a specified scenario (set of conditions/state of affairs)* (Linser, 2011a).

From the above definition we derived five essential structural components which characterize every role play simulation game: 1. An environment for social interaction that represents a simplified model of some world (or part of it); 2. Players that assume specifiable roles; 3. Roles with definable characteristics, objectives and relations (social rules); 4. Interaction that occurs between the players via their roles and 5. A scenario (specifiable set of conditions or state-of-affairs within that world).

This paper focuses on two design properties of the Role structural component of MORPSGs: the provision of choosing a role and the provision of anonymity of players. In other words, the questions this paper proposes to address are:

1. To what extent does the provision of choosing a role help explain students' motivation in MORPSGs?
2. To what extent does the provision of choosing a role help explain students' engagement in MORPSGs?
3. To what extent does the anonymity of players help explain students' motivation in MORPSGs?
4. To what extent does the anonymity of players help explain students' engagement in MORPSGs?

Literature Review

There are hardly any studies on either providing students with a choice of role they would like to play in role play simulation games for education or higher education, or on playing these roles anonymously. There are however several studies in the constructivist tradition that discuss the importance of providing students with choice in online environments and of the advantages and disadvantages of anonymity in web environments like discussion forums.

What is clear in the literature is that in the majority of role play simulations reported, students are given the opportunity to choose roles (Lantis, 1998; Ip & Linser, 2001; Nelson et.al., 2008; Ching, 2014; Rector-Aranda et.al., 2017), while some simply assign roles to the students (Newberry & Collins, 2012; Sterman et.al., 2014). Perhaps this is not surprising given that Constructivist theory seems to generally promote giving choice to students (Bandura, 1999; Sharan & Sharan 1992) as it is closely associated with a learner-centered perspective (Bonk & Dennen, 1999), autonomy (Hew, 2016), ownership (MCgrail, 2007; Kearney & Schuck, 2005), self-regulation (Brown, 2007), empowers students to take control (Chou, 2001) and leads to experimentation and self-efficacy (Gibson et.al. 2014). Moreover, providing students with choices, it is argued, leads to both motivation (Deci & Ryan, 1985; Pintrich, 2004; Lafrenière et.al., 2012) and engagement (Skinner et. al., 2008; Berson et.al., 2008). One recent study that compared the research on the level of engagement and effectiveness of political science simulations notes that even though these studies are empirically problematic, it is 'safe to conclude' that they are engaging for students (Baranowski & Weir, 2015). But what is it about role play simulations that makes them engaging to students remains unclear.

On the other hand, in one of the few studies that examined the contribution that the choice of role selected made to student engagement, it was found that it was the character students played (i.e. how well or easily they could "become" their character), which shaped student engagement rather than the choice they initially selected (Rector-Aranda et.al., 2017).

The issue of player anonymity does not fare much better as a research subject in the literature on online role play simulations and remains anecdotal. Some of this research reports that anonymity of students provides the advantage of safety and freedom to freely express ideas by lessening the pressure of performing in front of one's peers (Lybeck et.al., 2010; Wills et.al., 2009; Linser et.al., 1999), or that ideas are more fully developed and traditional biases and prejudices (relating to cultural expectation or gender issues) are minimized (Babst et. al., 2012; Kaufman, 1998). Similar advantages of anonymity to encourage participation are reported in the wider literature on online teaching using discussion boards MOO and SL environments (Mckenzie et.al., 2003; Shortridge et. al., 2007; Freeman & Capper, 1999; Li, 2006; Barrett, 2008) or for peer-assessment (Ward et. al., 2004, Zins, 2000). But there are also some disadvantages that are mentioned relating to anonymity in these environments such as insensitivity to others, aggressiveness, and predatory behavior because anonymity lowers inhibition and thus provides opportunity for inappropriate behavior, bullying, and the use of offensive remarks and actions to harm or denigrate another student's opinion (Seo & Tindall, 2010, Freeman & Bramford, 2004).

In sum, the research literature is rather thin, to say the least, in terms of empirical findings regarding the impact of providing students with the ability to choose roles in online role play simulations. Though empirical research on anonymity in relation to CMC via discussion boards, SL and MOO is slightly better, it is hardly existent in relation to online role play simulations apart from anecdotal evidence.

Motivation and engagement scales

To empirically gage the degree to which the provision of being able to choose roles and anonymity of players in MORPSGs help student motivation and engagement we used a modified form of two scales validated for motivation and engagement respectively: The Reduced Instructional Materials Motivation Survey (RIMMS) (Loorbach, Peters, Karreman and Steehouder, 2015) based on Keller's (2010) ARCS model; and the Student Engagement survey (SE), a modified and validated version of the US National Survey of Student Engagement (NSSE) (Ahlfeldt, Mehtab and Sellnowb, 2005).

To be useful for evaluating the relationship between design elements of MORPSGs and motivation and engagement both these scales were modified to fit the MORPSGs context. Given the word modification, the Internal consistency of both scales was re-validated in the current study using Cronbach's alpha test.

Motivation reliability
Attention – α=.812
Confidence – α=.755
Relevance – α=.795
Satisfaction – α=.877
Total Motivation reliability - α=.926

Engagement reliability
Active participation - α=.560
Cognitive effort - α=.758
Development of personal skills - α=.800
Total Engagement reliability - α=.81

Methodology

The Research Environment

The research Environment: To create the research environment, this study has used the Fablusi Role Play Simulation Generator (www.fablusi.com) (Fablusi software – for short) that has been used in various contexts in higher education and enables the online design, delivery and administration of simulated social systems (Ip, Linser and Naidu, 2001).

Population

Out of a total of 124 students from 4 different universities in the US, Holland and the UK and a polytechnic in Canada running 5 different courses participated in simulations appropriate for their course between November 2016 and June 2017, 59 students (48%) volunteered to anonymously submit the questionnaire for this study.

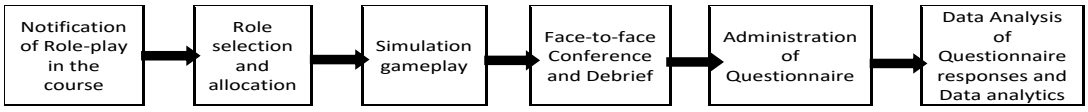
Research Instruments

The research design is a quantitative comparative study. The instruments for data collection and analysis included:
1) An online post-simulation self-reporting questionnaire composed of 52 items (of which 12 items comprised the motivation scale and 14 items the engagement scale) to collect the student response data.

2) Analytic data collection tool provided by the Fablusi simulation software enabled collection of data on the simulation's role structure and interaction in terms of time spent and number and length of messages.

3) The SPSS statistical package for the analysis of the data to measure the correlations between the 2 dependent variables (motivation and engagement) and the independent variables discussed in this paper (choice of role, role actually played, and anonymity) and to perform a regression analysis on those variables that display significant correlations to find the level to which each of the independent variables can predict the dependent variables.

Procedure



Data Analysis

Once all simulations ended, the data was downloaded from the Fablusi software and organized into one .xls file, that was imported into the SPSS package and conducted a Chi square test of the differences between respondents who answered the questionnaire and those participants who did not, for the simulations' independent variables -choice of role, role played and anonymity comprising the role structure of the MORPSGs. We then conducted an analysis of correlations between the independent and dependent variables.

Results

Motivation and Role Structure

One-way ANOVA tests were conducted to probe associations between the MORPSGs role structure's measures as independent variables and motivation and its factors as dependent variables. See means and standard deviations in the table below.

		Attention			Confidence			Relevance			Satisfaction			Motivation total		
		M	Std	N	M	Std	N	M	Std	N	M	Std	N	M	Std	N
Choice of role	No	2.9	1.39	10	2.67	1.25	10	2.67	1.52	10	3.13	1.52	10	2.84	1.33	10
	yes	2.39	1.1	49	2.16	0.89	49	1.76	0.77	49	2.02	1.14	49	2.08	0.8	49
Anonymity	No	1.82	0.83	15	1.67	0.58	15	1.29	0.33	15	1.29	0.43	15	1.52	0.38	15
	partial	2.73	1.1	20	2.35	0.93	20	1.88	0.8	20	1.88	0.83	20	2.21	0.77	20
	yes	2.67	1.25	24	2.52	1.06	24	2.33	1.18	24	3.06	1.4	24	2.64	1.08	24
Choice played	0	2.55	1.3	14	2.54	1.08	14	2.38	1.41	14	2.88	1.36	14	2.59	1.18	14
	1	2.48	1.09	27	2.12	0.99	27	1.79	0.81	27	2.01	1.19	27	2.1	0.88	27
	2	2.76	1.26	7	2.43	1.05	7	1.86	0.86	7	2.05	1.38	7	2.27	0.94	7
	3	2.1	1.19	10	2.07	0.72	10	1.7	0.71	10	1.97	1.18	10	1.96	0.76	10
	4	3		1	2		1	1.33		1	1.67		1	2		1

Significant differences were found for the two groups of choice of role (yes/no) and the total motivation score [$F(1,57)=5.815$, $p=.019$], the Relevance factor of motivation [$F(1,57)=7.855$, $p=.007$], and the Satisfaction factor of motivation [$F(1,57)=7.100$, $p=.010$]. For all three measures the group which had a choice of role got lower scores compared to the group which did not have a choice of role.

Significant differences were also found for the three groups of anonymity (yes/no/partial) and the total motivation score [$F(2,56)=8.220$, $p=.001$], the Attention factor of motivation [$F(2,56)=3.516$, $p=.036$], the Confidence factor of motivation [$F(2,56)=4.212$, $p=.020$], the Relevance factor of motivation [$F(2,56)=6.144$, $p=.004$], and the Satisfaction factor of motivation [$F(2,56)=14.735$, $p<.001$]. Tukey Post Hoc revealed significant differences between the no anonymity group which got lower scores in all 4 measures compared with the group which got total anonymity.

No significant differences were found between the five groups of Choice played and the total motivation level and it's 4 factors

Engagement and Role Structure

One-way ANOVA tests were conducted to probe associations between all 5 of Simulation role structure's measures as independent variables and the engagement and its factors as dependent variables.

		Active participation			Cognitive effort			Development of personal skills			Engagement Total		
		M	Std	N	M	Std	N	M	Std	N	M	Std	N
Choice of role	No	2.85	0.53	10	2.44	0.82	10	2.12	0.95	10	2.44	0.59	10
	yes	2.22	0.68	49	2.01	0.61	49	2.05	0.67	49	2.08	0.52	49
Anonymity	No	1.83	0.57	15	1.64	0.57	15	1.67	0.56	15	1.7	0.46	15
	partial	2.33	0.44	20	2.32	0.42	20	2.34	0.47	20	2.33	0.25	20
	yes	2.64	0.78	24	2.16	0.76	24	2.08	0.86	24	2.27	0.63	24
Choice played	0	2.73	0.51	14	2.2	0.82	14	1.91	0.88	14	2.25	0.59	14
	1	2.08	0.71	27	2.05	0.65	27	2.08	0.72	27	2.07	0.57	27
	2	2.32	0.73	7	2.09	0.49	7	2.26	0.46	7	2.21	0.43	7
	3	2.33	0.65	10	2	0.64	10	2.04	0.66	10	2.11	0.53	10
	4	3.25		1	2		1	2.6		1	2.57		1

Significant differences were found for the two groups of choice of role (yes/no) and the Active participation factor of engagement [$F(1,57)=7.628$, $p=.008$]. For this measure the group which had a choice of role got lower scores compare to the group with did not have a choice of role.

Significant differences were also found for the three groups of anonymity (yes/no/partial) and the total engagement score [$F(2,56)=8.500$, $p=.001$], the Active participation factor of engagement [$F(2,56)=7.624$, $p=.001$], the cognitive effort factor of engagement [$F(2,56)=5.581$, $p=.006$], and the Development of personal skills factor of engagement [$F(2,56)=4.270$, $p=.019$]. Tukey Post Hoc revealed significant differences between the no anonymity group which got lower scores in all 4 measures compare with the groups which got some or total anonymity.

Significant difference was found for the five groups of Choice played and the Active participation factor of engagement [$F(4,54)=2.773$, $p=.036$]. Tukey Post Hoc revealed significant differences between participants with 0 choice played which got higher score in that measurement compare to all other participants.

Discussion and Conclusion

The literature on multiplayer online role play simulation games generally tends to support the view that MORPSGs are useful in motivating and engaging students in higher education as the Constructivist theory claims. The problem is that this view has not been adequately supported by empirical research. Giving students choice in selecting their roles in MORPSGs is a widespread practice that assumes, as we did in the many role play simulations we conducted, that it helps student motivation and engagement.

The preliminary findings reported here, however, seems to negate this intuition. As the data seems to show in two of the factors and the total measure that constitute student motivation, groups which were provided a choice for which roles they would play, received lower scores than those which did not have a choice. Meaning that providing students with the ability to choose their roles, counter-intuitively detracts from their motivation. Moreover, there was no significant difference in student motivation whether students played a role they chose or did not play any of their chosen roles. In other words, students playing the role of their choice or playing a role they did not choose, made no difference to their motivation.

Similarly, at least in one factor of engagement students which had a choice of role got lower scores compared with the group with did not have a choice of role. Moreover, students who did not play their chosen role got higher scores than ones that did play one of their chosen roles. In other words, students playing one of their chosen roles were less engaged than students that did not play their chosen roles.

Regarding the anonymity of players however, the data seems to indicate that in MORPSGs that were structured so that students play anonymously, students got higher scores in all factors and in total motivation score as compared to students who knew who was playing the other roles. Similarly, MORPSGs that were structured so that students play anonymously, the students received higher scores in all factors and the total engagement measure than students in MORPSGS where the students knew who played the other role.

Our conclusion from these preliminary results, counter-intuitively as it may seem, is that in MORPSGs that provide students a choice of which role they want to play, students are less motivated and less engaged. On the other hand, MORPSGs in which students play anonymously are more motivating and engaging for students than those simulations anonymity of players is not maintained.

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