Reflexivity of Roles and Rules in Role Based E-learning

Roni Linser, Fablusi P/L, Australia

Abstract

Role based e-learning is becoming popular as part of the pedagogical arsenal of the constructivist paradigm that puts emphasis on learning by doing in collaborative environments that include simulations, games and role plays. This paper examines and delineates two dimensions of role-based e-learning, the significance of role and the significance of rules, for the design of online learning environments and their implications in meeting educational objectives. The paper defines the differences between simulations, games and role plays and argues that to be effective in meeting educational objectives role based e-learning must carefully consider what I will call the reflexivity of roles and the relations between game rules and social rules.

Keywords: Role play, simulation games, social roles, game rules, game design

Introduction

In a recent book by Wills, Leigh & Ip (2010) role based e-learning is described as "a particular approach to learning design that places learners in roles requiring them to collaborate and communicate about actions and decisions within authentic scenarios created in online environments" (Wills et al. 2010, 14). Thus to the extent that learners are involved in assuming a role for purposes of learning, it describes a variety of online computer mediated communication (CMC) approaches, such as simulations, games, role plays, scenario-based learning (SBL), problem based learning (PBL), case based learning (CBL), goal based learning (GBL) and probably a few more methods. Of course such methods do not necessarily have to be online, nor use any technological means. However for the purposes of this paper, the online component – that which makes it e-learning – will remain the focus.

The various methods noted above, with the exception of role play, however are not necessarily coterminous with role based learning. Not all simulations have the learner assume a role. A simulation of some physical system, for example, the behaviour of sub-atomic particles or the effects of pollution on fish in a river system, do not necessarily have learners play a role within the simulated system. Similarly in games players do not necessarily assume a role. Consider for example playing cards like solitaire or billiards where players are not playing a role in the sense meant by Wills and her colleagues (Wills et al. 2010). Rather, if anything they are a playing the abstract role of being a player. The same can be said about PBL or CSL in which learners are not playing a role. Rather they discuss a problem or a case study from the perspective of a collaborative group enquiry in order to tease out potential solutions. On the other hand in using a flight simulator a learner can take on the role of a pilot, or in the case of the simulation of the effects of pollution on fish, the learner may take on the role of a fisheries scientist or a fisherman. Similarly in PBL or CSL they may take the role of a doctor, or a manger or whatever role is pertinent to the subject they are scrutinizing in order to view it from the perspective of that particular role.

A recent analysis of 396 papers that mention, discuss or recommend role plays between 1997 and 2010, shows that simulations, games and role plays are often used interchangeably to describe role plays (Linser, 2011). And further, that they can be used or embedded within PBL, CBL, GBL or SBL. But rarely is it mentioned why theoretically that is a pedagogically sound manoeuvre, or how to do so effectively on the basis of sound theory to achieve specific educational objectives. It seems that it is mostly taken for granted, and mostly on the basis of particular experiences, that role play, games and simulations – or at least those that aim to be role based e-learning strategies – are useful in a general way that reflects the theoretical conceptualization of socially grounded 'authentic' meaningful contexts and problems recommended for learning by cognitive and constructivist theories (mostly those of: Vygotsky, 1962; Piaget, 1951 & 1972; Bruner, 1996 & 1997; Bundura, 1986 & 1995 ; Brown et al., 1989; Jonassen, 1991 & 1999; Harasim, 2001; Salomon et al., 1991; Prensky, 2001; Wenger, 1998; Lave & Wenger, 1991; and others). These 'authentic' contexts, presumably exemplified by role based e-learning, however, are rarely examined and very few papers attempt any detailed discussion or analysis of the implications of these contexts for role play as strategy for learning generally and e-learning in particular (Linser, 2011). In other words, how and why learning actually occurs

as a result of role based e-learning remains ambiguous and unanalyzed, though plenty of experience suggests that it works.

Though this paper cannot dispel these ambiguities nor provide an analysis of role based e-learning to answer these questions, it will attempt to provide direction in clarifying some issues that require consideration in such analysis and disambiguation – the two central features discussed here will be roles and rules.

Being clear what we mean: Definitions and Distinctions

Sauvé and his colleagues (Sauvé et.al 2007) have argued that one of the reasons that researchers are getting mixed results with regard to the effectiveness of games and simulations in education is because of the ambiguities that arise when comparing different research results based on different definitions. A clear distinction must therefore be made between simulations, games and role plays in order to aid us in understanding the particular role that 'role' plays in role based e-learning, and the particularity and significance of the rules of such activities.

On the basis of Sauvé and his colleagues (Sauvé et.al 2007) we can define simulations, and there are various definitions surrounding this theme, as a rule based dynamic system (some insist closed and artificial) that is designed to act "like", or "similar" to, a different or 'real' system. Games on the other hand, as defined by Salen and Zimmerman are artificial systems in which players engage in conflict, defined by rules and which result in quantifiable outcomes (Salen and Zimmerman, 2003). The difference between the two according to Sauvé and colleagues is the intended realism of simulations whereas games are created "without any reference to reality" (unless they are simulation games). Further, they argue, games have winners and losers, while simulations do not. We may therefore add that simulations do not have to have human agents as part of the simulating system whereas games must have at least one human agent to be counted as a game. When a computer plays, for example chess with itself or with some other computer, it is a simulation of a chess game, whereas when a human plays chess with another human or a computer then it is a game.

Role plays fall somewhere in between simulations and games. On the one hand like simulations they clearly have reference to reality – indeed they are specifically intended to simulate some real social environment or system, but on the other hand like games, they must have human agents within the simulating system. As a specific type of simulation, a simulation of social environment, the rules upon which they are based are social rules, and thus unlike games the rules are not arbitrary but derived from the simulated system. Salen and Zimmerman also point out that role plays do not have quantifiable outcomes, or in Sauvé terminology, winners and losers, and are thus not games.

Given the above we can define role plays as dynamic artificial environments in which human 'agents' interact by playing roles with semi-defined characteristics, objectives and relations (social rules) to one another and within a specified scenario (set of conditions) that simulates some real system (Linser et al., 2008.) Thus, while both simulations and games may or may not have human agents playing roles within the simulating system or game, role play by definition must have human agents playing roles. The second major difference to both simulations and games is that the rules that define the particular simulating system or games may or may not be arbitrary – in games they are arbitrary whereas in simulations they have some relation to the reality that is being simulated. The rules in role plays however, as a form of simulations, have rules that have a relation to reality, but these rules are the social rules of the system being simulated.

Given the above understanding of the distinctions and similarities between simulations, games and role plays we can now suggest a more precise formulation of role based e-learning. What is common to simulations, games and role plays, insofar that they do have human agents playing roles in the system, is the artificiality of the online environment chosen for interaction. It is what makes an online chat session or a forum a different environment when it is used as part of an environment of role based e-learning or when it forms part of a class discussion on some certain topic. Thus there is, in role based e-learning, an invisible but consequential boundary that separates the real world from the artificial environment in which human agents interact according to sets of defining characteristics of roles that are adopted for the duration of play and according to the social rules that govern such roles – or in Salem and Zimmerman's terminology this is the magic circle of play.

Given the above understandings we are now in a position to discuss in more detail both the role of roles and the significance of social rules in role based e-learning,

The role of roles

As noted in the introduction role based e-learning 'places students in roles' in some 'authentic scenarios' where they need to make decisions or take action in online environments. The idea is that the role being played by the students provides them, as learners, with a perspective that assumes an 'authentic' social context in which meanings, attitudes, expectations, interests and objectives of the role are embedded and with which to approach the topic or issues that they need to learn. As also noted in the introduction, constructivist and cognitive theories are the main theoretical backgrounds that are used support the pedagogy of role based e-learning. These theories maintain that learning is more effective in a social context in which discursive collaboration enables meaningful interaction and negotiations between learners and thus enables them to construct the knowledge that they need to learn.

However, very few researchers and practitioners actually elaborate on the link between the theoretical implications of the cognitive-constructivist paradigm to their specific design of role based e-learning (Linser, 2011). Most, simply describe the technical design and leave such linkage at a very general level. Those that actually also describe the theories underpinning role based e-learning make only tenuous connections between the use of roles and the scenario in which the roles are embedded and the required social context which the theories suggest as necessary for effective learning.

The consequence of such theoretical impoverishment is that role based e-learning, as understood in this paper, is either viewed as conceptualizing role in too limited a fashion because it does not sufficiently address the social context of performance of learners as practitioners (McClarey, 2004) or role based e-learning is simply ignored as Sauvé and his colleagues do, despite their otherwise impressive study on simulations and games (Sauvé et al. 2007). McClarey, it should be noted, understands the concept of role based learning in the context of Wenger's theory of Community of Practice (Wenger, 1998; Lave & Wenger, 1991) and attempts a useful and interesting analysis of the concept of role and learning, not as role play, but as learning within a community of practice.

McCleary, I think is partly right in his critique. The fact that roles, as a critical concept for role based e-learning is not theorized and simply taken for granted is, frankly very surprising. The explanation for this omission may be rooted in the fact that the concept is so imbedded in our background knowledge of social life that it no longer needs to be explained when learners are asked to take on a role – but in the context of education, as it will be shortly argued, this is critical. The habit of assuming roles in life, being a teacher, a leader, friend etc., is so prevalent that we intuitively understand what it means to take up a role. The explanation of the omission certainly can't be based on a lack of theories that address the concept of role.

Roles, as Robert Merton has pointed out are a fundamental building block of social structure (Merton, 1957) and as Biddle pointed out is one of the most important features of social life (Biddle, 1986). Social theory has a very long history of addressing the various dimensions involved in assuming a role and from a host of perspectives (Mead, 1934; Turner, 1974 & 1985; Hare, 1985; Kelley, 1955; Merton, 1957; Biddle, 1986 ;) This is not the place to attempt an exhaustive analysis of such theories and their implications for role based e-learning. All we can do in the limited space here is to very briefly outline a very limited number of the core issues that arise from this vast body of literature and their implication for role based e-learning. Indeed, underlying the assumed utility of role based e-learning is the sociological reality of roles and the dimensions they involve, for otherwise there would be no point whatsoever to using roles as a pedagogical tool for learning. Much of what follows is adapted from Biddle (1986) who outlines five general perspectives on role theory.

Firstly, as the work of Functionalist social theory conceives it, roles involve shared normative expectations that prescribe and explain behaviors. Role based e-learning must therefore account for, and explicate, these normative expectations for the roles that learners take up in their 'play' activities.

Secondly, as the Symbolic Interactionist perspective suggests, roles reflect norms, attitudes, contextual demands, negotiation and the evolving definition of the situation as understood by the actors. Thus role based e-learning must clarify to learners as role takers, that in playing a role attention needs to be paid to the contextual demands and the negotiated and evolving definition of the situations in which they are placed.

Thirdly, as the Structuralist perspective brings to attention, roles as patterned behaviors are shared by sets of persons in stable organization understood as a social structure. They are expressed in social networks, kinship, role sets and other forms of organization and thus highlight the environment and the constraints of that environment upon roles. It

would therefore be useful for role-based e-learning to outline the structural environmental constraints on roles, or at least suggest to learners who take on roles to be aware of their role's position within the structures that their role presupposes.

Fourthly, from the point of view of Organizational theory, roles are situated within hierarchy, task-oriented and preplanned activities and thus are associated with social position, generated by normative behavior reflected by official demands of organization and pressures of informal groups. Thus role conflicts arise which contend with antithetical norms of behavior that produce strain that must be resolved. Role based e-learning can use this feature suggested by Organizational theory, not only to focus learners on tasks specific to their roles, but to set up the conflicting demands of organizational pressures and informal groups that are placed on the roles being played an thus bring learners to the awareness of the strains that need to be resolved.

Finally, Cognitive theories of role focus on the relationships between role expectations, the social conditions that give rise to these and their impact on social conduct. Consequently the focus is on how a person perceives the expectations of others and the effects of those perceptions on behavior. From the perspective of role based e-learning it is therefore advisable to instruct learners playing roles to attend to the expectations their role should have of other roles and the conditions that give rise to such expectations.

That protagonists of role based e-learning must become theoretically aware of the implications of role theory is not only based on the need to fashion e-learning environments in which learners play roles. Nor is it because of the need to fashion appropriate roles on the basis of sound understanding of the different issues involved in the concept of role for particular educational objectives. Both these reasons are enough to motivate role based e-learning advocates to investigate the theoretical foundations of roles. But the third and final reason is perhaps the most crucial – the reflexivity of roles.

The reflexivity of roles refers to the double relation between the role of the learner, who in the cognitive-constructive model of teaching and learning, is at the center of the learning process (rather than the teacher) and the role assumed for learning purposes that role based e-learning recommends. This is not simply what is known in the literature of role theory as role sets nor to the multiplicity of roles that each individual plays in social life (Merton, 1957). It is not referring to the fact that each of us is simultaneously involved in a number of roles in social life. Rather, it refers to the reflexive cognitive and emotive processes of learners that occurs in role based e-learning and it is precisely also the reason why role based e-learning is so powerful.

In assuming a role in the context of some scenario, a learner must act upon the answer to the question: how should this role act? Simultaneous with this and cognitively linked to this, perhaps through frames, scripts, schemes or mental models (Pressley & McCormick, 1995), is the question: how would I act under similar conditions? In the resonance and interplay between the activities based upon the answer to these two questions lies the power of role based learning.

The role of role in role based e-learning is precisely to bring the learner to this reflexive cognitive process brought into awareness in the interaction between self and other given some scenario. Whatever the specific learning objective of role based e-learning is thus constructed by the learner in the process of constructing the identity of the role being played simultaneous with the process of constructing self identity of the learner as a learner.

The rules are no game, or are they?

As argued in this paper, role based e-learning straddles the divide between simulations and games. Thus like them they too are rule based systems. To the extent that CMC is used in simulations and games, the rules that govern them are mostly coded as algorithms that define the range of possible actions that can be taken. All interactions that takes place in such simulations and games are thus solely determined by the rules such that one cannot transgress these embedded rules nor act in anyway which the system does not recognize as a valid move.

Using CMC for role based e-learning however, to the extent that it supports the ability of learners to play out the characteristics defining roles rather than simply selecting preprogramed responses, and given that roles, as we have seen above involve norms, expectations and above all negotiating the definition of situations, must therefore have at least two (more often three) different systems of rules. First there are system rules which like all computer simulations are rules embedded as algorithms. Those are rules which define how the media, the computer, interacts

with the learner, and how it displays and enables communication channels to be used by the roles e.g. is it text based or can audio or video be used? In the case of avatar based 3D environment, the rules will also define how movement will take place given particular inputs from the players.

Secondly there are game rules, which in all digital games are also encoded as algorithms that cannot be transgressed e.g. in playing chess on a computer one cannot move a pawn 3 squares forward or in some games one must respond to a move within a certain time limit or suffer the consequences of losing as in Tetras. In role based e-learning, however, some rules may be similarly encoded – e.g. one must respond within a certain time frame. But other rules, non-encoded-rules, are presented outside the system as defining what players must do to pass some threshold of what will be counted as valid participation e.g. roles should act in accordance with their character, or players should login at least once per day and activate at least one move within the game such as sending a message to another role, or participating in at least two discussions within the game.

Finally and most crucially for role based e-learning, are the social rules that define the interaction between roles on the bases of the norms, expectations and attitudes that define the roles themselves. These are rules that define the domain being simulated, they are the social rules imported from the domain by the players assuming the roles. These rules are extremely difficult to code as algorithms because the nature of social rules is that they are negotiated in interaction and can be transgressed or altered at will, on the fly sort to speak, and in unanticipated ways. Let's suppose for the sake of example, a scenario in which an employee and his section manager in the tax department are having a dispute over the fact that the employee disclosed information to a newspaper about one of the companies he was auditing. The rule is that employees are forbidden to disclose such information and doing so will be prosecuted and dismissed from employment and that the manager is charged with the duty of enforcing this. In a role based e-learning game, just as in real life, the employee can deny the fact no matter what evidence is presented, while in a digital game, unless this possibility for denial is coded, this move cannot be denied if it has in fact taken place. Secondly the manager can choose to believe the employee, despite the evidence, again like in real life, and choose to not prosecute, or choose not to believe the employee but still not bring charges because he needs this particular employee or not fire the employee because he is his brother-in-law.

Social rules are thus part of any role based e-learning activity such that they themselves are negotiated in interaction, like in the domain being simulated relative to the objectives and interests of the role being played. They are an essential component of the role being played and a subject for the game play itself.

Given this understanding of system rules, game rules and social roles types of role based e-learning can be conceptualized along a continuum that defines the degree to which any specific role based e-learning activity enables learners to act and respond. On the one end of the continuum are closed activities where the rules define the game. These are highly structured activities where all the rules are encoded and thus allow little freedom of initiating and responding to scenarios and other roles. These are mostly role based e-learning systems that have a decision-tree as their core engine in which all possibilities for interactive responses are predefined e.g. A flight simulator, or Cid Mayer's game Civilization, or scenario based programs in which players can choose between alternate answers to some situation or question. On the other end of the continuum are minimally structured activities where the rules themselves are subject to modification by the game. In such systems only some of the rules, like system rules, are encoded, while other rules, like game or social rules are outside the simulating system and given as instructions to players. Such role based e-learning allow learners the freedom to negotiate, transgress and construct the social rules associated with the domain being learned. These are mostly role-playing games that use CMC as an environment for communication between roles enabling learners to continuously create new scenarios in response to the initial scenario e.g. Fablusi role plays. In such environments the rules themselves can be played with and altered during play.

Conclusion

This paper has argued that the advocates of role based e-learning need to direct more attention to theoretical considerations about the nature of roles and the nature of rules by which activities are organized for meeting learning objectives. The claim made here, is that the roles of role based activities intended to meet learning objectives need to be conceptualized in the same way that the roles and rules in social life that they are simulating, are understood. It is not enough to vaguely refer to social constructivist and cognitive theories that support role based e-learning. More attention needs to paid to role theory as it appears in sociological and social psychological literature and integrated with the cognitive-constructivist paradigm. This need is of particular importance if we are to

understand how the reflexivity of roles issuing from the double role of learner and the role played, actually enables learners to learn and how the various rules that define role based activities, especially the social rules negotiated in play, impact on the social construction of knowledge.

References

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1995). *Self-efficacy in changing societies*. New York: Cambridge University Press.

Biddle, B. J. (1986) Recent Developments in Role Theory *Annual Review of Sociology* Vol. 12: 67-92

Brown, J.S. Collins, A. & Duguid, P. (1989) Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.

Bruner, J (1996) *The Culture of Education*, Massashusetts :Harvard Univ. Press

Bruner, J. (1997) Celebrating divergence: Piaget and Vygotsky *Human Development*, 40, 63-73

Harasim L. (2000) Shift Happens: Online education as a new paradigm in learning. *The Internet and Higher education*, 3

Hare, A. P. (1985) *Social Interaction as Drama: Applications from Conflict Resolution*. Beverly Hills, Calif: Sage

Jonassen, D. (1991). Evaluating constructivistic learning. *Educational Technology*, 31(9), 28-33.

Jonassen, D.H., Peck, K.L., & Wilson, B.G. (1999). *Learning with technology: A constructivist perspective*. Upper Saddle River, NJ: Merrill, Prentice Hall.

Kelly, G. A. (1955) *The Psychology of Personal Constructs*. New York: Norton

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. NY: Cambridge University Press.

Linser, R. (2011) "What can we learn from the last 20 years of Role Based E-learning? Analysis and critique." *Society for Information Technology and Teacher Education Conference Proceedings*, Chesapeake, VA: AACE

Linser, R., Lindstad, N.R. & Vold, T. (2008). The Magic Circle - Game Design Principles and Online Role-play Simulations. In J. Luca & E. Weippl (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* 2008 (pp. 5290-5297). Chesapeake, VA: AACE.

McClarey, B.S., (2004) *Role-Based Learning: Considering Identity and Practice in Instructional Design*, Ph.D. Thesis, Nashville: Vanderbilt University

Mead, G. H. (1934) Mind. *Self and Society*. Chicago: Univ. Chicago Press

Merton, R.K. (1957) The Role-Set: Problems in Sociological Theory *British Journal of Sociology*, 8: 106-20.

Piaget, J. (1951). *Play, Dreams and Imitation in Childhood*. London: Routledge & Kegan Paul.

Piaget, J. (1972). *The psychology of the child*. New York, NY: Basic Books.

Prensky, M (2001) "Digital Natives, Digital Immigrants" in *On the Horizon*, MCB University Press, Vol. 9 No. 5, October 2001.

Pressley, M., & McCormick, C.B. (1995). *Advanced educational psychology for educators, researchers, and policymakers*. Boston, MA.: Allyn and Bacon

Salen, L. & Zimmerman, E. (2003) *Rules of Play, Game Design Fundamentals.* Cambridge and London: MIT Press.

Salomon, G., Perkins, D. N., & Globerson, T. (1991). Partners in cognition: Extending human intelligence with intelligent technologies. *Educational Researcher*, 20(3), 2-9

Sauvé, L., Kaufman, D. & Renaud, L. (2007). A systematic review of the impact of games and simulations on learning. In C. Montgomerie & J. Seale (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2007* (pp. 4149-4157). Chesapeake, VA: AACE.

Turner, R. H. (1974). Rule learning as role learning: What an interactive theory of roles adds to the theory of social norms. *International Journal of Critical Sociology* 1 :52-73

Turner, R. H. (1985). Unanswered questions in the convergence between structuralist and interactionist role theories. In *Micro-Sociological Theory: Perspectives on Sociological Theory*, ed. J. H . Helle, S . N. Eisenstadt, 2:22-36. Beverly Hills, Calif: Sage.

Vygotsky, L. (1962). *Thought and Language*. (Trans. Eugenia Hanfmann and Gertrude Vakar) Cambridge, Massashusetts: MIT University Press

Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. New York, NY: Cambridge University Press.

Wills, S., Leigh, E. and Ip, A. (2010) *The Power of Role-based e-Learning: Designing and Moderating Online Role Play*, Routledge, NY.