

# Entrepreneurial Humility and Learning from Serious Games

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**Abstract.** Serious games can create a fruitful environment for learning and development but participating in such games for learning in organizations imposes some challenges. The purpose of this article is to show having which element of entrepreneurial humility could play a significant role in relation with learning from serious games. In this study, 7 experts were chosen based on a questionnaire attempt to evaluate and prioritize entrepreneurial humility criteria, using a multi-criteria decision-making method called the ‘best worst method’ (BWM). The criteria are ranked according to their average weight obtained through BWM. The respondents view ‘social openness’ as the most important criterion. The results of this study help organizations’ managers, decision-makers, and practitioners decide where to focus their attention during the implementation stage, in order to increase effectiveness of a talent development portfolio especially serious games.

**Keywords:** Humility, Entrepreneurial Humility, Learning, Entrepreneurial Learning, Serious Games, Gamification

## 1 Introduction

Competitiveness refers to a company’s ability to maintain and gain market share in an industry. It’s confirmed that training and development practices can foster companies to attaining this vision [7, 4, 32]. Customer service, employee retention and growth, the economy, a multigenerational workforce, the use of new technology, extending learning beyond the classroom—these are just some of the issues affecting companies in all industries and sizes and influencing training and development practices [32]. These factors illustrate how training and development can contribute to companies’ competitiveness by providing employees with the knowledge and skills they need to be successful. To be effective in this way, training and development must play a strategic role in supporting the business vision and mission and contributing positively to business outcomes such as quality, productivity, development of new products, and retaining key employees. Along with all these issues companies must pay attention to the new workforce persona. Employees from Generation Z that well versed in informal learning, especially through collaboration facilitated by social media such as Facebook and Twitter. Also, their gaming experiences lead them to expect that learning experiences will be fun, multidimensional, and challenging and will provide immediate feedback and rewards [32]. Former research comprehensively addressed effective factor on effectiveness of learning project, but they neglected an important factor named humility. Humility was also associated with less social vigilantism, which may promote collaborative learning and, was associated with an intrinsic motivation to learn that may help explain

the observed relationship between humility and possessing more knowledge or being eager to learning [23]. The essence of learning is to accept shortcomings and mistakes. This is called humility along with accepting personal strengths and appreciating the participation and strength of others. With the extension of this competence to the business world, it can be argued that entrepreneurial humility has the potential to learn from the failures and successes that occur in different levels of the business life cycle. In current highly competitive business environment, one of the most valuable inputs for sustainable organizational growth is knowledge [55, 1] and recently, there has been a growing interest in innovative forms of learning such as serious games. Such games can create a different experience in the process of learning which are highly motivating and emotionally engaging for the trainee, especially the new generation who are named digital natives or digital born [24]. Digital born is a term that describes people who live in the digital age. They have a different mental model, values, and behaviors when compared to prior generations. The digital born person, however, demands new development methods to best achieve great performance. The use of serious games is a promising solution for learning through meaningful play [31,24]. The drawbacks of traditional training and staff development in ways that have proven ineffective, on the one hand, and the generational change and special preferences that these individuals have, and their interest in personal growth and development in new ways, and along with the development of technology, especially cognitive technologies, have provided the ground for a new type of development in the organization under the concept of serious games. Affected by the larger context of this phenomenon, however, in other words, game development, we must address an important concern about what motivations and characteristics cause people to turn to a game, stay in it, continue to play eagerly, and most importantly, play to learn. It should also be noted that in most organizations, development still takes place in a physical context and serious games are designed in this space. Combining physical education and giving the game-like nature to this type of development requires attention to how people are persuaded to start and continue these games. Going back to some earlier studies [18, 44, 30] it seems that the design of serious game is time consuming, costly and complex, and the efficiency of this type of learning will be more problematic. Hence the research main question is which components of humility will be most effective in learning from serious games?

## **2 Theoretical Background**

### **2.1 Humility**

Humility is a virtue. Solomon (1999) provides a definition of humility that is useful to business: humility is “a realistic assessment of one’s own contribution and the recognition of the contribution of others, along with luck and good fortune that made one’s own success possible.” Tangney (2002) have tried to distinguish between humility and narcissism, as well as experience and orientation towards goal-based learning. Jankowski et al. (2013) conceived humility as the capacity to regulate interpersonal and interpersonal relationships, which facilitates interpersonal Well-being. Humility, unlike many other virtues, tends to be silent. Characteristics of leadership such as gratitude, justice, or compassion are more visible, but humility is not something a leader explicitly

exhibits. “Humility,” a wise pundit said, “is like underwear; essential, but indecent if it shows.” [54]. Humility is a characteristic of sustainability, according to which a person considers himself to be very meaningful from the point of view of others. Consequently, humility entails a growing view of itself [35]. It also facilitates identification of the strengths and weaknesses of yourself and others. Based on learning nature of game we can define humility as a goal orientation Learning process. An adaptive approach to task situations associated with the motivation to understand and master the task rather than to display or prove competence [12]. Learning goal orientation describes cognitive and behavioral response patterns in achievement situations, whereas expressed humility is manifest in a broad range of social situations that may or may not have direct achievement implications. LGO reflects a desire (i.e., an internal motivation or cognition) to develop new competencies, master new situations, and acquire new skills; expressed humility reflects behaviors that reflect a pursuit of accurate self-awareness and appreciation of others’ strengths, in addition to learning and development [34].

## **2.2 Learning from Serious Games**

Games are enormously popular among adolescents and young adults [9] and the widespread interest in the learning and motivation benefits of serious games has been discussed before. Playing a serious game allows us to understand complex issues within a complex environment due to its systemic character. Therefore, it could play an important role in a knowledge management process and more generally in organizational learning [53]. Serious game is indeed a kind of educational games due to the early development of the ‘Edutainment’ approach in the 1970s [48, 38, 24]. One of the advantages of serious games is increasing the engagement and the motivation of the trainees. Add to this real and direct practice and the result is that the trainees learn better and more deeply. Indeed, many researchers [45, 42, 19,47] pay particular attention on the value of serious game design in facilitating players’ learning goals and processes as well as achieving learning satisfaction. Organizational learning as defined by Argyris & Schön (1995) concerns knowledge, skills, techniques and practices. Organizational learning depends on learning from individual interactions, these interactions being affected in return by organizational learning. According to Argyris & Schön (1995), this learning phenomenon is all the more important if the organization’s culture encourages its continuous progress and creates situations that are more favorable for changes and innovations. When applied to serious games, the theory of organizational learning considers that each player, gathered in team to play the game, learns individually which contribute to team learning (organizational learning). According to Argyris et al (1985), this knowledge constitutes theories of action or, in other words, it is produced to reach a goal and is the result of strategies deployed to perform complex tasks linked to the serious game [53].

## **2.3 Humility and Learning from Serious Games**

Based on vera and Lopez (2004) There are six ways in which the virtue of humility manifests itself in learning. These six ways are: Openness to new paradigms, Eagerness to learn from others, Acknowledgement of their own limitations and mistakes, and

ability to correct them, Pragmatic acceptance of failure, Ability to ask for advice, Development of others. Owens, Johnson and Mitchell (2013) cleared the concept of humility as expressed humility in three dimensions as: Willingness to See the Self Accurately, Appreciation of Others' Strengths and Contributions and Teachability. Maldona, vera and Ramos (2018) promotes humility as a key success factor and a source of competitive advantage and characterize a humble person in six components as: accurate self-awareness, appreciation of others, teachability, low self-focus and self-transcendent pursuit. Norcross and Manning (2019) claimed that there is four general traits and behaviors associated with humility: an attitude of inquiry, kinship, extraordinary collaboration, and professional excellence. These four general themes emerged from a thorough review of the literature on humility [20,35,49,50] including a review of several organizational case studies. These four traits and behaviors were also confirmed by recent empirical research [33, 35, 36]. In the next part some of these elements that are in relation with learning will demonstrate and then introduced in a conceptual model that will be useful for the aim of this research. In the next parts these elements that are in relation with learning and are useful for the aim of this research will demonstrate.

### **Social Cognition**

Learning implies changes in both cognition and behavior. humble players recognize that they do not know everything and that they have much to identify; they develop a true capacity to identify and understand from the work of others or situations like serious games. Also being humble help player to have a more realistic perspective of the complexity of the world and acknowledge the limitations of their current mental model and never stick to the past and out of date solutions.

### **Social Openness**

Tangney (2000, p. 72) argued that "humility carries with it an open-mindedness, a willingness to seek advice, and a desire to learn." Similarly, Templeton (1997, p. 162) noted, "Inherent in humility resides an open and receptive mind it leaves us more open to learn from others." We propose that this aspect of expressed humility reflects a person's absorptive capacity [56] on an individual level and may be generally related to developmental readiness, a concept that has mainly been applied to leaders [3] within the context of interpersonal interactions. In a game context, being open and accepting a change of mental models is more painful for most of players because they afraid of knowing the truth and are fearful of losing their status or control.

### **Social Courage**

One of the strongest obstacles against initiative is fear of failure. The virtue of humility helps people to deal with this fear by reminding them that those who do not fail, rarely try new endeavors, and those errors and failure are the price for learning. Managers who think they "know it all" and feel superior to others seldom seek or accept advice from others. In contrast, humble leaders look for advisors who can challenge them and

offer differing opinions, so that the leaders can assess and integrate the different perspectives and are therefore more likely to make good decisions.

### **Social Learning**

Ability to learn or teachability is critical for organizations competing in the “knowledge-based economy” [11]. It manifested in persons who showing openness to learning, feedback, and new ideas from others. Teachability may also be a particularly important component of expressed humility in leadership contexts. Alexander and Wilson [8] argued that a thirst for learning is one of the most critical capacities of effective leaders. This aspect of expressed humility would be manifest by a displayed receptiveness to others’ feedback, ideas, and advice and the willingness to ask for help. Humble individuals, through showing teachability, afford others a sense of voice, which has been shown to foster greater trust, motivation, and a heightened sense of justice [3].

### **Social Acknowledgment**

The capacity of players to accept their personal strengths and weaknesses could predict their ability to learn from their experiences. appreciating limitations is a desire to accept one’s fault and use them as a starting point for learning. Sixth While narcissistic or arrogant managers want others to be dependent on them, humble leaders are committed to training those who might surpass them in learning. Humble managers not only tolerate others’ successes but are proud when trainees outperform them. Managerial talent is a scarce resource; consequently, focusing on the development of new managers is one of the most valuable contributions that current leaders can provide to their firms [17, 16, 25, 6, 21, 5, 37, 22, 13, 54].

Owens et al (2013) propose that humility fosters a more objective appraisal of personal strengths and limitations that is manifested by transparent disclosure of personal limits, acknowledging mistakes, and seeking realistic feedback about the self. From a general psychological standpoint, longitudinal research has shown that individuals who maintain more realistic self-views tend to be more psychologically healthy and have higher general well-being [52].

### **Social Care**

According to Means et al. (1990, p. 214), “Humility is an increase in the valuation of others and not a decrease in the valuation of self.” Expressed humility reflects attitudes that are other enhancing rather than self-enhancing [29] and leads one to acknowledge and show that he values others’ strengths [49].

## Social Skills

We have described several ways in which humble behavior affects the long-term growth and survival of the firm. The resilience of humble leaders is reflected in their sobriety and down-to-earth views of themselves and their environment. When enjoying success, humility enables managers to be resilient, by helping them to remember the difficulties they faced to achieve success. When coping with problems, humility helps managers to avoid slipping into denial and to deal with reality and move forward. When combined with humility, positive ambition, and the desire to leave a legacy motivate managers to avoid self-complacency and be open to the need to continuously adapt the firm to its context. This type of culture generates high employee commitment towards the firm's growth goals.

## 3 Methodology

Best Worst Method (BWM) is a multi-criteria decision-making method that is based on a structured pairwise comparison system [39]. The BWM [40, 41] is structured as follows: Step1. Identify a set of decision-making criteria. In this step, a set of criteria  $\{c_1, c_2, c_3, \dots, c_n\}$  is chosen for decision making. Step2. The best criterion (e.g., most desirable, most important) and the worst criterion (e.g., least desirable, least important) are determined. In this step, the best and the worst criteria are identified by the decision-maker. Step3. The preference of the best criterion over all the other criteria is determined based on a score between 1 and 9, where a score of 1 means equal preference between the best criterion and another criterion and a score of 9 means the extreme preference of the best criterion over the other criterion. The result of this step is the vector of Best-to-Others (BO) which would be  $AB = (a_{B1}, a_{B2}, a_{B3}, \dots, a_{Bn})$ , where  $a_{Bj}$  indicates the preference of the best criterion B over criterion j, and it can be deduced that  $a_{BB} = 1$ . Step4. The preference of all criteria over the worst criterion is determined based on a score between 1 and 9. The result of this step is the vector of Others-to-Worst (OW) which would be:  $AW = (a_{1w}, a_{2w}, a_{3w}, \dots, a_{nw})$  where  $a_{jW}$  shows the preference of the criterion j over the worst criterion W. It also can be deduced that  $a_{WW} = 1$ . Step5. The optimal weights  $(w_1^*, w_2^*, w_3^*, \dots, w_n^*)$  are calculated. The optimal weights of the criteria will satisfy the following requirements: For each pair of  $w_B/w_j$  and  $w_j/w_W$ , the ideal situation is where  $w_B/w_j = a_{Bj}$  and  $w_j/w_W = a_{jW}$ . Therefore, to get as close as possible to the ideal situation, we should minimize the maximum among the set of  $\{|w_B - a_{Bj}w_j|, |w_j - a_{jW}w_W|\}$ , and the problem can be formulated as follows:

$$\min \max_j \{|w_B - a_{Bj}w_j|, |w_j - a_{jW}w_W|\}, \text{ Subject to: } \sum w_j = 1 \quad (1) \quad w_j \geq 0, \text{ for all } j \quad (1)$$

Problem Eq. (1) can be transferred to the following linear programming problem:

$$\min \xi L, \text{ subject to: } |wB - aB_j w_j| \leq \xi L \text{ for all } j, |w_j - a_j w| \leq \xi L \text{ for all } j, \sum w_j = 1 \text{ (2)}$$

$$w_j \geq 0, \text{ for all } j$$

After solving problem Eq. (2), the optimal weights ( $w_1^*$ ,  $w_2^*$ ,  $w_3^*$ , ...,  $w_n^*$ ) and  $\xi L^*$  are obtained.  $\xi L^*$  can be seen as a direct indicator of the comparison system's consistency. The closer the value of  $\xi L^*$  is to zero, the higher the consistency, and, consequently, the more reliable the comparisons become. Data were collected from Iranian entrepreneurship ecosystem experts and 7 experts were participated in this research. The demographic information of them is as table 1.

**Table 1.** Demographic Information of Research Experts

Expert	Gender	Age	Education	Expertise	Experience
1	Male	30-40	Phd	Behavior	10 years
2	Male	30-40	Phd	Accelerator	6 years
3	Male	30-40	Msc	Entrepreneurship	4 years
4	Female	30-40	Phd	Entrepreneurship	4 years
5	Male	40-50	Phd	Behavior	15 years
6	Male	30-40	Msc	Behavior	7 years
7	Female	20-30	Msc	Entrepreneurship	5 years

71% of Expert in this study were male and 29% were female, 85% have between 30-40 years old. Based on education 71% educated or educating in PhD. All have expertise in business and have average 6 years' experience.

## 4 Results and findings

*Determination of decision criteria:* In this first step, the decision-makers identified a set of criteria to describe the subject matter. This section throws more light on the development and refinement processes of the framework proposed in this paper. The criteria were identified through a combination of a literature review. Through the literature review, 7 entrepreneurial humility criteria were identified (see Table 2). *Identifying the best and the worst criteria:* In the second step, the 7 respondents specified the most and the least important entrepreneurial humility criteria, using a questionnaire. The resulting best and worst are listed in Table 3. *Identifying the best criterion preference over all criteria:* In the third step, the respondents were asked to specify the best criterion's preference over all other criteria, using 1–9 measurement scale. Table 4 shows the response of one of the respondents. *Identifying the other criteria preference over the worst criterion:* In this step, the respondents were asked to determine the preference ratio of all criteria over the least important criterion via a questionnaire, again using a measurement scale of 1–9. Table 5 displays the response of one of the experts. *Finding the optimal weights of criteria:* In this step, the optimal weights of the criteria are calculated by solving the BWM optimization model for each of the 9 respondents. Next, a

simple weighted average for each criterion is computed to obtain a single weight vector, as shown in Table 6, which indicates that the average consistency ratio ( $\xi_L^*$ ) is close to zero, Hence, the comparisons are highly consistent and reliable. Moreover, the consistency ratio (CR.) for each criterion can be found in Table 6. Small numbers for the CR show homogeneity of respondents.

**Table 2.** Social Sustainability Criteria Selected for the Assessment.

Criteria	References	Description
social cognition	[34, 54, 33, 26]	Ability to analyzing strength and weakness of own and understanding others potentials
social openness		Being openness to new idea and experiences
social Courage		Accepting faults and mistakes of own and others
social learning		Willing to learn from environment and people experiences
social acknowledgment		Admire and appreciation of others participation
social care		be care and willing about others development and growth
social skills		Ability and willing to give and receive feedback

**Table 3.** Best and Worst Criteria Identified by Experts 1–7.

Entrepreneurial humility criteria	Determined as Best by experts	Determined as Worst by experts
C1= social cognition	1,7	-
C2= social openness	2,5,6	-
C3= social Courage	3	4
C4= social learning	4	-
C5= social acknowledgment	-	1,2,3,6
C6= social care	-	5,7
C7= social skills	-	-

**Table 4.** Best Criterion Preference over the other Criteria for Expert 1.

Criteria	C1	C2	C3	C4	C5	C6	C7
Most important (C1)	1	2	4	3	9	7	4

**Table 5.** Preference of all Criteria over the Worst Criterion for Expert 1.

Criteria	Age
C1	9
C2	8
C3	6
C4	4
C5	1
C6	3
C7	6

**Table 6.** Results of BWM: Criteria Weights for the 7 Respondents.

Criteria	E1 <sup>1</sup>	E2	E3	E4	E5	E6	E7	GM <sup>2</sup>	RP <sup>3</sup>
C1	0.346	0.204	0,285	0.089	0.172	0.211	0.277	0.210	0.233
C2	0.211	0.318	0.122	0.125	0.258	0.352	0.309	0.224	0.249
C3	0.105	0.136	0.0343	0.036	0.103	0.070	0.072	0.099	0.110
C4	0.140	0.102	0.073	0.476	0.172	0.164	0.182	0.159	0.176
C5	0.030	0.032	0.029	0.089	0.103	0.046	0.031	0.045	0.050
C6	0.060	0.068	0.073	0.104	0.086	0.084	0.052	0.073	0.081
C7	0.105	0.136	0.073	0.078	0.103	0.070	0.072	0.088	0.098
Ξ	0.075	0.091	0.081	0.149	0.258	0.070	0.086	-	-
CR	0.020	0.024	0.021	0.039	0.069	0.018	0.023	-	-

<sup>1</sup>E=Expert, <sup>2</sup>GM=geomean, <sup>3</sup>RP=rank point

## 5 Conclusion and Discussion

Training and Development refers to practices as well as formal and informal education that help employees prepare for current and future jobs or positions. Serious games are one of these that can be performed as blended learning program. Persuasion to join and engagement to hang on these games is important for organization because designing of them is complex and need more time and cost. Based on self-determination theory (SDT) by Ryan and Decy (1980), intrinsic motivation in game-based practices have undeniable effect. On the other hand, based on [23] humility may associate with an intrinsic motivation to learn that may help explain the important role of entrepreneurial humility in learning from serious games. Results of the study show "Social openness" and "Social cognition" have the highest impact in organizational learning projects. "Social openness" with the weight of 0.249 is the most critical and important criterion when these organizations attempt to achieve effectiveness in organizational learning projects based on serious games. "Social openness" lays part of the foundation for inclusion and development of the other criteria of entrepreneurial humility, leading to the improvement of the entire development and training program. These findings were supported by the previous research that entrepreneurial humility has been associated with better training and development effectiveness [57, 43, 27, 23]. Although EH may promote learning from game by contribute to Persuasion, and motivations, However, further investigation is needed to examine whether this is the case. Future research may develop and validate a scale to measure entrepreneurial humility and explore the effect of this concept on persuasive nature of games. It would be beneficial for future research in persuasive technology to examine the links between EH and learning from games in both directions with longitudinal and experimental designs.

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