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"OLD FASHIONED, YET ADMIRABLE"

REVISITING BLOOM TO REVOLUTIONIZE BOARD GAMING IN OUR ENTREPRENEURSHIP CLASSROOMS

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Abstract. *Our paper melds two streams of knowledge, entrepreneurship education and gaming, via Bloom's Revised Taxonomy of Educational Objectives to develop a conceptual model for board game development. The conceptual development of the board game is specifically tailored for teaching the theories and competencies required for the establishment, survival and growth stages in the entrepreneurial venture process. We began with a discussion on the critical success factors of a board game, focusing mainly on why people appreciate certain board games than the rest. Discussion follows with an overview of Bloom's and colleagues' seminal works on learning theories, leading us to hypothetically propose the use of the Taxonomy Table as part of effective game development. Lastly, the importance of identifying the level of objectives of the prospective game is detailed to allow for a more comprehensive planning across a continuum. We conclude with a conceptual model of effective board game development and the prospects of board gaming in our classrooms.*

Keywords: *Entrepreneurship Education, Board Game Learning, Game-Based Learning, Entrepreneurial Learning, Educational Objectives, Taxonomy Table*

Introduction

"The chess-board is the world, the pieces are the phenomena of the universe, the rules of the game are what we call the laws of Nature. The player on the other side is hidden from us"- Thomas Huxley

When mentioning the words "board game", customarily a spontaneous visualization of *Chess*, *Monopoly* or *Scrabble* comes into mind. Throughout history, board games are universally known as two types: the traditional (original) games such as *Chess*, *Checkers, Backgammon*, invented way back in the ancient times, and the contemporary games which have been with us for around 100 years. R.C Bell in his famous book entitled *Board and Table Games from Many Civilisations* (Bell, 1979) described ninety one games, with the oldest being played around 5,000 years ago. On the other hand, *Monopoly* and *Scrabble* are among the few modern board games that have succeeded transcending time and have made colossal impacts to players worldwide (e.g Hargreaves, Pexman, Zdrazilova, & Sargious, 2012; Orbanes, 2002; Tuffiash, Roring, & Ericsson, 2007). Indeed, some modern board games are more popularly admired than the rest, and are more accepted as regular playing tools amongst households, despite maintaining the 'old-fashioned' playing manner compared to their rivals - high

technology multimedia and simulation based games played via the computer. In short, there exist board games which are still incontestable against time.

What, exactly, makes these games so well-liked? Is this popularity linked to certain attributes of the game itself? If so, what then, are these characteristics? To what extent do board games educate players? Is it possible to design a board game solely for educating entrepreneurship in our classrooms? Our paper aims to answer these questions via a critical review of seminal works on educational perspectives, entrepreneurship education and gaming. Discussion then follows with the main objective of our paper: to make known the attributes and the educational objectives that a board game must have to be an effective tool for entrepreneurship education in our classrooms, specifically for teaching the theories and competencies required to succeed through the establishment, survival and growth stages in the entrepreneurial venture process. Based on the extant literature, we embark to respond to the above queries and to propose a hypothetical model of effective board game development. We discuss each in turn.

Games and Research: An Overview

Seminal works on games have been published as early as in the 1920's with the work of Gulick's *A Philosophy of Play* (e.g Hargreaves, et al., 2012; Orbanes, 2002; Tuffiash, et al., 2007). In a broader-spectrum, researchers have ever since been awed by the power of games (Gulick, 1920), resulting in various proposed theories to rationalize on why people enjoy playing games of all kinds. It is known that games are seen as a human instinct (classical theories), that games somehow fulfill psychological and emotional needs (modern theories), and that games are the activities conducted as stimulants and to evade boredom (contemporary theories) (e.g Bretherton, 1984; Day, 1981; Prensky, 2002; Vinacke, 1969). Throughout the literature, games are popularly categorized into i) exploratory, ii) creative, iii) entertaining, iv) mimetic (i.e. role plays), and v) cathartic (i.e. played as therapy). On the other hand, the "playfulness" of a game refers to its level of internal control, the intrinsic and extrinsic forces which motivates the player, and the enjoyment it brings (see Ellis, 1973).

Board Games: Appreciation and Success Factors

Notwithstanding the fact that the popularity of board games with people of all ages remains despite the emergence of digital-based, computer and video-based entertainments, research is scarce in the area relating to modern board games (Day, 1981). On why people appreciate board gaming, one study revealed that the number one factor in explaining this is that board games provide people the ability to *fantasize* and live uncommon experiences. Players get to 'transform' into warriors, prisoners, entrepreneurs, farmers, etc., 'simulating' the game into very unique and rare experiences (Holbrook, Chesnut, Olivia, & Greenleaf, 1984). This then leads to the second highest factor associated with board game acceptance; that board games provide *entertainment* (Orbanes, 2002; Prensky, 2002). To add, board games are inexpensive, flexible and are easily adapted, and sustainable, in that they can be re-played by the same player willingly (d'Astous & Gagnon, 2007). This makes board games "especially advantageous for developing countries where teachers are busy and in short supply and where electronic games are often not available" (Lennon & Coombs, 2007). Another notable factor contributing to the attachment of people to board games is the main drawback of simulations - the usage of computers –which results to a *human-computer* interaction rather than a *human-human* interaction. In the same vein, game creators acknowledge the need to "provoke

discussions, arguments, and jokes, because people want to have the opportunity to interact during the game" (Lennon & Coombs, 2007, p. 303). Since computers could never duplicate the complexity and richness of competing and cooperating amongst humans, the 'old-fashioned' board game remains well-admired, even among young adults today (d'Astous & Gagnon, 2007, p. 82).

Undoubtedly, a few modern board games have succeeded better than the rest. An obvious explanation for this would be that these successful games possess features that players akin to. The huge success of such games (i.e. *Monopoly*) is based on the six principles of board game development (Hergeth & Jones, 2002), namely:

1. Exhibiting rules that are clear and simple;
2. Making the game comprehensible and accessible to all kinds of players;
3. Establishing a rhythm to help players follow the evolution of the game;
4. Providing players the likelihood to shape outcomes i.e. based on chance and strategy;
5. Providing players a unique experience, and
6. Stimulating social experience.

On the whole, the phenomenon of board gaming still survives, and is making an exciting comeback with highly innovative and challenging games being introduced, focusing on niche markets and specific fields of learning. We believe that this phenomenon, having existed for more than 5,000 years, is seen as a significant means for classroom edutainment (education + entertainment), particularly in entrepreneurship education, as entrepreneurship education involves action-learning, encouragement of experiential learning, project-based learning, problem solving, creativity, and the support of peer-evaluation (Jones, 2006; Mwasalwiba, 2010). The following section discusses the impact of board games on learning and the conceptualization of educational objectives aimed at entrepreneurship education.

Board Games and Learning

The roles games play in an educational perspective have been considerably discussed throughout the years (Orbanes, 2002). Despite this, games are still underused in college classrooms where the lecture continues to be the norm (Cruickshank & Telfer, 2001). Acceptance of games as a learning tool, rather than as a time-filler, is essential if their full potential is to be realized. In a recent review on gaming in classrooms, the authors conclude on how board games, if effectively executed, may positively impact active and experiential learning (Bok, 2005), as well as students' cognition (Tasnim & Yahya, 2013). Lectures are effective in conveying the concepts involved, while board games are advantageous as educational tools to fuel interest (Millians, 1999). They are fun to play with, and more often make an impact in aiding learning (1987), they can be played inside and outside the classroom, with or without the aid of teachers (as learner-initiated activities) and computers. Above all, board games energize behavior (Bisson & Luckner, 1996), and are important motivational and learning tools (Kafai, 2006).

Albeit the significant impact board games play in classroom settings, not much effort has been performed to look into its educational objectives' specifics, i.e. the comprehensive *taxonomy* of learning objectives achievable through each play. Indeed, researchers have empirically investigated the affects of board gaming on learning in a multitude of settings and approaches, but with little advancements for the past 30 to 40 years (Garris, Ahlers, & Driskell, 2002). This may be due to the fact that each of these studies is *distinct*; not looking at gaming from a *holistic* view of learning. For instance, when mentioning that the sine qua non of a particular board game is mainly about learning, the foundations of learning theories

ought to be discussed beforehand. Seeing that each game has its own learning goals, discussing each learning goal in a more holistic manner would entice further debates and spur research interest. The next section elucidates.

Revisiting Bloom's Taxonomy of Educational Objectives: A Holistic Approach for Effective Board Gaming?

Bloom's Taxonomy of Educational Objectives (Sykes, 2006) needs no introduction. Nonetheless, for the purpose of rationalization of our work, we present a précis on how the work of Bloom cultivated into a more recent revised taxonomy (Bloom, 1956) which is then applied as the foundation of our work. The original Taxonomy of Educational Objectives (Krathwohl, 2002) explains how humans gain new knowledge – from lower levels to higher levels of learning – via knowledge, comprehension, application, analysis, synthesis and evaluation. It is by far the most applied framework "for classifying statements of what we expect or intend students to learn as a result of instruction" (Bloom, 1956). The taxonomy is presented as a single dimension, hierarchical illustration, later to be revised into a two dimensional, non linear model (Anderson, et al., 2001, p. 212) (see Figure 1).

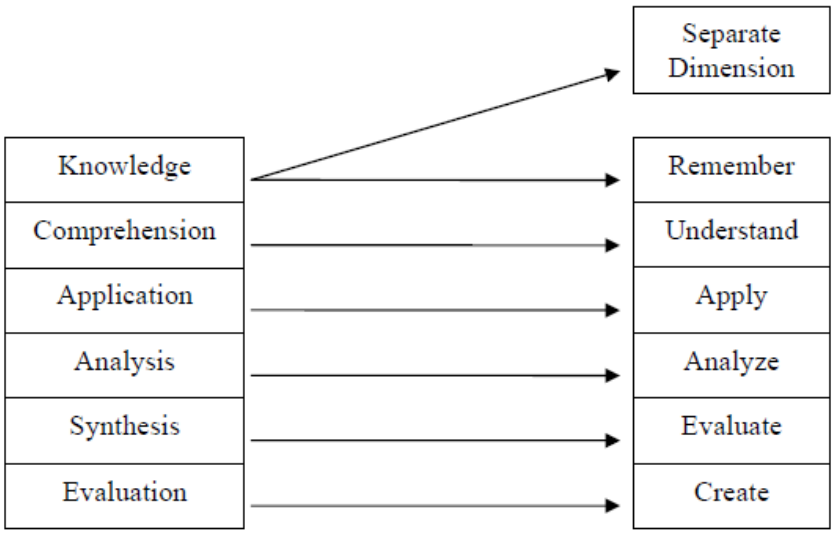


Figure 1: Summary of Structural Changes from the Original Framework to the Revision (Krathwohl, 2002)

This new model suggests a detached *knowledge* dimension (with factual, conceptual, procedural and meta-cognitive as its sub-dimensions), and a cognitive-process dimension (remembering, understanding, applying, analyzing, evaluating and creating). The basic facets learners must know to acquaint themselves to a discipline and to solve problems is termed factual knowledge, while conceptual knowledge links this basic knowledge to a larger body of knowledge. The knowledge of how to do something, methods of inquiry, as well as the criteria for applying skills, algorithms, techniques and methods is termed procedural knowledge while meta-cognitive knowledge is knowledge of cognition in general and the awareness of one's own cognition. On the other hand, the six groupings of *cognitive* dimension are; i) remembering – process of retrieval of knowledge from long-term memory, ii) understanding – process of constructing meanings from instructions, including oral, written, as well as graphic communications, iii) applying – performing or using a procedure in a given situation, iv) analyzing – breaking materials into elements, while determining how each element is linked each other, v) evaluating – making judgments based on criteria and

standards, and vi) creating – a process of merging the elements to form a rational and practical whole, and to restructure elements into a novel pattern or configuration. Table 1 and 2 summarizes the knowledge and cognitive dimensions of the revised taxonomy.

Table 1: Structure of the Knowledge Dimension of the Revised Taxonomy (Anderson, et al., 2001)

Structure of the Knowledge Dimension of the Revised Taxonomy
A. Factual Knowledge - The basic elements that students must know to be acquainted with a discipline or solve problems in it; a. Knowledge of terminology b. Knowledge of specific details and elements
B. Conceptual Knowledge - The interrelationships among the basic elements within a larger structure that enable them to function together; a. Knowledge of classifications and categories b. Knowledge of principles and generalizations c. Knowledge of theories, models, and structures
C. Procedural Knowledge - How to do something; methods of inquiry, and criteria for using skills, algorithms, techniques, and methods; a. Knowledge of subject-specific skills and algorithms b. Knowledge of subject-specific techniques and methods c. Knowledge of criteria for determining when to use appropriate procedures
D. Metacognitive Knowledge - Knowledge of cognition in general as well as awareness and knowledge of one's own cognition; a. Strategic knowledge b. Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge c. Self-knowledge

Table 2: Structure of the Cognitive Process Dimension of the Revised Taxonomy (Anderson, et al., 2001)

Structure of the Cognitive Process Dimension of the Revised Taxonomy
1.0 *Remember* - Retrieving relevant knowledge from long-term memory. *1.1 Recognizing* *1.2 Recalling* 2.01 *Understand* - Determining the meaning of instructional messages, including oral, written, and graphic communication. *2.1 Interpreting* *2.2 Exemplifying* *2.3 Classifying* *2.4 Summarizing* *2.5 Inferring* *2.6 Comparing* *2.7 Explaining* 3.6 *Apply* - Carrying out or using a procedure in a given situation. *3.1 Executing* *3.2 Implementing* 4.0 *Analyze* - Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose. *4.1 Differentiating* *4.2 Organizing* *4.3 Attributing* 5.0 *Evaluate* - Making judgments based on criteria and standards. *5.1 Checking* *5.2 Critiquing* 6.0 *Create* - Putting elements together to form a novel, coherent whole or make an original product. *6.1 Generating* *6.2 Planning* *6.3 Producing*

To illustrate the application of the Revised Taxonomy, we refer to a work applying Bloom's revised framework to entrepreneurship teaching (Leach, 2006). *Appendix A* depicts the knowledge dimension while *Appendix B* illustrates the cognitive dimension. Both illustrations are based on a course tutorial on *Idea Generation*, placed in the third week of a third year undergraduate course, New Venture Creation. The course is among the components in a multi-year/multi-course program known as the Entrepreneurial Skills Program (ESP). The tutorial is aimed to be the preliminary step leading to a fully functional business plan.

Taxonomy Table.

The revised taxonomy led to the introduction of the *Taxonomy Table* (Anderson, et al., 2001), i.e. a two dimensional matrix juxtaposing both the knowledge and cognitive processes (Table 3). While the knowledge dimension represents a continuum from concreteness to abstraction, the cognitive process dimension represents a hierarchical continuum of cognitive complexity. Development of the Taxonomy Table took into great consideration the aspects of both the subject matter content (the noun phrase) and the description of what is to be done with this content (the verb phrase). For instance, consider the following objective of a small business management course: to provide students with an overview of small business management and to allow them to apply planning, organizing and managing a small business. In this light, the subject matter (noun phrase) would be "managing a small business", while the description of what needs to be done would be "apply". In short, the Taxonomy Table allows the noun and the verb to form separate dimensions i.e. the noun shapes the foundation of the knowledge dimension while the verb shapes the foundation of the cognitive process dimension. The intersections of the knowledge and cognitive process categories form the cells, where each cell in the taxonomy corresponds to an *educational objective (Krathwohl, 2002)*.

Table 3: The Taxonomy Table

The Knowledge Dimension	The Cognitive Process Dimension					
	1. Remember	2. Understand	3. Apply	4. Analyze	5. Evaluate	6. Create
A. Factual Knowledge						
B. Conceptual Knowledge						
C. Procedural Knowledge						
D. Meta-Cognitive Knowledge						

At present, the Taxonomy Table is still widely used as a means for teaching, learning and for classroom assessments. The table provides an analytical view of the objectives of a unit or course, and "an indication of the extent to which more complex kinds of knowledge and cognitive processes are involved" (Anderson, et al., 2001, p. 216) Seeing the significant value of the table in delivering a holistic view of educational objectives, we heuristically propose the use of the table as a comprehensive guideline interplaying between teaching, learning, and assessment with an entrepreneurship board game. In other words, a conceptual development

of a specific entrepreneurship board game in the context of the revised taxonomy is presently discussed.

In order to capture the more complex hierarchies of knowledge and cognition, the conceptual development of an entrepreneurship board game must, specifically, incorporate *experiential learning* – the interaction between experience and learning via the exploitation of the subjective nature of the learning process (Anderson, et al., 2001) – as its apex. This interaction reproduces knowledge via the transformation of experiences (Kolb, 1984), where simulation and gaming are regarded as effective means personifying experiential learning in and outside classrooms (Mainemelis, Boyatzis, & Kolb, 2002). Moreover, the primary prerequisite for achieving experiential learning would be high-levels of *energy* and *excitement* for *both* the students and the teacher (Cooper, Bottomley, & Gordon, 2004). If well developed, these games become potentially excellent tools to evaluate one's comprehension of theory, one's ability to relate theory with practice, and one's capability to develop theoretical insights. We believe that the Taxonomy Table would be an excellent basis for experiential learning in the context of designing the board game itself.

Setting the Objectives

Recognizing the goals of the impending board game is central to the development of the game itself. In other words, prior to the development of the board game, a list of *objectives* must be finalized by the facilitator in order to offer a sound vision of the game. Objectives cover three distinct heights: *global*, *educational* and *instructional*, elongating from a general (global) to a more specific (instructional) degree (Faria & Wellington, 2005; Ruben, 1999). Each level of objective is seen as a difference in tenures of i) scope, ii) the time needed to learn, iii) purpose or function, and iv) examples of use (Krathwohl & Pyne, 1971). Table 4 exemplars the application of the associated constructs of objectives to entrepreneurship education (Anderson, et al., 2001).

Table 4: Examples of Global, Educational and Instructional Objectives (Leach, 2006)

Level of Objective			
	Global	Educational	Instructional
Scope	Broad	Moderate	Narrow
Time Needed to Learn	One or more years (often many)	Weeks or months	Hours or days
Purpose or Function	Provide vision	Design curriculum	Prepare lecture plans
Example of Use	Plan a multiyear curriculum (e.g. entrepreneurship major)	Plan units of instruction (e.g.courses)	Plan daily activities, experiences and exercises

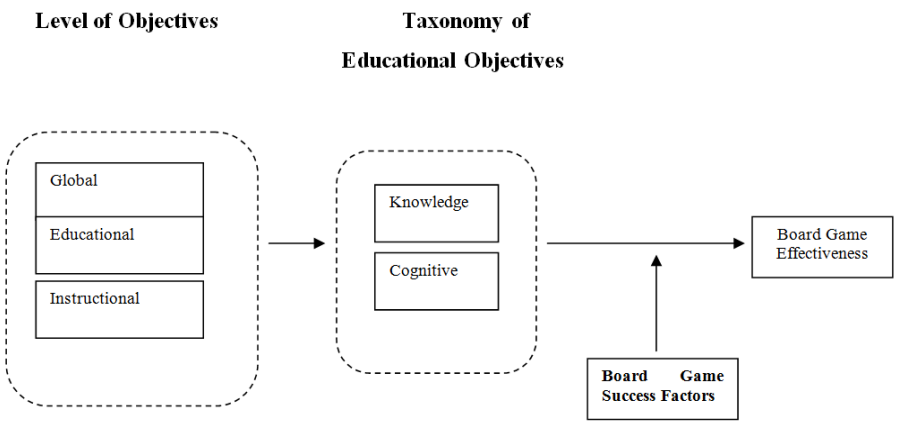
We believe it is possible to customize a board game based on the given levels of objectives. To illustrate, the *same* board game can become a tool to achieve all *three* levels of objectives; that is, if well designed, this same board game may not be limited to hourly, weekly or semester-length courses. Alternatively, it may be played persistently in classrooms throughout the *entire* entrepreneurship degree time-span (e.g. at most 4 years for undergraduates). In short, a singular board game may immensely impact the vision of the entire entrepreneurship course itself! However, when designing a multi-year and multi-leveled board game, extra emphasis on how the game would be tailored to achieve the specific educational objectives outlined in the Taxonomy Table must be taken. For instance, if a game is tailored to achieve all three levels of objectives, and to be played during the entire entrepreneurship degree tenure, different sets of taxonomies may be constructed for different levels of objectives – beginning from the global to instructional levels. In other words, the same game must be

discussed in terms of how it would contribute to learning in the continuum of four years (at most). Consider, for example, two different courses: the Introduction to Entrepreneurship course, a course designed to introduce the basic concepts of entrepreneurship to first semester entrepreneurship undergraduates, and the Business Taxation course, a course tailored to final year entrepreneurship major undergraduates, teaching students the role of taxes and its application in business and investment decisions. Although both courses cater to differing learning outcomes and to different groups of learners, the board game may still be usable to both groups and to contribute to both sets of learning outcomes. In short, the same game may be played by *both* sets of learners, only to achieve contrasting sets of learning outcomes from each play i.e. that the first semester students become well-introduced and well-versed with entrepreneurship concepts and theories, while the final year ones succeed in applying the concepts of business taxation. What makes it more interesting is that the same game makes available experiential learning in an economical, flexible and highly interactive way.

Conclusion: A Model for Board Game Development

In our paper, three crucial components of successful board game development were detailed: i) the (six) critical success factors of a board game, ii) the educational objectives of a board game, and iii) the level of objectives the game requires. Above all, a board game catered for entrepreneurship education should incorporate experiential learning as its apex. Based on Bloom's work on educational objectives, we conceptualize the development of an effective entrepreneurship board game as follows (see Figure 1);

Figure 1: Development of an Effective Board Game



The first step of board game development involves a crucial identification of the *level of objectives* the game plans to aim at. At this point, the feasibility of developing a *singular* game targeted at all three level of objectives may be considered, and not only limited to certain topics or portions of entrepreneurship education. We featured two differing courses as exemplars of this issue; the Introduction to Entrepreneurship course and the Business Taxation course. We believe that a same board game may be played by different segments of players, from first to the final semester, and that if well designed, the same board game would contribute to the different sets of learning outcomes targeted for each group. However, to allow this to occur, development of the game needs to heavily rely on the *specifics* of each learning objective. This leads us to the next step of board game development: identifying the taxonomy of educational objectives.

The taxonomy of educational objectives answers one fundamental question: *what can we expect or intend students to learn as a result of instruction?* This question is answerable through the mechanisms of learning per se – on how humans gain new knowledge – from lower levels to higher levels of learning. The two main dimensions known to immensely impact learning are knowledge and cognitive-process. The Taxonomy Table of Educational Objectives juxtaposes these two dimensions as separate cells. Having defined the level of objective(s) a board game aims to achieve, we propose game developers to carefully construct the taxonomy of educational objectives based on the Taxonomy Table. Featured in our earlier discussion were examples of both the knowledge and cognitive-process dimensions involved in the Idea Generation tutorial. Integrating both dimensions will result in a comprehensive, holistic view of learning, in the context of the game itself.

Having identified the level of objectives and its associated taxonomy, the final step in board game development would be the application of the critical success factors of the board game itself. We earlier discussed *six* factors known to contribute to the appreciation and effectiveness of a board game; that a good board game must i) exhibit rules that are clear and simple, ii) make the game comprehensible and accessible to all kinds of players, iii) establish a rhythm to help players follow the evolution of the game, iv) provide players the likelihood to shape outcomes i.e. based on chance and strategy, v) provide players a unique experience, and vi) stimulate social experience. It is up to the game developer to innovatively design the game so as to fulfill the requirements of each success factor, in terms of the board game's ergonomics, fantasized environment, levels of challenges, availability and affordability.

Taking into consideration all three factors, we conceptualize the following;

That the development of an effective entrepreneurship board game involves identification of the level of objectives, construction of a taxonomy on the educational objectives, and the application of all six critical success factors of board gaming.

Indeed, a few modern board games have succeeded better than the rest and have tremendously withstood the test of time. We believe that board games will remain an old-favorite despite solid rivals from the simulation industry namely for the unique human-to-human interactions and experiences board games provide as well as being an affordable and accessible form of 'edutainment' both in and outside our classrooms, what more in an entrepreneurship education setting. For educators immensely occupied with entrepreneurship education, our work hopefully sheds light for further advancements in pedagogical innovations dealing with entrepreneurship students. In the same vein, game developers benefit in terms of the applications of learning theories and success factors into the game itself. For policy makers involved with entrepreneurial development, board gaming may not be the 'perfect learning approach' for entrepreneurship education, but it may be one of the most flexible, affordable, more active, experienced-based approach, involving highly complex skills, high levels of energy and motivation. For these reasons, we believe that board gaming shall stay.

We end with a *magnum opus* by Plato;

"You learn more about a person in an hour of play than in a year of conversation".

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Appendix

Major Types and Subtypes of the Knowledge Dimension - The Idea Generation Tutorial

	A. Factual Knowledge	
The basic elements learners must know to be acquainted with a discipline or solve problems in it;		
AA	Knowledge of specific details and elements	The big picture constructs in idea generation – venture process and stages
AB	Knowledge of terminology	Definitions – opportunity, ideation, brainstorming
	B. Conceptual Knowledge	
The interrelationships among the basic knowledge elements within a larger structure that enable them to function together		
BA	Knowledge of classifications and categories	Sources of ideas – work experience, active search, friends, serendipity
BB	Knowledge of principles and generalizations	Creativity, innovation and entrepreneurship
BC	Knowledge of theories models and structures	Opportunity recognition/opportunity evaluation
	C. Procedural Knowledge	
How to do something, methods of inquiry, and criteria for using skills, algorithms, techniques and methods		
CA	Knowledge of subject-specific skills and algorithms	Articulation of the diverge/converge cycle in creative problem solving
CB	Knowledge of subject-specific techniques and methods	Use of SCAMPER as a brainstorming technique
CC	Knowledge of criteria for determining when to use appropriate procedures	Knowing when to diverge (idea generation) and when to converge (evaluation of ideas)
	D. Meta-cognitive Knowledge	
Knowledge of cognition in general as well as awareness and knowledge of one's own cognition.		
DA	Strategic knowledge	Personal strategies of idea generation
DB	Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge	Knowledge of the cues that trigger idea generation behaviours
DC	Self-knowledge	Knowledge of personal passions and interests

The Six Categories of the Cognitive Process Dimension and Related Cognitive Processes

Categories & Cognitive Processes	Alternative Names	Definitions & Examples
1 Remember - Retrieve relevant knowledge from long term memory;		
1.1 Recognizing	Identifying	Pertinent idea generation definitions
1.2 Recalling	Retrieving	Pertinent idea generation definitions
2 Understand – Construct meaning from instructional messages, including oral, written, and graphic communication;		
2.1 Interpreting	Clarifying Paraphrasing Representing Translating	Idea generation instructions
2.2 Exemplifying	Illustrating, Instantiating	Idea generation instructions
2.3 Classifying	Categorizing Subsuming	The order of idea generation instructions
2.4 Summarizing	Abstracting Generalizing	Idea generation instructions to other settings and instances
2.5 Inferring	Concluding Extrapolating Interpolating Predicting	When idea generation is appropriate
2.6 Comparing	Contrasting Mapping Matching	Alternative idea generation techniques
2.7 Explaining	Constructing models	Personal idea generation instructions
3 Apply – Carry out or use a procedure in a given situation;		
3.1 Executing	Carrying out	Idea generation instructions
3.2 Implementing	Using	Idea generation instructions in alternative settings
4 Analyze - Break material into its constituent parts and determine how the parts relate to one another and to an overall structure or purpose;		
4.1 Differentiating	Discriminating Distinguishing Focusing Selecting	The steps in idea generation
4.2 Organizing	Finding Coherence Integrating Outlining Parsing Structuring	Idea generation techniques that fit with personal preferences
4.3 Attributing	Deconstructing	Personal preferences for idea generation techniques
5 Evaluate - Make judgments based on criteria and standards;		
5.1 Checking	Coordinating Detecting Monitoring Testing	Which idea generation techniques work best
5.2 Critiquing	Judging	Both personal idea generation techniques and the techniques of peers
6 Create - Put elements together to form a coherent or functional whole; reorganize elements into a new pattern or structure;		
6.1 Generating	Hypothesizing	Which techniques will work best for the student
6.2 Planning	Designing	A personal idea generation protocol
6.3 Producing	Constructing	A personal idea generation protocol