

Chapter 6.4

Pedagogical trails for citizenship in the development of MIL Cities

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Abstract

When discussing about smart cities, it is common sense that the massive amount of data generated continuously about cities (big data) must be extracted, filtered, structured and systematized to compose relevant key performance indicators (metrics) and strategic. In the case of MIL Cities, that is media and information literacy in the context of cities, the essence lies in the empowerment of these indicators in order to promote the transformative action by the various agents of the context of social structures, focusing on enhancement of the common good. Thus, it is possible to consider that the concept of MIL Cities is directly linked to citizenship education, as literacy presupposes reading, understanding, the ability to argue and oppose and the creation of new content: only a conscious and literate citizen can overlap the quantitative metric of the rate of schools per city dweller for meaningful discussion of what is quality integral education. This chapter proposes to discuss what citizenship education is and its relation to media literacy, proposing the application of gamification in the construction of pedagogical trails that support the concept of MIL Cities, enhancing the processes of awareness, contextualization, reflection, proposition and sharing.

Keywords: MIL Cities, Citizenship education, Pedagogical trails, Educational design, Literacy, Gamification

CITIZENSHIP EDUCATION

The importance of the critical view on social problems and inconsistencies should be increasingly reconsidered through a proactive and active citizenship attitude in propositional and inclusive projects. Thinking and reflecting on citizenship means considering the rights, duties and responsibilities of citizens so that they can be active participants in the construction, monitoring and readjustment of social, economic, political and cultural relations.

According to the famous Brazilian sociologist and social activist Herbert José de Souza, in his famous text "Citizen Power":

Citizenship is therefore the condition of democracy. Democratic power is that which has management, control, but has no dominion or subordination, no superiority or inferiority. A democratic society is a relationship between citizens. It is the one that is built from society to the state, from the bottom up, which stimulates and is based on autonomy, independence, diversity of points of view and, above all, ethics - a set of values linked to the defense of life and the way in which people relate, respecting differences, but defending equal access to collective goods.

The citizen is the individual who is aware of his rights and duties and actively participates in all issues of society. A citizen with a strong ethical sense and a conscience of citizenship does not give up this power of participation [our translation from Portuguese].(Souza, 1995)

To promote this conscious, consistent and active citizenship, UNESCO¹ (United Nations Educational, Scientific and Cultural Organization) has been promoting since 2013 the Forum on Global Citizenship Education. Global Citizenship Education is the effort that "aims to be transformative, building the knowledge, skills, values and attitudes that learners need to be able to contribute to a more inclusive, just and peaceful world" (UNESCO, 2016, p.15).

This UNESCO's concept of Global Citizenship Education presents the three basic conceptual dimensions, to know:

1. Cognitive dimension: Acquisition of knowledge, understanding and critical thinking on global, regional, national and local issues, as well as on the interrelationships and interdependencies of different countries and population groups.
2. Socio-emotional dimension: Feeling of belonging to a common humanity that shares values, responsibilities, empathy, solidarity and respect for differences and diversity.
3. Behavioural dimension: Effective and responsible action, locally, nationally and globally, for a more peaceful and sustainable world.

¹ UNESCO is the United Nations agency that works in the fields of Education, Natural Sciences, Humanities and Social Sciences, Culture and Communication and Information, founded on November 16, 1945, shortly after World War II, to ensure the peace through intellectual cooperation between nations, accompanying world development and assisting the Member States - today there are 193 countries - in finding solutions to the problems that challenge our societies. More information at: [<https://en.unesco.org/>](https://en.unesco.org/). Accessed in November 27, 2019.

This approach to global citizenship education is convergent with the capabilities, or soft skills, which, according to Bordenave and Pereira (2011) can be promoted through educational strategies, as presented in Table 1:

Table 1 - Educational skills and strategies

Capacity	Description
To observe	Activities that stimulate the perception of reality. Describe situations and seek knowledge and information
To analyze	Includes operations of decomposing objects or systems into constituent elements; enumerate qualities and properties; distinguish key points; relationships and parts of a whole, variable factors and parameters of a situation; discriminate elements of a problem, steps in a sequence or process; learn taxonomies and typologies
To theorize	Includes operations to rethink reality, associate, generalize, infer, deduce, build models, hypothesize, explain or develop concepts and propositions, research, extrapolate, predict, transpose, transform and interpret by some criteria
To synthesise	Includes judging, evaluating, discussing values, appreciating, criticizing, debating, decision making, problem solving
To apply and to transfer learning	Includes activities of planning, organizing, directing, executing, accomplishing, building, producing

Source: Bordenave e Pereira (2011)

Thus, this need to promote Global Citizenship Education as a way of democratizing awareness of the rights, duties and responsibilities of social life, promoting the notion of belonging to a local community in a global context and encouraging attitude of engagement and protagonism in the construction of social structures that promote collective well-being in the broadest dimensions becomes more evident. Citizenship education should therefore be considered as a fundamental part of the contemporary citizen formation process, which, in turn, can be identified by receiving, living and building the impacts of the high degree of innovation that happens in the context of digital technologies.

In this sense, the concept of MIL Cities proposes the evolution of the idea of "smart cities" as the application of digital big data and artificial intelligence technologies for the capture, structuring and management of data generated in social contexts in order to support the functioning of cities (Chibás Ortiz, Yanaze, & Souza, 2019; UNESCO, 2018). In the concept of MIL Cities, in addition to the digitization of cities, it is necessary to consider the digitization of citizens, in order to empower them

with the data and equipment of smart cities in order to enable the citizen also to be intelligent: to be a protagonist in the construction of collective well-being.

Understanding the potential and communicational and educational risks of digital technologies, it is necessary to define what media and information literacy (MIL and Media Literacy) is, and its relationship to citizenship education processes.

MEDIA AND INFORMATICS LITERACY

Media Literacy is seen in this paper as a pedagogical process that seeks to enable citizens to critically and consciously experience the current "communicative ecology", contributing to the fact that individuals can take a leading role in the information they consume or produce and/or share.

To achieve these goals, media literacy embraces the knowledge of the field of communication such as the study of the characteristics of each medium and the possibility of selecting, evaluating and interpreting informative content from a critical media approach. Especially when the former "media consumer" is urged to produce content, literacy is concerned with access to and use of media as a way of enriching social experience.

For João & Menezes (2008, p.58) literacy "implies understanding and knowing the functioning of the media and the framework underlying the production of media messages", which means conceiving that there is a latent intentionality in all media production, that is, "the media are built and they build reality" [our translation from Portuguese]. In this sense, it is important to emphasize that it is essential for the citizen to have knowledge about the production techniques of each communication medium, as well as to "read" the production contexts in which all media contents are produced.

In general, the pedagogical dimension of literacy understands that any citizen is able to assume an active role in the face of the messages they receive daily, becoming also a co-creator of texts by offering their interpretation of them. Literacy expands the concept of reading the world by implementing mechanisms of analysis and deconstruction of messages in order to allow a reflection on the contents of the information conveyed.

Petrella (2012, p. 212) lists eight competences focused on citizen education aiming at the development of Media Literacy. They are:

- **Creative expression:** ability to express ideas and knowledge by exploiting the resources of each medium;
- **Expression:** ability to give meaning to lived experience, to share knowledge, opinions, worldviews;
- **Exploration:** ability to discover the new, to make conscious choices, to act consciously in search of new knowledge;
- **Cultural Approach:** Ability to establish contact with other cultures, to recognize the processes of otherness, to strengthen one's identity with respect to others;
- **Collaboration and networking:** ability to relate and exchange experiences, connect with other producers, contribute expertise and strengthen communities;
- **Reflexivity:** ability to recognize the multiple influences of social, political and economic contexts of processes;
- **Critical thinking:** ability to interpret information in order to critically reflect on the media;

- **Civic Responsibility and Social Participation:** ability to act socially in groups and contexts, acting with protagonism in the media environment.

From the competences listed by Petrella, it is possible to highlight which actions are necessary for the formation of critical and creative citizens in the information society. The development of media literacy skills and abilities may be the key to engage students and to promote the enrichment of the learning process at school by encouraging collaborative experiences that stimulate students' social and cognitive processes. In this context, games are able to contribute to the realization of projects that aim at inclusive, educational and reflexive dynamics in a playful way. Next, we proceed to conceptualize the gamified educational processes.

GAMIFICATION IN EDUCATIONAL PROCESSES

The definition of gamification, its context and its applicability is often confused with the simple act of playing or creating a game, even though it is a multidisciplinary study involving areas of cognitive science, human-computer interaction and games. However, its correct definition is related to the use of its mechanics in different contexts, including the empowerment of people. The term gamification in the educational context has a great initial prominence in the study by Karl Kapp (2012) in his book entitled "The gamification of learning and instruction: game-based methods and strategies for training and education". In this work, the author explores gamification as a pedagogical method, not simply the use of games in education. Thus, the peculiarities of game mechanics are considered as scores, difficulty levels, insignia, time constraints and points system in educational strategies. Some of these mechanics are already present in educational processes and are used by many educators, although not in a contextual way as the method suggests. For Busarello (2014), gamification is based on thinking as a game, using its mechanics in an out-of-game context, that is, reproducing the same benefits with the act of playing.

This understanding is in line with that of Rezende and Mesquita (2017), who state that

Students can no longer stand to be confined to a limited space for many hours, receiving information, often disconnected from their reality, without understanding how this information adds value to them; teachers suffer from the neglect of students, which causes a continuous wast during classes in search of attention, this factor causes dissatisfaction and makes it difficult to understand the importance of the role of school and teaching practice in the formation of youth and children.

The author suggests that it is necessary to review curricula and pedagogical practices, and idealizes that a viable alternative for improving the learning process is the practice of gamification.

To better understand the pedagogical systems in which the mechanics of gamification can be inserted, Tolomei (2017) argues that it is necessary to find new teaching methods to overcome the traditional ones, in order to create new ways to delight and motivate students, with methods that dialogue with the culture of digital technologies. The author explains that this new generation called "digital natives" already widely use the various communication technologies through devices such as computers, tablets, smartphones and video games. Digital natives are not satisfied with reading technical manuals or following instructions, but prefer to "learn by doing", which gives the learner much more interest.

Yanaze (2012), contributes with the concept of techno-pedagogy by which states that "the human formation is inherent technological and playful and that the resultant of the dialogical relationship between man and technology naturally has the playful element". For this author, "digital natives" are "those that exist while, connected through digital technologies, exchange information and establish social bridges, reframing their dwelling through digital interfaces" [our translation from Portuguese] (Yanaze, 2012, p. 225).

In order to enhance educational processes through these characteristics of games and other digital interactive technologies, the study by Gee (2009) considers learning principles that are incorporated into games. Here, we present some of these principles and the author's definition with interpretations:

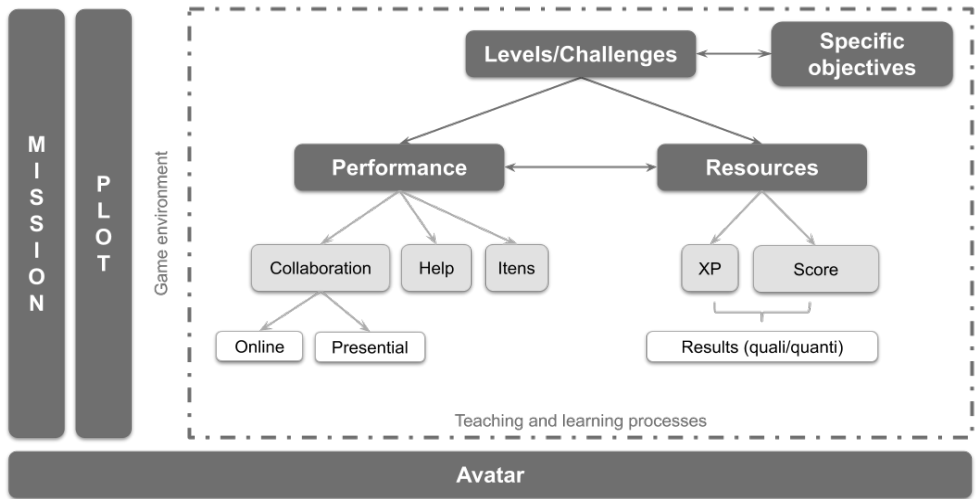
- **Identity:** Learning something in a new field, whether physical or carpentry, requires the learner to take on a new identity - make a commitment to see and value work and the world as good physicists and carpenters do.
- **Interaction:** In a good game, words and acts are placed in the context of an interactive relationship between the player and the world. So, too, in school, texts and books need to be placed in contexts of interaction where the world and other people respond.
- **Production:** Players are producers, not just consumers; they are "writers," not just "readers." Even at the simplest level, players co-design games by the actions they take and the decisions they make. Players help to "write" the worlds they live in - at school, they should help "write" the field and curriculum they study.
- **Risks:** Good games reduce the consequences of player failures; when they make a mistake, they can always go back to the last game they saved. Players are thus encouraged to take risks, to explore, to try new things. In fact, failing in a game is a good thing. In front of a boss, the player uses previous mistakes as a way of finding that boss's pattern of operation and gaining feedback on the progress being made. The school usually offers much less room for risk, exploitation and failure.
- **Customization:** Players can, in one way or another, customize a game to fit their learning and playing styles. Games often have different levels of difficulty and many good games allow players to solve problems in different ways. Customized school curricula should not only be about setting their own pace, but also about true intersections between the curriculum and learners' interests, desires and styles.
- **Challenge and Consolidation:** Good games offer players a challenging set of problems and then let them solve those problems until they have virtually "routinized" or automated their solutions. Then the game throws a new class of problems at players, requiring them to rethink their newly acquired mastery, learn something new, and integrate this new learning with their previous knowledge. At school, sometimes students with greater difficulties do not have enough opportunities to consolidate their learning and good students do not face sufficient challenges to mastering acquired school skills.

Those principles can (and should) be taken into account in the development of pedagogical strategies, as they are part of the language of digital natives. Rezende and Mesquita (2017) argue that gamification strategies for learning enhance the development of skills such as collaboration,

cooperation, critical thinking, autonomy, mastery of content and limits. Thus it is pedagogical that educators use game elements in their pedagogical practice, highlighting: levels, objectives, resources, collaboration, performance and punctuation.

For good gamified practice, it is important to relate teaching to different elements of digital games. Martins and Giraffa (2015) present a model of the digital game elements that can be used in gamified activities, as shown in Figure 1:

Figure 1 - Model of digital game elements in gamified activities



Source: Martins e Giraffa (2015)

In this study, the authors present criteria to characterize the gamified pedagogical practice, which are cited here:

- **Content and curriculum:** should be open, flexible, contextualized with the real world and constantly updated, based on interdisciplinarity and transdisciplinarity;
- **Assessment:** Assessment strategies need to transcend the paradigm of standardized testing by developing integrated, authentic and holistic assessment formats that replicate real-world contexts, to be a formative assessment;
- **Learning practices:** should focus on learning experience and how to engage students, being flexible, playful and engaging, covering multiple ways of thinking, meeting individual needs and expectations, and encouraging peer learning;
- **Teaching practices:** The role of the teacher should be to be mentor, manager and facilitator of learning, acting as a reference in creativity, applying their pedagogical knowledge, meeting multiple learning styles and working with transversal competences;
- **Organization:** Organizational practices should be shared among all members of the school ecosystem, broadening actions to meet local circumstances and needs;

- **Leadership and values:** School leadership needs to be open and participatory, considering the practice of values such as equity and social inclusion, as well as supporting the team of teachers and collaborators involved in innovation processes;
- **Connectivity:** Teachers and students must be prepared to connect with ideas, their interests, and with people (as their parents and peers) by opening and broadening the learning experience through social networking and relationship with the real world;
- **Infrastructure:** It needs to sustain a technological and physical dynamic in order to facilitate, communicate and disseminate innovative practices. In addition, expanding the boundaries of the learning space, effective support structures, too, are necessary for good application.
- Thus, gamification, as a pedagogical object, needs to be considered in different educational contexts, in order to attribute more interest and engagement on the part of the learner, as well as promoting playfulness in didactics. Creativity can be seen as an adherence mechanism because, although not a focus of gamification strategies, it can be considered as an essential competency.
- With all these concepts in place, this study proposes the development of a framework as a basic structure for the elaboration of gamified pedagogical strategies in citizenship education, considering media and computer literacy. In this sense, the objective is to support the creation of methodologies that enhance the formation of a more aware, involved and participating citizen, taking advantage of the media contexts and social elements present in games.

FRAMEWORK FOR GAMIFIED STRATEGIES FOR CITIZENSHIP EDUCATION

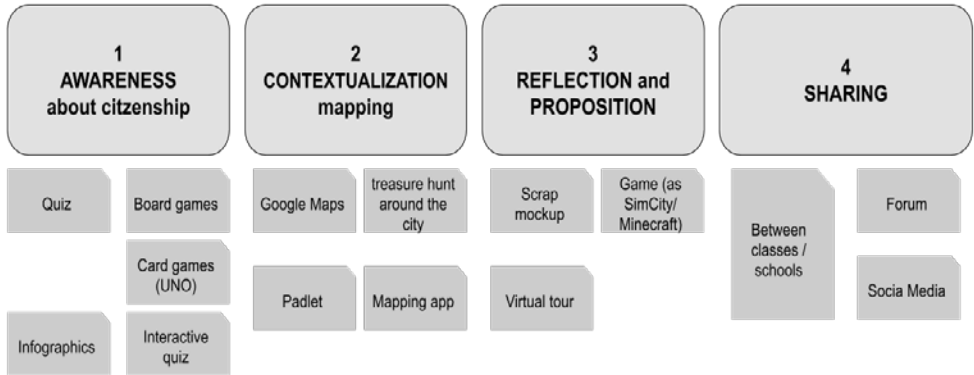
To construct the framework for the development of gamified strategies for citizenship education, the various possibilities of playful and media interactions were considered, from card and board games to the construction of virtual reality environments. From the cognitive, socio-emotional and behavioral dimensions of UNESCO's Global Citizenship Education and including the issues of leading the construction of digital communication artifacts with media and computer literacy, it is suggested to consider a dimension of proposition and sharing as actions of collective interest in gamified pedagogical strategies.

Thus, it is understood that citizenship education should contain the following educational axes:

1. **Awareness:** strategies to reinforce the concept of citizenship, rights, duties, responsibilities and assimilation of contents and sources of information on the functioning of social flows;
2. **Contextualization:** strategies for the student to learn how to map local problems and structures that can positively or negatively impact collective well-being, promoting a sense of belonging;
3. **Reflection and proposition:** strategies to promote engagement in attitude on the causes of social interests and encourage the creative and architectural interest to solve problems and enhance optimizations in the context of social welfare;
4. **Sharing:** strategies that allow the exchange of experiences among the student community to promote the inspiration and process of improvement in the flow of education for citizenship.

So that these educational axes for citizenship can take advantage of media and computer literacy, considering gamified elements, some initial strategic activities are proposed, as shown in Figure 2:

Figure 2 - Gamified strategies for citizenship education



Source: Own authorship

This first activity mapping consists of a framework proposal for the development of gamified strategies for citizenship education, using physical elements such as card games, performance, extra-class activities and scraps, but also considers application of digital artifacts such as apps, documentary and games display and social networks.

Thus, this work is presented as the beginning of a proposition to discuss the application and, in the future, also the measurement of pedagogical strategies for citizenship education, considering media and computer literacy and gamification as convergent approaches that promote engagement and social collaboration. It is hoped, thus, to contribute to the dissemination of educational practices that aim at the formation of conscious, engaged and collaborative citizens in the construction of social spaces of multidimensional interactions aligned with the concept of MIL Cities.

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² Formatted according to APA (American Psychological Association).

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