

CIRCULAR FAMILIES GAME

Marianna Marchesi¹

Introduction

The Circular Families Game (Fig. 1) is a card game which applies game elements in real-world scenarios to facilitate understanding of the circular economy in cities. Games for sustainability or eco-games are a type of game for learning. They create attractive and enjoyable educational scenarios to intrinsically motivate individuals to engage with materials related to sustainability (Stanitsas et al, 2019; Pereira Oliveira et al, 2021).

Figure 1: *Circular Families Game (Marchesi, 2022)*

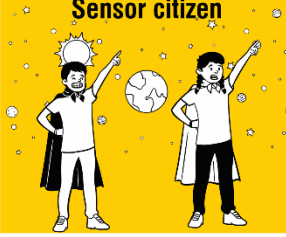



Circular economy is a regenerative and restorative approach that aims to eliminate waste and pollution, extend the lifespan of products and materials and regenerate nature to enable us to prosper sustainably. Circular economy fosters eliminating waste and pollution through practices like encouraging active and public mobility modes. It helps to keep products and materials in use as long as possible by promoting practices like second-hand product selling. Nature is regenerated by initiatives like food growing. Moreover, circular initiatives such as repair centres and food hubs create new jobs, improve access to healthy foods and connect people locally. Circular Families Game aims to support leaders within urban communities in fostering awareness of the circular economy in cities and promoting behavioural change within their communities. The game can be employed by the public sector (such as city councils) and the third sector (such as non-profit organizations, charities, housing associations, social enterprises and community groups). Students in planning and urban design who wish to engage in design for a circular economy can also benefit. The game creates an imaginative space for playing and learning to understand the circular economy in cities collaboratively. Players are engaged in urban scenarios, citizen roles and initiatives for a circular economy through game mechanisms. Initially, players are introduced to 7 circular citizen characters (Fig. 2) - do-it-together citizen, sharing citizen, strategic citizen, zero-waste

¹Marianna Marchesi, Dr, Lecturer, Welsh School of Architecture (Cardiff University), Bute Building, King Edward VII Avenue, Cardiff CF10 3NB U.K., +44 (0)29 2087 0923, marchesim@cardiff.ac.uk

citizen, sensor citizen, do-it-yourself citizen, service-oriented citizen – who performs a different production or consumption practice for a circular economy and asked to guess the type they are or would like to become.

Figure 2: *The Circular Citizens* (Marchesi, 2022)

<p>Sensor citizen</p>  <p>You enjoy sharing collected data to produce knowledge on issues of your interest through collaboration in research</p>	<p>Strategic citizen</p>  <p>You enjoy collaborating in a group formed for a short period to respond to communal issues in your city and take action</p>	<p>Do-it-together citizen</p>  <p>You enjoy collaborating in groups on long-term projects for making and using resources sustainably & sharing skills</p>	<p>Do-it-yourself citizen</p>  <p>You enjoy self-producing things, repairing goods, or refurbishing and upcycling items with the support of services</p>
<p>Sharing citizen</p>  <p>You enjoy sharing resources (products, transports, spaces) through services to save money, reduce material use, waste and pollution.</p>	<p>Service-oriented citizen</p>  <p>You enjoy renting and letting products, transportation and spaces through services to save money, reduce material use, waste and pollution.</p>	<p>Zero-waste citizen</p>  <p>You enjoy keeping products and items in use by accessing services to save money, reduce material use and avoid waste.</p>	<p>(Would do like to include your citizen? Describe it below and include a heading on the top)</p>

Then, participants are engaged in playing the Circular Families card game to test their hypothesis. They play to form a circular family in a resource sector by closing the resource loop. Each turn a player must decide on a circular action which could be ‘take’, ‘make’, ‘use’, or ‘recover’ to close the loop. By playing, they explore individual and community-led practices for a circular economy in different resource sectors: food, product, building, green infrastructure and mobility. These initiatives benefit individuals, communities and neighbourhoods by keeping materials in use, reducing waste and regenerating nature with impacts on the environment, economy and society. In terms of environmental impact, the game can help players explore suitable opportunities in their community network to reduce waste generation and raw material consumption through interventions like sharing, reusing and repurposing materials and products such as tool libraries and systems for donating unwanted goods. In terms of economic impact, the game can support players to explore circular skills and new and specialised jobs such as local exchange and repair centres, and urban gardens for food system innovations. In terms of social impact, the game can support players in discovering opportunities to enhance social cohesion through community-led opportunities for making, reusing, sharing and repairing as well as through organic producer networks linking communities with peripheral farms and alternative markets. While playing, they are encouraged to collaboratively interact and actively learn in a safe environment about the circular economy, the circular citizens and their initiatives to eliminate waste, circulate materials and products for as long as possible and regenerate nature. The game elements include strategies, progression towards goals, feedback, competition, and rewards. These elements are combined through game rules and integrated with pedagogical patterns to ensure learning.

Transformative Potential

The Circular Families Game can be an effective active learning method for sustainable development education as it provides players with a better understanding of the circular economy and practices that they can pursue in communities and neighbourhoods for a circular economy to thrive sustainably. It further promotes motivation, engagement, and satisfaction which together can improve interest in the learning process and performance results (Pereira Oliveira et al. 2021). Circular Families Game creates an effective learning environment and redefines the learner experience through gamification. Playing the Circular Families Game, participants are engaged with circular economy concepts implemented in real-world situations within a gamified context and

facilitated in learning about circular practices in cities through 7 circular citizen characters while having fun. The game also offers a debriefing discussion afterwards to encourage players to reflect upon their newly gained insights, deepening their learning experience. While simply possessing knowledge isn't enough to support behavioural change, enhanced knowledge does have a favourable impact on attitude, and attitude plays a significant role in shaping behaviours (Chappin et al., 2017). Therefore, increasing knowledge about circular practices at the individual and community levels can directly affect environmental attitudes and indirectly promote behavioural change. It can increase players' understanding of the circular economy and their familiarity with practices to contribute to ecological thought and encourage behaviour change.

Application

The Circular Families Game is designed for adults and teenagers (15+) and can be played in a group of 2-6 players using a card deck or multiple groups using multiple card decks. The game is available in 2 languages (English and Welsh) with the translation of the citizen identity cards into 23 European languages. The game brochure is freely downloadable from the CircuBED project webpage for home printing, making and playing (<https://www.cardiff.ac.uk/research/explore/find-a-project/view/2587142-circular-families-game>). It includes a do-it-yourself envelope to accommodate the cards, game instructions and rules after having played. A video is also provided on the project webpage to facilitate game rules briefing. For each playgroup, a table and 6 chairs are necessary for playing. If the game rules are briefed by the video, a screen connected to a computer, loudspeakers, and an internet connection are also needed. The game session requires between 45 minutes and 1 hour if the session ends when a player builds the first family. It requires between 1 hour and 1 hour and 30 minutes if the session ends when the players finish all the cards in their hands.

Initially, the game facilitator introduces participants to the 7 circular citizen characters and asks participants to guess the circular citizen type they are, or they would like to become. Then, participants are engaged in playing the Circular Families card game to test their hypothesis. Before starting the game session, the game rules are introduced. Players aim to collect all 4 members from one of 13 'circular family' groups representing 5 resource sectors in cities: construction, manufacturing, food, green infrastructure, and transport. To form a circular family, each turn a player must decide on a circular action which could be 'take', 'make', 'use', or 'recover' to close the loop in a resource sector. Each action corresponds to an initiative for closed resource loops and zero waste implemented by one of the circular citizens in a resource sector. The player who collects the first circular family or most families wins. While playing, participants get familiar with the 7 circular citizens and look into their circular interventions. After having played, they select the preferred intervention among all initiatives on the cards and identify the circular citizen in charge to verify their initial guess. Finally, players can discover features, practices, challenges and impacts of their preferred character by looking at the circular citizen identity cards included in the card deck, and then, reflect on their own circular practices.

References / Further reading

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