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## Education or entertainment? On the potential of games in financial education

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# **Education or Entertainment? On the Potential of Games in Financial Education**

**Panu Kalmi and Tanja Sihvonen**

## **Abstract**

In this chapter, we review the various ways games are used in financial education. We start by discussing the evidence on the links between financial education and financial literacy, and note that active learning methods, of which games form an important part, have been found to provide promising results. We introduce the distinction between serious games and entertainment games as a basis for our analysis. We note that students can learn valuable skills either at their leisure time or as part of formal learning experiences. We then discuss the education science literature on the implications of games for learning and devote a section to analyze the learning implications of games in financial education. Toward the end of our chapter, we discuss examples of different types of games used for educational purposes: digital games, board games, and role-playing games. In the concluding section, we provide some practical advice to teachers and other educators.

## **Introduction**

From the perspective of personal finance, life is becoming more complicated everywhere. Deregulation of the loan market has provided people with more choice concerning mortgages and high-interest consumer credit. Changes in taxation and retirement options as well as new financial and investment products have increased dramatically. Managing personal finances has become an essential life skill, and growing demands are placed on individuals' financial literacy as well as financial education in various settings. However, even though the need for financial planning and management has increased among individuals, financial literacy has been deemed to be low (Lusardi & Mitchell, 2014). The ongoing debate about the functionality of the current achievements of financial education

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(e.g., Fernandes et al., 2014; Kaiser et al., 2020; Kaiser & Menkhoff, 2017) has led educators and researchers to consider whether some kind of active learning methods could promote financial literacy more effectively in various settings, including schools.

Games are prime examples of active learning methods. The use of games is widespread in general economic education, and studies of their use in practice have been conducted at least since the 1990s (Gremmen & Potters, 1997; Sutcliffe, 2002). Some authors (e.g., Amagir et al., 2018; Collins & Odders-White, 2015; Kaiser & Menkhoff, 2018) have especially stressed the role of experiential methods to promote financial literacy. A good example of experiential methods are role-playing games where students simulate real life economic decisions, such as in *Junior Achievement's Finance Park*.<sup>i</sup> Financial literacy is thought to require reflection and the application of theoretical skills to practical problems, to which active and experiential learning approaches are well suited. The effectiveness of games in promoting financial literacy, in particular, has been noted in several studies (e.g., Harter & Harter, 2010; Kalmi & Rahko, 2020; Maynard et al., 2012). We also point to the fact that the flagship journal in economic education, *The Journal of Economic Education*, frequently features articles related to the use of games or simulations.

In this chapter, we aim to analyze the interlinkages between games, economics (with a focus on personal finance), and learning. First, we provide a brief review of literature that tackles teaching and learning from games, usually written from the point of view of economic educators. After summarizing basic economic aspects of games, we propose different dimensions along which learning from games can take place, including different types of games (e.g., digital games, board games, simulations, role-playing games) and games created for different purposes (so-called serious games and entertainment games). We take into account that learning may take place in both formal and informal settings. We then illustrate

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the various ways people can learn economically relevant lessons from games by introducing and discussing examples of different types of games.

In this chapter, especially when discussing the methods of financial education, we make the distinction between “games” and “gamification.” Games are defined by an objective, an activity that the players do to achieve the objective, rules, outcomes, and (often, though not always) conflict and competition (Huizenga et al., 2017). Gamification, in turn, often is defined as the application of game-like mechanisms to non-game settings in order to achieve some pre-defined objective (Deterding et al., 2011). A practical difference in these is that some curriculum (e.g., *Financial Fitness for Life*) may include many gamified elements, but are not a coherent game. The main focus of the chapter is on games rather than gamification.

Games and economics are associated in multiple ways, both concrete and metaphorical. In this chapter, the concrete link between these is approached through what we call “economic games.” Economic games are ludic systems that feature or simulate design characteristics and mechanics that can be interpreted and analyzed as a part of a wider economic context. For instance, it is quite common for games to have their own in-game currency that is used to trade assets, or to assign value to the “labor” players are expected to do in the game in the form of a reward or wage. These types of elements in games are analyzed through the perspective of personal finance. The metaphorical connection, on the other hand, is based on juxtaposing the characteristics of economic games to some of the basic concepts of economic systems (e.g., supply, demand, scarcity, exchange) and theorizing in which ways these games and their overall structure may help players understand real-life economics. Even more importantly, these ludic features can be utilized for the simulation of

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financial decision-making, thus providing players with a test environment in which to learn about real situations and events (see Velez, 2016).

In this chapter, we draw eclectically from various disciplines, including economics, education science, and game studies. There are clearly many parallels between economics education in general and personal finance education, so we want to highlight an important difference. Economics as a discipline often is studied for its own sake, or at least the more instrumental reasons are somewhat subdued. It is reasonable to argue that a better grasp of economics makes the electorate more informed and therefore may contribute to better economic policies, or that indeed there can be spillovers to the domain of personal finance. There is clearly demand for an informed cadre of economists for policy making, but a good understanding of economics is neither necessary nor sufficient to get by in everyday life.

The context is very different for personal finance which is regarded as an essential life skill in modern life. For these reasons, much of the economics research focuses on improving knowledge (e.g., on how the markets work), but has few normative implications (e.g., how to behave in these markets). Personal finance is all about behavioral implications – how to save and invest money, how to avoid becoming over-indebted, and so on. This also has implications for how games are used in the respective disciplines.

This chapter is written from a general standpoint on the use of games in personal finance education. Of course, the type and the use of games depends on what level we are addressing; whether we are discussing education in primary or secondary schools, in higher education, or in adult education. Research has been conducted on the use of games at all of these levels, and the benefits of using games do not seem to be very dependent on the levels at which they are used, although the implications for how to arrange teaching in practice of

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course are. For this reason, we discuss the games rather generically, only occasionally referring to the level at which the education is conducted.

## **Financial Education and Financial Literacy**

Can consumers be taught to be financially literate, and if so, how is that best done?

The generally low financial literacy identified in international research (see Lusardi & Mitchell, 2014) may be thought to indicate that for some reason, financial literacy skills are exceptionally difficult to build and maintain among the general public. Some early studies (especially the oft-cited meta-analysis by Fernandes et al., 2014; also Mandell & Schmidt Klein, 2009; Willis, 2008) made an impression that financial education would not produce behavioral changes and might even not lead to improvements in financial knowledge, insinuating that financial education would be little more than a waste of time. However, the rapid proliferation of studies in the field of financial education has produced a much larger dataset to examine these issues. This has been utilized in a number of recent meta-analyses by Kaiser and Menkhoff (2017), Kaiser and Menkhoff (2020, using data on schools) and, most recently, by Kaiser et al. (2020).

These more recent studies paint a quite different picture. In short, teaching financial literacy does not differ from other fields (such as mathematics or languages) in the sense that students gain factual knowledge, and these gains are quite comparable to other fields. In behavioral change, the effects are smaller and more nuanced, but the findings are consistent from study to study. In meta-analyses utilizing several comparable studies, the effects are positive and statistically significant. These findings have paved the way to investigate issues that might be more meaningful to study and that are familiar from didactics in other fields, such as what type of learning methods are associated with better learning outcomes.

To evaluate what might work as a teaching method in general, one promising avenue is active learning methods, the use of which in economics education has been advocated for

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many years (e.g., Becker & Watts, 1998). The application to economics may be especially promising, as the subject often is quite abstract and hard to grasp. By utilizing active methods, students are activated to approach these issues by more concrete applications which facilitates deeper learning and understanding. The use of active learning methods is promoted by the economics education community, both in scholarly journals and at conferences, such as the ones organized by the Council for Economic Education in the U.S. and by the Association of European Economics Education.

The use of active learning methods has also been promoted in the financial education literature. For instance, Collins and Odders-White (2015), citing Dewey (1938), argue that learning is best achieved when the content is meaningful and personally relevant. Meaningfulness, on the other hand, derives from a person's emotions and the emotional response to situations (e.g., Bower, 1992). Active learning is useful in promoting that sort of meaningfulness. Amagir et al. (2018) cite Kolb and Kolb's (2005) experiential learning cycle. The cycle begins with an experimentation phase. Thereafter, the participants (or students) reflect on what they learned, and that leads to the conceptualization of learning. After that, students may be involved in active learning again, which completes the cycle. This general educational philosophy appears to underlie many educational interventions in financial literacy education. We will review these in more detail when we look in closer detail at how to use games to boost financial literacy.

Games and simulations are prime examples of active learning (e.g., Lantis et al., 2010; Lean et al., 2006). Many articles within the economics education literature discuss the use of games in economics education. Typical educational interventions include games where students end up in situations they could not have had real life experiences. A good example of that kind of game is a monetary policy game, where the players make decisions as central

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bank governors (Duzhak et al., 2020). These are common both within the Federal Reserve System (*Chair the Fed*) and (previously) the European Central Bank. Another common type of game is a business game, where the players manage a business and they try to outperform their competitors (e.g., Greco et al., 2013). These often involve a competitive element that motivates many (though not every) student. They are used relatively widely in various settings from secondary schools to universities.

However, personal finance is a topic which, unlike running a business or managing a central bank, should be regarded as a life skill. Almost everyone needs to take responsibility to manage our own or our household's finances, and even for those who do not, understanding how personal finances can be balanced is vital. Games in this context are most commonly used and probably the most useful in terms of learning at a stage where the target group – students, for instance – are still underage and living with their parents, so that they do not yet have experience from managing their finances independently. However, they are most likely taking behavioral cues from the parents, so learning these skills by arousing and cultivating interest in them through the means of games and simulations appears to be promising.

### **Games and Simulations, Formal and Informal Learning**

To evaluate the effectiveness of games and other ludic systems in educational contexts, both formal and informal, we first need to understand the concepts of “game” and “serious game.” While there is no unified consensus about the formal definition of game in game studies, in this context we regard game loosely as a structured form of play, undertaken for entertainment or fun, and sometimes used as an educational tool (Stenros, 2017). Games often necessitate or consist of components such as goals, rules, challenge, lusory attitude, and interaction. Serious games, on the other hand, can be defined as ludic systems and artifacts



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primarily designed for educational purposes and intended for use beyond just their entertainment value (e.g., Mitgutsch & Alvarado, 2012; Wouters et al., 2013, p. 250).

Following Whitton (2010), the key thing is the inclusion of ludic or game-like elements that promote learning, such as challenge, exploration, fantasy, goals, interaction, and rules, irrespective of whether they are characteristic of gameplay or not. Educational games can be good at helping players learn something, or in terms of the gameplay they provide. The effectiveness of games for learning is based on their ability to engage players in cognitive, affective, intrinsically motivating, and socioculturally engaging ways (Plass et al., 2015; Wouters et al., 2013). This engagement is largely based on contextual factors, as both educational and entertainment games can, for instance, be used at school for the purpose of learning; hence, the context of their use defines their effectiveness. When it comes to the wide context of financial literacy, there are both regular entertainment games and serious games designed to help players learn about economic issues.

Generally speaking, concepts and mechanics we would consider “economic” have been present in games throughout their history. For instance, elements of game design such as made-up currencies, game mechanics such as resource management, and ludic narratives such as running a company, building an economically viable city, or becoming a business tycoon have been fundamental game contents throughout decades and even centuries. Many early games promoted strategic thinking, especially in areas related to politics, warfare, and military confrontation. We know of several board games from the 19th and 20th centuries that utilize the principles of economic resource management at the scale of a household or a city, running a business empire, and city planning – themes closely related to promoting financial literacy among the general public (see Arneson, 2019).

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The concrete link between games and economics in this chapter is approached through economic games which we defined as ludic systems that feature or simulate design characteristics and mechanics that can be interpreted and analyzed as a part of a wider economic context. The precise definition of economic games, however, is complicated to pin down already because “games” is a complex and diverse category of objects and systems (for concrete examples of game categorizations, see the Steam and Mobygames online databases).<sup>ii</sup>

The diversity of games can be approached through *platforms and contexts of play* (computer, console, mobile, hybrid, table-top, live action, etc.), *genres* (simulation, fantasy, action, adventure, role-playing, casual, sports, puzzle, etc.), *the materiality of play* (whether gameplay necessitates the use of game tokens, dice, or figures; or is it based on purely digital game elements or imaginative play), *social aspects* (single-player, multiplayer, and massively multiplayer, etc.), *network functionalities* (online vs. offline), and the fundamental dichotomy of *analog vs. digital*. Without delving too deeply into the study of games per se, suffice to say that various genres (simulation, puzzle, strategy), themes (business tycoon, construction), and gameplay options (single-player) have been used much more frequently and thus provide better-suited possibilities for financial education than others.

Learning from games and with games, as well as their special connection to various literacies and their development, has been explored by both education scholars and game studies authors alike (e.g., Gee, 2003, 2004; Prensky, 2001). Many consider both formal and informal elements of game-based learning together. For example, Kirriemuir and Mcfarlane’s (2004) discussion brings together viewpoints from formal and informal learning environments and games that are designed for learning and entertainment. On the basis of analyzing children’s play, they conclude among other things that the games used for teaching

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should be as easy to grasp and to use as possible, to facilitate focusing on the educational content of the game. While all types of games share similar characteristics, there are some clear differences between games designed and operated for pedagogic purposes, and games intended for entertainment and leisurely play (see Bedwell et al., 2012).

Based on these considerations, we have devised Table 1 that presents a simple 2x2 taxonomy of learning and games. In that table, we divide games according to whether they are originally designed for entertainment use or learning purposes (serious games). The second dimension is whether the games are used in a formal (school) context or an informal (leisure) context. This second dimension is more challenging to analyze, because all of the games are in principle suitable for both classroom and entertainment use. Here we have made the division on the basis of examples that we present later in this chapter.

**Table 1** *Taxonomy of Learning and Games with Examples*

	<i>Formal education (school)</i>	<i>Informal learning (leisure time)</i>
Entertainment game	Minecraft	Me and My City
Serious game	EVE Online	Visa Financial Football Game

## **Games and Learning in Formal Contexts**

One way the usefulness of games in formal contexts has been demonstrated is through teacher surveys. Typically survey data suggest that teachers are positive about games and their role in making learning more motivating (Klemetti et al., 2009). According to Kumar and Lightner (2007), students become much more engaged with learning when they are involved in gameplay. With the help of practice-based applications provided by games and simulations, students go beyond learning the concepts and learn to practically apply the knowledge. This often includes visual and verbal stimuli that go beyond following lectures or reading for exams (Lantis et al., 2010). Games promote much deeper learning than is possible with lectures.

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Other benefits with games are that they encourage reflection upon the knowledge gained and also sharing it with others (Sutcliffe, 2002). Games often (though not always) include a social element that may make learning both more enjoyable and also promote social reflection, i.e., interpersonal communication among students about the learning process. Games enhance communication, encourage others to give feedback, and, in heterogeneous teams, enable each team member to bring forward their personal strengths (Kumar & Lightner, 2007).

Games encourage players to take roles they would not otherwise take and put them into unfamiliar situations in safe environments (e.g., Fox et al., 2018; Lantis et al., 2010). Role-playing often has been used in various simulation contexts, including entrepreneurship simulations. In personal finance, a good example of this is a reality fair, such as *Me and My City*, where young students need to make decisions that mirror those they will have to make in the near future, when they lead economically independent lives. Game simulations are a useful and safe way to encourage students to make decisions and practice situations they do not yet face because they are living with their parents or do not have full decision-making rights because they are under age.

Ebner and Holzinger (2007) stress the role of games to introduce elements of competition and chance into education. However, competition in particular must be used with some caution, especially in summative assessment. Games create winners and losers, and while winning can be motivating, losing can be frustrating. Also performing well in the game and learning do not necessarily correspond, so there are reservations in the literature concerning the use of competitive performance in evaluations (Kumar & Lightner, 2007).

The use of games in education does come with a cost, however. The most often cited limitation of the use of games in higher education in Lean et al.'s (2006) comprehensive

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survey is the lack of time resources to plan educational interventions utilizing games. Like all forms of active learning, they require much more preparation from the teacher compared to lecturing. In the survey, the second often cited limitation was the lack of awareness of the use of games in teaching. This can probably be interpreted as another type of time limitation, as there usually are games available almost in any subject. The third most cited limitation is technical issues. Games may require access to computers; they also may require a lot of operational power of computers and well-functioning Internet connections.

Using games and ludic structures in formal education may significantly promote learning, but come with a cost of investments in technology and dedicated devices and are time-consuming. A challenge in games is also that they may shift the students' focus into playing the game instead of the learning goals that are related to the subject matter (Sutcliffe, 2002). For this reason, just playing the game is seldom sufficient as a learning activity. Deeper reflection is required, and gaming needs to be accompanied with group discussion or other supporting activities. Since the 2000s, there has been an increased emphasis on supporting material to enhance learning when using games (Klassen & Willoughby, 2003).

## **Games and Learning in Informal Contexts**

Informal learning from games has been an important topic in game studies and education science alike (Gee, 2003; Steinkuehler et al., 2012). However, informal "sandbox" learning of economics and finances via games has not been a focus of game research. Learning financial competencies from games has not been studied at large, and the use of entertainment games as pedagogical tools has been studied even less. Furthermore, many games that have potential for financial education fall in the simulation and strategy genres where different kinds of management themes are very common. Neither of these aspects has been a favorite among game studies scholars, so we have very little insight into how

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entertainment games played in informal settings aid in the development of financial skills or understanding in general.

In the context of informal learning, a crucial concept is *transfer learning* (Bransford & Schwartz, 1999; Steinkuhler & Squire, 2014), referring to the transferability of learned skills from one domain to the other; in this case, transferring learning from games (e.g., motor skills, social collaboration, forward planning) to another domain (e.g., personal finance). A problem in assessing transfer learning to personal finance empirically is that many of the needed skills are extremely general (see e.g., the “building blocks” of the Consumer Financial Protection Bureau (CFPB, 2016), so it is practically impossible to evaluate whether those skills were learned in games or as part of other activities.

Online gaming adds another dimension to the economic aspect of games (Lehdonvirta, 2005). As the online functionalities of digital games are ever growing, we have started to see multiple instances of successful player-created economies in addition to games’ internal economies (Lehdonvirta & Castronova, 2014). This is especially true in massively multiplayer online games (MMO) (*Eve Online*, *World of Warcraft*). In these MMOs, players create a need-and-demand-based economy that can be a free market economy or supervised by the game management to some degree. The money (or resources) in this context may contain both the in-game currency and real-life money.

Online games and their financial aspects is a fascinating topic of its own and beyond the scope of this chapter, mainly because the economics of large-scale online games are not only tied to players’ activities of playing the game but also to the community around the game. Furthermore, there may even be commercial operators that help to set up out-of-game auction houses (for instance, see Drachen et al., 2014). Emerging virtual economies where

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players interact with one another and exchange in-game goods also for their “real” economic benefit are an exciting context for learning about financial literacy in the future.

## **Reviews of the Effects of Use of Games in Learning in Economic Education Literature**

Within economics, a common way to analyze the impact of a given educational intervention is to divide the subjects into two groups, either experimentally or quasi-experimentally, and then see whether there are performance differences between the groups. Performance is typically measured as the number of correct responses in a quiz or as responses in financial behavior. In financial literacy education, studies that have utilized such design include Heinberg et al. (2014) and Kaiser and Menkhoff (2018). Heinberg et al. (2014) found that the use of videos and short narratives promoted learning. Kaiser and Menkhoff (2018) found that active learning approaches, including problem-based learning and group discussions, changed savings and investment behaviors, compared to the control group, in which behavior did not change. These results suggest that the delivery mode of financial education matters.

In economics, games and simulations have been quite widely used in teaching and for a long time. Lumsden (1970) noted that games generate a lot of excitement and involvement among students, promoting the need for research studying their effectiveness. There are many good reasons why games are widely used in economics. One is the prominent role of game theory in intermediate and advanced microeconomics. While game theory in itself derives from mathematics and investigates a much more restricted set of games than game research, many types of games investigated in game theory offer themselves to classroom use quite readily. From game theory, there is only a small step to a more empirically-oriented approach of experimental economics, where economic theories are tested empirically in laboratory settings.

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Again, many experiments (e.g., price convergence) can be tested quite easily (perhaps more casually) in classroom settings, and they can make a powerful impression on students. In fact, a keyword search for the words “games” or “simulations” at the flagship journal of the field, *Journal of Economic Education*, produces a number of simple classroom games that can be used for this purpose. As such, these games are often one-shot games involving just one (or a very limited) number of decisions, and therefore differ quite a bit from the usual understanding of “games.” These often are devised by pedagogically-minded university teachers and applied in their own teaching. One excellent article describing the use of video games in a Principles of Microeconomics course is Ng (2019).

Some literature has experimentally tested the effectiveness of the use of games in teaching and thus answered the need identified by Lumsden (1970). One of the early studies was Gremmen and Potters (1997), focusing on the effects of the use of game-based education in an international macroeconomics course. Their evidence suggested that the group participating in the gaming exercise performed better in the subsequent exam. Similarly, there is plenty of literature on the effects of experiments in learning, mostly finding that classes that participate in economics experiments display better learning than those classes that employ more traditional learning methods (e.g., Dickie, 2006; Dobrescu et al. 2015; Emerson & Taylor, 2004; Frank, 1997). However, much of this literature is related to standard microeconomics teaching and its applicability to financial education evaluations is unknown.

### **Gamification and Games in Financial Education**

Many of the financial literacy interventions described in the literature do use methods that draw from gamified methods of learning, especially role-playing games that help students to experiment with different roles. These include *Financial Fitness for Life* that has been developed by the Council for Economic Education and studied by Harter and Harter (2010) and Batty et al. (2015), and the experiential *My Classroom Economy* investigated by



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Batty et al. (2020). These studies found significant differences in financial literacy test scores among students who participate in experiential education interventions vs. students who do not.

While the above-mentioned studies are certainly indicative of gamified methods being useful in financial education, there is less evidence about the efficacy of actual games. One of the few cases where the impact of a game on financial literacy has been evaluated is the case of a stock market game. *The Stock Market* game is a well-known simulation game where students learn about the stock market by investing a hypothetical portfolio and tracking its performance. The game exists in several variants. Harter and Harter (2010) studied the influence of one form of the stock market game on students' learning financial concepts in high schools in Kentucky. Their results showed that the students who participated in the game learned more about financial concepts than those who did not.

Kalmi and Rahko (2020) studied the effects on learning of using several game-related programs in economics to teach in Finnish secondary schools. They examined three different games -- a role-playing game, a gamified online service, and a mobile game. They also used a control group in which students participated in standard classes. They found that students learned more in the group where games were used. A combination of different games improved learning more than playing individual games. The use of games also promoted interest in economics. However, there was no difference in self-reported financial behaviors, such as savings activity.

Due to the small number of studies, the differential nature of the interventions researched, and different conceptualizations of the dependent variable, it is impossible to draw strong conclusions about the magnitude of the impact games or gamification have on student learning. There is certainly still a need for further studies to experientially investigate

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the role of different teaching methods. However, qualitatively speaking, the impact seems to be firmly positive.

## **Examples of the Use of Different Types of Games in Financial Literacy Education**

### **Digital Games**

In casual conversations, the type of game that is most often associated with prominence in promoting financial literacy is digital (or video) games. Young people (now already in different generations) grow up playing digital games. Could there be a game that would simultaneously command their attention and teach them financial literacy?

We first discuss some educational games that are suitable in both formal learning situations and to be played informally, for instance, in young people's free time. Our observation is based on the fact that educational games focusing on financial literacy are not very common, and none of them seems to be played widely at leisure. Therefore, it would be interesting to consider what we could learn from games that are hugely popular.

There have been some attempts to use a well-developed approach to design the use of video games in financial education. Maynard et al. (2012) presented a five-stage theory of change that comprises 1) getting the learners engaged; 2) cultivates self-efficacy in financial literacy; 3) enables the game player to take positive action; 4) supports sustained behavior; and ultimately 5) realizes positive outcomes. This approach informed the game development framework of the Doorways 2 Dreams fund (currently Commonwealth Fund) that targeted low-income adult populations. Other providers of digital financial education games include the credit card company VISA, for instance with its *Financial Football Game*, and more recently Next Generation Personal Finance (ngpf.org). Common to these providers is that they provide educational games that are designed to be entertaining at the same time. On the basis of our own preliminary data on the history of economic games, we have found that

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personal finance games represent a very small proportion of all games, whereas various management simulation games are much more common.

One example of a popular game that can be turned into a learning game is *Minecraft*, which is used for teaching purposes in various disciplines. Even though it may not appear to have direct links to economics, the Council for Economic Education's (CEE) *EconEdLink*<sup>iii</sup> contains two lessons related to *Minecraft*, one relating to the factors of production and their combinations, and the other to the evaluation of costs and benefits, and opportunity costs. Especially the latter lesson can have useful applications to personal finance.

Another example is simulation games. Financial literacy is a critical life skill, so one of the tasks in life simulations can be to keep spending and income balanced. Many games that involve simulation of life situations, such as *The Sims* or *Sim City*, can be used at least to cover aspects of personal finance, such as consumption and planning ahead of borrowing. An advantage of using simulations is that they can capture the interest of students if they are already using the game for other purposes. Another advantage with simulation games is that they often attract both boys and girls, so they may be a more gender-neutral way to deliver the education than some alternatives. Liu et al. (2011) and Hilli (2017) describe experiences using the virtual world *Second Life* to teach economics at the secondary school level.

In the case of utilizing popular games in teaching, the teacher can point out how to draw conclusions to economics or personal finance from the game environment. However, there are also disadvantages in this context. One is that if the students are not using the game already, learning to play it may take a disproportionate amount of time. For students who are not intrinsically interested in life simulation games, learning how to play the game may just provide another obstacle to learning. The second challenge is that the teacher also should be relatively familiar with the game to begin with, in order to understand what happens in the

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game, and how that can best be used in learning. If only one of these two conditions is fulfilled, the benefits of using life simulation games might be questionable.

## **Board Games**

The world-famous board game now known as *Monopoly* (by Parker Brothers, 1933) was not alone in educating the American public about the importance of land ownership, renting, and taxation in the 1930s. The game was originally called *Landlord's Game*, and it was the invention of the politically active single-tax system advocate Elizabeth Magie from 1902. Targeted at adults, the board game slowly gained prestige among its players, many of whom also wanted a copy of it for themselves. Thus many hand-copied versions spawned through social networks, and different names appeared, such as *Finance* (by Daniel Layman/Parker Brothers, 1932) and *Inflation* (by Rudy Copeland, 1936). The original *Landlord's Game* was devised to educate people about the harms of monopolistic land ownership and the benefits of a land value tax (Donovan, 2017, pp. 73-75). In its complexity, the game even appears to have been used as a teaching resource, when economics professor Scott Nearing at the University of Pennsylvania used it to teach his students about the effects of rent gouging (Donovan 2017, p. 76).

Besides *Landlord's Game*, many other classic board games also feature characteristics of economic games: they focus on economic themes, employ transaction of resources (buying and selling) as a game mechanic, and have their own currency to measure the value of in-game items. Games such as *The Game of Life* (by Milton Bradley, 1860) are aimed to describe the course of life at large, but they also need to touch people on a personal level; hence they use the mechanics and vocabulary familiar to different kinds of people from their daily lives and financial situations.

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## Role-Playing Games

Role-playing games are a promising way to learn economics and personal finance. They allow players to assume roles that consist of characteristics that are different from their normal day-to-day roles. While this may be common in many types of games (also video games or board games may require players to assume a different character), role-playing games are a relatively straightforward way to engage students in active learning.

Role-playing is also very common in the sense that children naturally experiment and play with roles (for instance, small children taking up family roles in playing house). Role-play, under titles such as drama or theatrical play, regularly is used as part of learning in various disciplines: in language training, students may take the role of a traveler booking into a hotel or ordering a meal at a restaurant. Or in a literature class, pupils may engage in a dramatic rehearsal of a play for educational purposes. Similarly, role-playing can be used in financial education materials, and has been extensively used in learning materials, such as *Financial Fitness for Life*. For instance, in elementary education students may simulate visits to shops; various learning outcomes, such as understanding budget constraints, opportunity costs, or trade-offs, can be incorporated in such role-playing. Secondary school students can take up more advanced tasks, like buying a used car or applying for a mortgage.

While role-playing games easily can be used in classroom settings, a reason for their popularity, sometimes they take place in designated learning environments. One example of the use of such activity is the Finnish *Me and My City* learning environment,<sup>iv</sup> which is modeled according to the *Biztown* program of the Junior Achievement. In this role-playing scenario, primary school pupils take the role of employees in various companies that have counterparts in real life and conduct various business-to-business transactions. Students also act as consumers in the simulation and participate in town elections. This play takes place in designated physical environments, where pupils spend a whole day. The game day is

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preceded by several in-class lectures preparing for the visit. This concept has proven to be very successful, and many teachers have commented that it allows different types of students to shine than in classroom work. Kalmi (2018) has found that the program also is associated with improvements in learning.

## **Conclusions**

In this chapter, we have reviewed the use of games in economic education, with a special emphasis on personal finance. In economics education research, there has long been a consensus that active learning methods are preferable to lecturing or “chalk and talk” (Becker & Watts, 1998). Games are prime active learning methods. Their use has been established in higher education economics, and many personal finance materials incorporate the use of games and role-playing games. Still, there is a need to study the effectiveness of games in randomized controlled trials to better understand when they work and why.

The education literature on the use of games paints an overwhelmingly positive picture of their use, both from teacher perceptions and student learning perspectives. An important limiting factor to the use of games is the lack of resources – primarily, the lack of time and the lack of knowledge about how to use games in education. Proper use of games requires more preparation by the teachers than standard classroom teaching. Also, there is a tradeoff of depth vs. coverage in the issues to be discussed. Games promote deep learning, but their extensive use reduces the number of issues that feasibly can be covered within a course (Velev, 2016).

The focus of economics education literature largely has been in formal (and higher education) settings, with a smaller number of studies looking into elementary and secondary education. However, there is even less literature about learning from games in informal settings. This is a difficult topic to address in quantitative studies, as transfer learning often can be indirect and there can be many sources of informal learning. Nevertheless, this is a

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topic that should be addressed in the economics literature as well, if we want to learn how relevant personal finance skills are formed. The existing evidence about the use of games and gamification in financial education is consistent with the idea that these teaching methods promote learning in students.

### **Some Practical Implications for Teachers**

Regardless of the educational level where the use of games takes place, it is important that the teacher be familiar with the game material. This is less often a problem in university teaching, where teachers often devise their own course materials. Many of the games discussed in the economics education literature relate to such situations. However, there is less literature about the challenges and pitfalls of using “canned” games produced by other parties, even though this surely is common in primary and secondary (and perhaps tertiary as well) levels of education. As games often require more than one (or two) players, testing might provide challenges.

It would be important to have pedagogical support materials, including, of course, the rules and instructions of the game, but preferably going beyond that, so that the use of games would be part of a wider learning experience. Equally important is reflection on learning outcomes and how the behavior in games can be related to personal finance situations. As we have seen in the discussion, the connections between games and learning might be anything but obvious, and the input of the teacher may be needed to draw conclusions.

As noted by Sutcliffe (2002), perhaps one issue that deters from game use in teaching is that the teacher relinquishes control over the learning process and outcomes, thus making the process somewhat open-ended and unpredictable. From another perspective, that may also be a great advantage of games; the students really learn from the interaction with the game (and perhaps with other players), and that may leave a much stronger imprint than learning from the teacher.

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## **Appendix**

### **Resources Mentioned in the Text**

#### **Digital Games**

##### **Serious Games**

Arcade Games of Next Generation Personal Finance: <https://www.ngpf.org/arcade/>

Chair the Fed (USA): <https://www.sffed-education.org/chairthefed/>

The Stock Market Game: <https://www.stockmarketgame.org/>

Visa Financial Football Game: <https://www.financialfootball.com/>

##### **Entertainment Games**

Eve Online: <https://www.eveonline.com/>

Minecraft: <https://www.minecraft.net/en-us>

Teacher resources related to Minecraft:

Council for Economic Education. (2017). *Learning economics with Minecraft: Choices, costs and benefits*. <https://education.minecraft.net/lessons/learning-economics-minecraft-choices-costs-benefits>

Council for Economic Education. (2020). *Learning economics with Minecraft: Productive resources*. <https://www.econedlink.org/resources/learning-economics-with-minecraft-productive-resources/>

World of Warcraft: <https://worldofwarcraft.com/en-us/>

##### **Board Games**

Game of Life (Milton Bradley, 1860)

Monopoly (Parker Brothers, 1933)

##### **Role-Playing Games**

Junior Achievement, Biztown: <https://jausa.ja.org/programs/>

Junior Achievement, Finance Park: <https://jausa.ja.org/programs/ja-finance-park>



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Me and My City, TAT (Finland): <https://yrityskyla.fi/en/>

## **Gamified Learning Environments**

Financial Fitness for Life: <https://fitrusts.com/>

My Classroom Economy: <https://www.myclassroomeconomy.org/>

## **Endnotes**

<sup>i</sup> See <https://jausa.ja.org/programs/ja-finance-park>

<sup>ii</sup> <https://store.steampowered.com/>; [www.mobygames.com](http://www.mobygames.com)

<sup>iii</sup> <http://econlink.org>

<sup>iv</sup> <https://yrityskyla.fi/en>