

MindCET Snapshot 1

Kids & Digital games



August 2013

MindCET Snapshot comes out 4 times a year. Each issue highlights current trends within the developing field of EdTech, providing different perspectives: pedagogic, technological, business, and so on. This issue deals with the impact of digital games on kids' learning.

Overview



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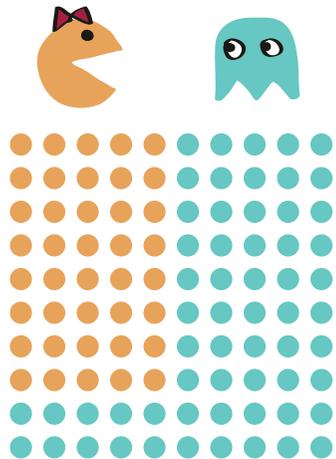
Gaming

What exactly does "gaming" mean? It has become a buzzword related to any sort of game that has a digital base, any game that is played using a technological device.



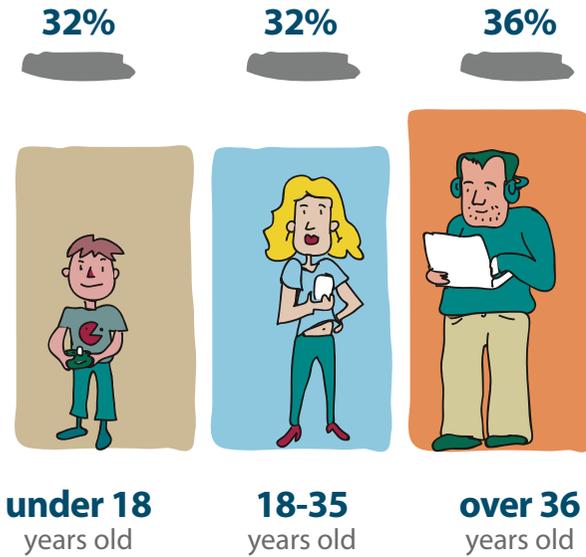
The fast pace of the digital world keeps us constantly learning about the latest novelty dramatically exerting impact on our daily lives. There is some agreement that after social networking has changed the way we relate to people, gaming is changing significantly the way we use our "free" time. Moreover, our smartphones have introduced an exit way (regardless of where we are, work/school/bed/gatherings/on the road) to our social networking and gaming activities. Broadband bolstered our potential to communicate and play with anyone and everyone, changing significantly our experience of community!

Gamers: gender



Gamers today are not isolated but immersed in an ecosystem of constant exchange of information and emotional experiences.

Gamers: age ESA 2013



Our hypothesis is that gaming is not only an entertainment activity but it is fulfilling a learning gap in the youngest generations' lives. Gaming has become an effective parallel path of education! We could even say that through gaming they are developing learning skills essential to their adulthood.

Throughout the last few years, we saw an important shift in the type of players, which today includes many different groups of society. According to the latest studies, the average gamer is 30 years of age,¹ with a very proportional distribution across age groups (ESA, 2013). A group that has stepped in, significantly, is women, reaching 45% of this group (ESA, 2013), apparently differentiating themselves according to the type of game chosen. There is a constant increase in the number of players, which has grown by 8%, both in the US and the EU (Newzoo Report 2012),² and more recently the gaming industry is reaching out to a much more global market, targeting developing countries due to the rise in their acquisition of technological devices, especially mobiles.

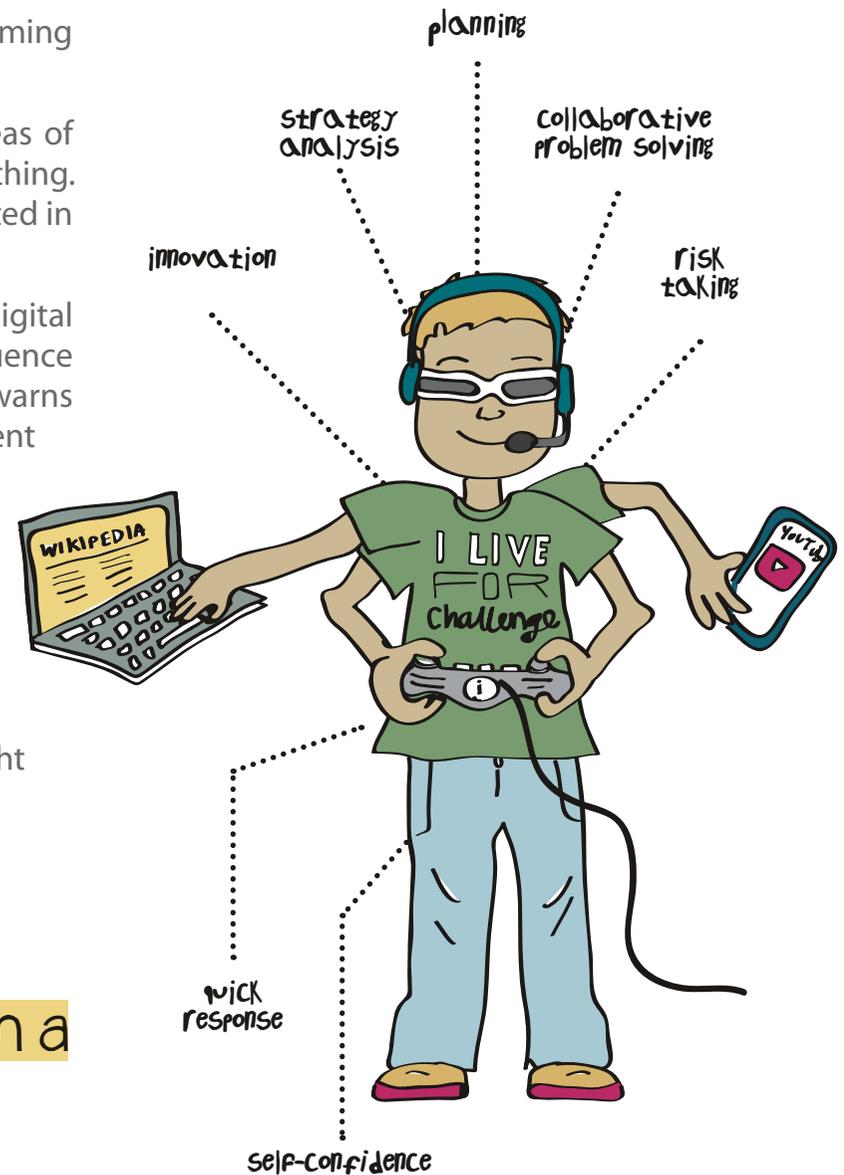
This report will try to shed some light on the tremendous impact gaming is having on a specific group – kids. Why is gaming occupying most of kids' interests and daily activity? According to the NPD 2011 Report,³ 91% of kids from 2-17 years of age are gaming, an increase of 12.7% from the previous year (compared to an increase of 1.5% in this age range population growth). This growth is especially significant in the sub-groups between 2-5 years, females, and teens. Parents are approaching the gaming world to “connect” to their kids; 58% of U.S. parents play with their children at least once a month (ESA, 2013).⁴

Suddenly, experts, from a wide range of fields, are raising their voices to advocate gaming as a significant and very important activity in kids' lives.

According to Yu Kai Chou, Generation-Y grew up gaming, and are used to the ideas of having empowerment, feedback, epic meaning, and social activities within everything. They, therefore, need these mechanisms, that games take for granted, to stay motivated in any other activity they do.⁵

Amy Jo Kim maintains that by playing games kids are developing skills to become digital experts.⁶ Experiences in virtual worlds, especially as "avatars," can significantly influence our behavior in the real world, says Stanford researcher Dr. Fox.⁷ Edward Castranova warns how a generation used to virtual worlds, especially at MMO games, will have a different perspective of the macroeconomy "in an avatar economy, increases in per-capita wealth – which make it easier to accomplish various quests and missions – will lower the challenge level of the game, potentially making it a less interesting puzzle. Growth can be bad"⁸ According to Jane McGonigal, we should multiply by seven the hours of game play in order to survive the 21st century. She argues that "gaming" provides a unique environment which motivates and inspires, allowing us to be the "best version of ourselves", collaborating to achieve objectives and getting up when faced with failure! Gamers are willing to work hard, if they are given the right challenge, a challenge that matters, that is relevant!

Somehow, gaming maximizes kids' potential capacities, while at the same time engaging them in a productive and entertaining activity.



Professor James Paul Gee



*Literacy Studies at
Arizona State University*

Professor Katie Salen



*Executive director of the Institute
of Play.*

The work of **James Paul Gee** has been highly influential in developing the credibility of computer games as a medium for learning. Reading and writing (including the interpretation and manipulation of images and sounds such as in computer game play) are not only mental achievements but social and cultural practices with economic, historical, and political implications. “Humans need to practice what they are learning a good deal before they master it... The fact that human learning is a practice effect can create a good deal of difficulty for learning in school. Children cannot learn in a deep way if they have no opportunities to practice what they are learning. They cannot learn deeply only by being told things outside the context of embodied actions. ...

Good video games involve the player in a compelling world of action and interaction. ... Thanks to this fact, the player practices a myriad of skills, over and over again, relevant to playing the game.”⁹

With such a learning potential, how can digital games play a significant role within the educational system? Let us look at the rise and fall of the educational digital games’ industry. The success of Carmen Sandiego and The Oregon Trail triggered the boom of an industry of games with educational content with very promising market opportunities during the 80’s and 90’s. At the turn of the century, the dream became a nightmare for investors, “a downward spiral that has had longstanding repercussions that still resonate strongly in the current market.”¹⁰ Today, the word “educational” linked to a digital game is considered a signpost to market failure. Games with huge popularity and commercial success like Minecraft and SimCity, which have not been designed, developed, or marketed targeting the educational world, are now being considered as having substantial educational value, as for example, [MinecraftEdu](#) and [SimCityEdu](#). Instead of trying to insert games within traditional pedagogical approaches, **Katie Salen** proposes games as an entryway for educators to build a transition towards the digital life of kids, as the Quest-to-Learn Public School in New York, developed by game-designers, which brings the gaming world as the basis for its pedagogical approach.¹¹

There are many popular games, today, that have made a significant impact on kids' daily lives, changing their perception of where and who can provide them with answers to questions which are relevant to them. Knowledge sources, skills training, content agents/channels, play partners, are all being discovered by kids while they play. What is the power of a **walkthrough** compared to an encyclopedia?



Many games work as rule-based learning systems, creating a world in which players actively participate, use strategic thinking to make choices, solve complex problems, seek content knowledge, receive constant feedback, and consider the point of view of the other. Moreover, they exemplify the complexity of systems.

"Understanding and accounting for this complexity is a fundamental literacy of the 21st century" (Katie Salen).

(Endnotes)

- ¹ Entertainment Software Association, Industry Facts Report 2013.
- ² NewZoo 2012 Country Summer Report
- ³ NPD Group 2011 Kids & Gaming Report
- ⁴ http://news.cnet.com/8301-13506_3-20069682-17/a-childs-hobby-average-gamer-is-37-years-old/
- ⁵ <http://www.epicwinblog.net/2013/05/epic-interview-octalysis-from.html>
- ⁶ <http://bokardo.com/archives/game-mechanics-for-interaction-design-an-interview-with-amy-jo-kim/>
- ⁷ <http://news.stanford.edu/news/2010/february22/avatar-behavior-study-022510.html>
- ⁸ On Virtual Economies by Edward Castronova (2003)
- ⁹ Paul Gee, JP (2003) What Video Games Have to Teach Us About Learning and Literacy (Houndmills: Palgrave MacMillan), p.68
- ¹⁰ What in the World Happened to Carmen Sandiego? The Edutainment Era: Debunking Myths and Sharing Lessons Learned (2012), The Joan Ganz Cooney Center.
- ¹¹ http://www.youtube.com/watch?v=xV_VlhV99EA

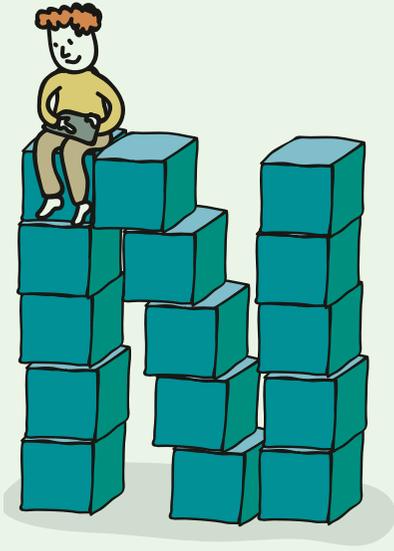
Kids and Gaming

Patterns of usage



Kids and Gaming

Patterns of usage



An overwhelming majority said they spend most of their free time playing digital games because they have fun and they learn.

Who we surveyed

1019 kids aged 6-18 years, Hebrew and Arabic speakers, voluntarily, and with no adult intervention, shared with us their perspective about the impact of gaming on their lives.

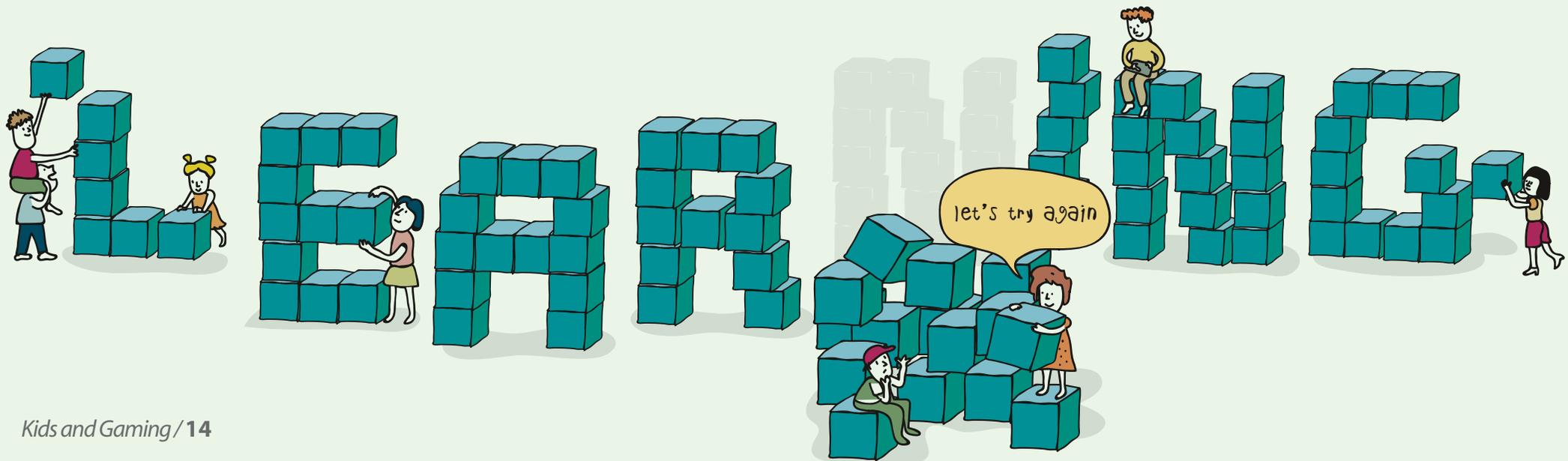
Benefits of gaming

The great majority of the kids participating in this study believe that by playing games they learn things that are significant to their lives: they learn about the world around them, they learn English, they learn strategy, they enhance their thinking skills, they develop autonomy and resources to find what they need, they learn about the consequences of their acts, they learn not to give up but to look for ways to carry on, they learn computer skills and that social interaction is not only fun but extremely helpful!

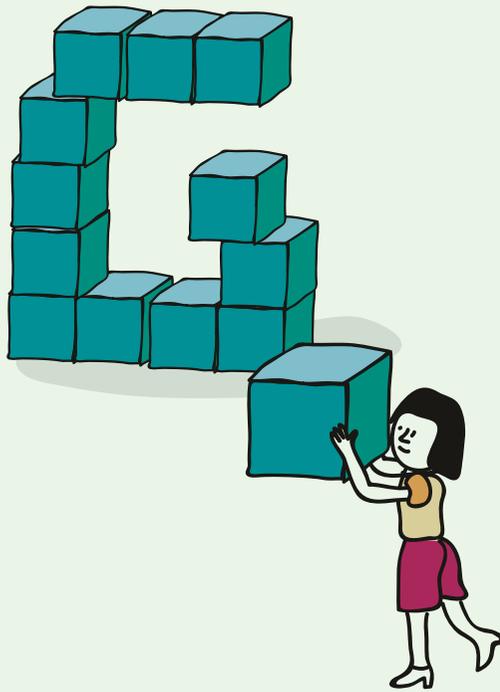
The social aspect of gaming

The story-line is a major feature for choosing a game, both in this study as well as in the US.

Their gaming activity is mainly social, both when they play as well as when they look for help, mainly from friends and relatives. The older the kids the more they said they interact with friends and with the Web, and less with relatives and/or play by themselves. This result is in accordance with developmental psychology theories which explain that kids' social interest starts being significant from 7 years of age, until when they prefer familiar contexts. The study also found that younger kids choose mainly closed virtual worlds to play digital games (Ekoloko, Mogobe), where they can feel at ease playing within a friendly and playful context where all is provided.



The Games



The most popular game is a Sandbox game, Minecraft, played on the PC, both with friends online as well as by themselves. The kids mentioned a wide range of games they had played during the last two days prior to the survey, mainly action games, with different contents such as adventure, battle, and sports. First Person Shooters (FPS) were almost exclusively chosen by boys. Casual games are very popular, in particular Temple Run and the ones offered by Facebook, especially among girls.

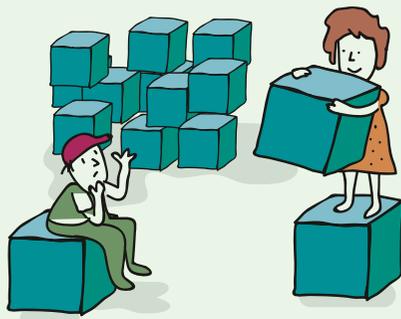
PC is still the main gaming device used by kids to play, closely followed by console, tablet, and phone.

Global and specific trends

Most kids said that a foreign language does not interfere their game play.

A few significant differences were found among Hebrew and Arabic speakers, especially related to the impact of gaming on their daily lives. The latter spend less time playing, and a smaller percentage of the sample play games that require longer periods of involvement.

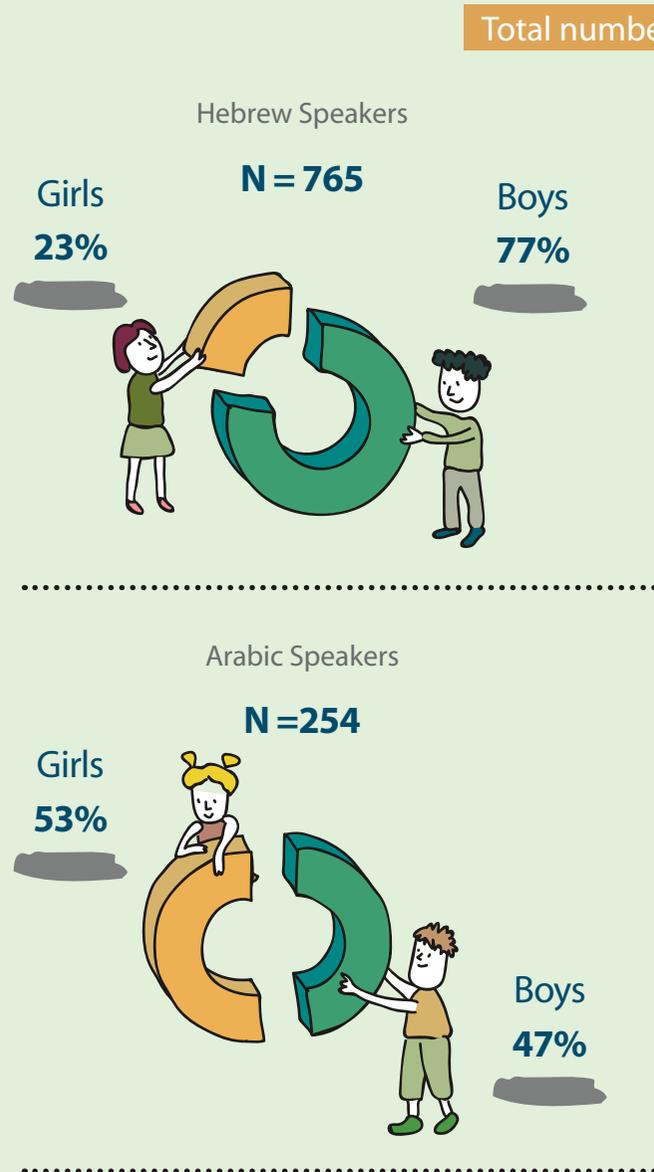
These results suggest that Israeli kids' gaming experience expresses a much more global behavior. The result of 62% kids playing games with others replicates the 62% reported by the US Entertainment Software Association (ESA Report 2013). The story-line is a major feature for choosing a game, both in this study as well as in the US. PC is still the most used device to play games, with a significant percentage of kids using up to four devices (also console, tablet, and phone), a result also found in Europe and the US (Newzoo, 2012). Following world trends, MMO games represent a significant choice, especially Minecraft, as well as First Person Shooters (GTA, Call of Duty), and, among mobile games, the extremely popular running escape, Temple Run.



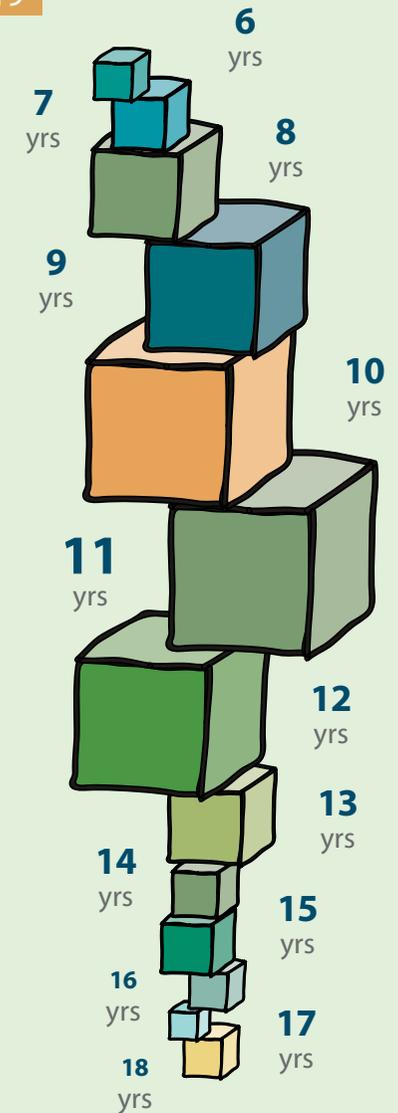
Who participated in the survey

Since the data were derived from voluntary responses, the few subjects younger than 6 years of age or older than 18 were excluded from the sample. The responses were both open- and closed-ended, and it was surprising the insignificant number of non-sense responses, suggesting that the kids took seriously their participation in the survey. The decision to publicize the questionnaire on open online platforms, without any previous incentive from adults, was in order to raise kids' motivation to say what they truly feel about gaming. This was a risky choice, dependent on kids' personal decision to participate, which resulted in a significant sample of 1019 kids (for further methodological details, contact ceciliaw@cet.ac.il).

Culture & Gender



Ages of participants



Hebrew speakers:

The majority play digital games most of the time, after they come back from school (58% of kids said they played all or most of the time and another 5% at least 4-5 hours/day), and only 3% had not played at all during the last two days.

Gender differences:

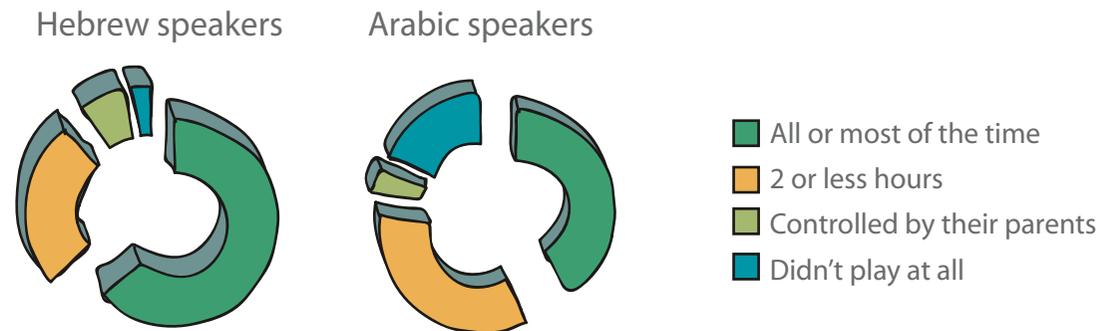
were significant since 11% of the girls had their time controlled, compared to only 6% of boys. Even though the number of hours played was similar in both gender groups, the distribution among the girls was more even; 37% of girls play 2 or less hours and 40% at least 5 hours.

Arabic Speakers:

60% of this group play less than 2 hours a day, and 18% had not played during the last two days, mainly girls.

Parents control gaming time for girls twice as much as they do for boys

How long do you play



"Opportunity to be someone else, to do things that I cannot usually do, that I can play with other people, and develop motor, physical and mental skills" (12-year-old boy).



What do you like the most?



“Digital games take you into another world, and it makes you forget all the worries and troubles. They help you not to get angry and they make you enjoy, and have fun”
(12-year-old boy).



The kids wrote freely about the things they like the most about gaming and the responses were grouped. Most kids mentioned the environment of the game, the content/story-line and the possibilities the digital space provides, such as the interaction, the freedom, the graphics, the participation in the story-line, the absorption into the game, etc.

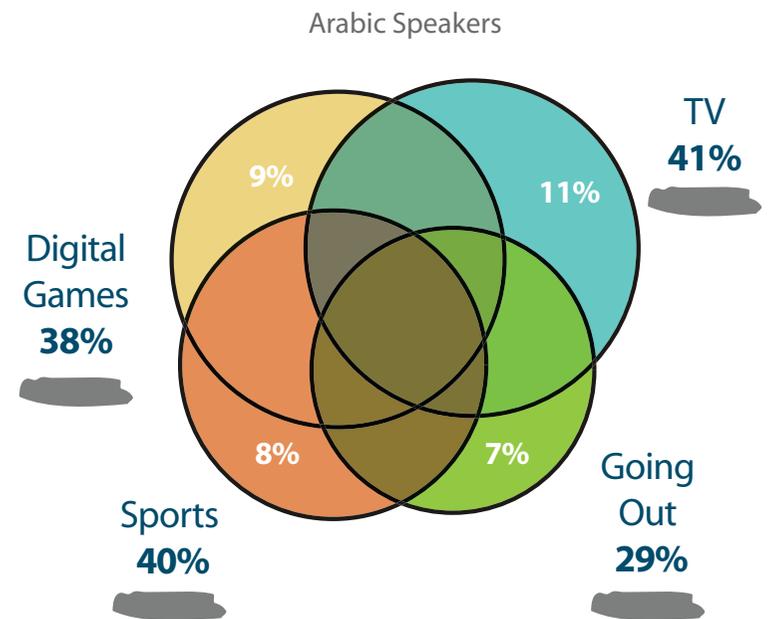
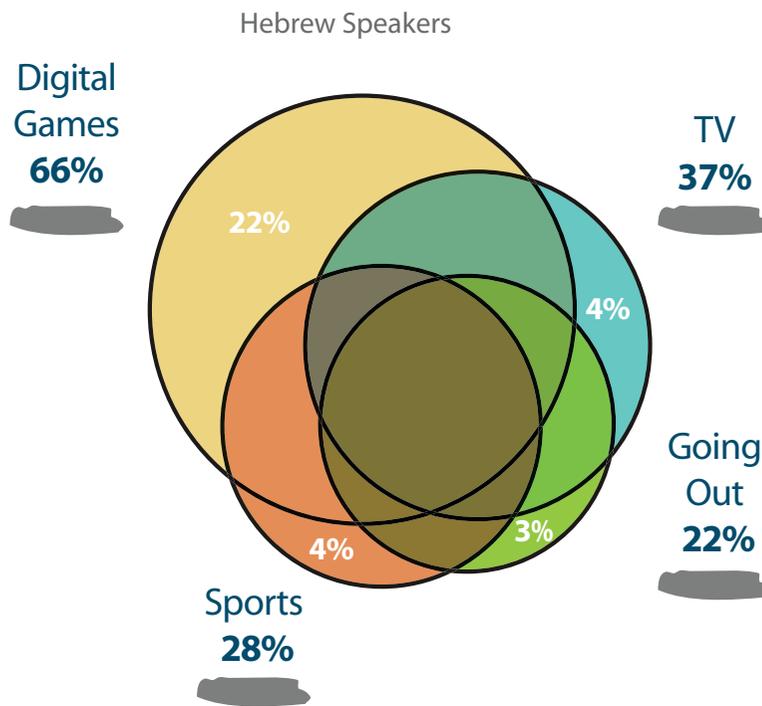
Many answered they like everything about digital games, and mentioned the fun and joy they experience.

Other popular answers were related to the action, the challenge, and the possibility to win, the engagement, the possibility of playing with friends and with other players.

What do you do in your freetime?

The great majority of the kids said they choose a variety of activities to do during their free time. A significant proportion of Hebrew-speaking kids choose digital games (66%), while among Arabic-speaking kids, games, TV, and sports are equally popular activities

In their free time

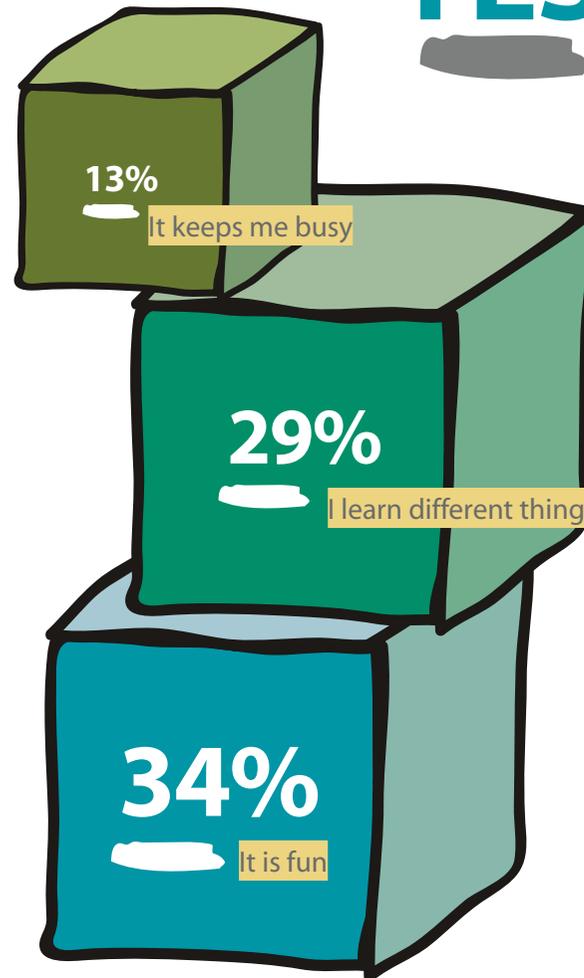


Are digital games good for you?

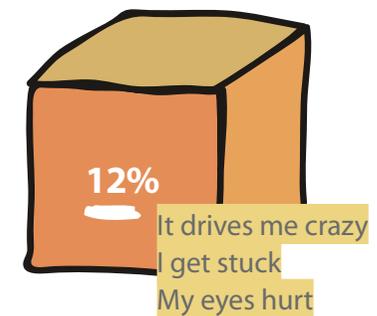
69.2%
YES

Are digital games good for you?

69.2% said that playing digital games is good for them mainly because "It is fun," "I learn different things," and "It keeps me busy". The ones who said NO justified it by saying that "It drives me crazy/I get stuck" and "My eyes hurt." Arabic-speaking kids mentioned learning reasons twice as much as fun-related reasons.



12%
NO



What did you learn from digital games?

Kids were asked to write two things they learned while playing digital games. Based on their written responses the following categories were created:

- 1 Content learning:** English, math, history, language, space, minerals, chemicals, sciences, technology, different countries and cultures, etc.
- 2 Specific skills:** how to fish, how to save money, how to build, how to drive, how to fly and land a plane, how to invest on the stock exchange, how to make swords and other crafts, how to fix electronic objects, how to produce coal, how to make ice cream, how to trade, etc.
- 3 Fighting skills:** how to avoid being hit, fight techniques, strengths and weaknesses, how to shoot, about weapons, etc.
- 4 Computer skills:** how to program, how to search, how to find help on the computer, how to type well and fast, etc.
- 5 Thinking/Survival skills:** lots of thinking, to think fast, right responses, strategy, how to solve problems, how to resolve complicated tasks, how to improve thinking, to find ways to improve after I lose instead of getting upset, to be consistent, tricks, to finish what I have started, to calculate, to concentrate, how to play, etc.
- 6 Emotional/Social skills:** to win and lose with respect, not to get angry when you do not pass the levels, not to lose control, you learn that you cannot give up, to respect others, important to learn not to fight and make friends with other kids in the game, they can bring you more friends, how to be social, not to get in touch with people I do not know, how to help when people need help, etc.
- 7 Sports/Physical:** how to play soccer, basketball, how to improve my body, etc.

tricks

math

english fish think
soccer strategy

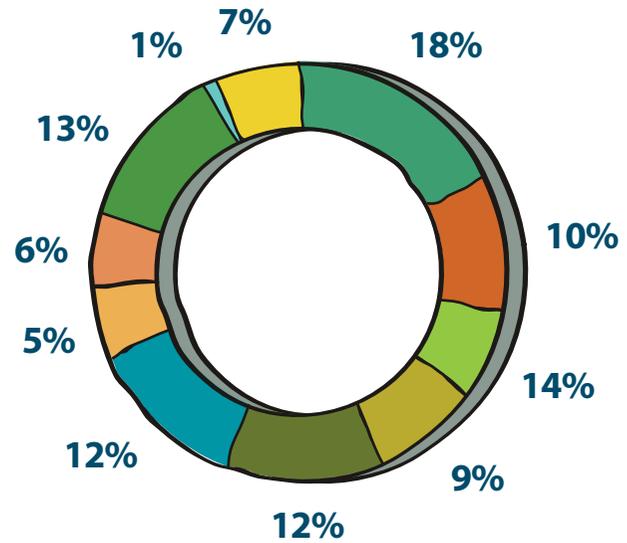
Paint

space COOK

minerals type

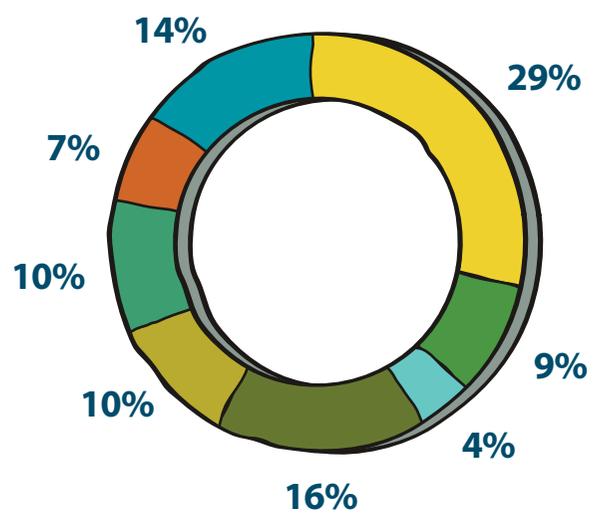
Friends

79% of the Hebrew speakers said they learn significant things by playing digital games and 13% said they did not learn anything. They mentioned that they learn, mostly, in this order: content learning, specific skills, fighting skills, computer and thinking skills.



- Content learning
- Specific skills
- Fighting skills
- Computer skills
- Thinking skills
- Emotional / Social
- Sport / Physical
- Other
- Nothing
- Don't know
- No reply

Among Arabic speakers the results were slightly different. 57% said they learn significant things, and 9% said they do not learn anything. However, there was a large percentage of no reply (29%), compared to the Hebrew sample (7%).



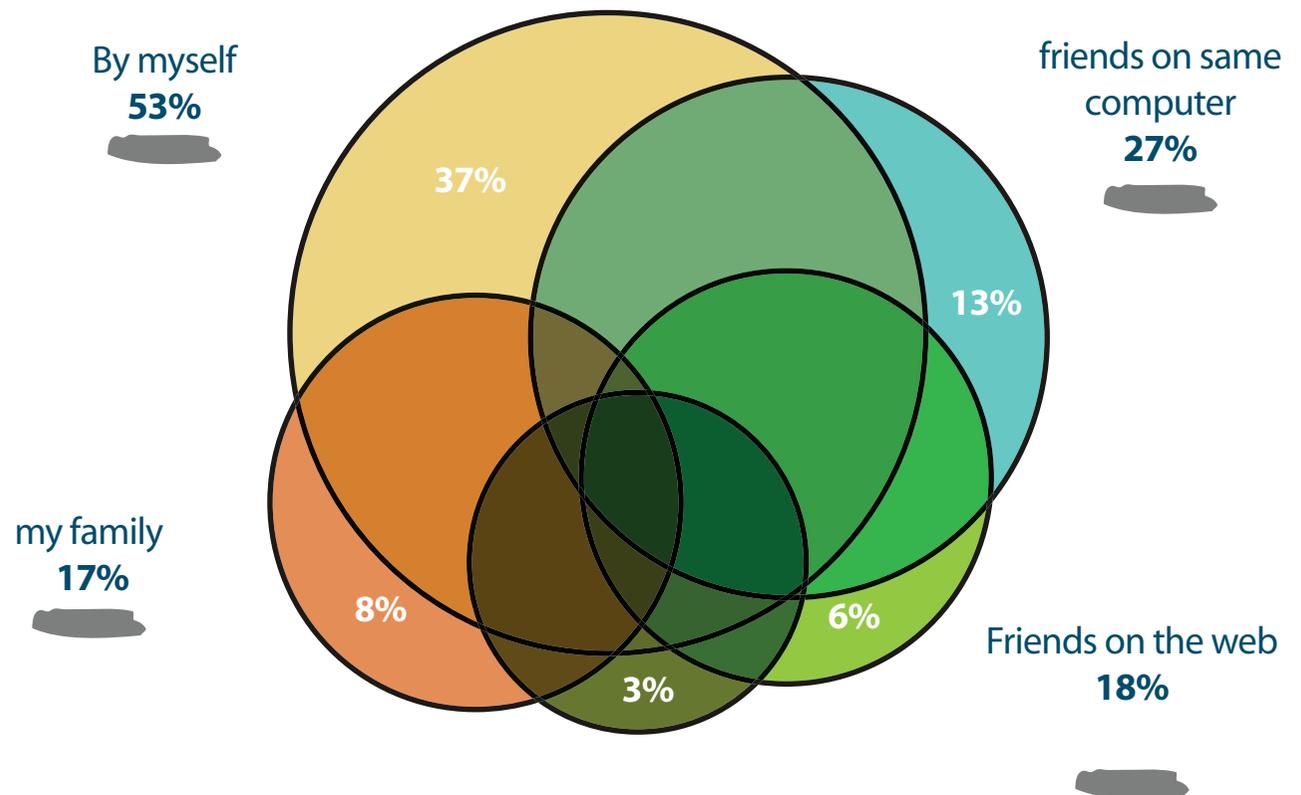
- No reply
- Nothing
- Don't know
- Thinking skills
- Computer skills
- Content learning
- Specific skills
- Emotional / Social

Who do you play with?

The Arabic-speaking kids included a larger percentage of kids playing with relatives, and less playing with friends through the Web, as compared to the Hebrew sample.



Asked with whom they played during the last two days, most kids said that they played with different people and sometimes, also, by themselves. 37% of kids said they played only by themselves. This result was significantly affected by age, since the older the kids, the less they mentioned playing by themselves. 13% of kids said they played with unknown players on the Web.



Who helps you?

Most help is from relatives & friends

Relatives were the first choice of help when needed by kids, followed closely by their friends. Only 11% said they use the Internet to look for help.

There were important gender differences, since girls tend to ask significantly more help from relatives compared to boys, and boys tend to search on the Internet when they need help, significantly more than girls.

An age factor showed that as kids get older they rely less on relatives and more on the Internet.



Help from relatives **decreases** as kids get older



Help from web **increases** as kids get older

The 10 most popular games, in this order:

- 1 **Minecraft** (Sandbox),
- 2 **Call of Duty** (FPS),
- 3 **GTA** (Open world),
- 4 **FIFA** (Action-simulation),
- 5 **MIKMAK** (Platform),
- 6 **TempleRun** (Mobiles),
- 7 **Mogobe** (Virtual world),
- 8 **Ekoloko** (Virtual world),
- 9 **Battlefield** (FPS)
- 10 **Counter Strike** (FPS).

As children get older, Sandbox and Personal Shooter games become more popular, with platform games less so.

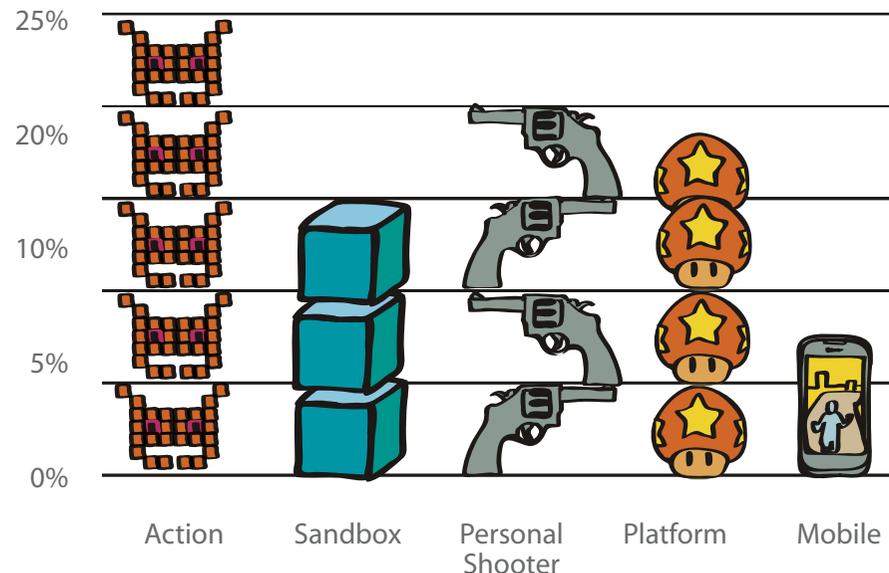
Minecraft is the most popular game

The most popular games

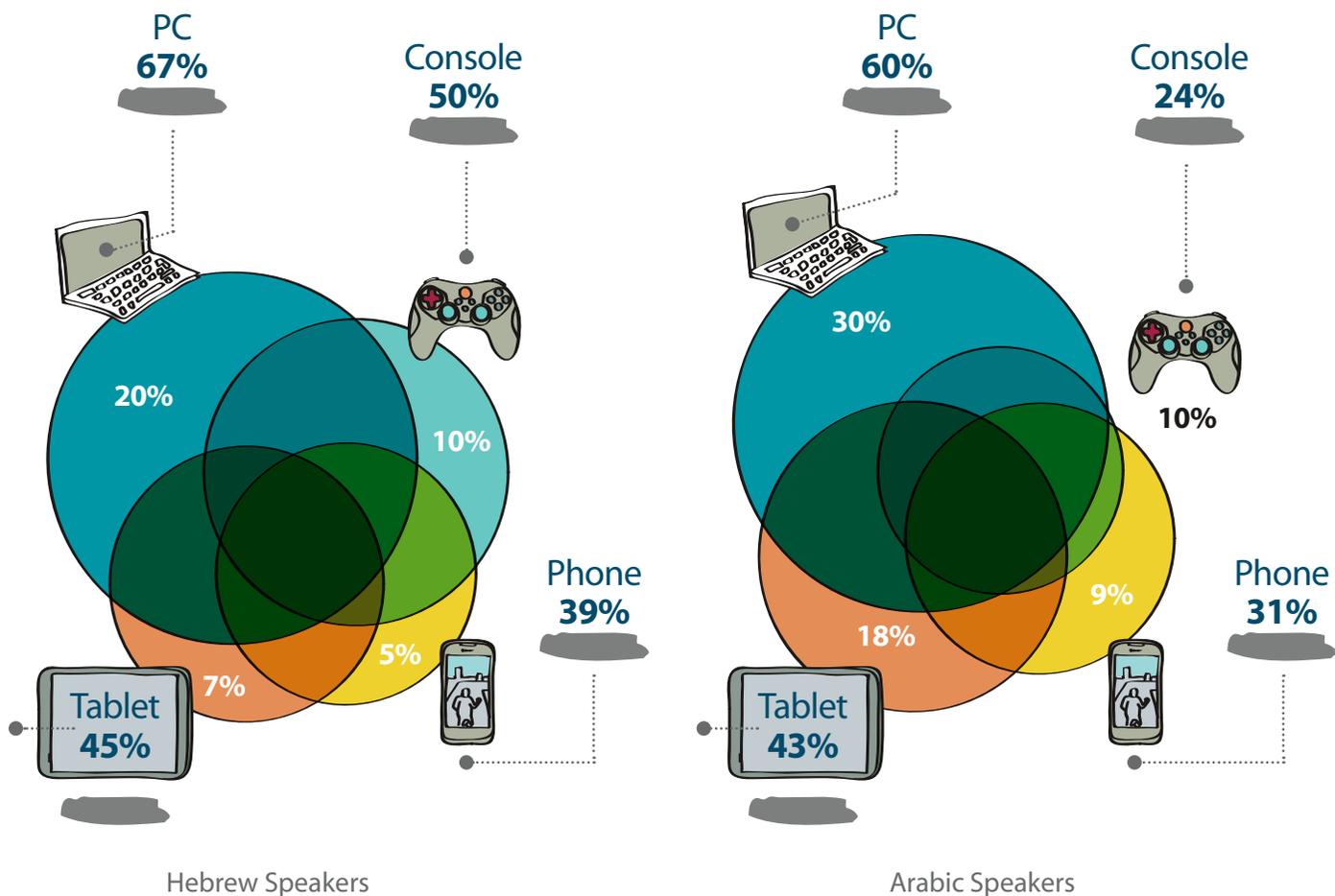
The written responses comprised a very large list of games. The complete list of games was grouped by categories: Action and Personal Shooter (FPS), Sandbox/Open World, Platform/Virtual World, Strategy, Mobiles and Social Network. The latter two categories overlap since at Social Network, kids specifically wrote Facebook (FB) and not a game name, and many of FB games are exclusively for mobiles.

There were significant gender differences: 50% of boys enjoy Action games (17% FPS, 34% Adventure and Sport). Girls' favorite games are Platform/casual games. FPS were almost exclusively chosen by boys.

Age was an important independent variable, since with age kids choose less Virtual World and casual games and more games that require a longer engagement and specific development of skills and knowledge (as many of the Action games mentioned, Sandbox, Open World, and Personal Shooters).



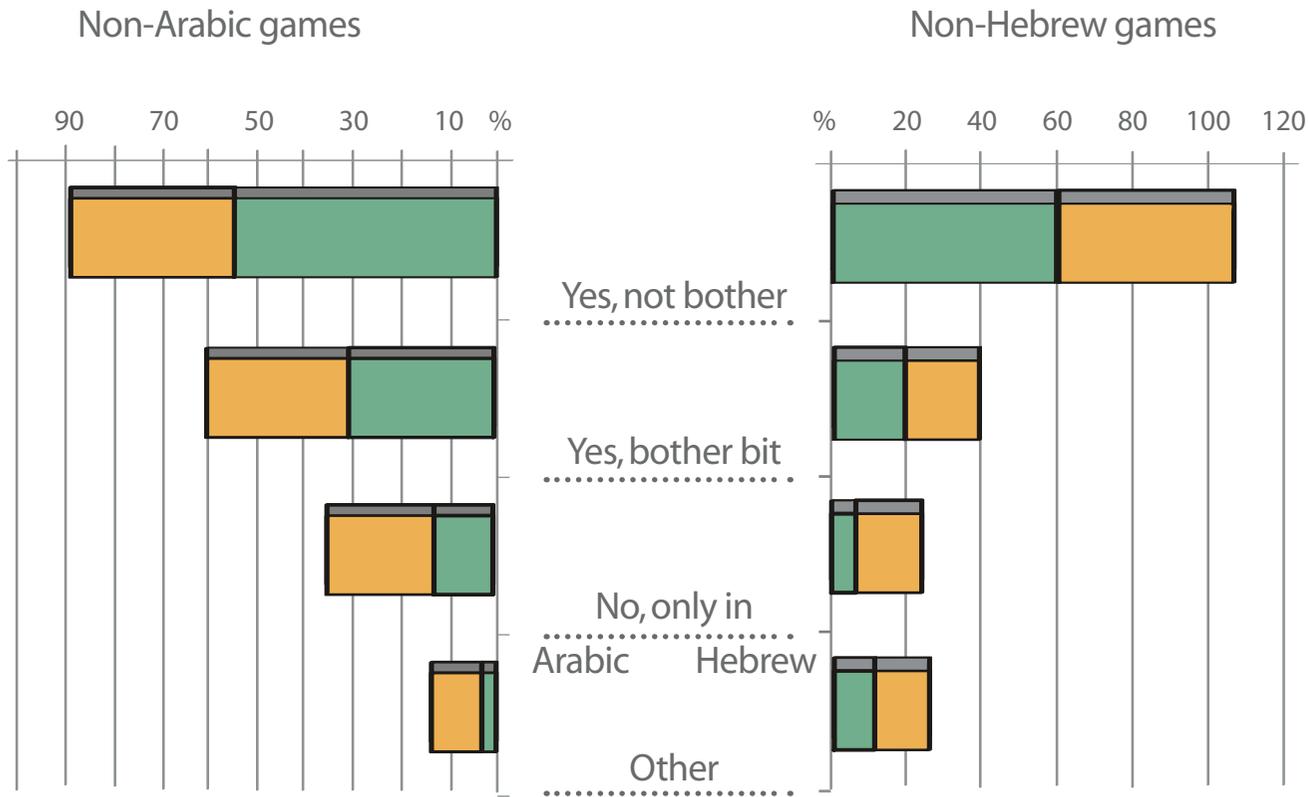
What devices do you use?



Most kids used a variety of devices, and very few only one device, to play games, as the graph shows. The only significant difference between the Hebrew- and Arabic-speaking groups is that in the latter only 24% mentioned playing on consoles (every kid in this group also plays either on a PC or on a phone).

PC is still the most used device to play games, with a significant percentage of kids using up to four devices (also console, tablet, and phone), a result also found in Europe and the US (Newzoo, 2012).

Games and Education



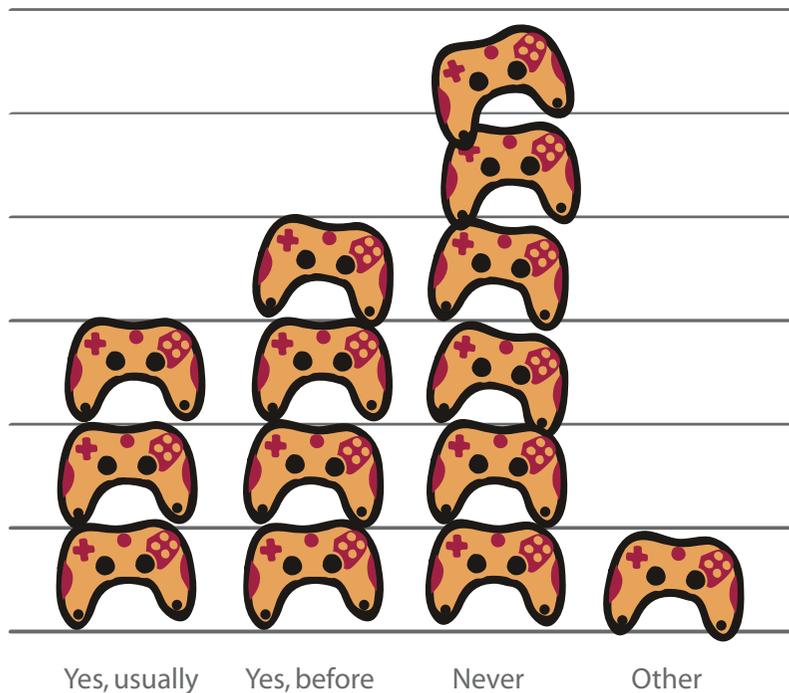
Language of digital games



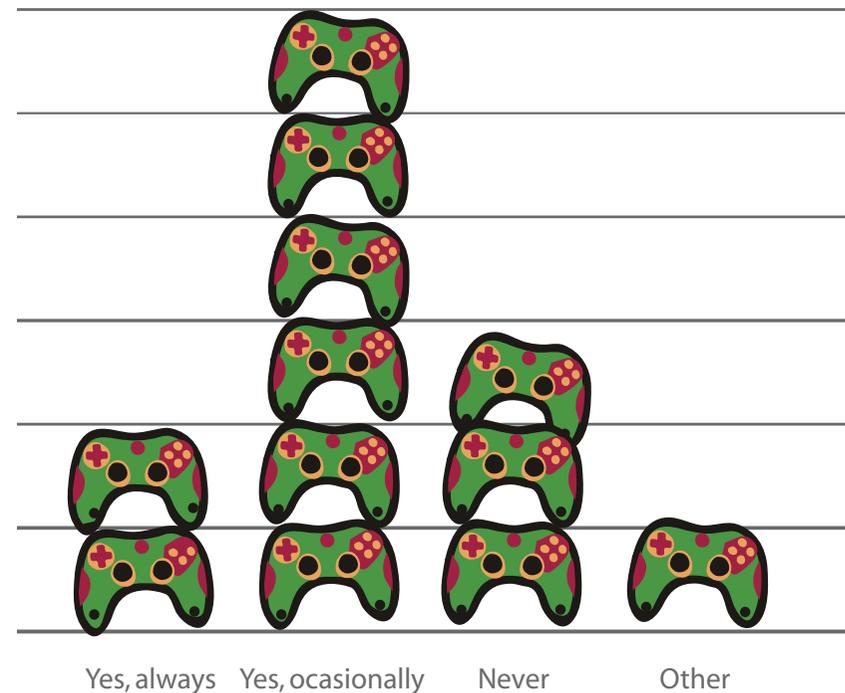
Most kids say that the language of the game is not important when they choose a game to play. Most of the "other" answers referred to kids choosing particularly games in English.

- Boys
- Girls

Have you ever played digital games at school?



Do you play educational games?



Two questions were related to games and education. The first one asked if they had ever played digital games at school, to which the majority replied YES. This result could imply their gaming activity took place in their free time, as well as in class time.

The second asked if they play educational games, to which the majority said they occasionally play them.

EPIC face

GAMING pedagogical strength



EPIC FACE

GAMING PEDAGOGICAL STRENGTH



The pedagogical strength of games is being repeatedly acknowledged by specialized and amateur media. The number of scientific articles, reports, and internet media space, has risen considerably, with a shift from “concerned” to “cautious but promising” positions about the relation of kids and gaming.

Disrupting Gaming

The appearance and rapid expansion, or even proliferation, of “gamification”¹ is a good example. Gamification is generally defined as the use of digital game design elements (or techniques) in non-game contexts^{2,3}, especially business⁴, in order to resolve specific problems, or to provoke a specific response from intentional agents; in other words, fragmenting “gaming” in an attempt to use or manipulate its “magical,” engaging, pedagogical elements in more productive-oriented environments. We wonder whether its separated elements, used in different contexts, maintain the same pedagogical strength.

Developing essential skills

James Paul Gee suggests that games are not the only but a very significant alternative to an educational system which is still oriented towards producing people who know a lot of facts but cannot solve problems, risking this system's survival since it no longer responds to the socio-economic demands.

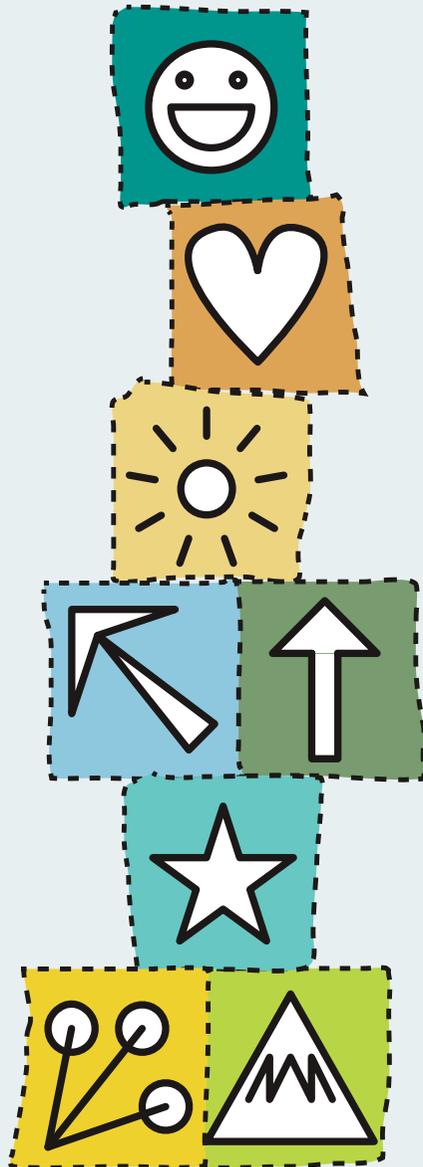
Many digital games potentiate innovative strategies to solve problems instead of providing standardized solutions, and do so through collaborative processes. Kids are realizing that the "smartness" of the group is much greater than of any one individual. Information is provided in time when it is needed; therefore, much more effectively. Communities are self-organized and supported by a specific interest, being, thus, always relevant. Assessment is actually built as an active part of the learning process, providing feedback to the player so he can understand where he is and what he needs in order to move on.

The virtual environment enriches the players' real learning experience. "When six soldiers take out a machine-gun nest at Fort Bragg, the machine gun is real and the teamwork is real. When the same six soldiers take out a dragon in a synthetic world, the dragon is not real but the teamwork is. In synthetic worlds, the things we trade may be fantastic, but the process and value of the trade is real" (E. Castranova)⁵.

We will try to define a few "gaming" elements, which we believe have proven to have pedagogical strength with kids.

However, we would like to emphasize that this strength is significant within the whole "gaming" context. Its fragmentation disrupts its essence.

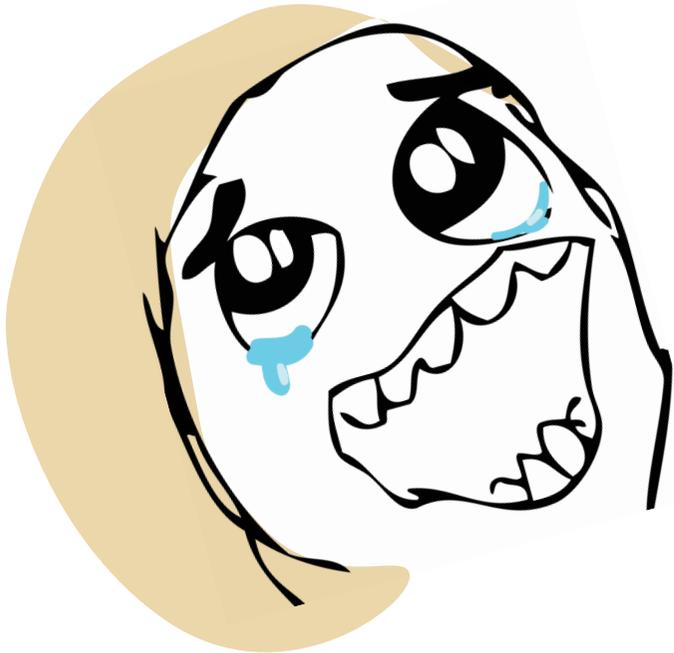
It is important to stress that there is a considerable variety of digital games providing different experiences and that we cannot expect that the word "game" imply the same thing in every case. As suggested by Wittgenstein, the different games have similarities and commonalities like "the various resemblances between members of a family: build, features, colour of eyes, gait, temperament, etc."⁶ and not every game has winners and losers, nor do they always involve luck or skill, neither do all games require rapid decision making or sensory stimuli.





1

Epic Win



“The sense of urgency, a little bit of fear, but intense concentration, deep, deep focus on tackling a really difficult problem. If you are a gamer, you will notice a few nuances here: the crinkle of the eyes up, and around the mouth is a sign of optimism, and the eyebrows up in surprise. This is a gamer who is on the verge of something called an epic win” (Jane McGonigal, *Ted*, 2010).

“Epic win” is a term frequently used among gamers and slowly occupying a significant place within the digital world to describe a common but unique emotional state. The pedagogical potential of this state explains part of the impact of games on kids. It is acknowledged that one is happiest when playing at the very edge of one’s ability. An excitement arises, motivating us to try even harder! Game designers affirm that if a game is too easy, people walk away, just as if a game is too hard, people will walk away. A positive emotional context is built to keep the player working very hard to reach the target, always approaching an exciting limit of the player’s strength. This equilibrium is one of the important game design mechanisms. Any learning context that is too easy provokes disengagement, since the learner stops paying attention, and trying to catch up later requires a big effort, which is also disengaging.

“An epic win is an outcome that is so extraordinarily positive you had no idea it was even possible until you achieved it. It was almost beyond the threshold of imagination. And when you get there you are shocked to discover what you are truly capable of” (J. McGonigal).



2 Engagement

Kids can be engaged in certain types of digital games for long periods, totally focused on the activity and voluntarily attentive and responsive.

Gaming is able to recruit kids to commit, not only with their attention but, moreover, with their will.

Researchers maintain that an important ingredient in engaging in games is the "storytelling."

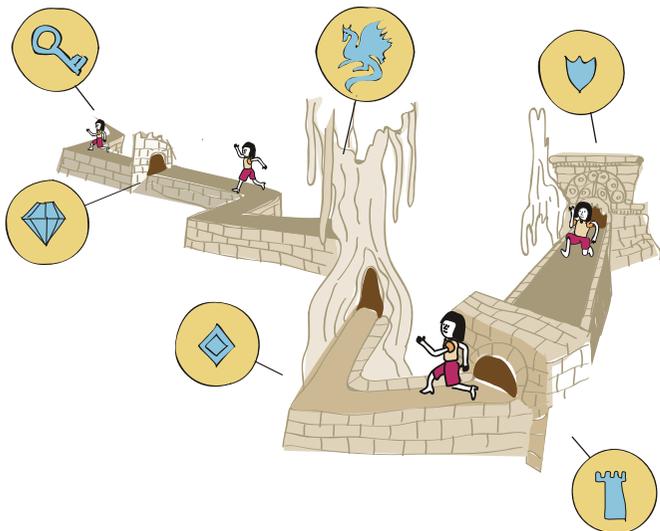


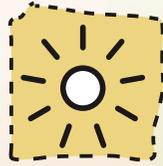
The word "engagement" actually underlines a commitment to the object the subject is "engaged to," as for example getting engaged when one decides to get married.

Most games that "engage" players for long periods have rich narratives and are constantly fed by the "cut scenes," video scenes created with the most sophisticated and artistic animations. "Stories provide the ideal context for a message and an avenue for engagement."⁷

Interesting insights are provided in the field of positive psychology, studying people's daily-lived experiences⁸ and showing that people's daily actions, thoughts, and feelings include "Flow" states – a term that has been created to define the experience of becoming fully immersed, involved in activities that bring challenge to a set of skills, bringing enjoyment in the process of the activity.

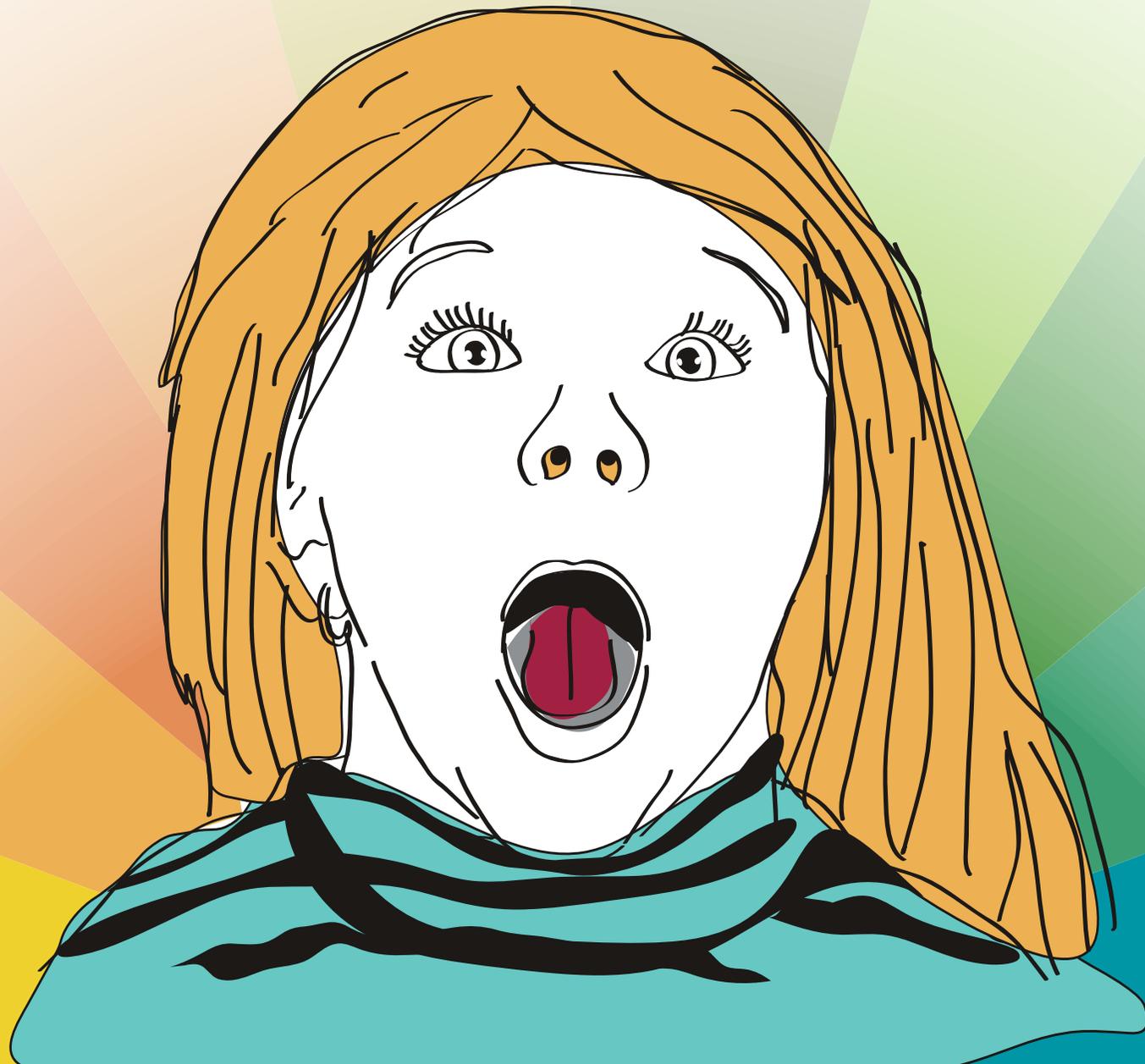
Games engage the player, narrating stories that provide intense life experiences enriched by the creation of situations where the player can actively participate or change the context, be rewarded, overcome obstacles, and interact with diverse character traits. Moreover, by increasing levels of difficulty, the gamer increases her or his special skill in that particular game, enabling the player to take part in the story development. Players are, therefore, able to relate to the game in a meaningful way.





3

Amazement





4 Failing Up

"By playing, I learn to be calm, to focus on the target and not to give up" (girl, 12 yrs),



A very "fashionable" term these days in the business world, to "Fail Up" basically means to get up and fight after failing. Gaming allows players to face failure as a learning process, providing the context and conditions to get up.

Katie Salen points out that games provide a "very forgiving environment for kids to fail in." Kids do not have many environments that allow them to take risks and feel safe about it.

D. Williams, in an article about his experience as an entrepreneur and the power of Failing Up, says that "some days we make great progress in some areas; other days we seem to slide a bit. If we were to chart our progress on a board, it has ups and downs, but overall it should move upward as we live and learn from our mistakes and failures."⁹

The digital games that keep kids moving forward are exactly the ones that were able to create a context in which kids fail; however, instead of getting frustrated, they are provided with enough resources and means to feel they can look for ways to move on to the next level.

Research shows that gamers spend on average 80% of their time failing in game worlds, but instead of giving up, they stick with the difficult challenge and use the feedback of the game to get better.¹⁰



Failure is part of the learning process, changing its negative emotional experience to a positive, part-of-the-game one!

By providing a safe environment where failing is part of the game-play, games are rewarding perseverance and effort, at the same time that they encourage the player to take risks, trying out new, creative, out-of-the-box solutions.

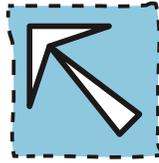
As a gamer puts it: "In Angry Birds, usually the first thing that I do is to shoot all my birds in a straight line to see if the brute force method can knock down the structure. Almost all the time, this doesn't work, but sometimes it gives me a clue about where a weak point in the structure might be so I can try a new idea the next time."

Our study of 1019 kids, "Do you like digital gaming?" (MindCET, 2013), has shown that when kids were asked about what they learn by gaming, "Failing Up" came up in a significant number of responses.

"Sometimes you lose and sometimes you win, and you learn not to be angry, but to try again"

(boy, 11 yrs)

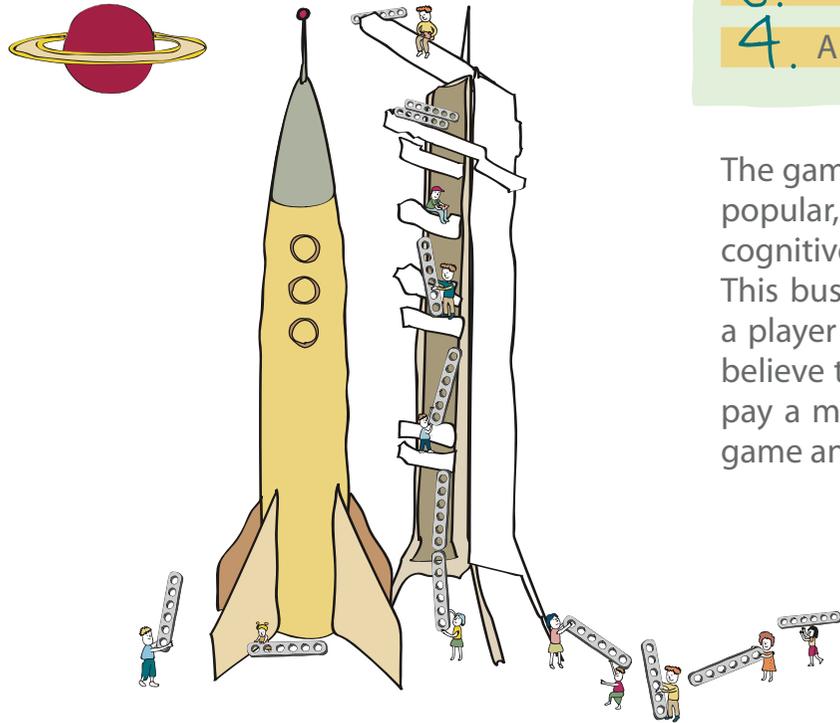




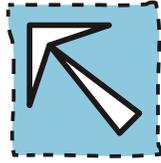
5 Blissful Productivity

Jane McGonigal in her book "Broken Reality" asserts that "playing games is the single most productive way to spend our time," and defines the following four steps to reaching a context which enables blissful productivity:

1. A clear, meaningful goal.
2. Actionable next steps.
3. Proof of completion.
4. A new, more challenging goal.



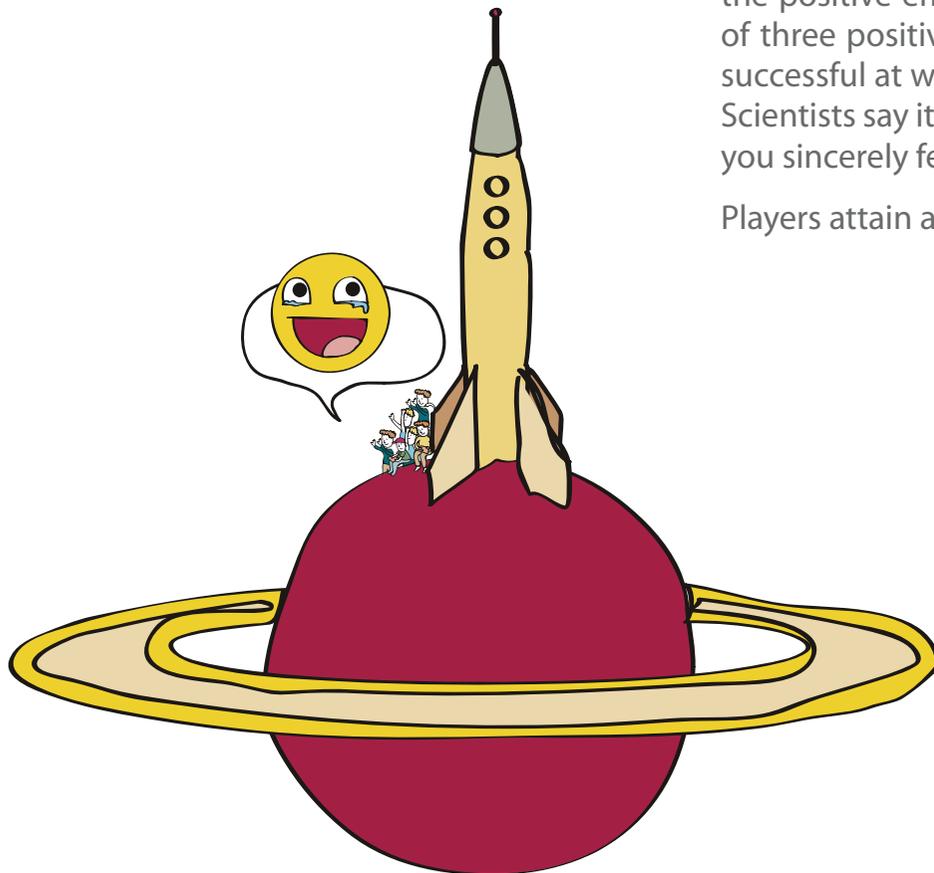
The game "World of Warcraft" (created in 1994), the first MMO that became outstandingly popular, reaching more than ten million players, requires a significant amount of skill and cognitive development, as well as new knowledge, which keeps the player busy working. This busy work is referred to as "quests." It is estimated that it takes over 300 hours for a player to reach the highest level in the World of Warcraft, which is when most players believe that the real game begins. "Why do gamers, many of whom are students, happily pay a monthly fee for the privilege of slogging through over three hundred hours of a game and yet balk at the idea of doing thirty minutes of math homework?"¹¹



Apparently, games produce a context where one is happier working hard than one would be relaxing, based on the assumption that we all feel happier by doing meaningful and rewarding work.

According to game advocates, gameplay is extremely productive since it does create the positive emotions crucial to health and success. "People who experience on average of three positive emotions for every negative one will live 10 years longer. They're more successful at work, school and personal pursuits and they have longer, happier marriages. Scientists say it doesn't matter where you get these positive emotions – it just matters that you sincerely feel them."¹²

Players attain a sense of urgent optimism, believing they are up to any challenge.





6 Empowerment, "Yes I can"

Part of the magic of the experience provided within the gaming context is the perception that "We are not as good in reality as we are in games." This, however, does not suggest a connotation of inability to generalize from the gaming experience to reality, but the possibility of "being" and "learning" within a context where one can!

A research found that 19% of young people said they now play an instrument because they were inspired to do so after playing a music-based console game,¹³ "Guitar Hero," whose players are more likely to pick up a real guitar and learn how to play it. This result suggests the personal empowerment provided by the gaming context in helping kids leap from the virtual to the real world.

Gaming is a voluntary activity; therefore, it requires initiative and motivation to enlist the player. To do so, games are well designed in order to enable players to feel comfortable and assured of their capabilities. The player is empowered, reassured of his/her capacities to move forward.

One of the reasons games are so motivating is that kids know that their design was meant for them to be successful in them, to move forward and not to give up. Kids intuitively trust this environment and they feel empowered by it.





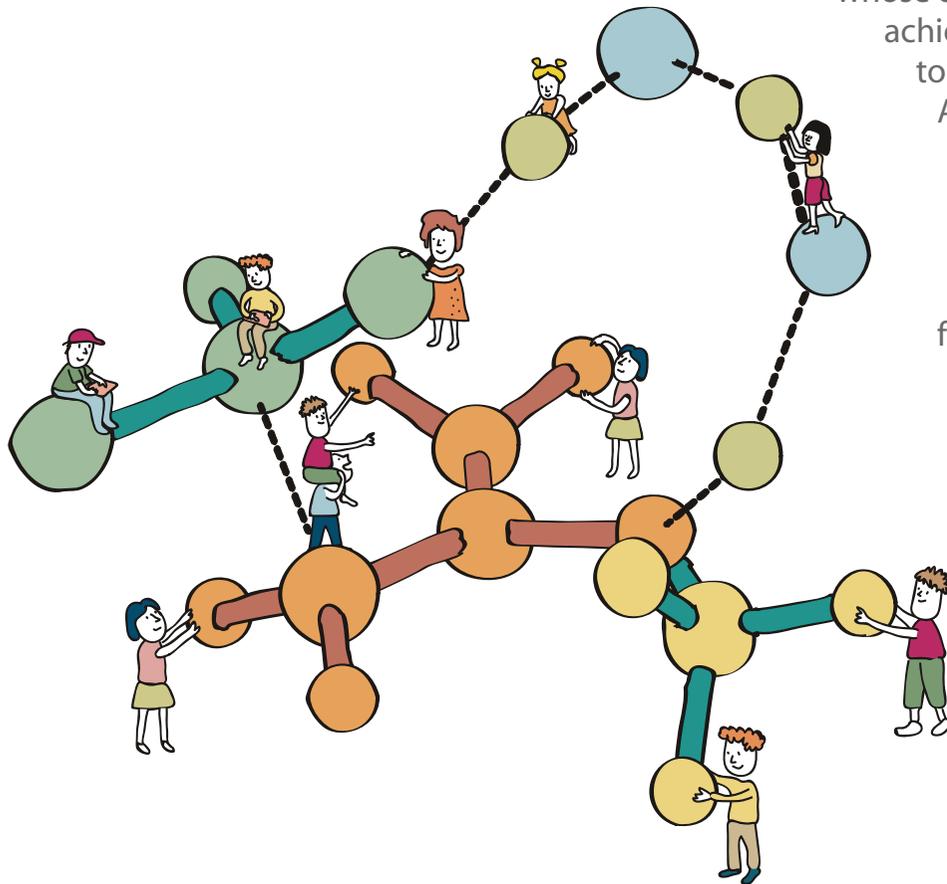
The scientists challenged the gamers to produce an accurate model of the enzyme. They did it in only three weeks.¹⁴

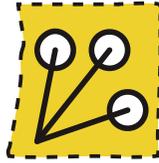


There is a gradual increase in the level of difficulty, allowing the player to see and feel his/her progress in the game. The players' effort is visually translated to the virtual world. The player is engaged in a learning process where he/she is able to manage and direct his/her own actions. Moreover, in order to potentiate his/her actions and trials, conditions and restrictions are important game ingredients, directing the actions of the player/learner. This creates a "safer" road for action and for trial. The player acquires a stronger sense of being his/her own agent, empowering him/her to act.

This cognitive and emotional empowerment achieved by players are well exemplified in projects based on specifically designed games such as "Foldit," developed by scientists at the University of Washington. "Gamers have solved the structure of a retrovirus enzyme whose configuration had stumped scientists for more than a decade. The gamers achieved their discovery by playing Foldit, an online game that allows players to collaborate and compete in predicting the structure of protein molecules. After scientists repeatedly failed to piece together the structure of a protein-cutting enzyme from an AIDS-like virus, they called in the Foldit players.

According to Castranova,¹⁵ gamers turn to games to produce the emotional high associated with accomplishing something concrete, feeling capable, and being recognized for their successes.





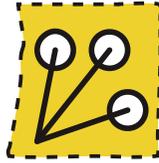
7 Collaborative Problem Solving



Collaboration has been a pedagogical goal for decades in most K-12 learning environments. However, it has been promoted by grouping, or by project-based learning situations that usually converged to division of labor among group members. Cooperation, understood as working with other people towards a common goal, is sometimes achieved, but collaboration, understood as working together towards the same goal, hardly ever. Collaboration towards problem solving entails sharing the understanding of the problem, sharing the development of the process, coordinated actions (when one understands the effect of one's action on the other), and reflections on the progress to allow for constant and agile common responses. The shared understanding of a group will reflect the individuals' understanding of and involvement in the activity.¹⁶

The development of MMO games has created an environment where collaboration is inherent. Not only do players share common spaces, but they share a common understanding, common tasks, and they naturally collaborate to move forward.

The context promotes collaboration to solve common problems. Gamers make sense of their shared experience together. The ability to visualize one's action and its immediate effect on the common space helps to understand one's impact. Many games require group actions to move forward, helping to develop one's image of one's role as an active group member. Many multiplayer games allow kids to find their place and freely choose "virtual" partners. Games like Minecraft have shown that kids enjoy collaboration to solve immediate problems, not only learning each player's skill, but collaborating to construct and create new virtual environments.



The flexibility and constant movement of the virtual environment provide a unique learning context for collaborative action.

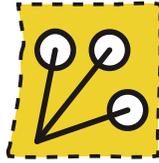


This natural will to collaborate among gamers was described by researchers on positive emotion, who have found that whenever we feel awe or wonder, we become more likely to collaborate selflessly with others.¹⁷

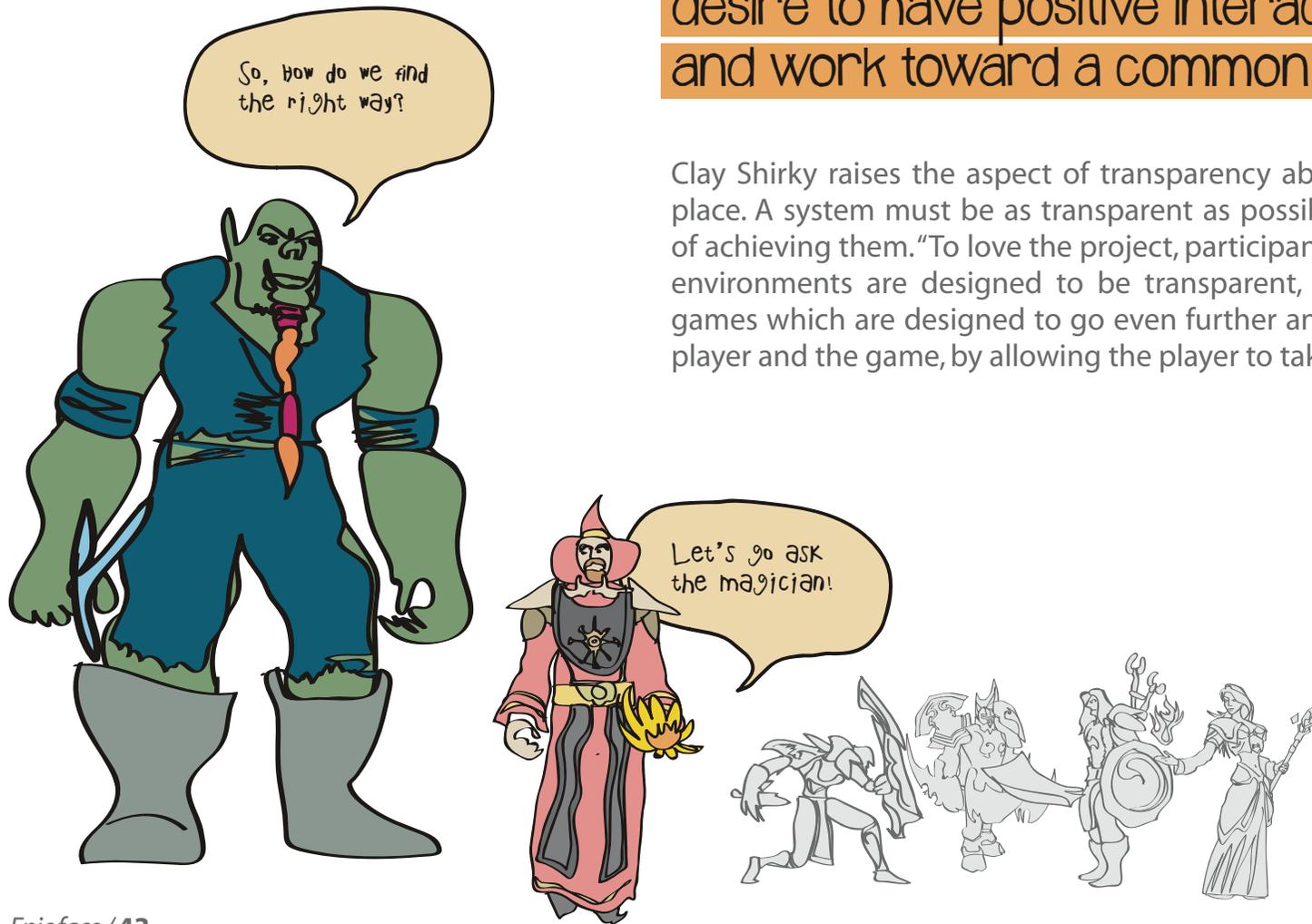
According to James Paul Gee,¹⁸ the game World of Warcraft is probably the best-known example of a collaborative problem-solving environment. "Players not only communicate and collaborate within the game space, they also use social networks, wikis, blogs, and discussion boards to mentor and support one another."

There are games designed to leverage the power of this kind of global communication and collaboration among players to resolve real-world issues like poverty, hunger, clean energy, and education. Examples are found in games like World Without Oil,¹⁹ where players collectively imagine the threats of an oil crisis and use the "wisdom of the crowds" to develop solutions, or Evoke,²⁰ where teams develop innovative solutions to make a difference in their community, through collaboration, creativity, entrepreneurship, knowledge networking, resourcefulness, sustainability, and vision.

Collaboration has distinct advantages over individual problem solving for the following reasons: effective division of labor; incorporation of information from multiple sources of knowledge, perspectives, and experiences; enhanced creativity; and quality of solutions stimulated by ideas of other group members.²¹



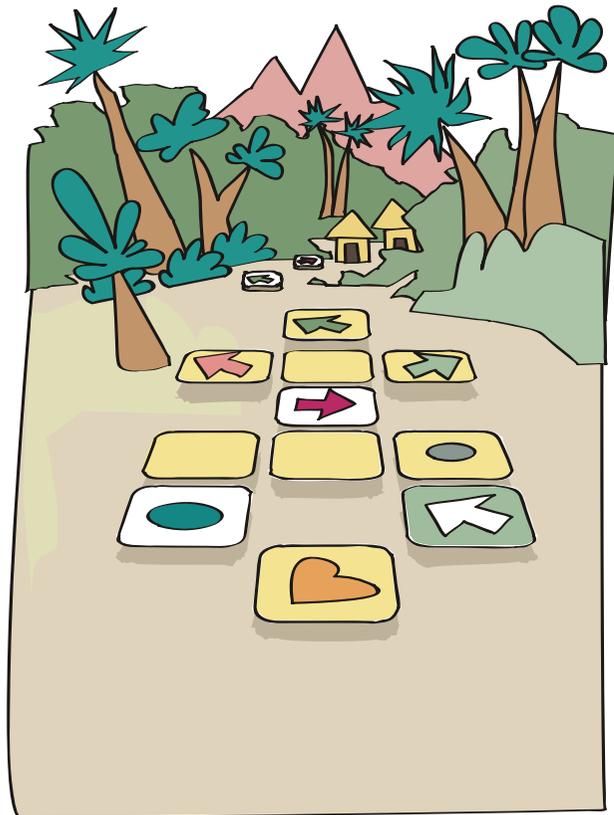
PARC researcher and MMO expert Nick Yee²² recently published the results of a large-scale study about the motivations for play in online games, identifying that one of the three main reasons is the desire to have positive interactions with other people and work toward a common goal together.²³



Clay Shirky raises the aspect of transparency about the context in which CPS is taking place. A system must be as transparent as possible regarding its goals and the benefits of achieving them. "To love the project, participants must be able to understand it." Game environments are designed to be transparent, in particular sandbox and open-world games which are designed to go even further and dissolve the boundaries between the player and the game, by allowing the player to take part on the making of the game!



8 Exploration:



“Humans are innately curious beings. From birth, they behave in ways that demonstrate an ‘instinct’ for inquiry, a natural capacity and desire to learn about their environment” (National Science Foundation, 2001). “Babies rely upon their senses as they explore the concrete, observable aspects of their immediate surroundings. Their world is full of wonder and newness. They gaze at faces, put objects into their mouths, respond to voices and sounds – all to gain more experience and information” (Thornton, 2003, as cited in Ogu & Schmidt, 2009).²⁴

Games potentiate the natural learning process of exploration. Digital games invite kids to enter new environments with no previous explanations or instructions on how to behave. A constant learning is therefore required through exploring the different resources and tools provided. Through attractive narratives, challenging situations are presented, and the player has to search for the given resources and develop skills to effectively use them on a systemic level. The richer the game design, the more kids have space to explore.

The exploration in order to learn is a personal process which provides the player with personal choices such as timing to learn, range of resources to use, individual or collective activity, etc.

The exploration is potentiated within a virtual environment, not only because kids feel “safer” to dare in virtual new situations, but moreover because of all the possibilities allowed, without the boundaries and limitations of reality. Kids are allowed to explore “being” and “doing” things following their imagination, limited only by the choice of game and the specific game design. Sandbox games potentiate kids’ learning through exploration of resources as well as of team play, providing the necessary resources for them to experience their fantasies while they are awake!

(Endnotes)



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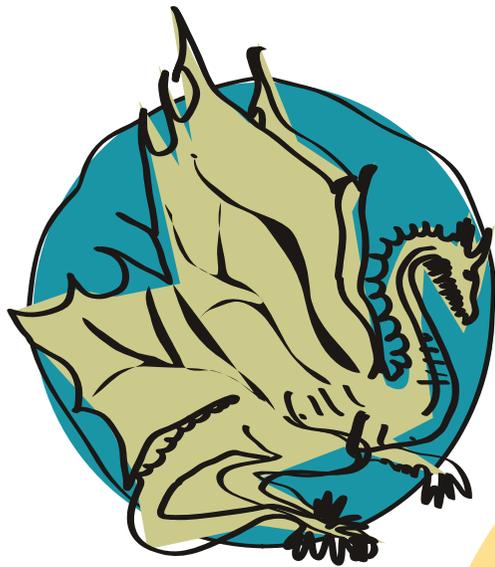
unfinished Dictionary

based on 11-12 years old kids' information



unfinished Dictionary

based on 11-12 years old kids' information



A
B

AFK >>>>>>>>>> away from keyboard notice to other online players

AKOL >>>>>>>>>> annoying kids online, unexpert players interacting on multiplayer game

AO >>>>>>>>>>> adult only game

BETA >>>>>>>>>>> game prototype exposed online

BOOMSTICK >>>>> shot gun

BOSS >>>>>>>>>> strong character player needs to beat to advance

BOT >>>>>>>>>>> help players learn the gameplay environment and necessary skills

CHEAP DIFFICULTY> game's easy obstacles

CLAN >>>>>>>>>>> group of players on specific game

COM >>>>>>>>>>>> usually refers to the character controlled by the game

COMBO>>>>>>>>>>> series of moves performed consecutively

CRITS >>>>>>>>>>> player or character performing a powerful and unique hit

CUT SCENE >>>>>> short video telling story sequence of the game

DLC>>>>>>>>>>>> downloadable content

POPULAR GAMES



POPULAR GAMES



MINECRAFT

Minecraft is a Sandbox game, which means that the player is given considerable freedom in choosing how or when to approach objectives, and the players can modify the given world themselves by creating the world where he/she plays. The game can be played by one or many players. Minecraft has created a culture of hundreds of “communities” on the Web, usually focused on specific topics, as for example the crowdsourcing project to build the world of “[Game of Thrones](#)” or “Prince of Persia.”

Minecraft [is one of the] leading examples of games and services that enrich people’s lives through collaboration and collective action (Amy Jo Kim).

[Minecraft](#) provides a space where by placing blocks you build anything you wish. The game involves players creating and destroying various types of three-dimensional environments. The player takes part as an avatar that can interact with his or other players’ “worlds.” The game also enable for group “servers,” generated by the players themselves, where a common environment is created through collaboration on building, destroying, advancing, and supporting each one’s avatars against unexpected “dangers.”

Kids can personalize the environment. This personalization provides them with a sense of security to exercise their skills with determination in order to face and overcome physical

and social challenges. Games that allow for cooperative interaction bolster the initiative of kids to reach out to others and at the same time that helps them understand how their actions affect others. Such environments enforce collaborative problem solving, where kids learn about each other's skills and individual paces, strengthening and fostering group actions.

Minecraft intelligently allows for freedom and creativity, features that could "inhibit" less confident players, by offering structures that can be destroyed at the pace at which the player feels ready to act upon the environment.

Minecraft boosts a world of skills such as exploration, gathering resources, crafting, maintenance, decision making, etc., also provided by similar games where the player has to choose or construct different combinations of objects in order to survive, having to manage food, health, shelter, and other basic resources. These skills are exercised in a virtual world, leading kids to start to understand each one's role and responsibility toward the ecosystem they are a part of.

This open-ended game attracts a wide range of kids since they can adapt the environment according to their preference and abilities. More than 20 million copies have been sold since its release in November 2011.

Minecraft is an indie game (the term is used for independent game developers, individual or small groups), developed by Notch, a game programmer. Today there is a team of developers constantly enriching and modifying the game.



WORLD OF WARCRAFT



The king of MMOs, massive multiplayer online games (Forbes, May 2013), with 10 million paid subscribers. Released in 2004, it was an instant success among youngsters not only because of the amazingly rich story plot but moreover because of its capacity to support large numbers of players simultaneously online. An inter-cultural phenomenon was taking its large steps, players playing with unknown players from any part of the world, finding each other through a common interest, the world of Warcraft (according to Wikipedia, the second-largest English-language wiki). Brown & Bell research (2004)¹ described these collaborations as constituting a “distinctive space of play made possible by the capabilities of the Internet, the design of World of Warcraft, and the culture created by players. Many collaborations spontaneously take place with strangers – a striking phenomenon that seems unusually prevalent in multiplayer games and suggests the emergence of new kinds of social relations developing within contexts provided by the Internet.”

World of Warcraft takes place in a 3D representation of the Warcraft universe, allowing players to interact with it through their characters. The game world initially consisted of the two continents in Azeroth: Kalimdor and the Eastern Kingdoms.

The game contains elements from fantasy and science fiction: such as gryphons, dragons, and elves; steam-powered automata; zombies, werewolves, and other horror monsters; as well as time travel and alien worlds. Means of transportation range from spaceships, boats, zeppelins, or portals to move from one continent to another. Although the game world remains relatively similar from day to day, seasonal events reflecting real-world events, such as Halloween, Easter, and Midsummer, are represented, as well as variable weather like rain, snow, and dust storms.

Some of the challenges in World of Warcraft require players to group together to complete them. The idea of “dungeons,” instances that allow a specific group of players to focus on the challenge, collaboratively looking for the solutions to the given problems, exploring areas and completing quests.

Much of World of Warcraft play involves the completion of quests. These quests, also called “tasks” or “missions,” allow characters to gain access to new skills and abilities, and explore

new areas. It is through quests that much of the game's story is told, both through the quest's text and through scripted NPC (non-playable character, controlled by the game) actions.

The pedagogical strength of World of Warcraft has been referred to in many papers as the ideal environment for collaborative problem solving (Horizon Report 2011).² Moreover, it is a game that requires a significant amount of specific content learning, skill development, peer support, specific search (webs, blogs, search engines), and a long-term commitment to hard work.



CALL OF DUTY

Call of Duty is an action-adventure first-person (FPS) and third-person shooter (TPS), released in October 2003 for PCs, and later expanded to consoles and handhelds; in 2001 it became an MMO.

The game follows the American paratroopers, British paratroopers, and the Red army. The earlier games in the series were set in World War II, and later versions in Modern Warfare, the Cold War, and in futuristic settings, such as the latest, released in November 2012, Black Ops 2, which takes place in the year 2025.

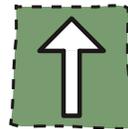
The gameplay is based on an avatar. FPS allows the players to experience the gameplay through the eyes of the player-character, providing a first-person perspective. In TPS, the player sees the player-character, usually from behind or "over the shoulder." The FPS is perceived as immersing the player in a much deeper emotional relation with the game world while TPS provides a "movie-like" perspective, however a much more clearly defined avatar that the player can identify with. In terms of skill development, TPS provides a better perspective for the interaction of the player with the surroundings, facilitating overall physical movements like jumping, fighting, driving; FPS allows for a more refined use of the weapons. The choice of weapons is a major decision that leads the player to search for information and to learn deeply about personal and peers' experience. Players are generally





given a few seconds before the round begins (known as “freeze time”) to prepare and buy equipment, during which they cannot attack or move.

Most of Personal Shooters require a great amount of strategy planning, as in the game [COUNTER STRIKE](#) where realistic (“real-world”) settings are simulated and players need to develop authentic military tactics to accomplish goals in the game and not simply quick reflexes as in other action games. Tactical shooters involving military combat are sometimes known as “soldier sims” and they require caution, care, cooperation, coordination, planning, and pacing.



[TEMPLE RUN](#)

A very popular game, these days, across many different ages, from very young kids to adults! Only for mobiles, initially released only by the App Store (August 2011), but today it is available also on Google Play for androids. It is today the most downloaded paid game.

With surprising graphic design and user experience (UX), Temple Run is an endless individual run from monsters, or “demonic monkeys.” The player has to perform physical actions while running by using different possibilities of the device. The design resembles “arcade” games, where coins or more powers are gained depending on the meters the player is able to run. Statistics are always available to the player to check his/her performance.

Temple Run is an indie adventure (games designed by small independent studios) of a team of three people who work out of their homes. “We’ve had a ton of people contacting us and all sorts of crazy offers,” Luckyanova says. “People wanting to acquire us, make movies, merchandising... [They] want to make T-shirts, kids’ pajamas or shoes with Temple Run on it” (Wired, 03/28/2012). They have lately teamed up with Disney Productions, and are adapting its narrative to various Disney movie releases.



Sports simulation game series, released annually since 1993. The name refers to the world governing body of football. As of 2011, the FIFA games are offered in 18 languages, and in 51 countries, and are available for consoles, PCs, and mobiles. Includes 360 degrees player control. Online play was introduced in 2009, with a feature called “FIFA 09 Clubs” allowing players to form or join clubs and field their strongest team online.

Sport simulation games allow the player to develop skills in a controlled environment. The NPCs (player controlled by the game) try to offer a reality base about the behavior of the other players on the field, so the player can exercise and relate to players he/she cannot control.

Through the 10 years of this game series, one can see the development of simulation, attaining a very realistic experience. The players are allowed “virtually” to experience real emotions as if they were playing with their sport heroes, in their chosen teams and chosen venues. These games allow kids to satisfy their sports dreams. Apparently these games attract specially kids who practice these sports, suggesting they do not isolate them; on the contrary, they stimulate them to go out and feel empowered by the virtual experience.

FIFA is the most popular sport simulation game today, especially among boys, followed by NBA.



Ekoloko is a virtual community designed for young kids, “where kids discover the world, virtual and real, through fun games and quests, while absorbing positive values, knowledge and skills that will help them become more responsible and involved individuals.”

Kids’ virtual communities, or worlds, are virtual spaces specially created for kids to be able to play in a protected, safe environment. Ekoloko, Mogobe, and Mikmak are the three most popular in Israel today.

These spaces are very successful with young kids, who still play with given environments, and are less daring in navigating to find new games. They all provide specific characters kids can relate to, and feel identified with. They target a population of kids at a developmental stage where their cognitive functions are more egocentric and they are starting to develop social relations, so they prefer “known” friends (real and virtual).

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ASKING growups



ASKING GROWNUPS



MR. NOAM WEISBERG:
C.E.O EdLee Entertainment LTD.

Digital game...the digital game I had and still have fun is [Air Control](#) or something like that, you need to put airplanes back to the airport and to their specific line based on the color they have etc. Why – because it was easy and fun.



PROF. SHEIZAF RAFAELI:
Director of the [Sagy Center for Internet Research](#), leads the "Games for Executives Project", University Haifa.

If you mean to ask about *commercial* games, I would probably choose [SimCity](#), with its various versions. It is rich, it kept growing, morphing and improving, and I found that I can use it to support a myriad of didactic contexts. The game I used the most is one we (Gilad Ravid and I) developed, called "Hulia". We have been using this game for the last decade, with thousands of participants. We have also published several scientific articles based on its development and use. For younger students, we have used (and reprogrammed) a game that CET was actually involved in many years ago. It is called "Sea Merchant" (סוחר הים), and after re-wiring it, we used this game with a variety of high school groups. In all three cases I found that having a record of play, modularity and the ability to rewind were all very important and contributed to the pedagogical use of the game a lot more than graphic sophistication).



DR. DAVID WEINBERGER:

Senior researcher at Harvard's Berkman Center for Internet & Society, and co-director of the Harvard Library Innovation Lab.

[Doom](#) was hugely exciting to me because it showed the direction graphics were going in. If we can make Doom, eventually what wouldn't we be able to make? But I should probably respond [Portal 2](#) because it demonstrates the unique power of a game to combine the narrative, character and humor from other forms (movies, books) with flat-out gaming elements. Plus, there are touches of genius throughout it -- for example, the simple singing of the machine guns.

MR. STEVE THEODORE:

Game developer, his credits include MechCommander, Half-Life, Team Fortress, and Counter-Strike. He's been a modeler, animator, and technical artist, as well as a frequent speaker at industry conferences. He's currently content-side technical director at Bungie Studios



Probably the game that impacted my way of thinking the most is [SimCity](#). The original game debuted in 1989 and was a big departure from most games of the day, The underlying mathematical model was based on 'cellular automata' -- lots of fairly simple rules operating in parallel, rather than the more common approach that would try to cram all of the complexity of a big system into a structured, top-down system like a flow chart. More conventional games, built around linear mechanics, are ultimately puzzles that can be solved: if the player can figure out the logic of the programmer's mental model it is possible to 'beat' the game, much as it's possible to solve a Sudoku puzzle. Sim City, on the other hand, resists easy solution: the combination of random events and many simple rules interacting alongside each other creates complex systems that have the same intractability as the real world: I can solve my traffic problems with a new highway, but now I have too

much pollution. Bulldozing an industrial area to cut pollution increases unemployment, and hence crime. Increasing the police force requires more taxes... and so on. Sim City was probably the first real example of "emergent gameplay" - a game where the designer could not know in advance all of the things that might happen. From a game design standpoint, it was a very refreshing change from the linear designs that were common 20 years ago. From an aesthetic standpoint it also had an organic quality, almost a "natural" feeling that contrasted strongly with more conventional scripted options. Will Wright, the designer of the game, used to refer to it as a 'Toy' rather than a 'Game' because it allows the players to set agendas for themselves. Gameplay aside, Sim City was also exciting because it showed how a fairly simple interfaces and graphics could convincingly model very complex real-world phenomena. This led me to learn a lot more about how mathematical and algorithmic models can be used to understand the world. A couple of years ago I helped my son design a little simulation game showing how a very simple set of rules could illustrate the way ecosystems work using almost the same mathematical technique as Sim City. Of course, today's games are far more graphically sophisticated and offer more gripping moment-to-moment gameplay. Still, I don't think any of them really teach me anything that compare with what I learned from all those blocky 8-bit pixels back in 1990.



MR. BRIAN WANIEWSKI:

Managing Director of Institute of Play.

Wizard. The game included a construction set allowing users to create their own levels. For the first time, I had a way to bridge the gap between the kind of sophisticated experiences I knew I wanted to build and my own meager programming skills. I spent hours making and testing levels with friends. It became an important part of a larger transition in my life toward a more active, creative relationship to the world: from a player of games to a maker of games; from an eater of food to a cook and grower of food; from a reader of books to a writer of poems and stories, etc. etc.



MR. LEON MARKOVITZ:

Entrepreneur, B.A. in Economics and Int'l Relations, and co-founder of Wikibrains Start-Up.

Counter Strike has impacted me the most. First played it at age 12, and the experience of offline and online collaboration was spectacular. Playing w/groups worldwide opened my eyes



MR. HANAN GELBENDORF:

Co-Founder & Principal at BABA - Bezalel (Academy of Arts and Design) Alumni Business Accelerator and Partner at Buzz Hunter

JumpMan, on Commodore 64. At first, I was addicted to it, when I was a teenager. I can still remember the tune and the sound effects- I think that it was the first game that made a great use of it.



DR. IDIT HAREL CAPERTON:

President and Founder WorldWideWorkshop

In the past three decades I've played and created innumerable digital games, and many of these have impacted me. It's very hard to select a favorite, because I have too many! Here is my attempt to list my top all-time favorites,

1) [Oregon Trail](#) represents one of the early models for computer games in the classroom. Oregon Trail uses a role-playing format to situate students face-to-face with the difficulties of the 19th Century American migration westward. I believe the game resonated with me and with kids because it was the first opportunity to play computer games in the classroom, and the first-person learning it offered was more effective (and fun) than reading a thick textbook about the same historical event would have been.

2)  [Logo](#) and [Microworlds](#) The first playful digital tool I deeply engaged with for hours and hours was Logo. It was created by my mentor and colleague Seymour Papert and his team at MIT in the 1960s and 1970s. Logo was the first computational programming environment created for kids. It was so powerful, ahead of its time, and engaging. It embodied Papert's philosophy that learning mathematics and geometry could flourish through Constructionist play and kinesthetic intuition. The first Logo was an intelligent toy—a programmable robotic turtle that kids could direct to move around by typing commands at the computer to which it was connected. Later it was designed for PCs, and through programming commands, learners (kids and adults) explored mathematical, geometrical and computer science concepts in radically-new and playful ways. Logo migrated to all computers and has been used by millions of young learners to program computer graphics, explore geometrical shapes and scientific imagery, build simulations and make interactive software and games on their own. I always appreciated that learning Logo was accessible to programming novices, including very young children and teens, and also supported complex explorations and sophisticated projects by experienced experts. It was a groundbreaking tool in youth

learning and inspired me deeply in everything I created ever since I first used it in 1982.

- 3) [SimCity](#) : I met creator Will Wright at MIT in the late 80s. His Sim toolkit engaged students in active learning through demonstrating and exploring knowledge by creating simulations of situations or phenomena. Released in 1989, SimCity offers an even more complex approach to Will's Sim toolkit by placing users in the role of creator, operator, and manager of a city, where gameplay has consequences but can never be lost nor won. This open-ended design defines, for me, the best game-based learning, and it reflects a philosophy that Wright and I share: Games give kids the opportunity to navigate complex systems, experiment, construct, try and fail, which comprises a more relevant and engaging learning experience than reading a fact-based textbook or playing a quiz game could ever approximate.
- 4) [Super Mario Brothers](#) and [Game Boy](#) One of my favorite moments in gaming was the release of the Nintendo Game Boy, because it signifies an important shift to mass-market mobile gaming. Experiencing classic games like Super Mario Brothers on a handheld device was a game-changer for kids and adults alike, demonstrating that technology could be sleek, fun, playful, and portable... thus appealing to all people! My kids loved it, and I did too. I met the Nintendo R&D team and Gunpei Yokoi, creator of Game Boy, in 1989 while applying and negotiating MIT's first-ever grant from a leading video game company to explore the positive impact of playing video games for learning.
- 5) [Cartoon Guide to Physics](#) Harper Collins CD-ROM: I loved creating and playing this game that was designed to explain Newtonian Mechanics to college-level students. Released in 1995, it was based on Larry Gonick's popular book by the same name and offered users the opportunity to experience physics phenomena as a way of fostering learning physics concepts. For me, the Cartoon Guide to Physics represents the unique benefit of game-based science learning: games can convey complex concepts through hands-on, engaging activities, rich simulational experiences, self-paced navigation and personalized explorations.
- 6) [MaMaMedia](#) : In 1995-2000 my team and I invented and produced a website to engage young kids (ages 5-12) in learning through playing casual online games, which became the first-ever dynamic playful toolbox that gives children a space and the digital tools

to create their own media. It was designed to foster imagination and digital literacy, and encourage children to use the Internet for playful, expressive and active learning—not just for searching and finding information. Some of my favorite games were Frame-that-Toon, Flipsticks, Botblox, What’s-the-Story, Romp, Card-Zapper, and DigSigs. MaMaMedia grew to host more than 5.2 million active registered users from 36 countries. This vibrant community of young people and their families created innovative, imaginative Internet projects that proved to me that we must provide kids with tools for creative digital learning at an early age and at home and school, to develop their abilities to drive their own knowledge-building and exploration-capacity with digital media, tools, and games. In 2007-8, I was asked by Nicholas Negroponte to re-program a suite of MaMaMedia games (using Python and the Sugar OS) for OLPC’s first generation XO laptops (http://www.worldwideworkshop.org/pdfs/OLPC_Activity_Center.pdf). OLPC kids in communities all over the world have been using these games ever since.

- 7) [SEED Science Games and Sims](#) : In 2002-2008, I was tasked by a team of science experts from Schlumberger Corporation with creating an online hub of online science games and simulations for their science-learning website SEED. I simply loved making and playing these games, because it required me to think creatively about how playful games could teach very complex science concepts to kids—specifically those in underserved communities worldwide. For example, my team and I created the game Tectonic Plate Movements, in which players learn about the shifting of tectonic plates and then use this knowledge to animate simulations of tectonic plate movements. What resonated most with me in this project was SEED’s insight into the unique ability of digital games to engage individuals in collaborative learning communities online, and the particular success of doing so in underserved populations in the developing world.
- 8) [Globaloria Games](#) : My most recent innovation in learning games is to enable kids themselves to increasingly occupy the role of game creators and coders. I believe that every kid (and adult) must learn to play AND make games. I see it much like the relationship between reading and writing: the more we read the better writers we become, and the more we write the better critical readers we become. We need to master both to be fully literate.

MINDCET Pitch



MindCET Pitch

Today, we are facing a troublesome situation within the educational system, with the widening information and communication gap, in and out of the classroom. A growing majority of kids are genuinely looking for answers in alternative spaces. The educational-oriented environments, including the digital ones, and the school context, are rapidly becoming uninteresting. In order to keep the educational system relevant to kids we need to understand kids' alternative, parallel learning environment.

This report presents a snapshot of the significant place digital gaming occupies today, as an efficient learning alternative space for kids, providing new data about Israeli kids.

We do not propose a solution, but we do offer a suggestion:

Let us lower our guard against the negative effects of digital gaming, and try to understand its total impact, and especially its potential as a support to kids' developmental needs.



According to the kids themselves, digital games are helping them raise their self-esteem, connect them to significant others, motivate them to learn and to develop skills, and, most of all, make them feel empowered and relevant!

Living in this fast-paced era, when the entrepreneurship culture keeps us refreshed with new propositions, we must keep our eyes opened. Relevant alternatives, coming from a variety of different fields, may broaden our educational arena, keeping it relevant and useful to kids.





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