Accelium

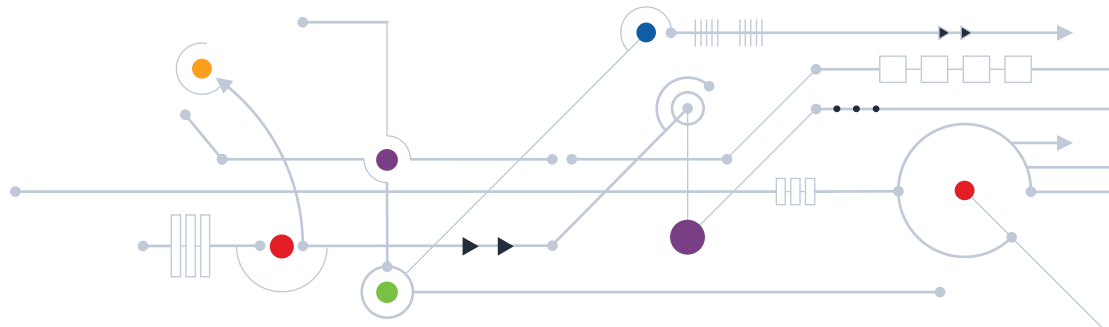# *CURRENT STATUS ABOUT GAME-BASED ASSESSMENT*

Accelium presents a framework for the measurement of knowledge, skills, abilities, and other human characteristics using smart games
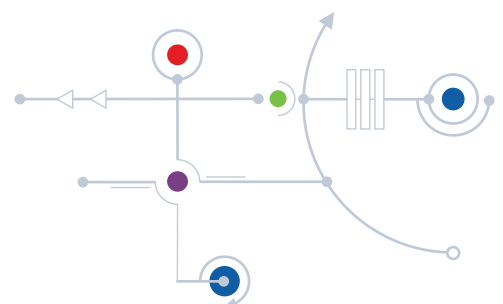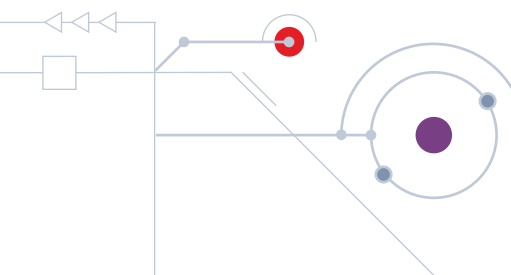
November, 2020

INSIDE

CEO's Opening Remarks

Ehud Shachar

"Which tool is stronger, Bishop, or knight?" One of the first questions I asked my chess teacher as a child. This is a tricky question, both tools move on the board in a completely different way, and at the same time, they are considered equal in their power. Each of them is worth three points. How do you know which is better? Bishop, or knight?

The chess teacher replied: "It depends on the position; in open positions, the Bishops are better because their range of motion is big, and in closed positions, the knights are stronger because their maneuverability is greater." "It's like with people," he added, "it depends on the position." Of course, I did not fully understand what he meant. I was young and preferred to focus on the board's boundaries and what's inside them rather than looking for insights outside of it.

To me, the world of human resources is becoming more and more similar to Chess. We already understand that people have abilities appropriate for the board's position, the cooperation with other people, and the need for the game. We are looking for hidden talents, adaptability to the organization's spirit, adaptation to the needs of the project. We are looking for abilities, skills, behaviors, and not necessarily accreditations and certifications.

A penetrating view at the candidates' thinking patterns, gaining insights related to their learning style, their ability to endure pressure, their level of understanding of the situation. All of which have become more important in our time.

Another important trend is, of course, the technological trend. In recent years we have witnessed a digital revolution in many service areas of our lives. Many traditional areas such as insurance, health, transportation, hospitality, shopping, and more have undergone a shake-up and change following the coming of advanced digital services. The evaluation field is also undergoing a rapid change in the digital direction. More and more organizations are looking to lower costs, simplify processes, and get more information with less effort. The new habits of all of us, especially the younger generation, require a faster pace, a different and more accessible experience. The rapid changes in the labor market require other skills, which must be assessed and developed. The global epidemic has further accelerated the digital processes, and what is considered advanced and exciting has become necessary due to the epidemic's constraints. As a global company specializing in developing and evaluating thinking skills, we see a growing demand for game-based assessment products. Since this is a new and fascinating trend, which is intriguing to many intellectually and practically, we decided to gather data, research, and answers on the subject for you.

This status document comes to give up-to-date information from the last three years, in which we operate our solutions in the market. We hope that we will contribute to your knowledge and that this document will contribute to the Game-based assessment development and promotion.
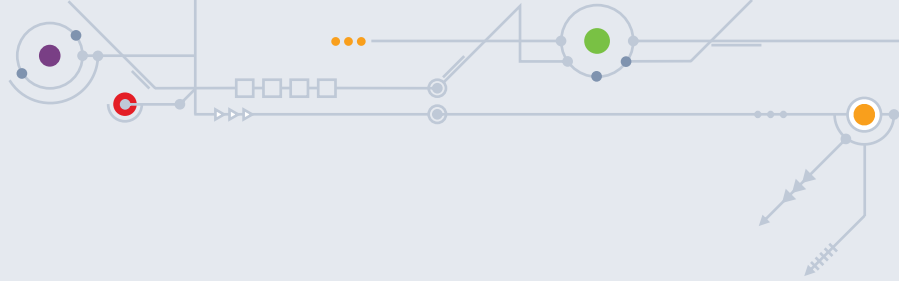
Chapter A: Introduction

There is a growing interest in the use of Game-Based Assessment to measure skills performance. This chapter will provide an initial introduction to game-based assessment technology.
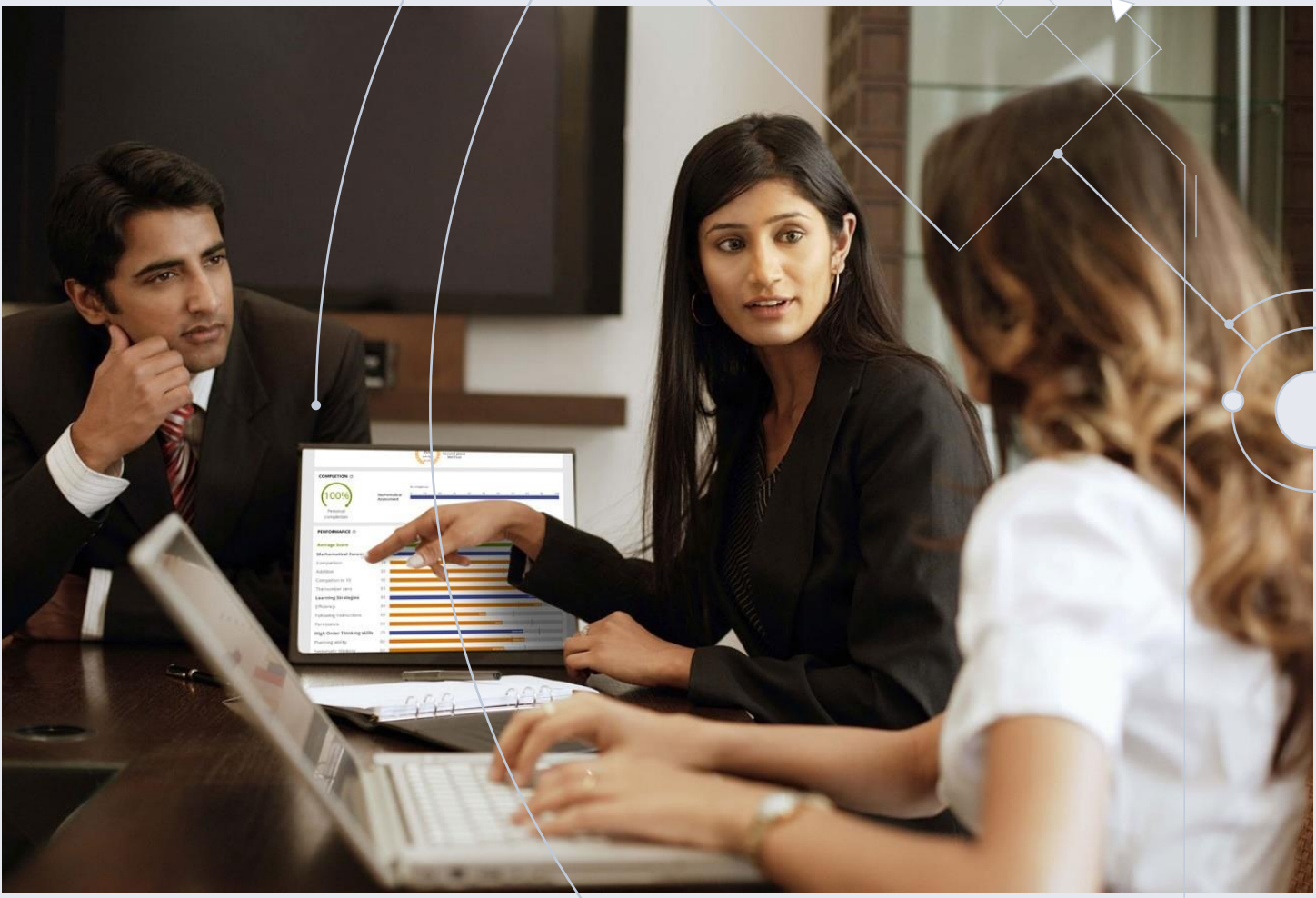
1. What is a game-based assessment?

There's a lot of buzz around game-based assessments as a way to evaluate employees and candidates in hiring or in promotion process. Game-based assessments are enticing because they seek to turn something that can be stressful and tedious into something fun and engaging. It's clear that game-based assessments can add a ton of value to the candidate evaluation process, and we believe they represent a promising new frontier. Let's dig into what game-based assessments are and how we see them positioned in the corporate and education landscape.
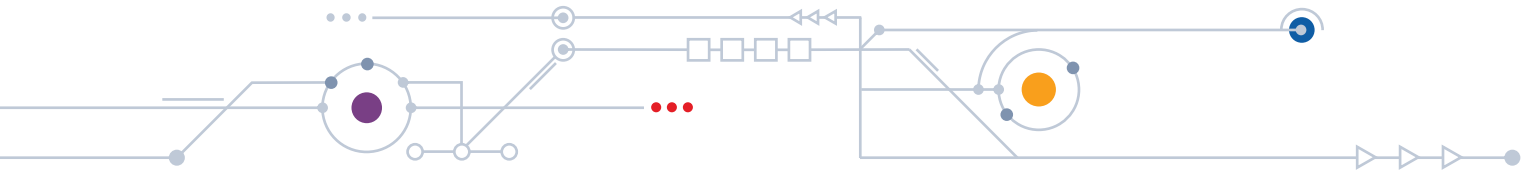
First, what is a game?

Games typically have several qualities in common. First, they're fun. Of course, "fun" can be subjective from person to person, but the intention is for the assessment to have that element of game-like fun to it. Without that, it's just a typical assessment.
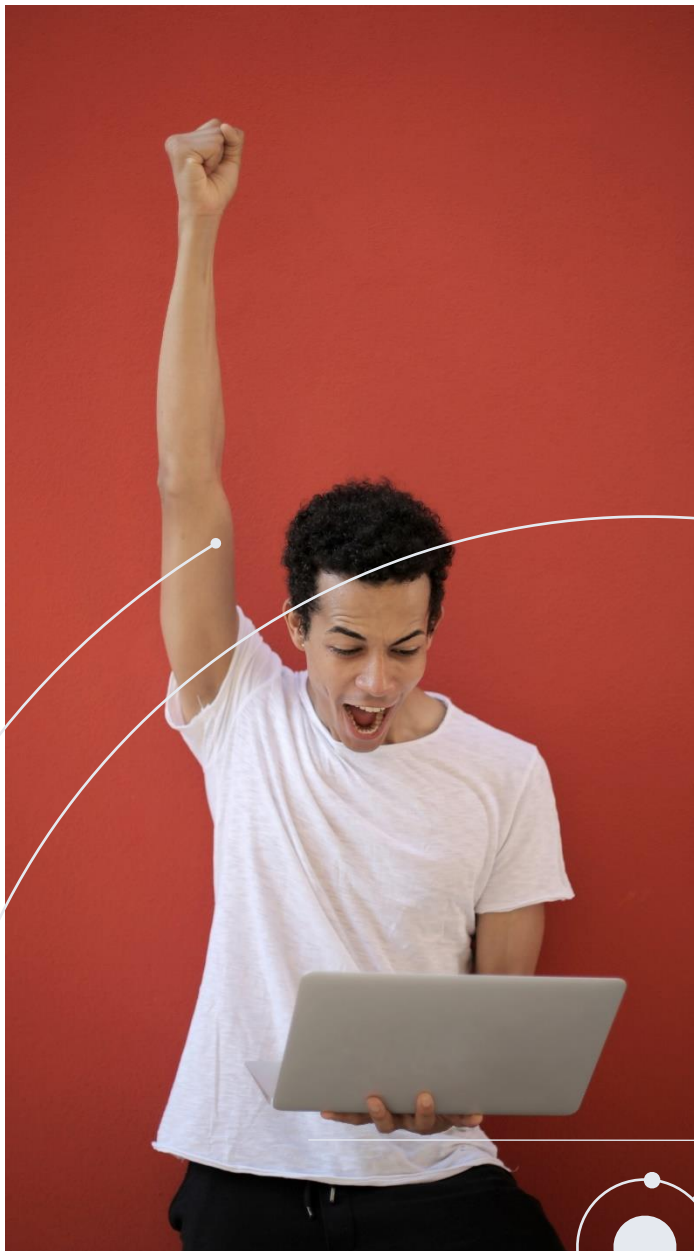
Second,

games involve a set of rules that define the gameplay.

Third,

the player typically gets to make a series of decisions within the bounds of a defined set of rules. These decisions are oriented around achieving a goal, whether that goal is to beat other players or to get the most points.

And fourth,

the game typically results in some sort of measurable outcome, which is typically expressed as your score, or whether you win or lose.

Game-based assessment (GBA) is the application of principles of game design to measure human performance.

Game-based assessments balance two very significant needs. The first need is to identify the skills and abilities that will ultimately predict how an employee or a candidate perform in the job. Employers want more predictive information on the likelihood that their candidates will succeed, and validated assessments are a great way to achieve this.

But the need for this information is balanced by a second need - the need to maintain a positive candidate experience that respects your candidates' time and investment in the process. In a candidate-driven job market, candidate experience is more important than ever, and companies are rightfully concerned about appealing to their candidates.

Game-based assessments have emerged as a way to balance the need for predictive information on your candidates with a fun and engaging experience.

2. What are the benefits of game-based Assessment?
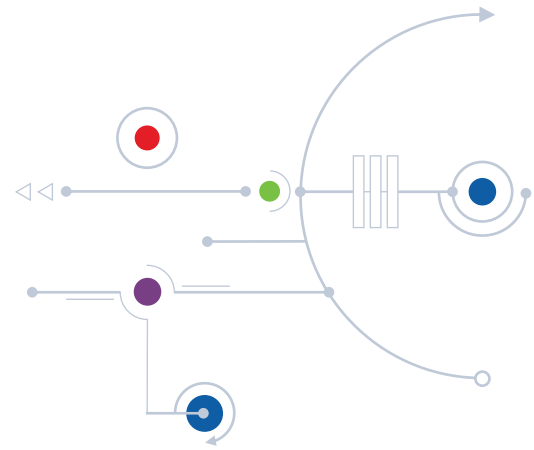
Attraction! Positive Experience and Highly Engaging

- *Fun, interesting game-playing test*
- *Positive differentiation - reflects an innovative, people-oriented brand identity*
- *No need for long, tiresome questionnaires*

Streamlined Assessment Process

- *Fast testing*
- *Produces a rich, concise report including skills assessment and identification of strengths*
- *In-depth and multidimensional analysis - based on the identification of behaviors and thinking patterns*

No prior knowledge required

- *No need for preliminary instruction*
- *Game rules are learned during the test*

Maximum flexibility

- *No monitor presence required*
- *Applicants can be tested in the comfort of their own homes*
- *Supports multiple concurrent test-takers*

Enhances Employment Brand

- *Leave a lasting positive impression on applicants*
- *Convey a fresh and dynamic employer image*
- *Creates an important competitive edge for companies in an increasingly global war for talent*
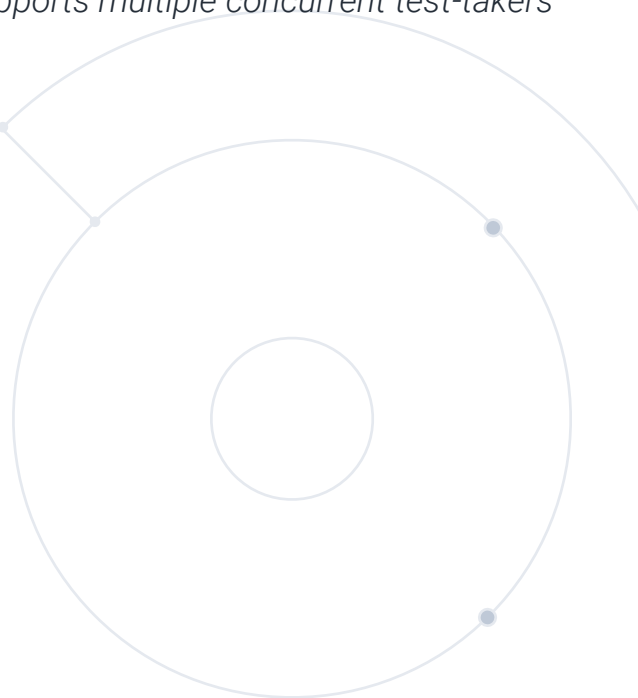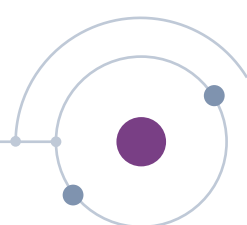
3. For what ends will we use a game-based assessment?

Perhaps the most important aspect of game-based Assessment is its potential to measure the higher-order skills essential for success in so many walks of life. This what makes the Game-Based Assessment relevant to various segments in the population and for different purposes.

For Recruitment

Game based assessment makes recruitment process more effective and efficient for employers. It enables to test employees' and job applicants' skills in a fast, engaging and effective way, providing exclusive insights on the most critical skills for success.

For Business Coaches

Whether they are training individuals or an entire organization, game-based skill-development programs give coaches an innovative way to build critical skills such as Analysis, Planning, Flexible Thinking, and Resilience.

For Executive Courses

Game-based Executive Courses allow key managers and employees to build critical skills in an engaging, cost-effective way across organizations.
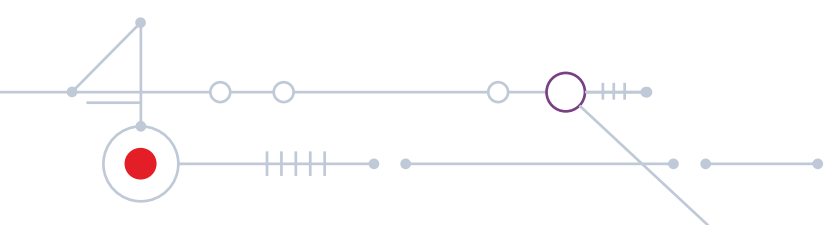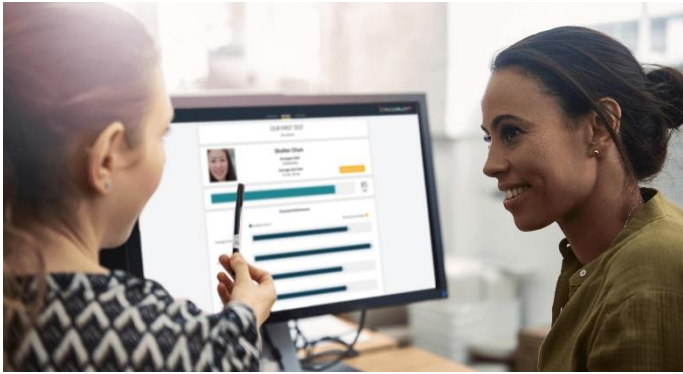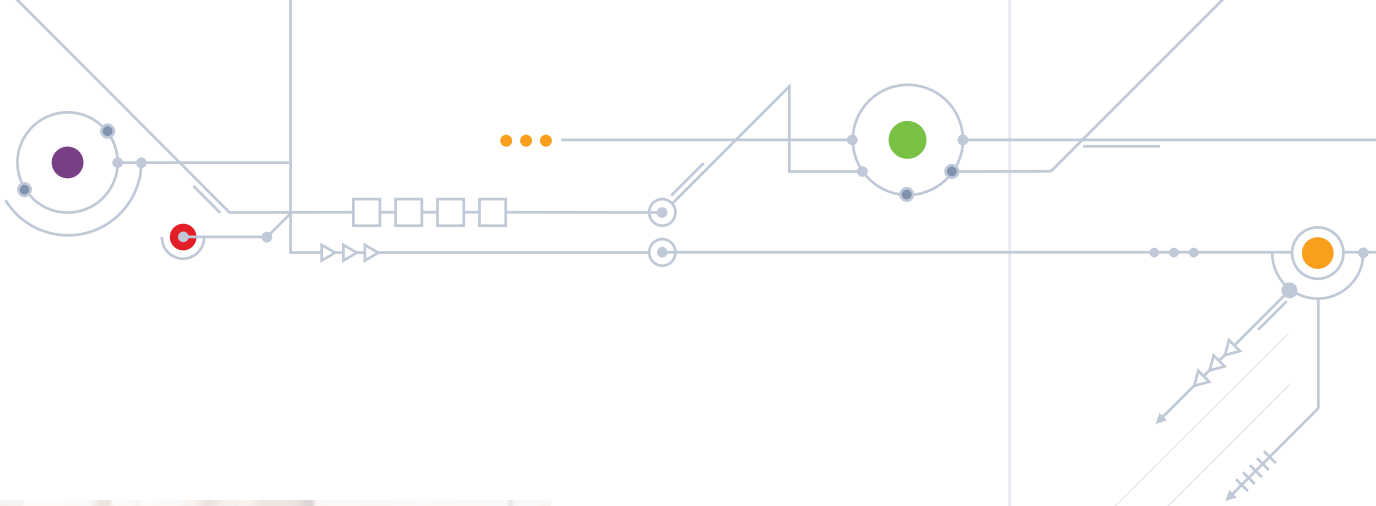
Employee Evaluation

Game-based Assessment utilizes artificial intelligence tools to identify employee thinking patterns and characterize their decision-making style, focus over time, methodicalness, learning curve, etc. Resulting insights improve personal awareness and can help define a focused personal growth and career plans.

Educational Systems

Game-based learning and assessment are a great tool that helps to modernize learning and education. It keeps students engaged and make sure they are learning how to be critical, confident, and creative; all are abilities they'll need for success in the future.

Universities

The formative nature of game-based learning and assessments permits students, through applying and practicing the targeted knowledge and skills during gameplay, to gain experiences, receive immediate feedback, and as a result, improve their skill mastery.
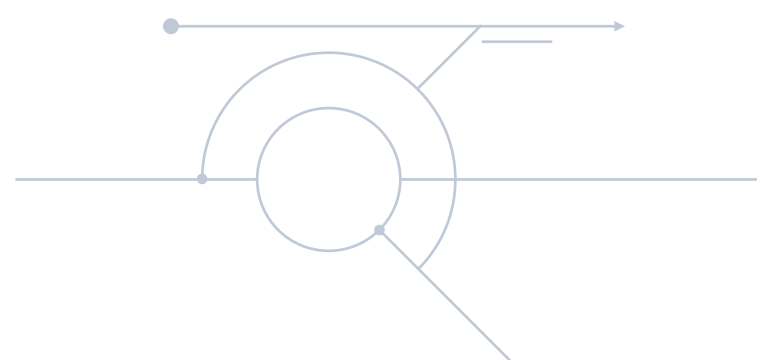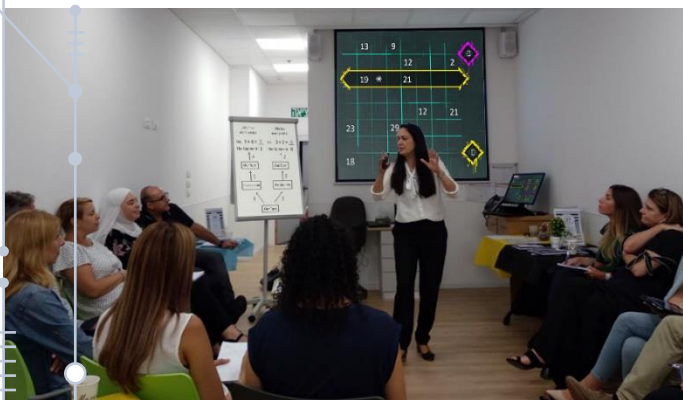
4. What is the difference between game-based and traditional assessments?

While it's rather obvious that playing a fun digital game is more exciting and less stressful for candidates and can lower the guard of candidates to answer more truthfully, what's in it for the employers using these tools?

Routinely, companies examine their candidates via interviews on their academic achievements and past professional experience; occasionally combining the latter with Psychometric tests. One of the problems employers are facing when applying the traditional evaluation tactics alone is the subjectivity level and inability to determine candidates' soft skills. Not to mention the biases that predetermine our choices and impressions.

It is proven that companies applying a combination of several selection practices end up generating greater productivity and increased sales per employee. Here is where the game-based assessments come into the fray. The use of games for HR purposes helps to recreate real-world situations and true candidate reactions; disclosing their soft skills (i.e. adaptability, flexibility, resilience, decision-making etc.) which are difficult to ascertain from traditional multiple-answer tests or interviews.

Professionals state that "unconscious biases have a critical and problematic effect on our judgment, leading to making decisions in favor of one person to the detriment of others".

Here is a short review of the advantages of game-based assessment versus the disadvantages of traditional assessment tools.

Time-consuming: possibility to screen more people in less time

Reliable and Objective results

Easy - applicable

Engaging for Candidates

Capture hidden behaviors

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4. What is the difference between game-based and traditional assessments?

#1 Time-consuming: allow to screen more people in less time

Game-based assessments don't require the presence of an interpreter, moreover, they do not even require the candidate to be in the same country. Instead of spending a day for conducting interviews, recruiters are able to devote their time analyzing the results and then making a hiring decision. This approach also motivates recruiters to assess a larger amount of candidate profiles, than they would have if running traditional interviews, allowing them to cherry pick the best profile.

#2 Reliable and objective results

Another difference between game-based and psychometric tests in the traditional methods is that during the game, candidates can hardly fake their reactions; what they would normally do when asked directly. This provides recruiters with a rather powerful, factual, objective and unbiased ability to evaluate candidates' fit for the position. The game-based assessment analytical report is available to the recruiter upon completion of the test; illustrating the potential hires' strengths and areas of improvement, enabling them to shortlist candidates and hire the best person for the job. Due to the human factor elimination, game-based assessment also reduces discriminatory judgments such as gender or ethnicity, providing a unique opportunity for fair comparison for every candidate. In turn, this adds credibility to the company's employers' brand, representing the company as an innovator; providing a base for top talent attraction.

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4. What is the difference between game-based and traditional assessments?

#3 Easy - applicable

Game-based assessment focuses on the evaluation of soft skills and of cognitive aptitude, which are necessary and are applicable across all the industries and position levels, regardless the seniority. Additionally, there is no difference whether the candidate is an "experienced gamer" or not. Game based assessment are self-explanatory and offer each candidate a unique experience. Furthermore, companies of all sizes can gain from game-based tests.

Vs.

#4 Engaging for Candidates

Game based assessment is significantly more engaging than a traditional psychometric exam. Candidates are generally more likely to complete a short series of games than a lengthy test and are more likely to enjoy the experience.

Vs.

#5 Capture hidden behaviors

Game-based assessment can be used for the summative evaluation. Still, its natural strength is monitoring performance by assessing the information trails that examinees naturally leave behind when playing a game: that information trail can consist of four types of observations: time to respond, the accuracy of answers, points earned, number of attempts, and more. Traditional tests will not be able to calculate these criteria.

Vs.

5. What prompted the use of game-based assessment?

Corporate recruiting and training are facing significant challenges. Employees are no longer engaging with traditional forms of recruiting, training, and assessment, finding the whole experience 'unexciting' and 'boring'. Compounding this situation is the growing number of 'millennials' entering the workforce. Millennials are the largest generation in the world labor force since 2015.

By 2025, Millennials are going to make 75% of the global workforce. Millennials (also known as Generation Y) are the generational demographic group of people born between 1980 and 1995. The older Generation Z members are now entering their final year of college, and they will soon be entering the job market. Millennials have come of age during a time of technological change, globalization, and economic disruption. That's given them a different set of behaviors and experiences than their parents.

Gallup report from 2017 states that Millennials have grown up with the internet and smartphones. This new generation is highly educated, tech-savvy, entrepreneurial, self-aware, and confident. These demographics have made it necessary for businesses to engage with emerging talent in new ways to secure their company's future.

The generations defined

Post-Millennial generation
Born: 1997 and later

Age of working-age adults in 2017: 16 to20

Millennial generation
Born: 19Slto 1996

Age in 2017: 21 to 36

Generation X
Born: 1965 to 1980

Age in 2017: 37 to 52

Baby Boom generation
Born: 1946 to 1964

Age in 2017: 53 to 71

Silent and Greatest generations
Born: 1945 or earlier

Age in 2017: 72 and older

PEW RESEARCH CENTER

Chapter B: Research

As game-based assessment becomes more popular, so does the academic debate surround the use of the tool. In recent years there have been more and more studies on the subject. In this chapter, we will review several relevant research topics

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1. Can game-based assessments able to predict real-life performance?

1. Can game-based assessments able to predict real-life performance?

Game-based learning and Game Based Assessment are two areas of research that have attracted attention in recent years within the global trend of educational and corporate technology research, recognized as important subjects for study that will become increasingly popular in the next few years. This chapter outlines few researches in both game-based learning and game-based assessment, and tries to answer the question: are the game-based assessments any good? Are they actually able to predict job performance?

The Impact of games-based learning on learning outcomes

The efficiency of using games in learning and training has been tested in several comparative research projects, most notably that of Professor Donald Green of Columbia University. The different projects confirm that proper use of thinking games under orderly and systematic methodology can significantly improve learners' thinking abilities and life skills. One project tested the hypothesis that children can be taught abstract strategic thinking by learning meta-cognitive models and by being exposed to the applications of these models in strategy games and in real-life situations. The study included children ages 8-12, from diverse socio-economic backgrounds.

Professor Donald Green
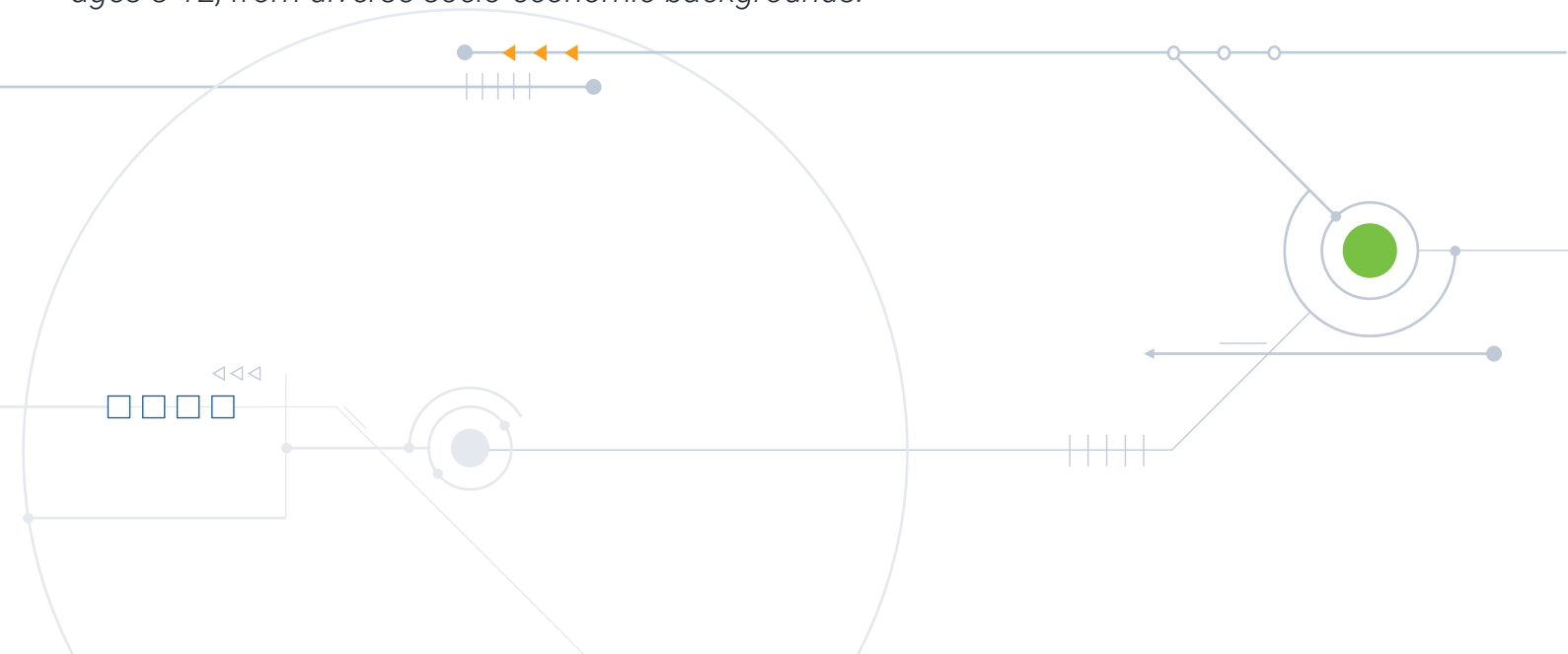
In the first stage, all children played an online "puzzle" game. Their game performance and progress were monitored. In the second stage, children in the research group were taught abstract models for problem-solving, and their analogies to real-life situations.

They were then shown how to apply these models in the games. The children in the control group simply participated freely in game-playing sessions. In the third stage, all children were taught a new game. Both groups received identical instruction.
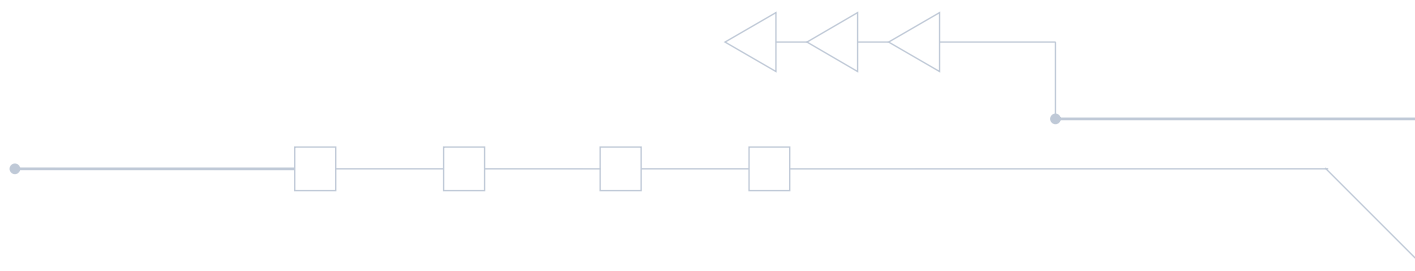
The Accelium Method & Problem Solving

Success rate in Problem Solving tests

	Pre-experiment results	Interim results	Final results
Control Group (standard method)	71	75	72
Research Group (the Accelium method)	69	80	88

● Control Group (standard method)   ● Research Group (the Accelium method)

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1. Can game-based assessments able to predict real-life performance?
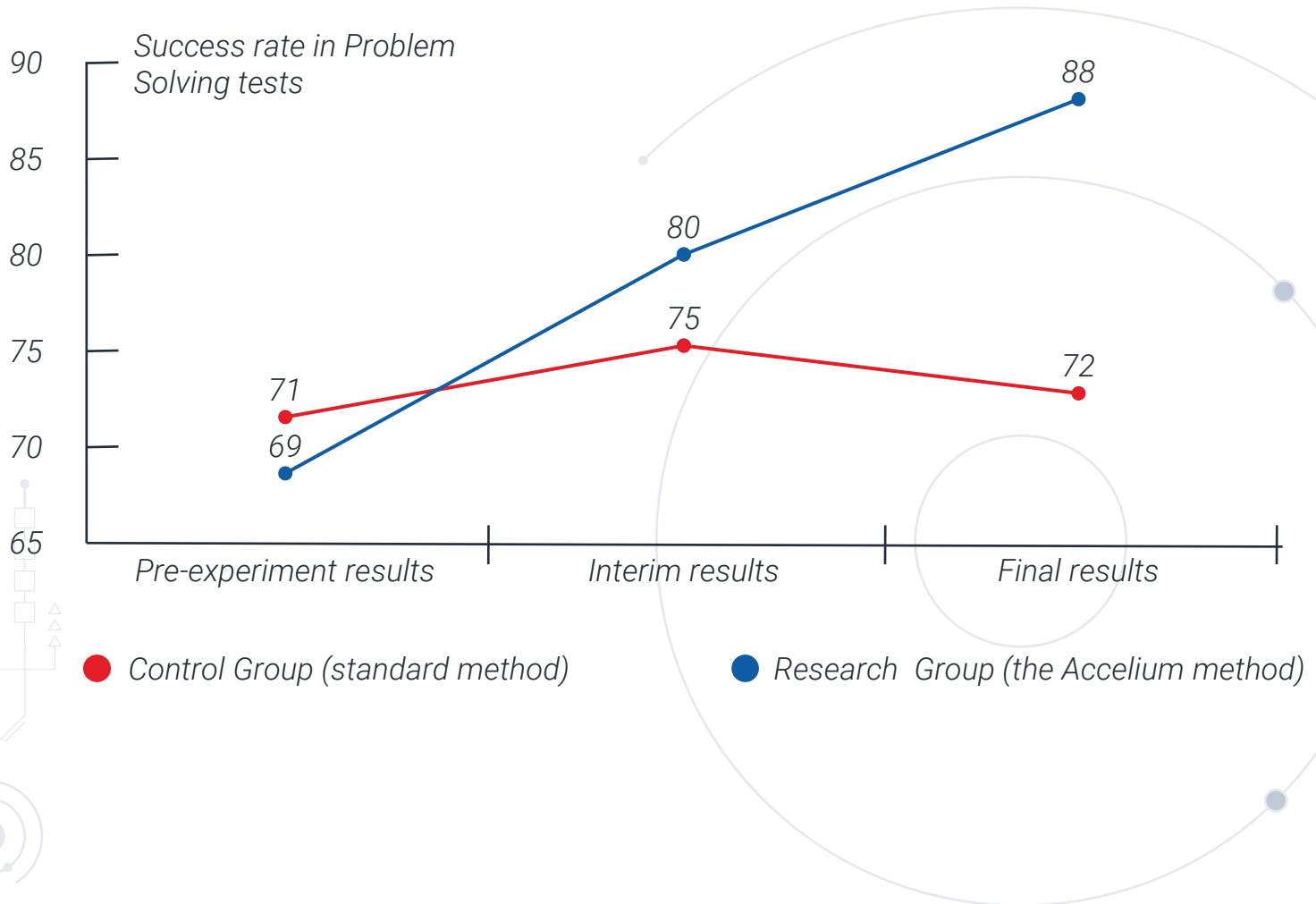
Summary:

- *The Children in the research group significantly improved their performance levels comparing to the control group, even though the latter were allocated more time in their game-playing sessions.*

- *The remarkable fact is that even in Stage Three, the research group achieved notably higher results. In fact, the disparity between the two groups actually increased between Stages Two and Three.*

- *There is a close connection between how students performed in the game and how they perform in school related tasks.*

(i) **For further reading:** *Green, Donald P., and Dan Gendelman. (2003). Teaching Children to Think Strategically: Results from a Randomized Experiment. Unpublished manuscript, Institution for Social and Policy Studies at Yale University.*

Green, Donald P., and Dan Gendelman. (2004). Can a Curriculum that Teaches Abstract Reasoning Skills Improve Standardized Test Scores? Unpublished manuscript, Institution for Social and Policy Studies at Yale University.

The Impact of games-based learning on learning outcomes

A soon-to-be-released study called "Substantial Integration of Game-based learning into schools Curricula," Vanderbilt University in the US had remarkable findings. They measured the impact of using game-based learning tools on students' engagement and school achievements. The research found that the students who played the digital games outperformed their peers on standardized tests. Additionally, teachers saw dramatic increases in engagement and performance. The sample size was large enough—more than 1,000 students in seven states and schools with differing student bodies, socioeconomic factors, and geographical locations.

Teacher's reported dramatic increases in engagement amongst students who participated in the game based learning.

Very high *students engagement*

High *students engagement*

Low *students engagement*

■ *With Games*   ■ *Without Games*

ⓘ **For further reading:** *Substantial Integration of Typical Educational Games into Extended Curricula, Journal of the Learning Sciences, May 2019 edition.*

Game based assessment in corporate training and recruitment

Digital games also provide employees with opportunities to fail, learn from their mistakes, and try again in safe environments.

While Don Greens' study have been carried out in educational settings, there have also been studies relating to the effectiveness of game-based learning for corporate training.

In 2012, the Learnovate centre, a European research and innovation center focused on EdTech and learning technologies, published a comprehensive review of the research evidence for the effectiveness of serious games for corporate training. Learnovate center has listed three key processes in organizations in which games are being used: training, recruitment and marketing and sales. The use of digital games for corporate training and development across many subject domains are increasingly being recognized.

Large organizations such as IBM, Cisco, and Deloitte are increasingly using games to train their workforces in areas ranging from compliance training to leadership training. These organizations recognize that new employees are not engaged and motivated by traditional training forms due to exposure to new and exciting technologies in their everyday lives (including page-turning, linear eLearning), resulting in a poorly trained workforce.

Their review showed that there is an increasing body of empirical research to support the effectiveness of games-based learning. They found research evidence for improvements in attitudes, engagement and motivation. They brought evidence for improved cognitive gains when compared to conventional instructional methods. Furthermore, according to their review, there is research evidence demonstrating positive impact on higher order skills such as Decision Making and Problem Solving.

Game-based assessments are an exciting frontier in recruitment testing because they combine the best of both worlds - a scientifically validated assessment delivered through a candidate-friendly experience.

Learnovate center emphasized the use of digital games in recruitment testing. Pre-employment game-based tests provide an objective and predictive measure of how likely a candidate is to succeed on the job. Assessments are designed to provide employers with an additional layer of objective information to make more informed hiring decisions.

In 2019 Learnovate center held a survey with more than 200 hiring professionals across a wide range of industries to gain a better understanding of how they hire and the ways they incorporate game-based assessments into their hiring process.
The results showed that the majority of respondents use game-based assessments to assess entry and mid-level candidates.

88% use it for entry-level candidates, while 89% use it for intermediate or mid-level candidates. This isn't too surprising. As we mentioned earlier, many organizations use game-based assessments to filter through large pools of candidates.

The report stated that when moving up to higher job levels, the usage goes down. Just 68% of companies give game-based assessments to manager or director level candidates, and just 50% are giving them to VP or executive level candidates.

This pattern is not surprising. When an organization defines an upper-level role that requires a great deal of experience and knowledge, it is more likely to get fewer applicants overall than entry and mid-level candidates.

Percentage of companies that used game-based assessment at each job level

↑25%
From 2018

50%
VP/Executive Level

68%
Manager/Director Level

89%
Intermediate/Mid Level

88%
Entry Level
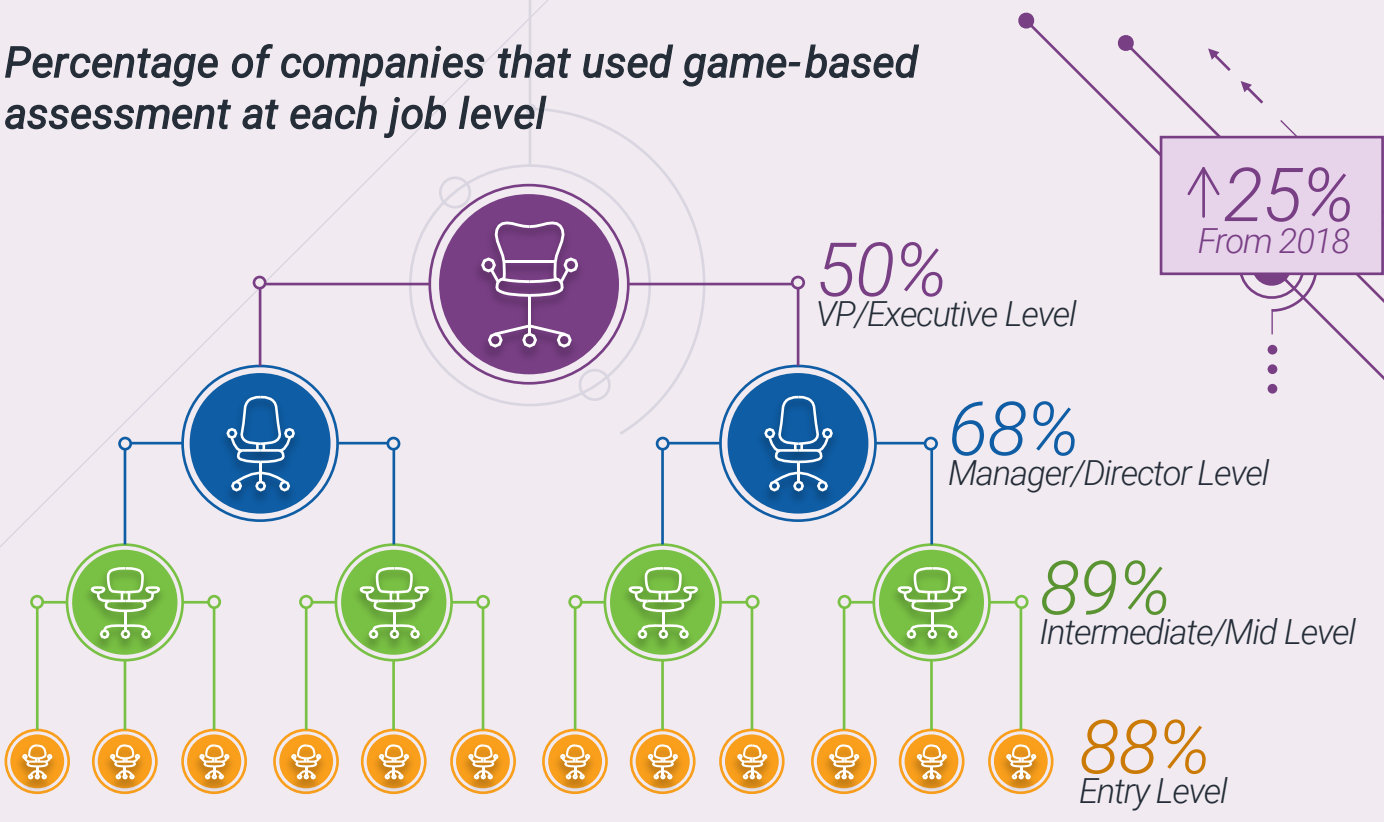
(i) **For further reading:** *Donovan, L. (2012 and 2019). The use of serious games in the corporate sector. Learnovate Centre Ireland. Available at:*
https://www.learnovatecentre.org/wp-content/uploads/2013/06/Use of Serious Games in the Corporate Sector PRINT FINAL.pdf (Accessed July 2020)

2. Which skills can be examined using a game-based assessment?

Along with the increasing use of games for learning, there is also a growing development and research around skills assessment.

In 2015, the Education Policy Committee of the OECD launched the OECD Future of Education and Skills 2030 project as an opportunity to step back, explore the longer-term challenges facing education, and help make the process of curriculum design and development more evidence-based and systematic.

The project aims to help countries find answers to two far-reaching questions:
1. What knowledge, skills, attitudes, and values will today's students need to thrive in and shape their world?
2. How can instructional systems develop these knowledge, skills, attitudes, and values effectively?

As one response to these questions, the OECD Future of Education and Skills 2030 project, developed the OECD Learning Compass, its an evolving learning framework that sets out an aspirational vision of education in 2030. It provides points of orientation towards the future we want.

The document describes with great accuracy the skills that school graduates will need to integrate into the world of work: "The critical skills that graduates of the education system need to successfully cope with the challenges they expect in adulthood (in the 21st century) are high-order, cross-disciplinary thinking skills. These skills are characterized by non-algorithmic thinking, unclear and predefined thinking patterns, multiple criteria, multiple ideas/hypotheses/solutions…"

The paper also calls for education systems to keep pace with changing times:
"Emerging evidence on how to optimize learning, including the use of technological innovations to deepen and transform learning; and changing expectations on the part of learners, who are demanding an education system that is more connected and relevant to their everyday lives."

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2. Which skills can be examined using a game-based assessment?

Summary:

As computer technologies have displaced labor in routine tasks, they have also created new employment opportunities for workers with non-routine cognitive skills, such as creativity, and social and emotional skills.

To remain competitive, workers will need to acquire new skills continually, which requires flexibility, a positive attitude towards lifelong learning and curiosity.
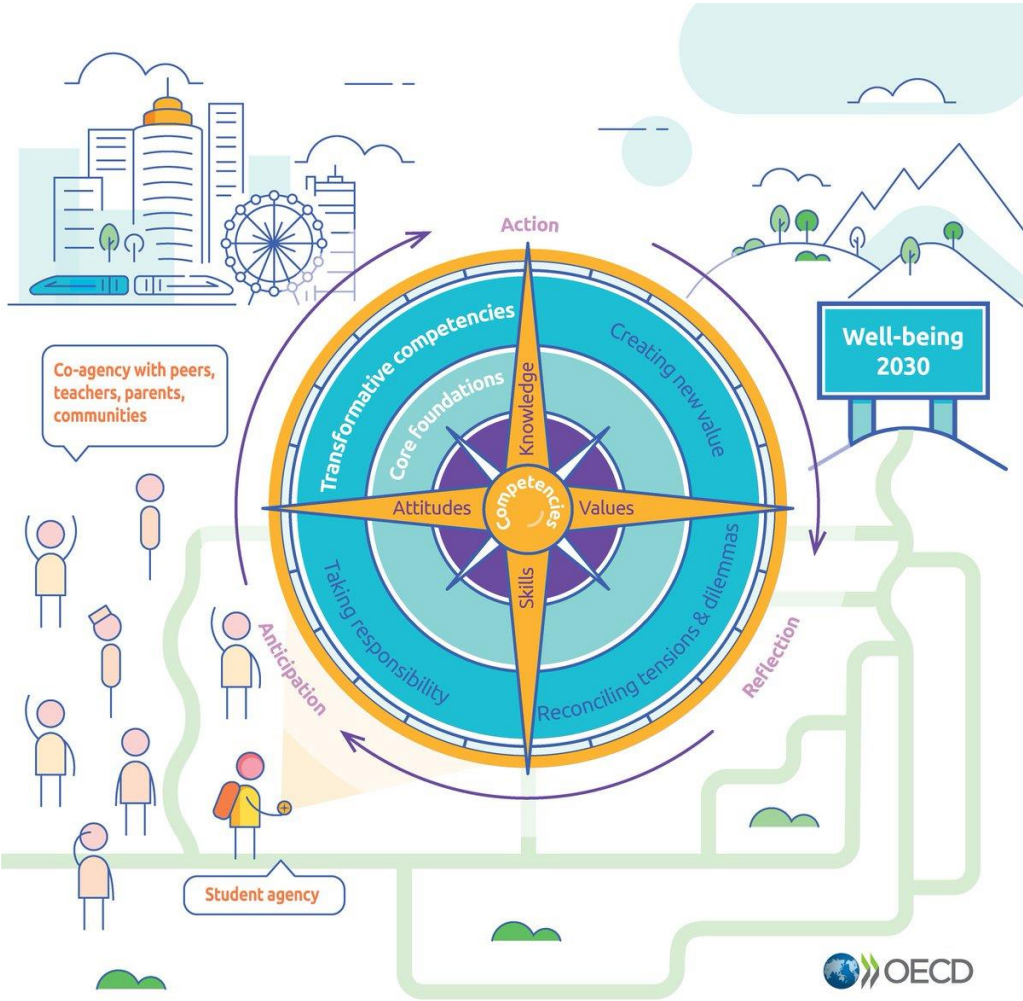
ℹ️ **For further reading:** *OECD Future of Education and Skills 2030, Conceptual learning Framework, Learning Compass 2030*

More than half of executives admit their employees are "average" at best in critical thinking, creativity, collaboration, and communication skills.

According to a new survey conducted by the American Management Association (AMA), more than half of executives say there is significant room for improvement in their employees' competencies. Most respondents admit that their employees are average, at best, in the critical four C's areas (critical thinking, communication, collaboration and creativity) - a distressing situation, since three out of four managers and executives surveyed say these skills will become ever more critical in the near future. (Figure 1)

How do you believe your organization will view these skills and competencies (critical thinking, communication skills, collaboration, and creativity) in the next three to five years?

They will become less important	*1.4%*
They will remain the same	*21.4%*
They will become more important	*74.6%*
No opinion	*2.6%*
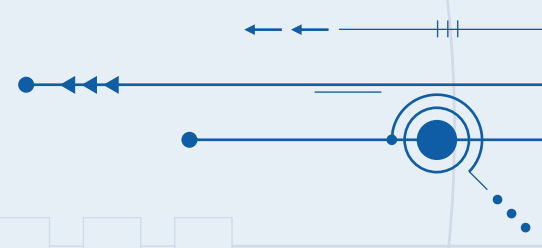
In December, AMA conducted the 2012 Critical Skills Survey, asking 768 managers and other executives about the importance of the four C's skills to their organizations. According to the results, executives say they need highly skilled employees to keep up with the fast pace of change in business to compete on a global level.

The survey also shows that managers and executives believe that it is easier to develop these skills in students and recent graduates (59.1%) than to develop them in an experienced worker (27.1%), suggesting that students and recent graduates may be more open to new ideas and tools versus experienced workers with established work patterns and habits.

Please rate the following methods for developing employees' four Cs.	*Least Effective*	*Less effective*	*Neutral*	*More effective*	*Most effective*
Prof. development/Training	*1.7%*	*53%*	*19.6%*	*553%*	*18.1%*
In-house/Job training	*1.4%*	*7.7%*	*22.9%*	*463%*	*21.6%*
Mentoring	*0.9%*	*3.5%*	*17.6%*	*46.0%*	*32.0%*
One-on-one coaching	*0.1%*	*2.4%*	*10.8%*	*43.5%*	*43.2%*
Job rotation	*23%*	*8.1%*	*27.9%*	*43.0%*	*18.7%*

3. Motivation, gender, age, and biases in GBA-recent studies

Attitudes and Motivation

Applicants report higher levels of satisfaction and in turn, perceived fairness and organizational attractiveness when the gamified assessment method is used compared to its traditional version.
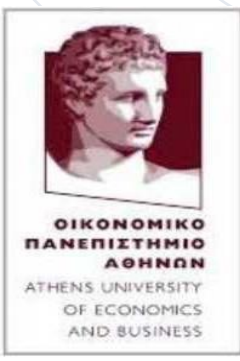
*Researchers from the department of management science and technology in Athens University of Economics and Business have conducted a study aimed to **compare the applicants' reactions between a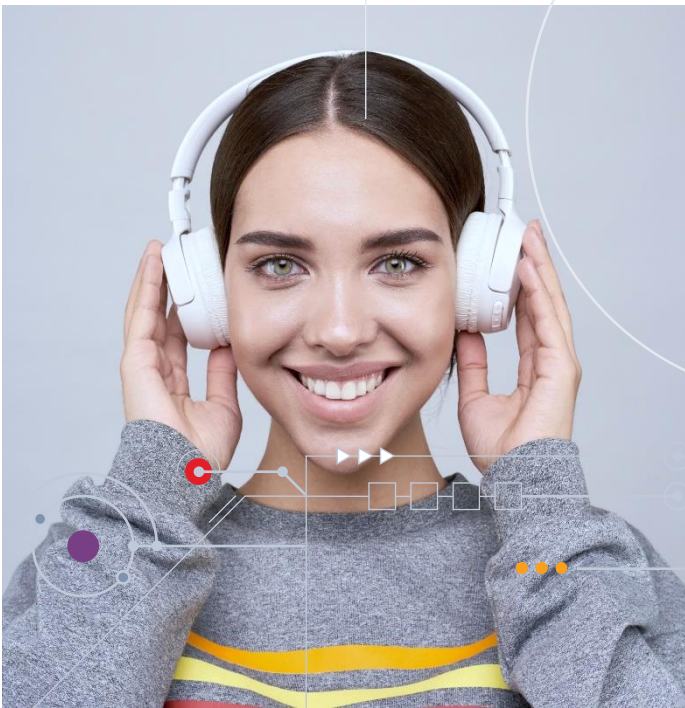 game-based assessment method and a traditional text-based assessment method.** The experimental group has been asked to complete an online game-based assessment, following an online questionnaire measuring their reactions to the assessment method, while the control group has been asked to complete an online text-based assessment, following an online questionnaire, measuring their reactions, as in the experimental group.*

Their findings indicated that applicants report higher levels of process satisfaction and in turn, perceived fairness and organizational attractiveness when the gamified assessment method is used compared to its traditional version.

For further reading: *Georgiou, K. and Nikolaou, I., (2020). Are applicants in favor of traditional or gamified assessment methods? Exploring applicant reactions towards a gamified selection method. Computers in Human Behavior. 106356. 10.1016/j.chb.2020.106356.*

> *"Our students have changed radically. Today's students are no longer the people our educational system was designed to teach".*

This is how Marc Prensky, an American writer and speaker on education recently (2001) stated the problem with education today.

Prensky suggests that the arrival of digital technology in the last decade of the 20th century can be marked as a "singularity" - a dramatic break in the flow of generational change. Prensky therefore holds that "today's students think and process information fundamentally differently from their predecessors". He even suggests that these changes might be found in the very manner in which the new generation's brain functions. As far as thinking patterns are concerned, Prensky is confident that thinks have already drastically changed.

Prensky calls this new generation of high technology usage "Digital Natives", holding that "Our students today are all "native speakers" of the digital language of computers, video games and the Internet". Consequently, all people born before the beginning of the digital era are termed by Prensky as "Digital Immigrants".

*"Native Speakers"* **Vs.** *"Digital Natives"*

The problem that Prensky identifies regarding education is that "our Digital Immigrant instructors, who speak an outdated language (that of the pre-digital age), are struggling to teach a population that speaks an entirely new language", thus creating a cross-generational dissonance and de motivate the students.

Education today rests on the assumption that learners are the same as they ever were. This is according to Prensky no longer a valid assumption. Traditional education cannot meet the needs and inclinations of the new digital immigrants.

According to Prensky, this gap has to be addressed by the traditional education system that needs to adapt itself to the new Digital Natives in both content and methodology.

Prensky claimed that games should be used for learning as a mean to close the gap. He has coined the term digital game-based learning and listed games' motivating elements: they have goals and rules - which gives us structure and motivation, they are interactive - which gives us an active role, they are adaptive - which allows flow and maximizing motivation , they have outcomes and feedback, they have win states, they have characters and story -which gives us emotion, and more.

❝ Learners in this century have grown up with the Internet as part of their cultural experience. The very fact is that game based learning is now a consistent part of their social experience. It means that the game in the learning and assessment processes contributes to the motivation of the learners and may improve their performance!
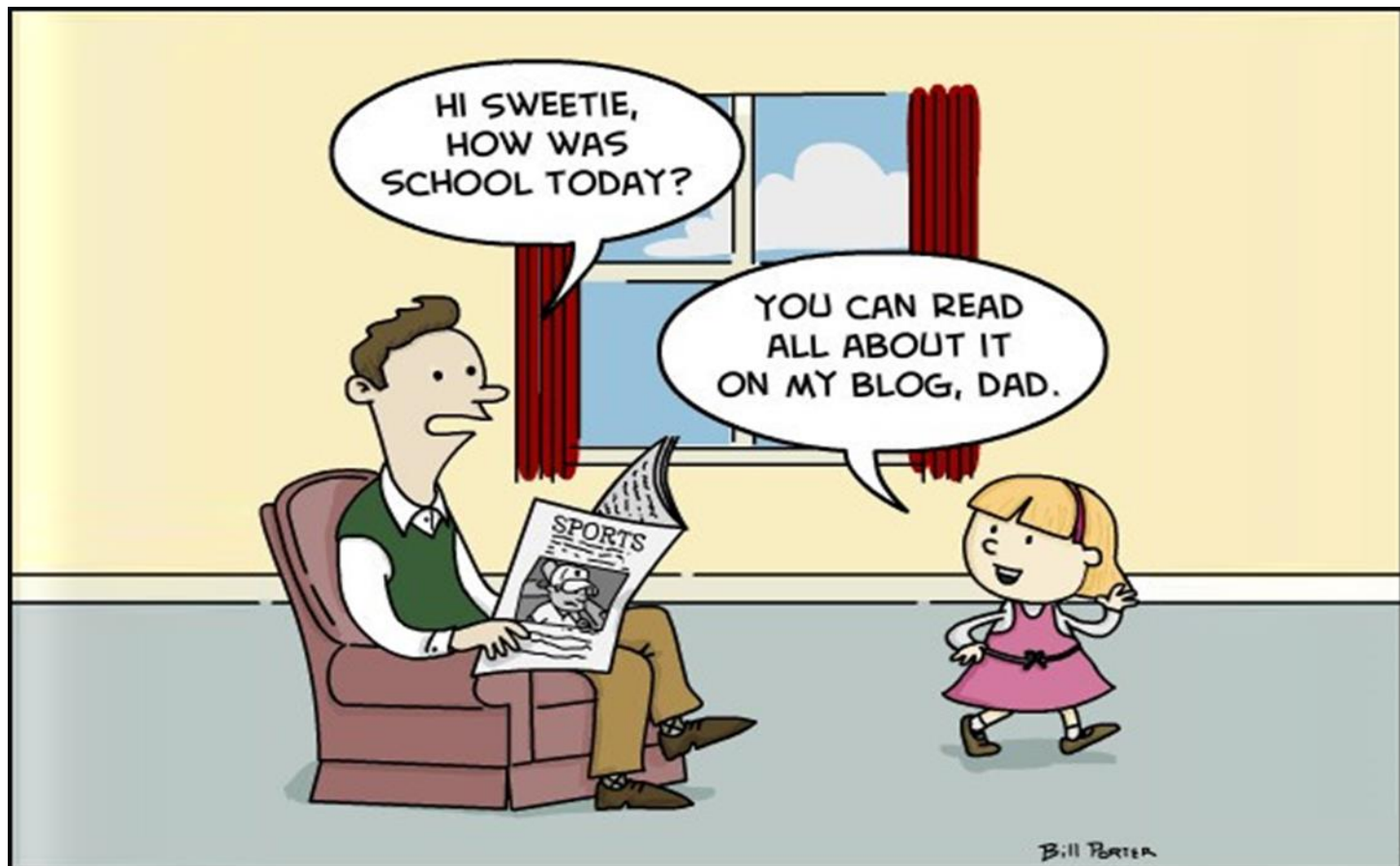
ⓘ **For further reading:** Prensky, M., (2001) Computer games and learning: digital game-based. And Prensky, M., (2001). Digital Game-Based Learning. McGraw-Hill Education

Here is a brief overview of 3 additional studies that examined the relationship between motivation and games as a tool for learning and assessment.

1. A research conducted in the University of Southern California has examined the effect of emotional arousal on human's memory. One of their conclusions was that people pay more attention to The small details, and better remember information that are highly relevant to them and when they are emotionally involved. These findings indicate that games, which elicit a strong emotional involvement and commitment may yield high recall and long-term retention rates.

For further reading: *Sakaki, M., Fryer, K. and Mather, M. (2014) Emotion strengthens high-priority memory traces but weakens low-priority memory traces. Psychological Science 25(2): 387-395.*

2. The Educational Testing Service (ETS), the world's largest private non-profit educational testing and assessment organization, has published a comprehensive review addresses the impact of motivation on assessment scores.

In that review they pointed out an important concern about the impact of motivation on test performance and validity.

Specifically, they focused on educational measures and the problem of low motivated students and their impact on the test validity.

For further reading: *Finn, B. (2015). Measuring Motivation in Low-Stakes Assessments. Educational Testing Service Research Report ETS RR-15-19.*
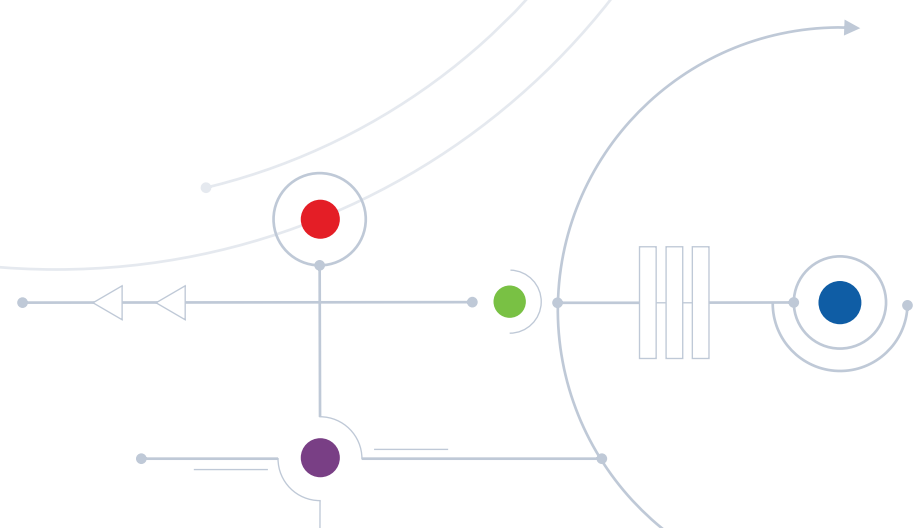
3. The use of engaging and exciting games, in which the examinee is emotionally involved and high motivated, may improve assessment validity. In recent years, more researches about the validity of game-based assessment tools which assess examinee's high-levels skills, have been conducted: In one example, researchers from Florida State University and University of Luxembourg used game-based assessment to measure middle-school students' problem-solving skills. To validate their assessment, they compared their results with two external problem-solving measures. Their results indicated that the problem-solving estimates derived from the game significantly correlated with the external measures deals with measuring problem solving skills.

i **For further reading:** *Shute, V., Wang, L., Greiff, S., Zhao, W. and Moore, G. (2016). Measuring Problem Solving Skills via Stealth Assessment in an Engaging Video Game. Computers in Human Behavior, 63, 106--117.*
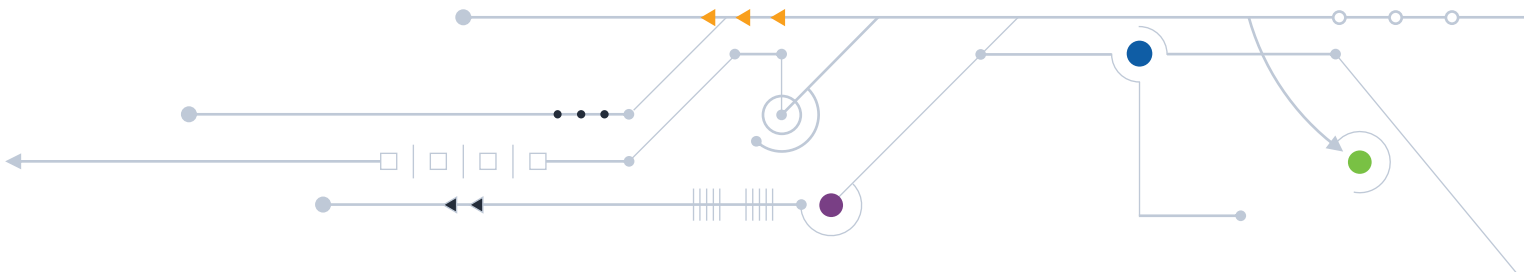
Summary:

- *Technology is already transforming the way we teach, learn and assess.*

- *The research evidence to date suggests that game-based learning and game-based assessment can appropriately positively impact learning outcomes, improve engagement and motivation, and influence behaviors and attitudes both in adults and young students.*
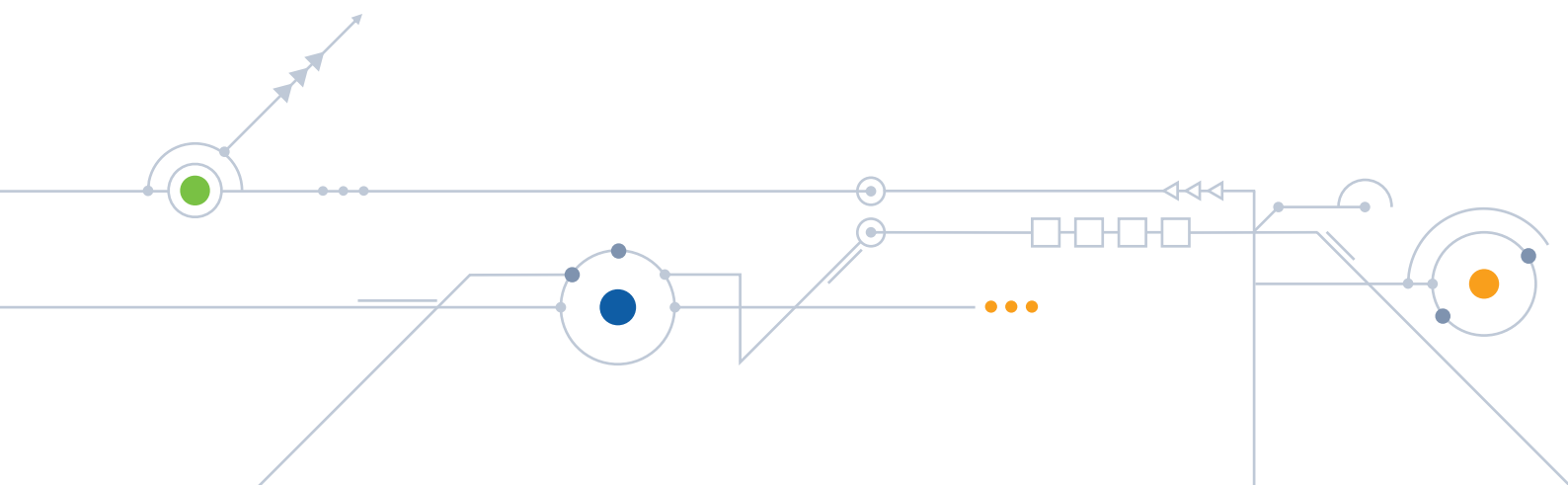
Games for Learning and Assessment: Does Gender and age Make a Difference?

Several studies tested social factors such as gender, age, and cultural identity on the acceptance, usage, and performance of digital games used for assessment. Little is known about how candidates may react to this type of assessment, and what implications this can have for organizations using this method to assess candidates.

In collaboration with Arctic Shores, Athens University of Economics & Business conducted a study with more than 250 participants to check the reaction and effect GBA has on examinees of different ages. Findings from previous research suggest older adults have increased anxiety and lower self-efficacy about using technology. Age has been found to be associated with longer response time, more errors, and lower performance levels. Based on this, It is feared that older individuals may be discriminated against by this assessment method.

There were 2 research questions:

1- Dose age predict performance within game based assessment?

2- Do candidate perceive the game based assessment differently depending on their age?

The initial correlational analysis shows age does not predict performance on a game-based test. No findings were found indicating discrimination based on the examinee's age. It is concluded that GBAs are equal as a suitable assessment method for candidates across a range of age groups and cultures.

ⓘ **For further reading:** *Kerr G., Montefiori L., Close L., Nikolaou I., (2019). The Effect of Age and Game Experience on Candidates' Reactions to Gamified Assessments. Arctic Shores website. Downloaded from:*
https://www.arcticshores.com/wp-content/uploads/2019/09/Research-Poster-Cultural-Differences-and-Faking.pdf

4. Accelium GBA – Adam Milo Validation Research

Any HR leader, hiring manager, or recruiter who is interested in using game-based assessment knows how important is for the tests to be validated. After all, the goal of using game-based assessment is to drive better hiring decisions, which in turn lead to better performance outcomes across the entire organization. The validation process provides the backbone for a test's ability to predict and drive these positive outcomes. The validation process is by no means simple, often requiring a careful study that involves gathering different pieces of evidence to provide a scientific basis for interpreting the test scores in a particular way. There are a variety of different validity measures that can be used to provide this evidence, from criterion validity (how well a test correlates with a certain outcome, such as job performance or turnover) to construct validity (whether a test is measuring what it's supposed to be measuring).

Adam milo research

Adam Milo is the leading and largest company in Israel in the field of human resources. With more than 50 years of experience in recruiting, diagnosing, placing, developing, and advising employees and organizations in Israel and around the world.

Adam Milo has tested some of Accelium's assessment products before integrating them into their solutions. The data they accumulated support its use as a diagnostic support tool.

In one of the validation tests, Adam Milo conducted a large-scale study with about 1000 participants to examine the internal consistency of two central Accelium's evaluation tools': the first tool is based on the game Move It, and the second tool is on the game PingWins.

Internal consistency: assesses the consistency of results across items within the Accelium tests. The most common internal consistency measure is Cronbach's alpha. Most often, the goal is to get an "alpha" of at least 0.7. Assuming the tested items are positively correlated with each other. The results showed that for both tools, Kronbach's alpha was 0.89- 0.90.

It means that in the tests a consistency was found between the different levels of the test.

Further studies have examined Accelium's tool validity. In early 2019, Adam Milo incorporated in their standard recruitment process one of the Accelium assessment tools to test the tool's validity.

The focus was on two main skills: Analytical Ability and Quick thinking. Both skills were defined as significant by the decision-makers in the organization that participated in the study.

It is important to emphasize that the Accelium tool results were not provided to the decisionmakers (i.e., organizations' decisions regarding the candidates relied only on the data obtained from Adam Milo standard assessment tools).

At the end of the recruitment process, a comparison was made between the candidates' results in the Accelium assessment tool who were accepted for the position and the candidates who were not accepted for the position they were examined for.

The chart below shows that significant differences were found in their performances.

Candidates who were accepted to the job

Candidates who were not accepted to the job
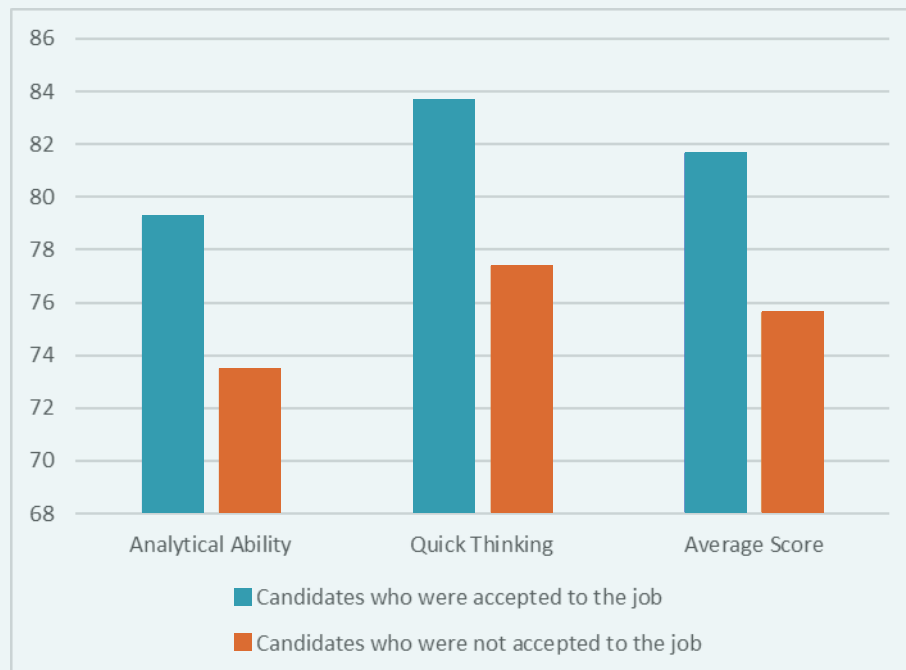
In addition to the validation analyses described above, the same group of examinees also participated in a set of tests aimed to examine the correlation between the Accelium Assessment tools to other skill tests Adam Milo is using.

They measured the correlation between Thinking Speed and Analytical Thinking (assessed in the Accelium tests) with understanding instructions, verbal logic, abstract reasoning, and general thinking. For these skills, a high positive correlation was found!

In contrast, a low correlation was found for reading comprehension skills. This finding is not surprising since the Accelium assessments are game-based and do not require examinees to demonstrate this ability.

Figure 2 shows the correlations found between Accelium results and other test results:

	Execution style test	Understanding instructions tests	Reading comprehension test	Verbal logic test	General thinking test	Average
Analytical Ability	0.47	0.42	0.18	0.68	0.67	0.44
Quick Thinking	0.45	0.39	0.28	0.60	0.58	0.41

Table 1: Correlations between one of the Accelium tools, which assesses analytical ability and quick thinking, and other external tests.

*The findings indicate convergent validation with applied intelligence tests, systematic thinking, understanding instructions, and abstract reasoning. However, it also shows discriminant validity with tests which their main characteristic is verbal. The correlations are average. Therefore, despite the existing overlap between the skills assessed by the Accelium game-based assessment and the abilities evaluated in traditional assessments, other factors are not measured by the traditional ones. Thus, **the tool contributes to a complete diagnosis of the candidate's skills.***

Another study examined correlations between psychologists' assessments of candidates (based on different tools) and Accelium digital test. Medium and high correlations were found between Accelium tests and assessments related to analytical thinking, learning ability, judgment, and more. In contrast, a low and non-significant correlation was found between our tests and organizational capabilities. This finding is expected since Accelium assessment tools were not designed to test these capabilities.
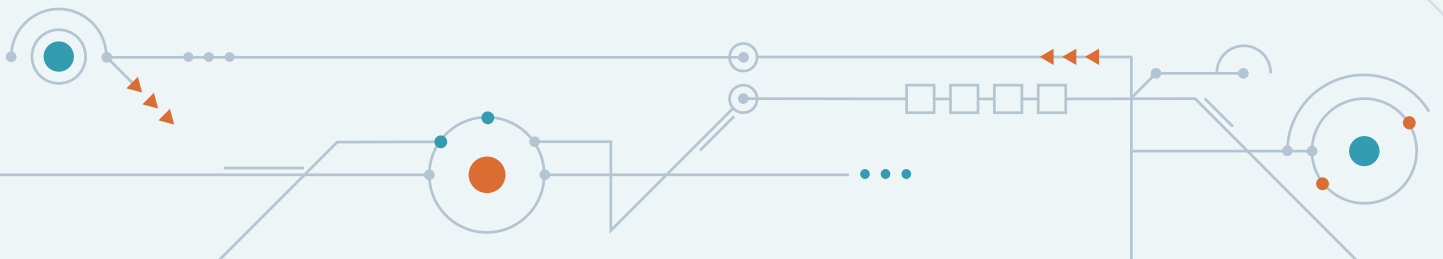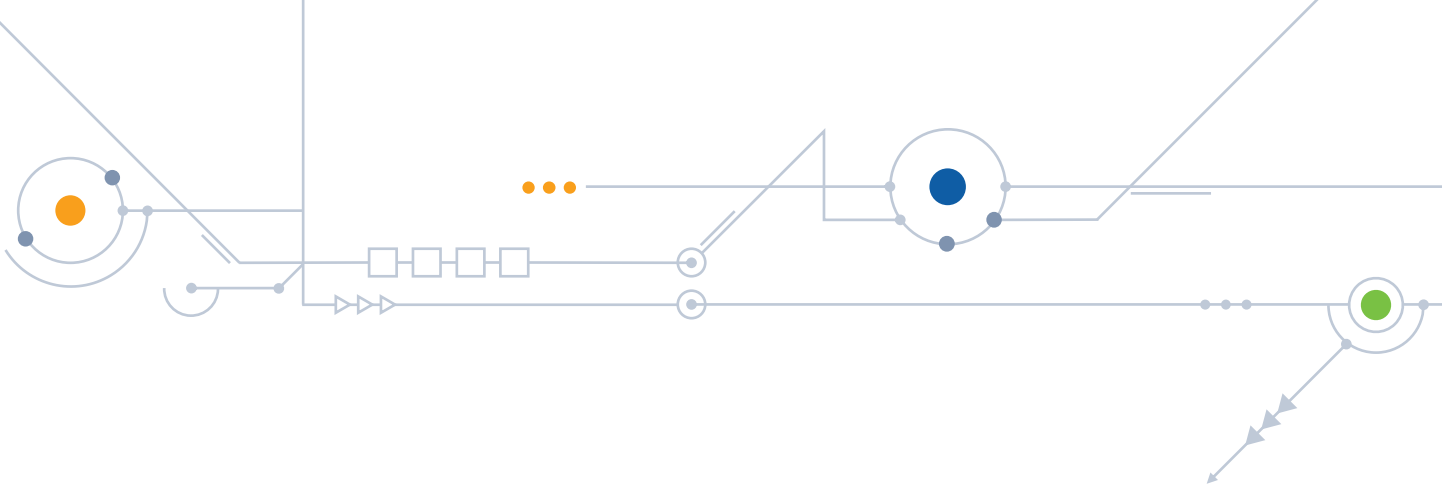
Summary:

Adam Millo tested the validity and reliability of Accelium's game-based assessment tools. They examined several digital games as alternatives to cognitive diagnosis. They concluded from the accumulated data that the tool supports the diagnosis, and they recommend using it as part of the screening processes they conduct.

Following the data collected from studies presented here, Adam Milo decided to incorporate our game-based assessments into their solutions to recruit and sort candidates for various positions.
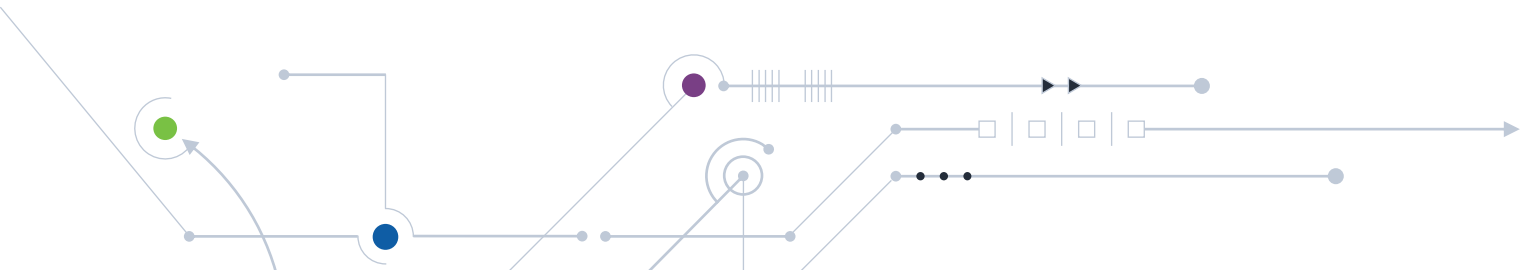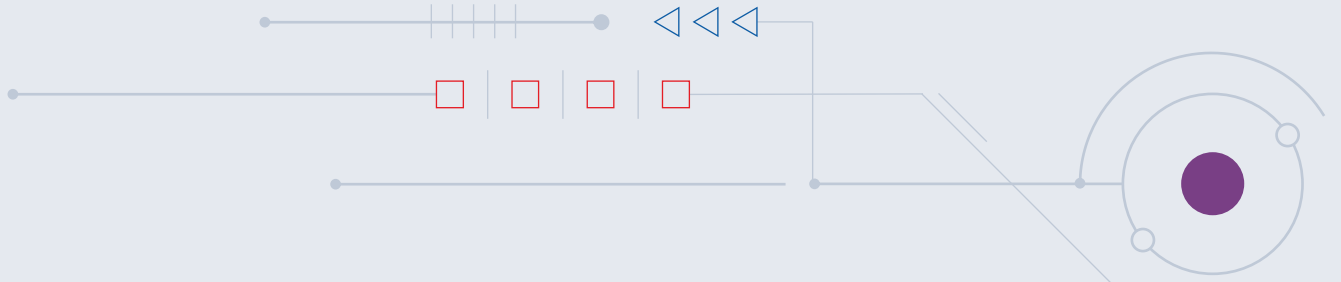
Chapter C: Application

Game-Based Assessment is becoming very popular!
In this chapter, you will get a glimpse of the extensive activities that have taken place in recent years in the context of assessment and game-based learning using Accelium tools and learn about the perspective of consultants who work with the tools for various purposes.

1.Accelium Assessments - A Growing International Trend

The field of assessment through games is growing and becoming common. More and more people in the sector of recruitment realize its importance and its many benefits. This means for us an increasing numbers of users and usability in our system.

2021- Projection

40 countries
700 schools
150 organizations
300,000 tests

2021

300,000
Tests

2020

30 countries
500 schools
100 organizations
200,000 tests

2020

2019

20 countries
300 schools
70 organizations
100,000 tests

2019

2018

10 countries
100 schools
50 organizations
50,000 tests

2018

Tests

50,000
Tests

38

2. New Consultants Survey Reveals- Accelium's Game-Based Assessment is an Effective Tool!
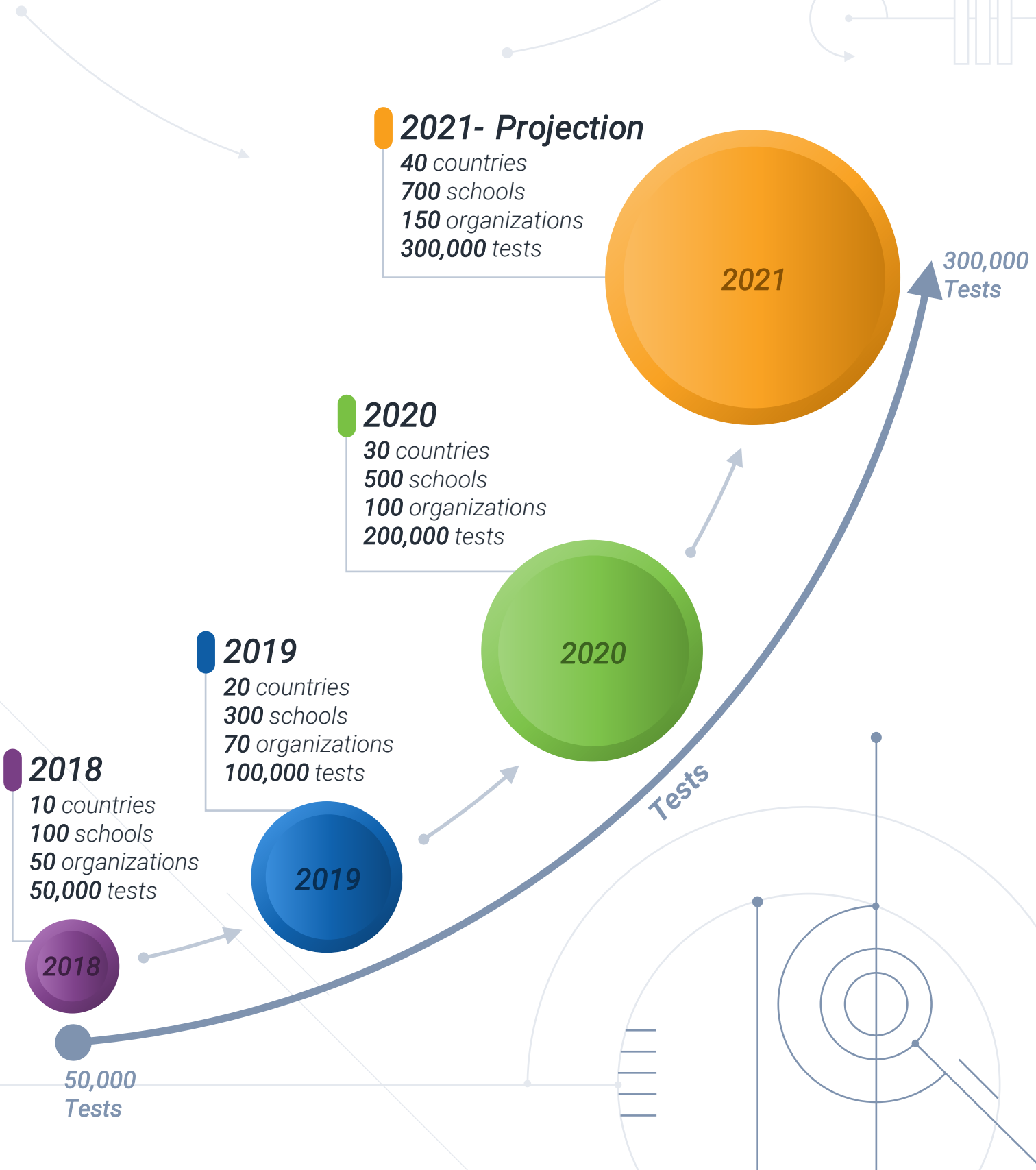
2. New Consultants Survey Reveals- Accelium's Game-Based Assessment is an Effective Tool!

"My experience has been eye opening as the report oftentimes speaks to the individual's skill set and helps make the recruitment process easier and less stressful. It has also reduced shortlisting time by over 50%A consultant working with Accelium tools."

A consultant working with Accelium tools.

Organizational consultants use Accelium tools in different organizational processes: employees' evaluations, self-development processes, talent and management development processes, learning processes, and recruitment processes. They undergo appropriate training to work with various Accelium tools: the application, the assessment tests, the reports, the workshops, etc.

39

2. New Consultants Survey Reveals- Accelium's Game-Based Assessment is an Effective Tool!
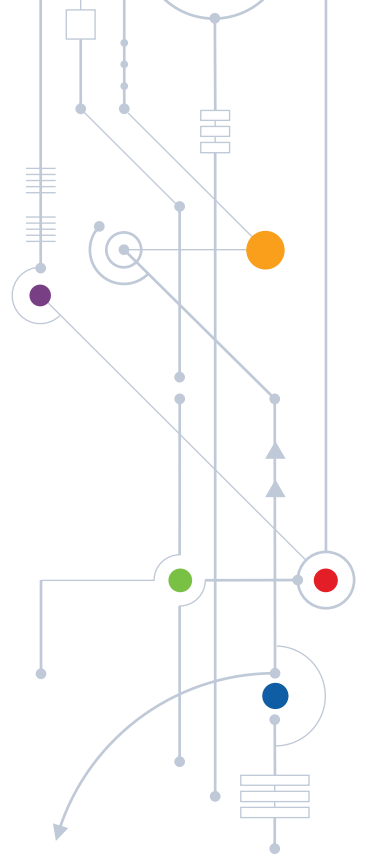
In summer 2020, we surveyed worldwide consultants who work with Accelium tools to evaluate their satisfaction with our tools. The following are the results.

*A few dozen of our consultants reported positive feedbacks from their clients regarding the Accelium products. Specifically, **89%** of our consultants reported positive feedback regarding the examinees' test experience and the test results and **94%** reported positive feedbacks regarding the whole process.*

The Accelium assessment tools are a unique and innovative ways of evaluating critical thinking skills. It is unique such that employees can be objectively evaluated on skills that determines success on the job. The reports are robust and provides practical ways the examinee's strengths can be leveraged and weaknesses can be improved.

I have conducted a few feedback processes based on the Accelium tools. In general, my clients' experience and mine was very good. The Accelium assessment correlates with their self-assessment and provides them with more accurate insights.

The Consultants' satisfaction

94% of the surveyed consultants reported they find the Accelium system useful, comfortable, and user-friendly.

> *For some of my clients, the world of technology is less relevant and not in everyday use. The Accelium system was simple to use, intuitive, and guided them through all assessment stages.*

All of the consultants confirmed that the Accelium reports provide their clients with useful, meaningful information about their users. **94%** reported that Accelium testing is accurate, which means they fit the examinees' skills ability.

> *I have run hundreds of 1 on 1 feedback sessions with managers who took Accelium 360formative assessment test. Almost all those sessions were meaningful, promoting and authentic.*

> *People find Accelium game- based assessment accurate, insightful and extremely relevant to their professional and personal challenges.*

The same percentage - **94%** reported that Accelium provides them with a useful evaluation tool that meets their needs and clients'.

> *Over the last 4 years I have used Accelium assessment tools with clients from different industries such as banks, high-tech companies, government offices, security organizations, universities and more.*

> *All our clients saw great value implementing an innovative, out of the box, deeply thought and effective solution such as Accelium 360 and Accelium Talent.*
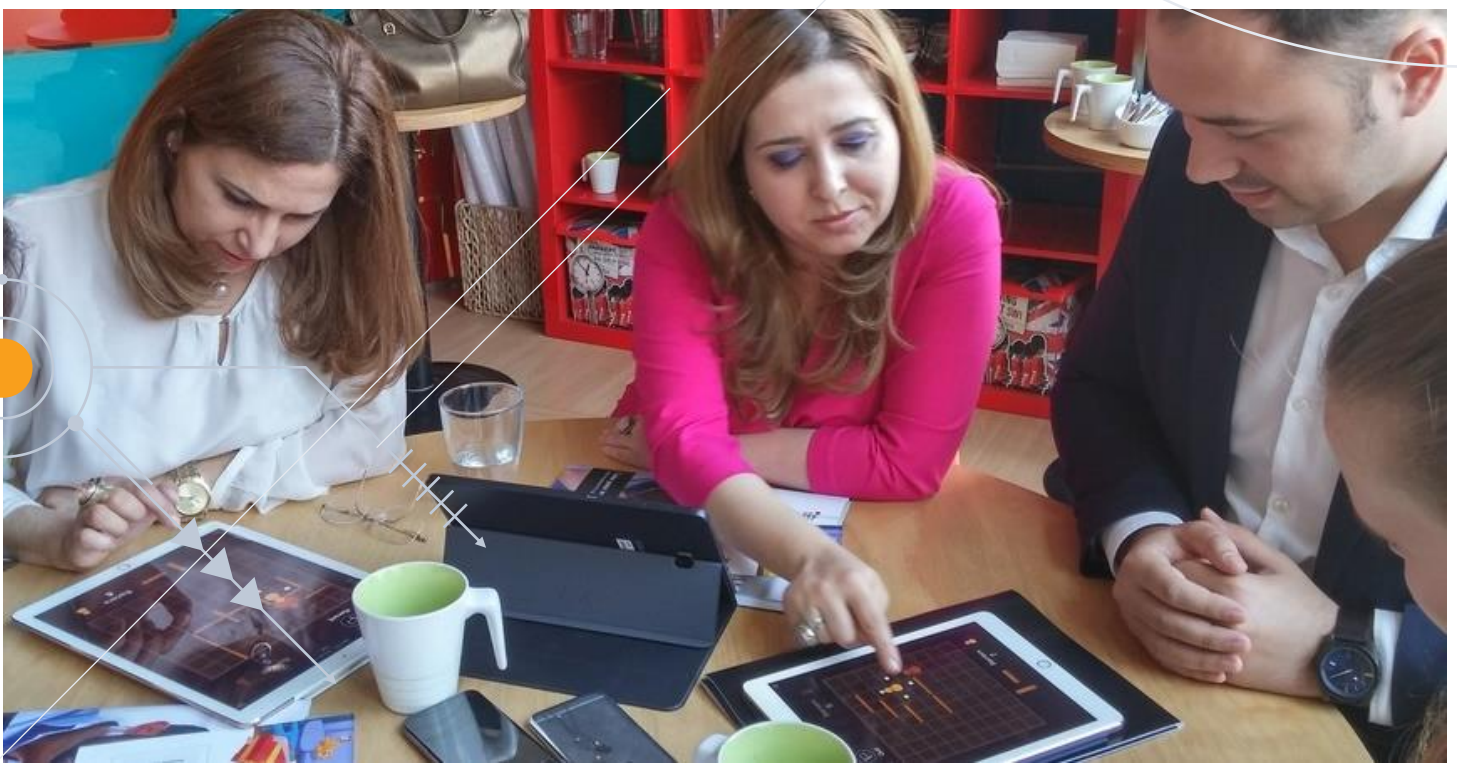
3. Learn from the experience of an organizational consultant

We interviewed Nadav Agozi. Nadav is leading the Growth Center in Israel. Nadav has many years of experience working with thinking games- first-hand experience as a chess player, facilitator of executive development programs, and guide senior executives in personal and professional growth processes.


Nadav Agozi

What is the importance of integrating games into learning processes and skill assessment?

Nadav: *Games have a dual contribution to our executive development programs we deploy in organizations. The first is related to the creation of learners' high engagement and involvement. People love to play, especially if it's instead of working or instead of putting an effort to listen to a lecturer. Therefore, a game always stands in contrast to attending a lesson and is always surprises the participants who jump at the opportunity to do something different. In Accelium's learning processes, people are alert; they laugh, talk, and emotionally involved. When people play, they open up. Open to their learning colleagues, open to the facilitator, and open up to themselves. By the way, this is a contribution that training managers are well aware of and rightly seek.*

But there is a less trivial and no less important contribution. The game is a great simulation tool.

It allows us to demonstrate and reflect on thought processes without talking about professional issues. When a person plays, we can recognize his thinking style and how he copes with challenges. The thinking processes are reflected not only by the Accelium system and the workshop facilitator. They are reflected by the participants themselves, who recognize their strengths and weaknesses and instantly recognize the importance of developing these abilities.
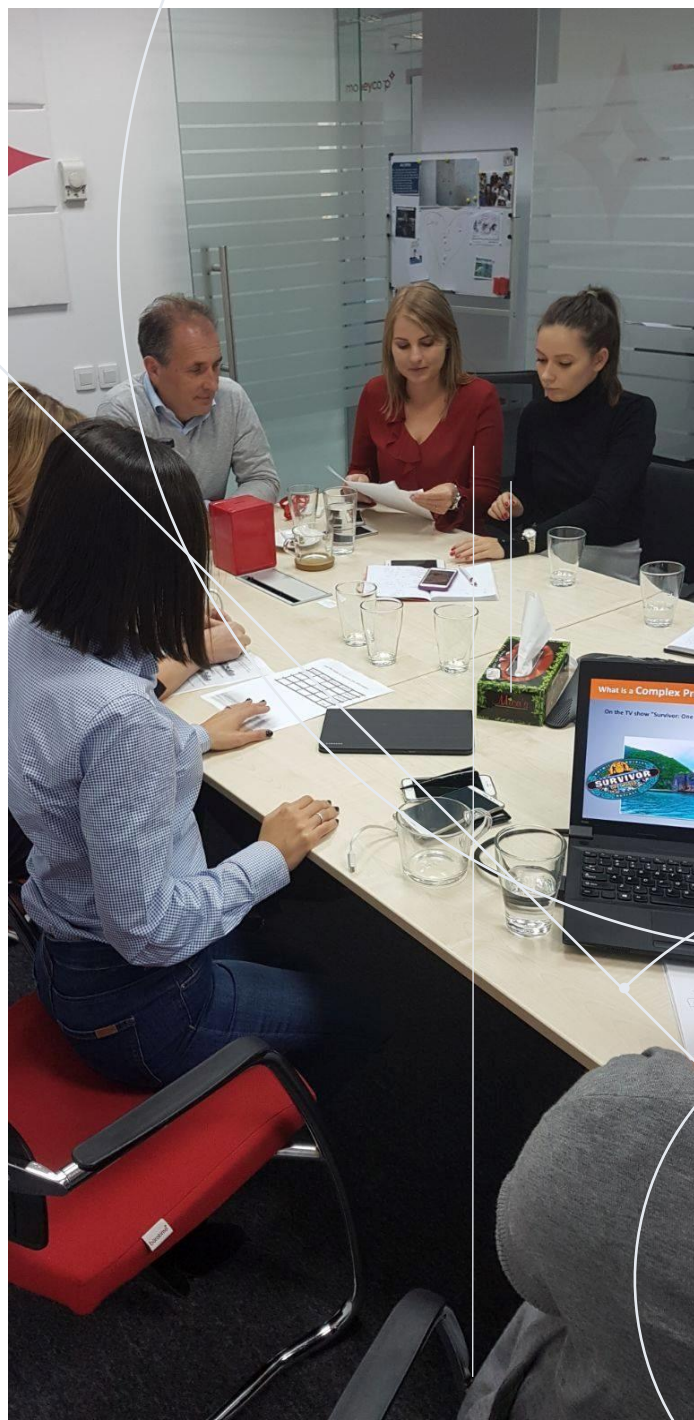
In what kind of processes and with which groups do you recommend combining game-based assessment and learning?

Nadav: Game-based assessment and learning are relevant for almost any learning process and any group because of what we mentioned earlier. It can be a one-time meeting, multiple meetings, professional staff groups, executive groups, small groups, and large groups. The contribution of the game will be welcomed by all of them.

I find that the significant contribution of these tools is in executive development and growth programs. In these programs, the participants come with the goal of learning and developing. The context makes it possible to deepen the learning with each and every one of them, create a diagnosis of their thinking profile and connect the learning significantly to their professional challenges.
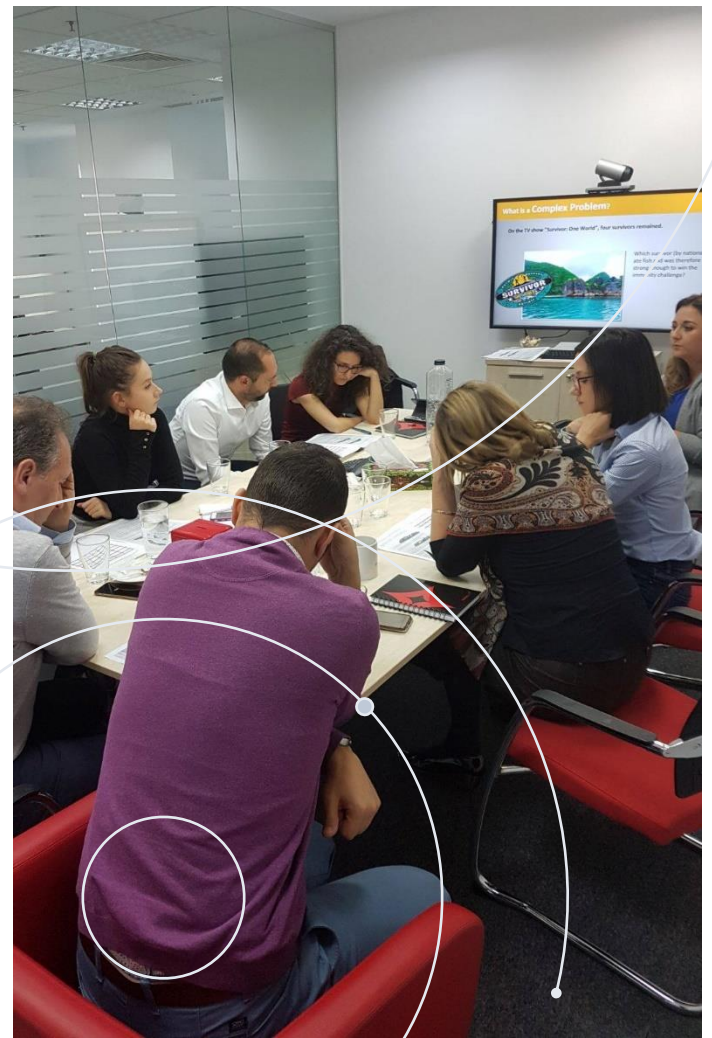
Can you expand on a number of organizations you have worked with?

Nadav: The projects we have carried out in Israel with Accelium are varied and interesting. I will mention three that I think give an understanding of the range of possibilities.

A. **Protalix Biotherapeutics**

One of the first projects we carried out using Accelium's game-based tools was at a biotech company by the name Protalix.

The client:

Protalix is a biopharmaceutical company focused on the development, production and commercialization of recombinant therapeutic proteins. The company was founded as a greenhouse company in northern Israel in 1993. Protalix is proud to be the first company to gain FDA approval for a plant cell culture expressed protein. Protalix operates in competitive, knowledge-intensive markets, requiring employees and managers to handle dynamic and highly complex challenges in a sales cycle that demands both a well-formed strategy and high tenacity.

Participants Profile

The program was attended by 20 leading employees from the organization, those defined by managers in the company as employees that the organization wants to nurture.

	20 Participants	*9 Managers* *4 Engineers* *5 Lab specialists and researchers* *2 Finance and operations*
	40 Y/O	*The average age of participants*
	6 Years	*Average time at Protalix*

Program Objectives

1. Expose participants to innovative strategic tools for management, problem solving and decision making.

2. Boost motivation in a fun, unorthodox and thought-provoking atmosphere.

3. Inspire participants to reflect about their roles: explore potential growth opportunities and identify inhibitive factors.

4. Create an opportunity to break from the restless routine and gain new perspectives on organizational and personal challenges.

5. Stimulate a free, profound, cross-organizational discussion about work processes.
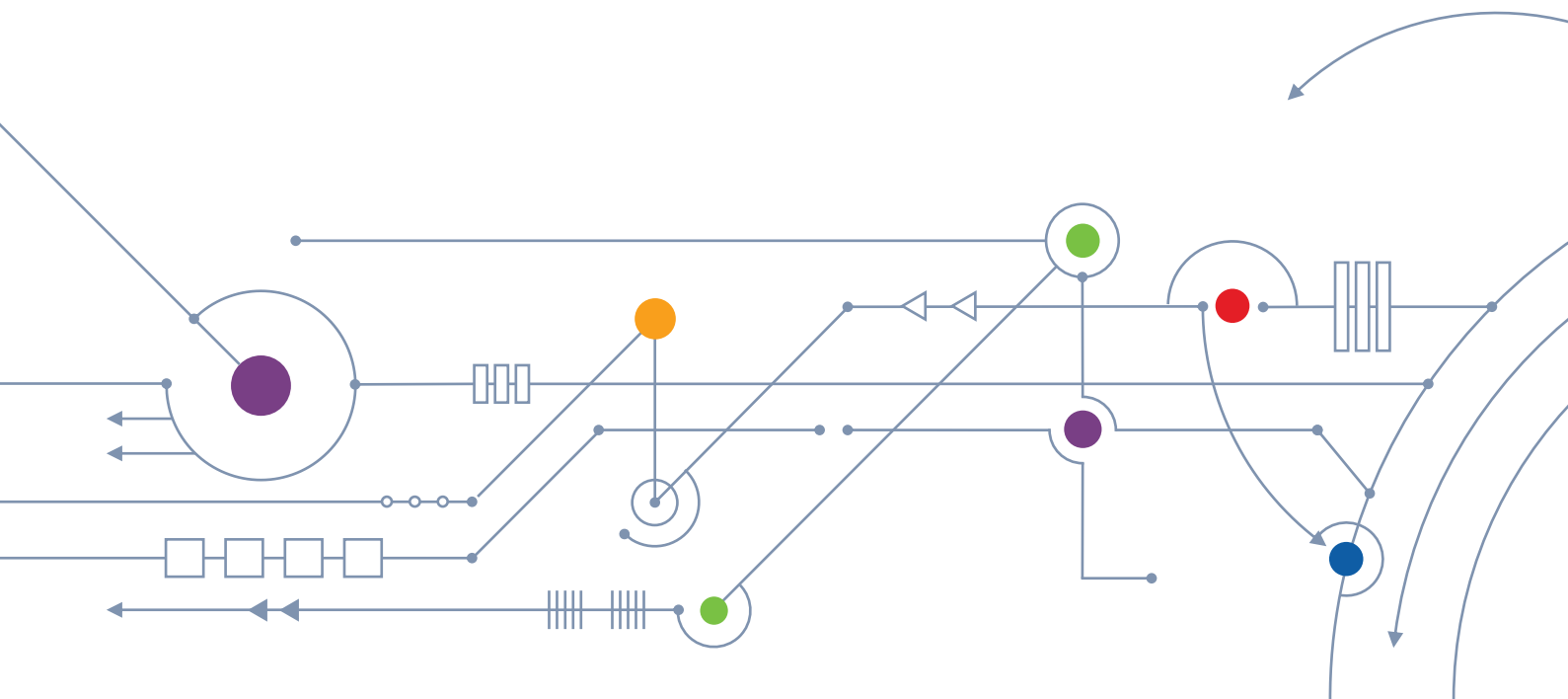
The Process

We planned a blended program with four quarterly workshops, followed by internal meetings in between the workshops in which participants discussed ways to apply the tools they acquired in the workshops to solve professional challenges and streamline them to their work processes.

Workshop   Personal Analysis   Reflective Session   Workshop 2

1 month

3 months
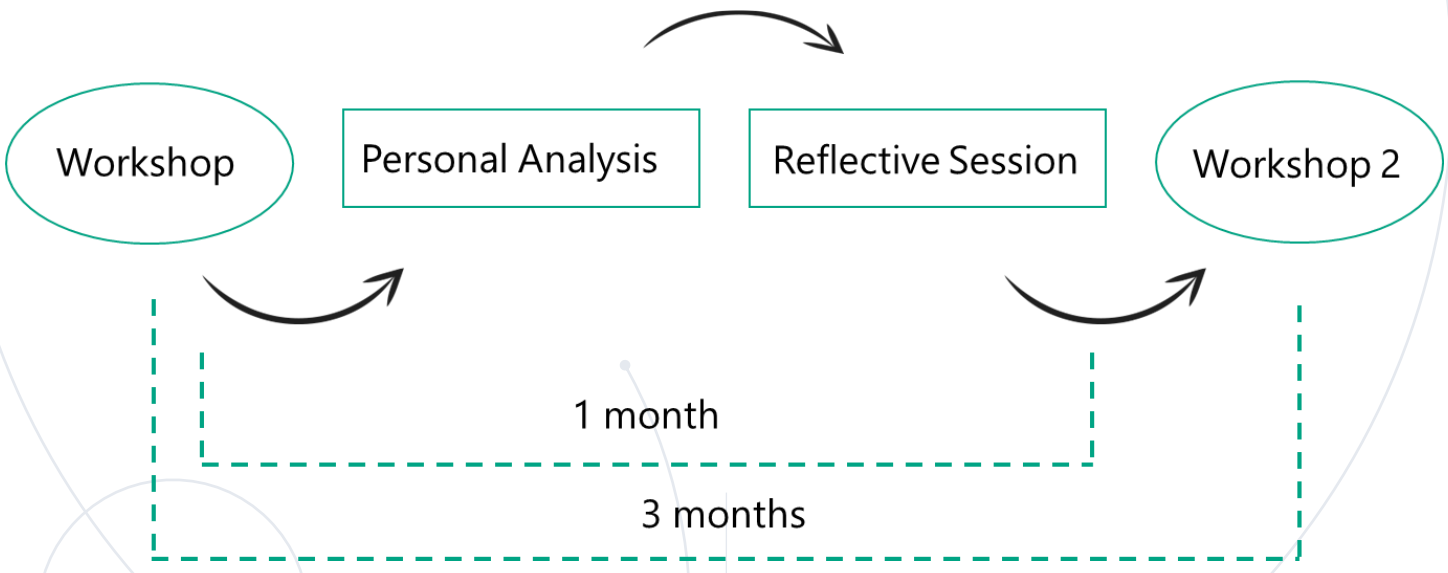
Applying the thinking tools participants acquired during the program's implementation led to real and significant breakthroughs in the teams' everyday work, opened new ways of thinking, and received praise.

Engagement

90%

90% Completion rate
Accelium Pro exercises following the workshop.

100% teams presented a detailed analysis of
insights gained about their work processes.

"A fresh wind just swept through the Protalix hallways. I'd gladly recommend Accelium to any knowledge-based organization. I think the program is great for several audiences: new workers being groomed for management positions, hi-potential managers climbing up the ladder, and leading, committed employees who are invaluable for the company's growth. The essence and mindset of Accelium is perfect for thinking organizations like ours, where employees are constantly facing intellectual challenges and need to reflect and keep sharp on the long run, through extensive, complex projects".

Daphna Shelly, VP Human Resources

Nadav: *Another project, which is interesting to review in these contexts, included a series of workshops for service centers in the Tel Aviv Municipality. The service department director wanted to improve the call centers' ability to understand the city residents' problems and provide an appropriate solution. Due to the routine nature of focus work and burnout in this type of position, the emphasis was on breaking fixations, "shaking up" thinking patterns, and developing flexible thinking. The workshops we conducted had a powerful impact on the participants and enlightened their eyes. For the first time, they understood the mental challenge they were facing every day and learned and practiced tools to provide a more satisfying answer.*

B. Tel Aviv Municipality

The Tel-Aviv Yafo Municipality provides municipal services to the city's 418,600 residents, 50,000 businesses and millions of yearly visitors. The Municipal Service and Public Inquiries Office, an independent unit under the Mayor's Office, is responsible for improving the quality of service across all of the municipality's branches and units.

This includes Property tax service, Parking services, The city's Call Center, Transport, Education, Water services and more.The client wanted municipal service centers to adopt a customer-centric approach. They wanted service representatives to listen intently and empathize with service recipients, avoid prejudice and bias, be flexible and creative, and look for solutions that satisfy the customer rather than focusing on the procedure. The main challenge was overcoming the demanding conditions of the call-center environment: overworked staff and high-stress levels. A high personnel turnover makes knowledge retention difficult, and Service Representatives tend to "put out fires".

Participants Profile

	52 Participants	*2 Groups – 15 Service Representative* *2 Groups – 11 Shift Supervisors each*
	*Late **20s** – Early **30s***	*The average age of participants*
	1 Venue	*Average time at Protalix*

Program objectives

1. Build a deep awareness of problem-solving processes

2. Develop individual Problem-Solving skills:
• Encourage methodical fact-gathering and analysis
• Avoid unfounded assumptions and decision bias
• Distinguish between core problems and symptoms
• Break complex problems into simpler sub-problems

3. Discover effective strategies for creative problem-solving:
• Methodically gather and analyze information
• Evaluate multiple solutions before acting
• Recognize and effectively adapt to change
• Shift perspectives and generate new solutions
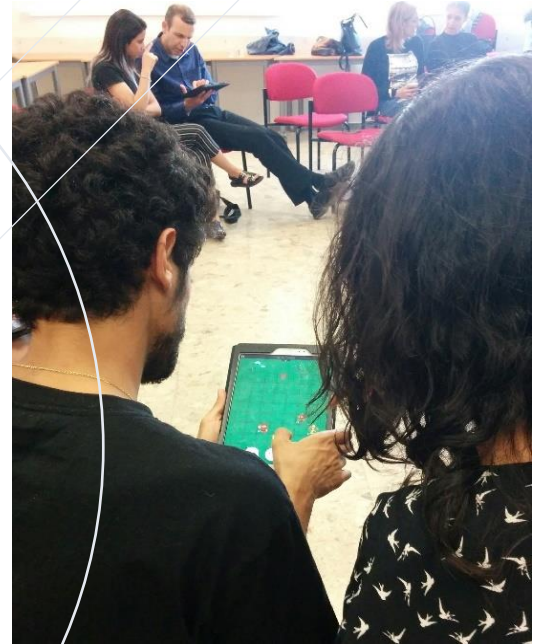
The Process

To ensure the workshops correspond with the client's needs and "speak their language", we researched the municipality's challenges and organizational culture:
• We held a preliminary meeting with the head of the Municipal Service Office and the unit's project managers, which was used to define the unit's needs and understand the problems faced by different stakeholders at the office. The attendees expressed their expectations from the skill development process, which included both professional skill development and personal development in various domains.
• Spent a day observing call-center representatives at work, listening in on service calls, studying the unit's unique terminology and interviewing employees and managers.
• Conducted a focus group with Shift Supervisors to map out their needs and identify skill gaps.
• Met with client's Customer Service Consultant to coordinate Supervisors' workshop.

A series of game-based skill development workshops aimed at 2 target groups in the Municipal call centers' staff: Service Representatives and Shift Supervisors.

	Workshop Duration	Focus	Registration
Service Representatives	Full day	Proactivity, Problem Analysis	Voluntary
Shift Supervisors	2x Half day	Flexible Thinking, Creativity	Mandatory

Engagement

90%

80% Completion rate
Accelium Pro exercises following the workshop
100% of participants rated the workshops as
practical and applicable to their position.

"The atmosphere in the workshops was fantastic: positive and fun. The Method's combination of game-playing and discourse creates a very high level of involvement. The vast majority of participants take a genuine interest in the workshops and actively participate in the games, discussions and exercises"

"...several new insights and perspectives emerged immediately when the supervisors wrote down their post-game analysis. It was an excellent expression of the quick transfer and translation of game concepts to new attitudes and active behaviors."

Avital Braiman Ezra, Facilitator

"I learned to listen more carefully. I'm used to working automatically, thinking I can predict everything the customer will say and 'shoot' all the answers at them. But the solution comes from truly listening, there might be something I'm missing, I don't have to know it all."

Service Representative.

"It was fascinating, I'm leaving with a different mindset than the one I came with. I want to bring more of myself to the job."

Service Representative.
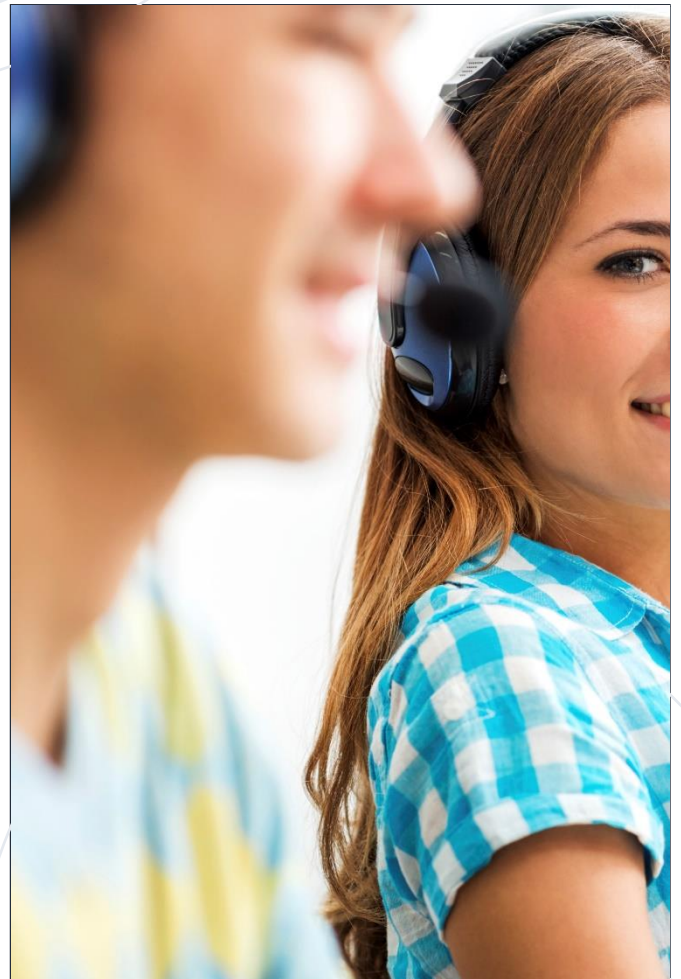
Nadav: *The third project I will describe was carried out at Discount Bank and was perhaps the most significant. As part of the project, we built an executive development program that included group workshops, evaluation tests and personal training. Over two hundred executives from all divisions of the Bank participated in the programs.*

C. Discount Bank, Ltd.

Discount Bank, Ltd. is retail bank, commercial bank, private bank and financial services company headquartered in Tel Aviv with 112 branches throughout Israel. Discount Bank is a public company traded on the Tel Aviv Stock Exchange under the symbol DSCT. It provides personal banking, business banking and private banking products and services through physical branches, online banking and mobile banking.

Participants Profile

A diverse group of leading employees and mid-level managers representing a cross-section of the organization

	200 *Participants*	*10 Groups*
	2 *Accelium Facilitators*	*The average age of participants*
	2 *Years*	*Average time at Discount Bank*

Program objectives

- *Expose participants to innovative strategic tools for management, problem solving and decision making.*
- *Boost motivation in a fun, unorthodox and thought-provoking atmosphere.*
- *Inspire participants to reflect about their roles: explore potential growth opportunities and identify inhibitive factors.*
- *Create an opportunity to break from the restless routine and gain new perspectives on organizational and personal challenges.*
- *Stimulate a free, profound, cross-organizational discussion about work processes.*
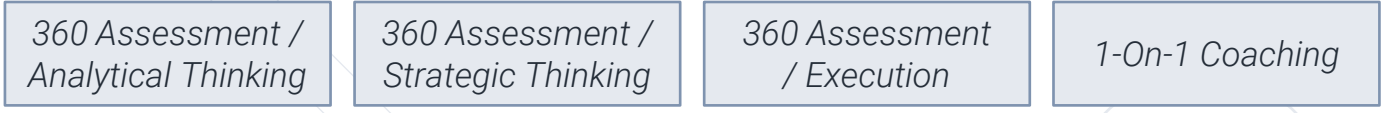
The Process

Each of the 10 groups went through a blended training program with 4 workshops, followed by a personal game-based skills assessment test, generating each participant a thinking profile report. Each program was concluded with a one hour 1 on 1 feedback session, supporting a meaningful, long-term assimilation of concepts.

Group Workshop

Analysis and Deduction	Decision Making	Problem Solving	Flexible Thinking

Individual

360 Assessment / Analytical Thinking	360 Assessment / Strategic Thinking	360 Assessment / Execution	1-On-1 Coaching

Engagement

85%

85% Completion rate
Accelium Pro exercises following the workshop

100% of participants stated high relevance to their work processes of the tools acquired during this process.

"I learned how to use elements from the game in my life, such as getting into the other person's head and understand their point of view. Thinking ahead and to consider the consequences of things I do."

"I came in with an attitude that I do not like games, but I had so much fun! I now can easily understand how the concepts from the game relates to my work and life. I got tools to prioritize tasks, to keep focuses and how-to breakdown my thinking fixations."

Users' reviews

At the end of their training, one group of the Discount Bank talent development program were asked to answer a questionnaire about the training. As seen in Error! Reference source not found., the results show high satisfaction from the training in general, and specifically from the individual assessment and the use of the Accelium application during the training. The respondents (n=17) were asked to evaluate (and rank from 1 to 6) different elements in the training:

The element	Average score
The contribution of the training	5.6
The contribution of the application	5.8
The contribution of the application	5.6
Will you recommend this training to other employees	5.8

Table 1: The Discount survey's results.

What is the difference between applying game-based programs to senior executives and other employees in organizations? What is your take regarding people who have not yet entered the job market?

Nadav: *One of Accelium's programs for developing thinking skills is designed to work in the academy.*

We work with students from different faculties (computer science, engineering, business administration), and their lack of business acumen is noticeable. The connection of the thinking tools acquired during the workshops is often used to deal with personal challenges. One of the interesting aspects of this context is the program's contribution to young people's coping with making decisions about their future in general and employment in particular.

Ruppin Academic Center

In the past year, we have been carrying skills development programs for B.A managers at Ruppin Academic Center.

Two groups of students participated in a series of online game-based sessions in which we practiced and learned thinking tools for decision making, problem analysis, and problem-solving. The students even performed the Accelium 360 Assessment to map their thinking style. Ruppin Academic Center, like many academic bodies, has been trying in recent years to provide their students with non-academic tools that will qualify them for the world of employment. The inclusion of Accelium tools in their programs has met this need.

User's reviews

"I really liked the concept of using a game as a learning and focusing method, in both the individual and the group level."

Student in Ruppin Academic Center

"I would like to thank you for my abilities' analysis, I agreed with all of them, and I must point out that the report has ordered things for me and game me a lot of thought for myself."

A student at Ruppin Academic Center
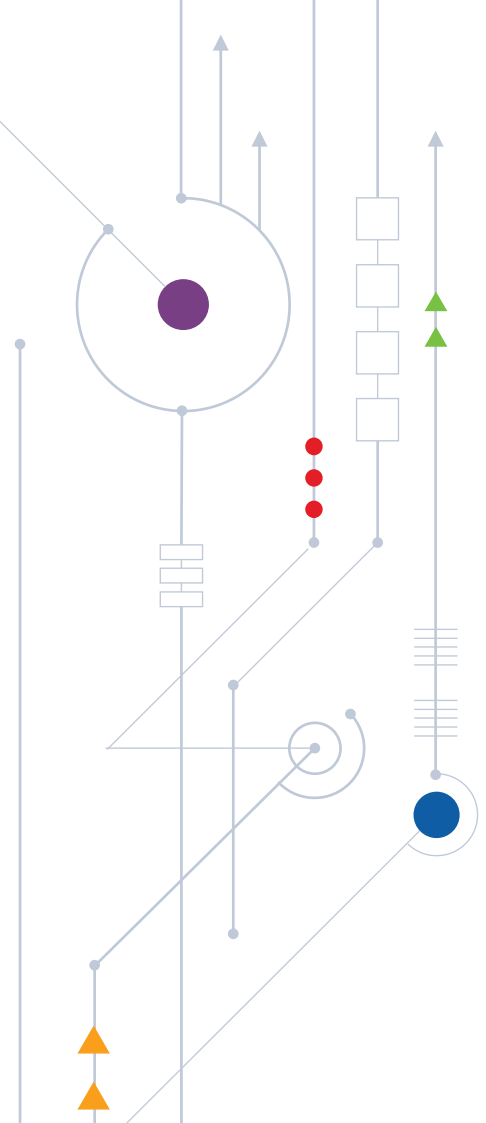
What responses do you get from the trainees and those in charge of the training?

Nadav: *The feedback we get from the market is excellent. The impression that the programs and the digital system leave on the participants is very strong. Positive impressions are regularly passed on to the supervisors of the training through personal feedback or questionnaires.*

Managers note the program's unique nature, the technological innovation, the high level of involvement of the participants, and especially the impact that the process had on the participants' way of thinking both in personal contexts and the change in their thinking and approach to professional challenges.

Quite a few clients come to us for or because of the games and are surprised to discover the depth of the programs' learning and personal development processes.

Do you see differences in the aspect of age and gender in working with digital games?

Nadav: *There is a tendency to think that there will be a change in people's perception regarding digital games for learning or assessment purposes based on their sex and or their age.*

The digital game environment, technology, and even the game mechanics are not trivial things for everyone. So, it is understandable why people possess these assumptions. From participating and conducting dozens of game-based workshops and assessments, I see that people of all ages and genders connect to the game even when it is digital; the challenge stimulates them and inspires intrinsic motivation.

What tips can you give to consultants who are interested in incorporating a game-based assessment as part of their toolbox?

Nadav: *Accelium's diagnostic tools produce a rich snapshot of insights and form a rich profile on how managers and employees think and make decisions. These tools enable a high-quality and in depth formative personal assessment. Incorporating the assessment tools makes it possible to create a meaningful dialogue with trainees and learners to develop their abilities and promote them personally and professionally. Corporate and private clients highly appreciate Accelium's game-based assessment tools and are open to working with them and using them in various processes.*

My most important emphasis for consultants who want to work with a game-based assessment is to strive to understand in depth what the assessment is based on. It is essential to understand the thinking challenges we face in the game context: The ability to analyze the position systematically and thoroughly. The ability to see the big picture and break free from the concrete. The ability to think about the opponent and understand their perspective. The ability to break free from fixations and more.

Anyone who understands these processes in the game knew how to work with the report effectively.
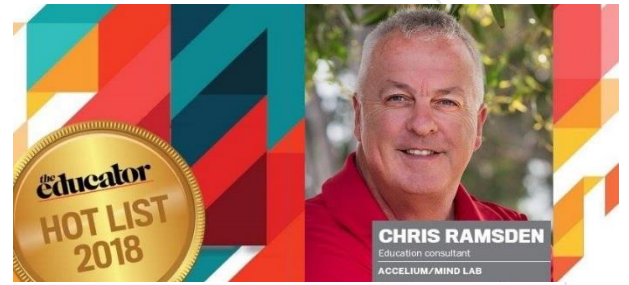
The feedback we get from managers is very favorable.

When they compare the reports from the system to their knowledge and their personal and professional acquaintance with the examinees, they always state that they were pleasingly surprised to find that the report very reliably reflects the examinees' abilities.

4. A Powerful Tool in Education

Chris Ramsden often hears that his work is "amongst Australia's best-kept secrets." Chris has been working with Accelium for the past 13 years, during which time he has demonstrated resilience and dedication while training teachers in the art of metacognition and transference using Accelium's smart games. Chris s high-quality teaching skills have forged purposeful and positive partnerships with innovative schools in Australia. In 2017 and 2018, Chris was chosen by The Educator magazine in Australia where he was listed as among the most innovative educators in The Educator's Hot List! Chris was happy to share some inputs about his experience of using game-based learning and assessment in his schools.

How do your teachers react and respond to the idea of using games as a tool for teaching, learning, and assessing skills?

Chris: During the 13 years I have been teaching Accelium, I have worked with many educators. The attitude of most educators is very positive. I think it stems from their desire to connect with students in a positive and familiar context and the game allows for that in a very natural way. Many are incredibly impressed with the innovation and ease of use of the lesson plans', the level of analysis of the game positions, and the examples and transfer to everyday life. I particularly encourage educators to see the lesson plans and associated tools that students will encounter as the formative ingredients in a "menu." When partnered with their implicit knowledge of the students in their care they are empowered to develop their teaching craft and play the role of a "Master Chef." By this, I mean I want them to introduce the relevance of the tools to areas of study at a given time and to choose wisely when and where they would place certain parts of the projects to complement and enhance subjects within the national curriculum requirements, such as Math, or Science or Personal, Social and Emotional Learning.
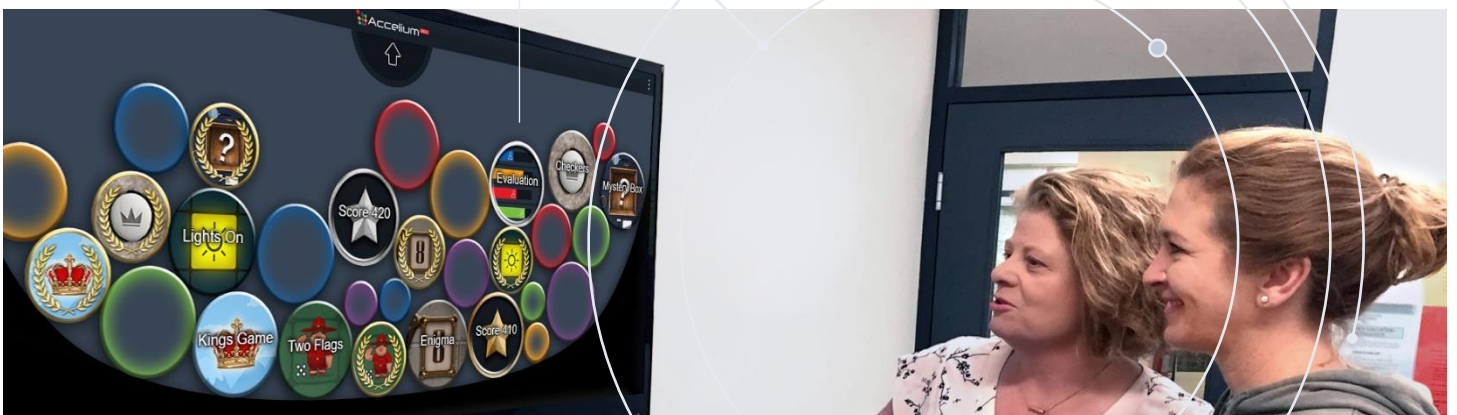
"Our students have thoroughly enjoyed and been fascinated by the games-based learning which has made them aware of different and new ways of reasoning and given them a language to talk about it. This is fundamental to their coming to appreciate the application of the thinking skills within all disciplines at school. What's more, this extends beyond school to help them with the processes of identifying and solving problems at home too."

Howard MacPherson - Head of Pembroke Middle School

Can you share your experience of working with the assessment tool in schools? What feedback did you get from teachers when showing them the reports?

Chris: Assessment and the use of data is a key component of education in Australia and the schools and educational systems are seeking ways to assist them in the assessment of 21st century skills. In this context, educators are intrigued to learn that valuable data can be achieved from playing games in a testing environment. The power is that Accelium assessment is a tool that provides a formative snapshot which gives information on aspects of skills development which can be targeted.

"Initially with the testing that the students took part in there was quite a lot of comprehensive data, that as a group within our teaching domains we analyzed and it was really good to highlight different strengths that particular students had, it did show up aspects like being able to work under pressure, being able to think strategically on the spot, elements that sometimes you probably wouldn't have picked up in some students, so it was nice to have that diagnostic, concrete evidence to support what the students were doing, so I found that very valuable."

Daniella Coscia, teacher at Burnside Public School
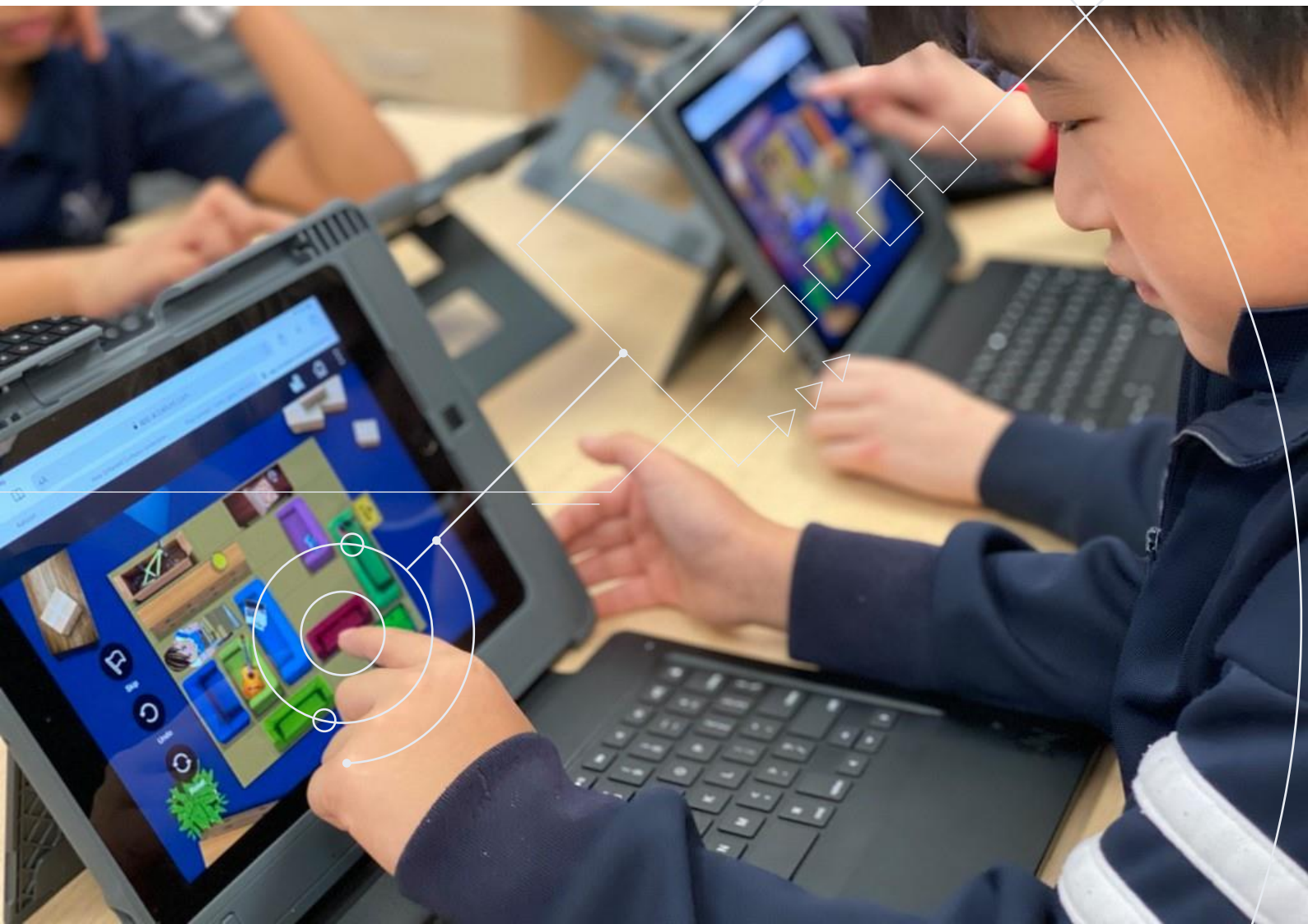
To what extent does the Accelium program (and the corresponding) fit or match the Australian education system?

This is a common question that is asked of all offerings into schools. Those that have definite links to areas of the Curriculum can express that easier - e.g. Mathletics is an offering that focuses on Math. Accelium is gaining the upper hand in Australia by matching the Australian National Curriculum's general capabilities.

Accelium presents a wonderful opportunity to accelerate the interdisciplinary skills needed to enable students to thrive in any part of their lives. It's pedagogy and methodology lend itself beautifully to the development and transference of 'critical and creative thinking', 'personal and social capabilities' and 'ethical understanding' and the 'attitudes' and 'approaches to learning' of the IB Learner Profile.

"Ingham High places high importance on the development of students' skills for lifelong learning through our school wellbeing program. Accelium compliments this program and we have seen students affirmed in both. Through Accelium we are able to connect the HOMs in "real" learning situations and provide opportunities for students to develop these further. This provides students and staff with a common language that further strengthens the wellbeing messages being embedded in our classrooms."

Jennie Nash - Head of Department Teaching and Learning, mathematics and Wellbeing

5. Innovation in Organizational Training in the Army

The client: IDF Command & Staff College

The IDF's Command & Staff College trains commanding officers from all military arms who are about to assume battalion-level command. The 9-month long training is mandatory to attain the rank of Lieutenant-Colonel/Commander. Program participants go through comprehensive screening earlier, thus the program' focuses on developing their competencies and equipping them with better tools for command while establishing common language and shared values among officers from all arms of the military.

Program Objectives

- *Assess participants' competencies, highlight strong suits and identify weaker skills which require focus.*

- *Expose participants to innovative thinking strategies, enriching their toolbox with additional methods for problem solving, decision making and critical analysis.*

- *Help participants make the transition from a company-level, task-oriented perspective to a wider, systemic view, preparing them for the complexities of leading combined arms teams.*

- *Trigger a personal reflective process, enabling participants to analyze their cognitive and behavioral patterns and identify processes where they could form more effective thinking habits.*
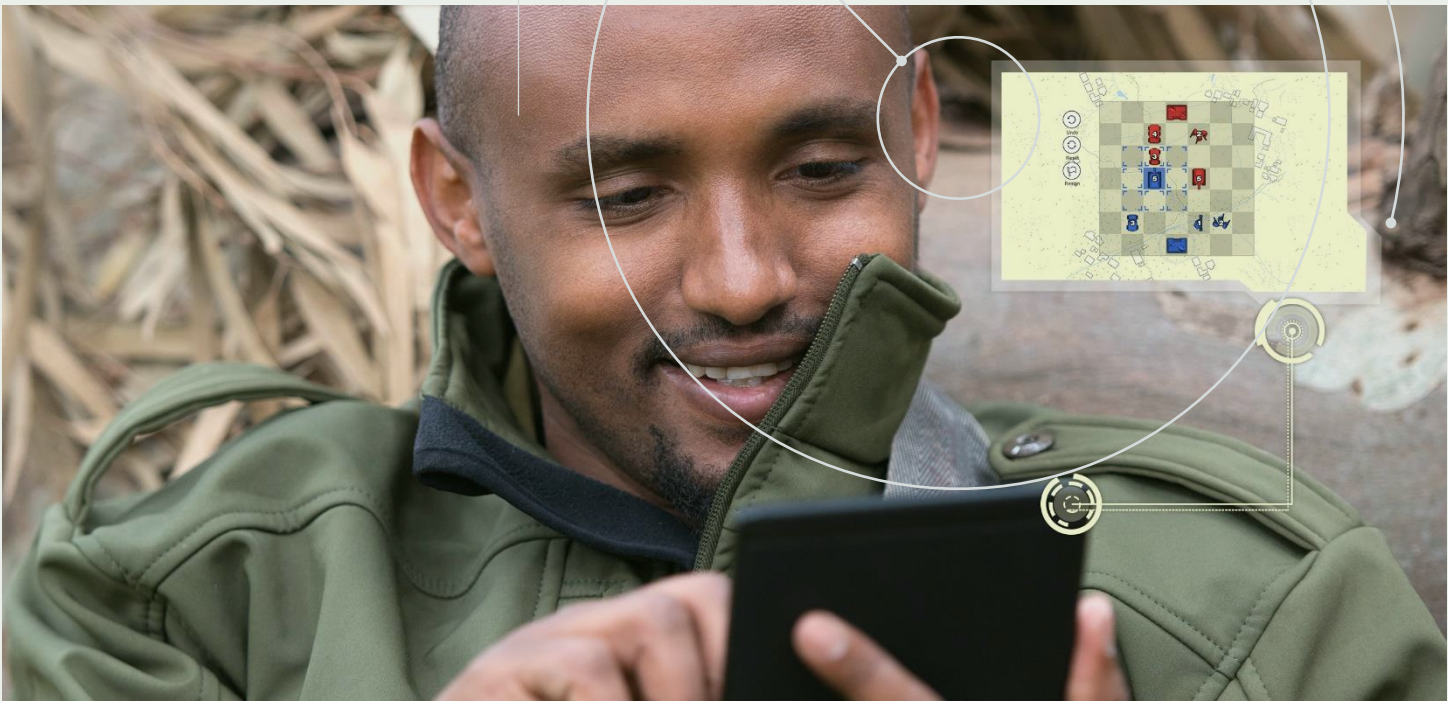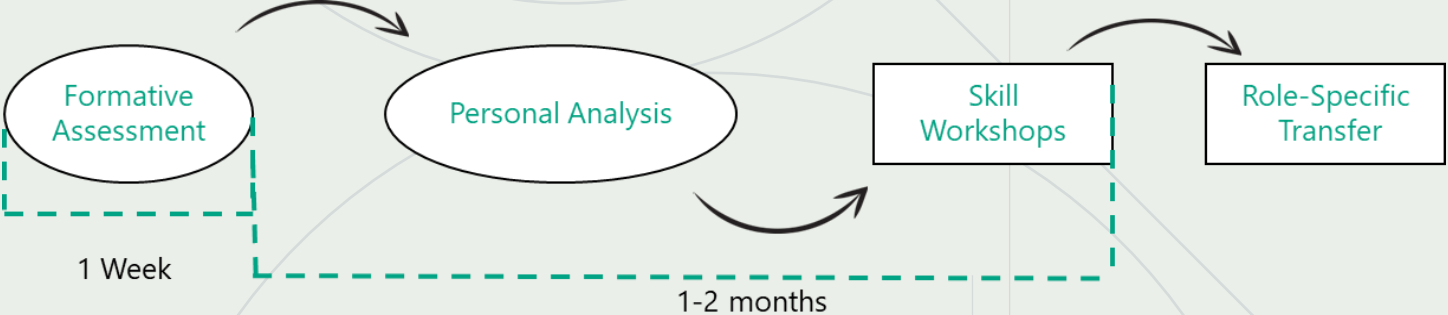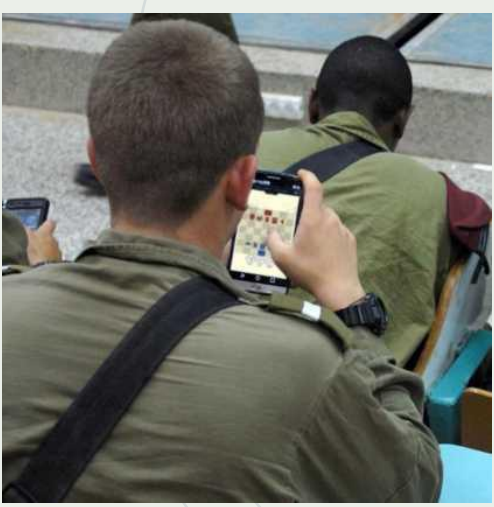
Group Profile

The training brings together future battalion commanders from the Army, Naval & Air Force squadron commanders as well as additional field officers.

	62 *Participants*	• *Army* • *Naval Officers* • *Air Force* • *Intelligence, Communications and* • *Logistics officers*
	30 - 40 *Y/O*	*Predominantly male officers*

The Process

Formative Assessment — Personal Analysis — Skill Workshops — Role-Specific Transfer

1 Week

1-2 months

Personal Formative Assessment

Participants began by taking a comprehensive game-based evaluation, which they had to complete within a week, working at their own leisure from any web-enabled device. They were evaluated on 3 higher-order skills: Analytical Skill, Strategic Thinking, and Execution.

Consequently, officers received a detailed evaluation report, which summarized the assessment's findings and recommended the workshops they would most benefit from taking. The Chief Training Officer was provided with a comprehensive group report to facilitate the planning of the group's training process.

After the initial self-analysis and reflection, test results were reviewed in a 1-on-1 session with an organizational consultant, and were used to define each officer's personal development plan.

Skill Development Workshops

Based on their evaluation and preferences, officers went through 1-4 skill development workshops: Problem Solving, Decision Making, Flexible Thinking and Analysis and Deduction, which combine online coaching on Accelium with an engaging and empowering interactive group discussion.

Participants Feedback

""classic assessment center tests stir up a lot of emotions as their influence on candidates' future is considerable. Participants tended to be more receptive and curious about the feedback they got from the Accelium skill evaluation and that creates a potential for better dialogue" Dr. Motti Klang, the program's organizational development team leader

""I was really intrigued by this analysis, I was curious to find out what it would tell me, and found myself taking the entire test in one morning, no breaks or anything. It was fascinating." Unlike the rest of the tests we take during the course, such as the assessment center, it's easy to take Accelium's test with a 'clean-slate' approach. You put things aside and just enjoy the challenge with no bias, especially since it's fun, and there's nobody else involved, just you and the computer. It simply doesn't feel like a test." "The Accelium report was certainly aligned with the evaluation I got at the assessment center. They both showed that I had strong execution skills and both highlighted a gap in systemic vision- they indicated that I needed to pause more and consider more alternatives before acting." Major N., Program participant

About Accelium Group

Chess masters use the game as a mentoring tool that helps their students develop both cognitively and emotionally, taking away useful strategies that can be applied in various problems and domains.

In 1994 a team of game experts decided to extend the chess-mentoring experience to a variety of strategy games, creating a powerful learning tool that is universally accessible. The innovative methodology born out of this venture was soon being taught in 12 languages and over 40 countries around the world. More than 4,000,000 learners and 10,000 teachers have embraced the Accelium Method to date.

The innovative game-based training and assessment tools inspired by the method combine personal coaching, team workshops, and mobile learning to develop strategic thinking and resilience. They create an engaging experience that inspires learners to continually practice effective strategies, to reflect, and improve their skills and performance.