

# The Preferred Learning Styles of Generation Z: Do They Differ from the Ones of Previous Generations?



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**Abstract** A new generation, named Generation Z (born after 1996), is currently in education and it will soon approach the job market. Knowing how they engage in learning is critical to design effective learning experiences both in academia and at work. However, being the newest generation, it is also the least studied one, especially in academic research. With this paper we aim to explore Gen Zers' preferred learning styles and to compare them with the ones of previous generations. We collected data from 870 Italian MSc students and Executive Education participants to assess their learning styles using Kolb's learning style inventory. We found that Gen Zers have higher preferences towards the assimilating learning style (combining abstract conceptualization and reflective observation), while Baby Boomers and Gen X prefer the accommodating style (combining active experimentation and concrete experience). These results conflict with the common stereotypes—mainly based on qualitative evidence—about the youngest generation, which see them as a generation that needs to engage in a highly informal, interactive and experience-based learning. Implications for theory and practice follow.

**Keywords** Gen Z · Gamers · iGen · Digital natives · Generations · Learning styles · Learning · Experiential learning

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# 1 Introduction

Generation Z, Generation 2020, iGen, Gamers and Digital Natives are different labels for the same individuals belonging to the newest generation. The bulk of Gen Zers are now going through education and will soon enter the job market. They are the Gen Z because they come after the Millennials, who were labelled Gen Y; the Gen 2020 because this is the year around which many of them will graduate from college; the iGen because Internet always existed for them [1], the Gamers because they grew up playing videogames [2], and the Digital Natives because they were born in a world already heavily reliant on technology [3].

In all these definitions there is a common factor, namely the pervasive presence of technology and internet. Gen Z individuals “grew up with cell phones, had an Instagram page before they started high school, and do not remember a time before the Internet” [1]. Technology in its broad sense affects every area of Gen Zers’ life and makes their life experiences different from those of their predecessors, including how they learn (e.g. [4]). Thanks to technology, learning has become more personalized, flexible and adaptive to individual learning needs and preferences [5], and the learning experience includes a much wider variety of learning models and methods [6]. These changes are particularly evident in the first generation born into an integrated and globally connected world.

With this study we aim at exploring how Gen Zers approach learning, analyzing in particular their learning styles, which is under-researched in scientific inquiry [7]. We rely on Kolb’s learning styles inventory and experiential learning model [8, 9]. We compare the Gen Z’s learning styles with the ones of previous generations.

This inquiry is of interest both for research and practice. From a practice point of view, there are authors and professionals claiming that education is not equipped to meet the needs of this new cohort of learners [10]. As far as scientific research is concerned, there have been very few academic studies on the newest generations, a surprising fact given that generational differences are the subject of countless articles in the popular domain and the management of young workforce is often seen as a critical issue by managers [11].

In the following sections, first we describe the characteristics of Gen Zers, in particular with regard to the impact of technology and internet on how they learn, and we review Kolb’s learning styles and its appropriateness in this setting. Secondly, we present our research methods and sample. Results, discussion and conclusions are drawn in the last part of the paper, suggesting that Gen Zers are much less active experience-led than we think. Finally, implications for instructors and organizations are discussed.

## 2 The Influence of Technology, Internet and Gaming on Gen Zers' Approach to Learning

Research on generational differences suggests that individuals belonging to different generational cohorts tend to exhibit differences both in general life domains and in the workplace in factors such as personality traits, personal values and work values. This means that individuals belonging to a given generation tend to have their own, shared belief about what is important to them in general and at work, and this belief somewhat differs from that of individuals belonging to different generational cohorts. Generational differences affect disparate factors, including work-related attitudes—such as organizational commitment, work-life balance preferences, teamwork orientation, career patters, leadership behaviors and preferences [11, 12]—and technology use patterns and learning characteristics [13].

Generational differences exist because individuals from the same generation share birth years and thus experience significant life events at the same time, especially in the formative years of adolescence and young adulthood [14]. These events affect the development of generational identities, which in turn impact individuals' responses in a rage of life situations.

Among the different generations, Gen Z is the least studied one in higher education, being the one currently in school [15]. Yet Gen Zers will soon approach the job market. It is thus compelling to understand this generation better, because it is the generation that we are educating now and that will represent a significant component of the worldwide workforce in few years [10]. Finding ways to (re)design learning experiences that take into account their needs and preferences, as well as the ones of the labor market, is critical given the dynamicity of the current organizational environment [16].

Individuals belonging to Gen Z are those born approximately from 1996 to 2010. This generation differs in many ways from its predecessors, in particular due to the fact that it is the first generation born into an integrated and globally connected world. Technology and internet influenced their life more than anything else. Gen Zers were born with technology and they have never known a world without internet and smartphones. They cannot thrive without digital resources. They are tech savvy and in constant contact with people via social networks and instant messaging, more than emails and direct contact [1, 3, 17]. Technology is there to facilitate their lives, solve their problems and provide them with relevant information or people [18]. Finally, they grew up with online videogames often preferring the playful virtual world to the real one, and spending a great proportion of their time in parallel gaming realities [2, 19].

Several studies showed that their brain is affected by internet use [20]. They are quick in finding answers to questions in Google and YouTube, but they lack the critical thinking skills to evaluate sources [15]. They have become wired to sophisticated visual imagery [21] and they have difficulties in focusing and analyzing complex information or issues to the extent that they expect information to be delivered in short bursts and they are at risk for attention deficit disorders.

**Table 1** The characteristics of Gen Z when they learn

Motivation to learn	Learning is a challenge and an opportunity to develop
Models and methods	Learning best occurs online It has to be self-paced and informal It should include active methods, such as interactive simulations and role plays, and project-based works
Relationships with...	Instructors: they are facilitators of dynamics among students Peers: they are a source of learning through peer learning Technology: it eases learning

Other studies report that the intense use of videogames also affect the brains of these learners reinforcing certain beliefs and working modes. In fact, videogames train people to handle risks and learn from their errors, a skill that is valued in many workplaces [22]. Additionally, videogames create a self-centered universe where the player is the character running the show and manipulating other people and objects to his or her will within certain rules. They teach players that the world is a competitive place, but also that they have to exert individual control over their action, and they reinforce independent problem solving. Furthermore, videogames reinforce players' beliefs about the self, how the world should work, how people relate to one another and, mostly, about the purpose of life in general [2]. Yet, at the same time videogames also contribute to develop teamwork cooperation and the capability to quickly examine, adapt to and interact with new situations [7].

All these factors seem to have profound implications in terms of how Gen Zers engage in learning [23] (see Table 1), and consequently of how instructors and organizations should design learning experiences to be effective for this generation.

Existing research on how Gen Zers engage in learning has focused on different aspects.

Some scholars explored Gen Z's motivation to learn, which seems analogous to the one moving them towards the use of videogames: they look for challenges and tasks because they are used to play increasingly complex games online [24]. Moreover, they see learning as stimulating and as a means to increase their versatility within the workplace, the latter also representing a major driver to learn [25].

Another topic that has been often addressed by scholars is that of learning models, modes and methods that are most effective with Gen Z, and how learning experiences should be designed accordingly [26]. Gen Z's familiarity with technology makes online learning and forms of self-paced learning very well received by individuals belonging to this generation [27]. Gen Z seems intolerant towards formal and structured learning, privileging informal learning and just-in-time learning bits [2, 28]. When they learn, Gen Zers dislike lectures and discussions, whereas they enjoy interactive games, collaborative projects and challenges [15]. They enjoy challenges, because they seem to learn a lot by taking risks in a safe environment and relying on a trial and error approach [2, 29]. "Experience" is a key word for them. Simulated environments or recreated role-play scenarios allow them to enjoy something that is too risky or even physically impossible to achieve in the real world [30, 31].

For Gen Z, learning takes place beyond the boundaries of traditional places and classes [2]. These learners make conscious choices about what learning methods work best for them, these can comprise reading lecture notes online, watching interactive media or digital images, or working in groups [32]. They are naturally inclined to focus on understanding, creating knowledge by adopting discovery methods, active engagement and asking faculty to provide them with a tailored learning experience [33, 34].

Furthermore, other scholars have inquired about who and what do Gen Zers interact with when they are learning, exploring in particular how they relate to instructors, peers and technology. Gen Z uses peer learning, despite the predominant virtual nature of the relationships with others [2, 35]. Instead, they do not seem to take into account the authority from instructors, who are rather seen as facilitators of peer dynamics [2]. Finally, the relationship with technology is by far the strongest one [36, 37], as they did not experience a world without technology. They consider technology as a means to an end rather than as an ultimate objective [38]. For Gen Z, easy-to-use technology is a primary source of information, as it helps organizing their activities and it supports problem solving [15]. Social networks are the main platforms for communication, and keeping online contacts is more important than face to face interactions [39]. In learning, there is a growing trend in Gen Z opting for electronic material and tech-based exercises [40].

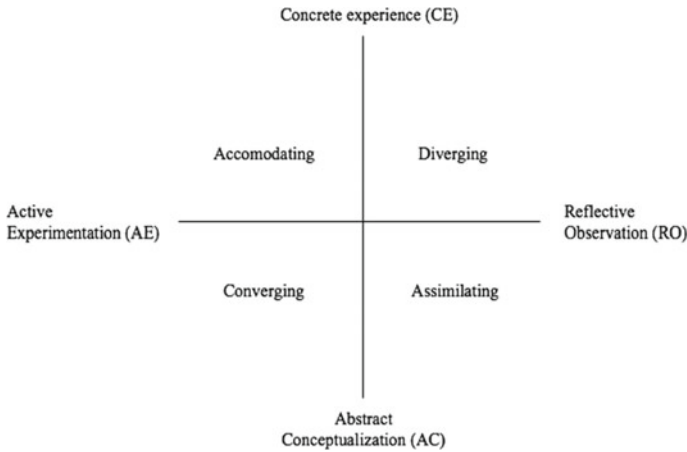
Some scholars have also started exploring whether the peculiarities of Gen Zers can be explained in light of their specific preferred learning styles [2, 27, 41]. Yet, so far this topic has not been examined in sufficient depth.

### 3 Learning Styles

By learning styles, we refer to cognitive, emotional, and physiological features, which are used to recognize how learners understand concepts and interact with the learning environment [42].

Over the years, the existing literature mapped 71 different learning styles models, which translates into hundreds of different learning styles. Curry [43] systematized these theories in a three-layer framework depending on the stability of the style: the most stable ones are the cognitive styles relating to personality, while the least stable ones are environmental and instructional styles. In between these are the information-processing learning styles, which are the most diffusely used in research and practice [44]. Kolb's Learning Style Inventory [8] belongs to the latter category, and it is the most frequently used model in research and practice [45]. In addition, relying on the experiential learning theory, Kolb's model appears to be particularly appropriate to explore Gen Z's learning styles because individuals belonging to this generation seem to learn best when actively involved in experiencing something [46].

According to Kolb, learning is a dynamic process and learners modify their learning style with changing circumstances or "the learning space" [47]. Kolb



**Fig. 1** Kolb's learning styles and experiential learning model

described learning as the students' preferred method of perceiving (grasping experience) and processing (transforming experience) information. The perceiving continuum reveals the extent to which individuals prefer abstractness (abstract conceptualization—AC) over concreteness (concrete experience—CE), while the processing continuum is about action (active experimentation—AE) versus reflection (reflective observation—RO) [9].

Individual learning styles represent a combination of these two independent dimensions, resulting in diverging (CE/RO), assimilating (AC/RO), converging (AC/AE), and accommodating (CE/AE) learning styles (see Fig. 1).

The *accommodating* learning style relies on concrete experience and active experimentation to learn. Individuals who embrace this learning style tend to learn from “hands-on” and challenging new experiences. They tend to act based on instinct, rather than logical analysis. When engaged in problem solving, to get information they rely more on the people around them, rather than on their own technical analyses. In formal learning situations, individuals with this style prefer collaborating with others to complete tasks, define goals, work in the field, and test various approaches.

The *diverging* learning style is based on concrete experience and reflective observation. People with this learning style are very good at looking from various perspectives at concrete situations, which they approach through observation rather than action. They are comfortable in situations that call for brainstorming a broad selection of ideas. In formal learning contexts, they prefer working in groups to gather information, listening with an open mind and receiving personalized feedback.

The *converging* learning style involves using abstract conceptualization and active experimentation. People with this learning style are very adept at finding practical applications for their ideas and theories. They are capable of solving new problems with the solutions to past problems. They would rather deal with technical tasks and issues, rather than interpersonal or social ones. In formal learning situations,

they prefer to learn by “first hand”, testing out new ideas, simulations, laboratory procedures and practical applications in general.

The *assimilating* learning styles relies on learning abilities that use abstract conceptualization and reflective observation. People with this style are highly skilled at understanding a wide variety of information and presenting it in a concise, logical way. They are far more focused on ideas and abstract concepts rather than people. In general, people who prefer this style believe that it is more important for a theory to be sound from a logical standpoint rather than valuable from practical one. In formal learning situations, they prefer taking lessons in a classroom setting, doing reading assignments, studying analytical models and having time to thoroughly think things thorough.

We have previously noted that Gen Zers have a liking for challenge and risk-taking in safe contexts. Moreover, they have a preference for applied and uncomplicated information, and they tend to rely on collaboration with their peers. Based on these characteristics of Gen Zers and on their approach to learning, we hypothesize that Gen Zers have higher preferences towards the accommodating learning style than previous generations do, and thus we expect a higher percentage of Gen Zers embracing the accommodating style compared to other generations. Furthermore, we analyze the generational differences in preference towards the four styles in an exploratory fashion.

## 4 Methods

We collected data from 870 Italian MSc students and participants to executive education at an Italian University in 2018. Out of the 870 participants in our sample (average age 26, 47% females), 68% were Gen Z (born after 1996), 19% Millennials (born 1980–1996) and 13% belonging to generational cohorts born before 1980 (Gen X and Baby Boomers). Students belonging to Gen Z are enrolled in MSc courses in Management and Economics, while the others include participants attending Executive Education courses within the Business School. We decided to merge individuals from Gen X and Baby Boomer because there are fewer of them in the dataset compared to the other generations; moreover, Baby Boomers have almost exited the workforce.

We asked participants to fill in Kolb’s learning style inventory [9], which is constructed in such a way that individuals respond to it as they would respond to a learning situation: it requires them to resolve the tensions between the abstract-concrete and active-reflective orientations. There are eight couples of statements. For each couple respondents pick the one that better represent the way they behave, and they give a score using a Likert scale 1–5 (1 = it represents me a little, 5 = it totally represents me). An example of couple of statements is the following one: “(a) *I am a careful observer of events and people, and I find myself reflecting on what I see and hear from what goes on around me*” versus “(b) *I am a decisive and practical problem solver who enjoys putting plans into action.*”

To test our hypothesis, we then performed a One-Way ANOVA and post hoc analyses to test whether there were significant differences in preferred learning styles between Gen Z and previous generations. We further ran a series of binomial logistic regressions to control for the eventual effects of age and tenure on the preferred learning style. In particular, we created dummy variables for each of the four learning styles, with each individual displaying one preferred style based on his/her Learning Style Inventory score. We then split the dataset into three generational cohorts (Gen Z, Gen Y and older generations, including Baby Boomers and Gen X) and ran binomial regressions for each style, introducing first age and then career tenure as predictors. In this way, we were able to check whether age or career tenure had any effect on the likelihood of embracing a learning style within each generation. We decided to perform this analysis to tackle one of the criticisms that is most often moved to generational research, namely that the effects of generational cohort on the outcomes under scrutiny are confounded with age and tenure effects [48, 49], even if previous research found that generational effects exist beyond pure age and period effects (e.g. [48]).

## 5 Results

The results are reported in Tables 2 and 3. Despite the predominantly qualitative evidence from existing research suggesting Gen Zers' preferences for active experimentation and concrete experience when compared with their predecessors, we found no support for our hypothesis. Indeed, we found that Gen X and Baby Boomers are significantly more accommodating than both Gen Z and Gen Y, while there are no differences between the latter two generations. On the contrary, Gen Zers have higher preferences towards the assimilating learning style when compared to individuals belonging to both other generational cohorts. Our results also showed the Gen Z individuals are marginally more converging than individuals from Gen X and Boomers, while the differences between them and Gen Y are not significant. Finally, we noticed that Millennials (Gen Y) have higher preferences towards the diverging

**Table 2** Analysis of variance

Variable	Gen Z		Gen Y		Gen X/B		F-test
	%	SD	%	SD	%	SD	
Accommodating	25.34	43.53	31.71	46.68	50.91	50.22	15.17**
Diverging	25.34	43.53	35.98	48.14	25.45	43.76	3.80*
Converging	21.64	41.22	15.24	36.05	12.73	33.48	3.46*
Assimilating	27.68	44.78	17.07	37.74	10.91	31.31	9.80**

Note  $n = 870$ ; BB baby boomers

\* $p < 0.05$ , \*\* $p < 0.01$



**Table 3** Tukey’s honestly significant different test

Variable	Gen 1	Gen 2	MD	SE	Sig.
Accommodating	Gen Z	Gen X/BB	-0.2557**	0.0467	0.000
		Gen Y	-0.0637	0.0397	0.244
	Gen Y	Gen X/BB	-0.1920**	0.0555	0.002
Diverging	Gen Z	Gen X/BB	-0.0012	0.0461	0.999
		Gen Y	-0.1064*	0.0392	0.019
	Gen Y	Gen X/BB	0.1052	0.0548	0.134
Converging	Gen Z	Gen X/BB	0.0892 <sup>†</sup>	0.0409	0.075
		Gen Y	0.0640	0.0347	0.156
	Gen Y	Gen X/BB	0.0252	0.0485	0.862
Assimilating	Gen Z	Gen X/BB	0.1678*	0.0436	0.012
		Gen Y	0.1061**	0.0371	0.000
	Gen Y	Gen X/BB	0.0616	0.0518	0.460

Note n = 870; MD mean difference; SE standard error; Sig significance; BB baby boomers  
<sup>†</sup>p < 0.1, \*p < 0.05, \*\*p < 0.01

learning style than Gen Zers, while there are no differences between either generation and Gen X and Baby Boomers.

These results suggest that Gen Zers’ learning is activated when abstract conceptualization and reflection observation come into play. They seem to need theories and concepts much more than the mainstream stereotype suggests, and they tend to prefer information that is logical, valid, and well thought through. On the contrary the most senior generations (Baby Boomers and Gen X) rely on concrete experience and active experimentation, as they are more accommodating than both Gen Z and Millennials (Gen Y). The latter tend to combine elements of the older generations (specifically the orientation towards concrete experience) and of the youngest one (the orientation towards reflective observation), showing more diverging tendencies than the other generations, especially than Gen Z.

Either as far as the binomial regression that we ran to control for age and tenure effects are concerned, in none of the 12 regression analyses (four styles by three generations) did we find that age or career tenure predicted any of the styles. These results confirm our claim that the generational cohort is an adequate unit of analysis and that generation effects exist beyond age and tenure effects, as also suggested by previous studies [48, 49].

## 6 Discussion and Conclusions

In this paper we examined Gen Zers’ preferred learning styles, in comparison with the ones of individuals from previous generations. We found significant differences between Gen Zers and individuals belonging to the previous generations, even if

results differ from what we could have expected from existing academic and practical evidence.

Gen Zers has a higher preference for abstract conceptualization and reflection observation than individuals from previous generations, as Gen Zers showed a significantly stronger preference for an assimilating learning style than the others. In order to activate their learning, they need theories that are logically sound, and they need time to think things through. We can infer that instructors should make an effort to provide them with a sound theoretical and predetermined framework to analyze, interpret and deal with reality. Gen Zers learn better step by step, digesting small and frequent bits of theories and concepts. The more they receive theory in an already structured and logical way, the better it is, despite the common belief that they that they enjoy playing an active role, facing challenges and experimenting. They do like being active, but this is not how their learning process gets started. To engage in an effective relationship with this population, instructors can probably provide small bits of theoretical models and offer examples of their applications, adopting more a deductive rather than an inductive approach. The challenge is to frame theoretical frameworks in such a way that they are accessible. In order to so, instructors could for example adopt interactive methods for collaborative visualization and cross-community knowledge sharing. In fact, visualization typically facilitates information sharing and complex problem solving [41, 50].

On the contrary, the oldest generations—Baby Boomers and Gen X—have a higher preference for concrete experience and active experimentation. They learn best when they can rely on hands-on experience and play an active role in terms of experimenting and facing new challenges. The challenge for instructors is to make their professional experience a key component of the learning process [51].

When different generations learn together in formal occasions (in class) or informal ones (on the job everyday), differences in terms of learning styles represent an opportunity, as well as a challenge. They are an opportunity because individuals train themselves to appreciate and value differences by interacting with diverse people. They are also a challenge, because they need to be accommodated, especially when people have to collaborate and solve problems as a team.

From a research point of view, we provide an empirical test of Gen Zers' learning styles, based on Kolb's model. We also highlight differences in learning style preferences among Gen Z, Millennials (Gen Y) and individuals from the previous generations (Gen X and Baby Boomers).

From a practice point of view, we offer instructors the provocative suggestion to start being more deductive and theory driven when teaching the youngest generation.

This work has some limitations that offer inspiration for future research: the dataset is limited to Italian people in terms of nationality and to students/participants who are enrolled in management and economics courses. Nationality and field of studies influence preferred learning styles [9]. We also call for research on how gender and personality types impact learning styles. Finally, this research belongs to generational research which is often criticised for confounding generational, age and tenure effects. Therefore, more research questions can be tackled with the appropriate rigour with, for instance, longitudinal studies on Gen Zers over the years, to track

whether their learning style evolves with age and work experience, or with studies comparing different generations at the same point of their life (e.g. when they enter the job market).

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