



## Beyond Killers and Socialisers: Game-Based Learning and Gendered Career Adaptability

Christine Hoffelner<sup>1</sup>[0000-0003-0992-3031], Albert Düggele<sup>2</sup>[0000-0003-0527-4871] and Christof Nägele<sup>1</sup>[0000-0002-7133-0889]

<sup>1</sup> University of Applied Sciences and Arts Northwestern Switzerland, School of Teacher Education, Muttenz, Switzerland

<sup>2</sup> University of Teacher Education of the Grisons, Chur, Switzerland  
[christine.hoffelner@posteo.de](mailto:christine.hoffelner@posteo.de)

**Abstract.** This full paper investigates how gendered gaming behaviors mirror and shape adolescents' career adaptability, a key competence for navigating uncertainty in career planning. Drawing on quantitative data from the Swiss longitudinal project [www.digibe.ch](http://www.digibe.ch) (2021–2025), the study analyses how male and female students' gaming preferences ( $N = 134$ ), based on Bartle's typology, align with psychosocial adaptability resources such as cooperation, concern, creativity, confidence, and control. A quantitative approach was applied, combining descriptive statistics, chi-square and Mann–Whitney U tests. Results show that male adolescents predominantly identified with the competitive Killer type, characterised by goal orientation and mastery, while female adolescents preferred the cooperative Socialiser type, emphasising communication and collaboration. These patterns were mirrored in career-reflection processes: female students demonstrated stronger cooperation in their career planning. The findings suggest that gaming serves as both a mirror and a training ground for adaptability. While reinforcing gendered tendencies, it simultaneously provides opportunities to experiment with alternative coping strategies. The study concludes that guided reflection on gaming experiences can help balance gendered skill profiles and enhance equity in career planning.

**Keywords:** Gender, Career Adaptability, Game-based Learning, Career Planning, Lower Secondary.

### 1 Introduction

Adolescence is a formative stage in which individuals confront the intertwined tasks of identity development, social belonging, and envisioning their professional futures. In the Swiss context, these processes are institutionalised through structured career education embedded in lower-secondary education [5]. However, despite decades of gender-equality policies, career choices remain strongly gendered: male students continue to dominate technical and mechanical professions, while female students concentrate in care, education, and social fields [12, 15].

Traditional guidance approaches often emphasise rational decision-making and labour-market information, thereby reducing career choice to a primarily cognitive optimisation task and underestimating its emotional, motivational, and social dimensions [21]. In contrast, research within the life-design framework conceptualises career planning as an ongoing process of coping and meaning-making rather than a one-time decision [10, 26]. From this perspective, adolescents are required to continuously negotiate between internal aspirations and external expectations, managing structural and personal uncertainty through adaptive resources such as career adaptability [25].

Commercial video games constitute central arenas where these adaptive processes unfold informally: Games are not merely entertainment; they provide complex systems of rules, feedback, and social interaction that simulate challenge and mastery [9, 19]. Within these environments, adolescents repeatedly experience cycles of failure and success, develop strategies, and engage in collaboration or competition, all of which mirror psychosocial mechanisms relevant to real-life career adaptability [25].

Yet, gaming cultures are also deeply gendered. Studies show persistent disparities in how male and female gamers are perceived and how they engage with play [7, 16]. These orientations may extend beyond the virtual sphere, shaping how young people approach learning, problem-solving, and career planning.

Building on previous analyses from the *www.digibe.ch* project [14, 21], this study focuses on students' responses to a gaming-related reflection module. By analysing gendered player type preferences and their relation to different expressions of career adaptability, the paper offers a focused contribution that complements earlier work on this digital career reflection tool. It thereby positions gaming as a reflective learning context within gender-sensitive career education.

To clarify the specific focus of this study, the following research questions guide the analysis:

**RQ1:** How do player types differ between female and male adolescents participating in a gaming-related reflection module?

**RQ2:** Which dimensions of career adaptability are articulated within different player types?

**RQ3:** What implications do gendered expressions of career adaptability in gaming contexts have for gender-sensitive career guidance?

## 2 Theoretical Framework: Adaptability, Gender and Reflection

To understand how gaming, gender, and adaptability intersect, this section synthesises three conceptual traditions: (a) career-adaptability theory, (b) gender and socialisation research, and (c) Game-Based Learning as a reflective framework. Each strand provides analytical tools for interpreting how adolescents construct meaning and cope with uncertainty in both virtual and real contexts.

### 2.1 Life Design and Career Adaptability

The life-design paradigm [25, 26] conceives of careers not as linear progressions but as dynamic narratives shaped by adaptability; the ability to anticipate, plan, and respond to change. Savickas [25] identifies four adaptability dimensions: *concern* (future orientation), *control* (self-regulation and agency), *curiosity* (exploration), *confidence* (perseverance). Nye et al. [23] expanded the framework with *cooperation* (social support and collaboration). In Ungar's social-ecological model, resilience is conceptualised not as a fixed personal trait but as a dynamic process of navigating and negotiating access to resources that are meaningful within one's cultural and contextual environment [6]. Career adaptability closely aligns with this understanding, as it similarly emphasises the mobilisation of personal and social resources to manage uncertainty and change [25]. Although the explicit negotiation of resources within broader social and structural contexts is less central in career adaptability theory, it can nonetheless be interpreted as a domain-specific manifestation of resilience, focusing on how individuals activate available resources to construct coherent career narratives amid change.

Adolescents strengthen these resources through experiences that demand reflection, problem-solving, and interaction with others [11]. Gaming naturally embodies these features: players project themselves into future scenarios (concern), make autonomous decisions (control), experiment with strategies (curiosity), persist through setbacks (confidence), and collaborate with peers (cooperation) [9, 19]. Therefore, empirical studies indicate that video games constitute a rich informal learning environment in which adolescents acquire problem-solving strategies, self-regulatory skills, and persistence through iterative engagement with complex challenges [13, 14]. When these experiences are consciously transferred into processes of self-reflection, they can meaningfully inform career planning by making tacit competencies visible and narratively accessible. However, such transfer does not occur automatically; it requires structured scaffolding that helps learners connect in-game experiences with real-life vocational challenges. Without guided reflection, gaming-related learning remains implicit and underutilised. This insight underpins the *www.digibe.ch* project [21], which leverages the motivational and experiential depth of gaming by providing a digital tasks that encourage students to articulate, reinterpret, and contextualise gaming-derived skills within career planning.

However, the transfer of gaming experiences into career planning is embedded in broader socialisation processes. Gender, in particular, structures adolescents' access to gaming cultures and shapes how competencies developed through play are interpreted and valued. The following section therefore focuses on gender and socialisation in career planning and the gaming world.

### 2.2 Gender and Socialisation in Career Planning and the Gaming World

Gender is one of the most persistent structuring forces in adolescents' identity development and educational decision making [29]. Socialisation theory posits that gendered expectations are transmitted through family, peers,

media, and institutions, shaping how young people interpret their abilities, roles, and life choices [15, 29]. Even in educational systems that formally promote equality, implicit social scripts embedded in classroom interactions, teacher feedback, and peer cultures tend to reproduce gender typical orientations, subtly guiding students toward gender typical learning strategies and career pathways [15, 18, 29].

Against this socialisation background, within the life design and coping framework, career planning is understood as an active process of dealing with uncertainty by mobilising personal and contextual resources [6, 11, 25]. Empirically grounding this perspective, our previous study showed that digital games can function as such a coping space: adolescents who engage more with gaming, particularly male adolescents, were able to identify and articulate a broader range of career adaptability resources, and these resources were transferable back into career planning [14].

However, these findings must be situated within the social conditions of gaming itself. Importantly, gaming environments themselves are deeply gendered social spaces. Research shows that competence in games is often interpreted through a gendered lens: male players are more readily assumed to be skilled, whereas female players are more likely to face scepticism, delegitimisation, or harassment and must continually prove their competence [7, 16]. Consequently, these dynamics shape not only participation but also how adolescents experience self efficacy, competition, cooperation, and social support in gaming contexts. In this sense, games do not merely reflect individual preferences but actively structure which forms of competence become visible, rewarded, or silenced.

Building directly on this tension between resource activation and gendered recognition, the present study advances a more fine grained analysis by focusing on player types as a lens for understanding gendered expressions of career adaptability. Rather than reproducing additive comparisons, we do not ask whether adolescents possess more or fewer resources, but examine which students engage in gaming, how player type preferences cluster by gender, and which dimensions of career adaptability become visible and reflected upon through different forms of play.

Taken together, by integrating gender, adaptability, and gaming, this study conceptualises digital play as a microcosm of socialisation; a playful laboratory in which gendered norms are rehearsed, negotiated, and occasionally disrupted. On this basis, the following section builds on this argument by positioning Game-Based Learning as both a pedagogical and reflective framework for making these adaptive processes visible and usable in career education.

### 2.3 Game-Based Learning as a Context for Reflection

Game-Based Learning (GBL) provides a powerful framework for understanding how digital play contributes to learning, identity development, and adaptability. It conceptualises games not merely as entertainment but as complex systems that promote cognitive, emotional, and social growth.

In gaming environments, failure is not final; it is feedback. Players experiment, fail, and try again, learning persistence, resilience, and strategy [9, 13]. This dynamic aligns with McGonigal's *challenge mindset*, which reframes adversity as a stimulus for growth [19]. Such a mindset contrasts sharply with traditional classroom and career-guidance settings, where failure is often stigmatised rather than used as a learning resource.

While McGonigal emphasises the motivational power of reframing adversity as a challenge, Gee extends this logic by explicating the concrete learning mechanisms through which games support persistence and growth. He identifies twelve learning principles inherent in game design, including situated meaning-making, the cycle of expertise, and incremental problem-solving [9]. These mechanisms closely mirror those of career adaptability, which also depend on iterative cycles of anticipation, exploration, reflection, and mastery [25]. Translating this playful logic into education enables career counseling to position uncertainty as a natural and productive part of vocational development.

Games also serve as spaces of identity exploration: Within virtual worlds, players assume new roles, test decision-making strategies, and experience the consequences of their choices in safe, simulated environments [19]. This process parallels narrative approaches in career counseling, where individuals construct and test "possible selves" through storytelling and self-reflection [25]. Games externalise this narrative process: they provide embodied, emotionally engaging experiences of competence, control, and cooperation that can later be translated into real-life adaptability.

Within this GBL framework, Bartle's taxonomy offers a practical and accessible lens for linking gaming motivation to adaptability. Although originally developed in early multiplayer gaming contexts, the four player types continue to be used in educational research to design and analyse gamified learning environments, particularly in secondary and higher education settings [8, 28, 30]. While more fine-grained player models have

been proposed, Bartle's archetypes remain a reliable heuristic due to their interpretability and suitability for reflective learning designs [4, 28].

Viewed through this lens, player types can be understood as informal learning profiles that make adaptive strengths visible. For educators and counselors, they provide entry points for reflective dialogue. Rather than ranking player styles, reflective GBL frames them as complementary routes toward balanced adaptability.

This reflective approach is reinforced by Rochat and Armengol's counseling model, which describes learning transfer from gaming through three stages: experience, narration, and transfer [24]. Players first recognise meaningful experiences in play, then translate them into personal narratives, and finally connect them to real world contexts. This process echoes Savickas's constructivist understanding of career planning as an ongoing act of authorship [25,26].

When integrated into educational practice, GBL thus functions as both a pedagogical and reflective framework. It validates gaming as a legitimate context for developing psychosocial skills while providing tools to challenge gendered learning boundaries. By helping adolescents reflect on how different play styles relate to coping and career planning, GBL transforms digital leisure into a site of identity work, resilience, and vocational development.

### 3 Methodology

To address the three research questions guiding this study, we conducted a quantitative analysis of students' responses to a gaming-related reflection module within the *www.digibe.ch* platform. The methodological design, instruments, and analyses were selected to examine gender-related differences in player types and their relation to different dimensions of career adaptability.

#### 3.1 Research Context and Design

The study forms part of the larger longitudinal research initiative *www.digibe.ch* (2021–2025), funded by the Swiss State Secretariat for Education, Research and Innovation (SERI). This project investigates how digital reflection tools can strengthen adolescents' career planning skills by connecting formal guidance practices with digital reflection activities. The platform provides structured online reflection tasks embedded within the subject of career orientation (*Berufswahlunterricht*) in Swiss lower-secondary schools [21].

Within this broader framework, the present analysis focuses specifically on the intersection of gender, gaming behavior, and career adaptability. The design is quantitative and exploratory, aiming to uncover relational patterns rather than causal effects.

#### 3.2 Participants and Procedure

The sample comprised 134 students (62 female, 72 male) aged 13–15 from lower secondary schools from seven German-speaking Swiss regions. As shown in Figure 1 the platform *www.digibe.ch* provides a structured environment for career reflection activities, organised into four competence areas based on the Swiss curriculum *Lehrplan 21: looking inward, looking outward, deciding, and developing* [5]. The interface guides students through a sequence of reflection tasks that connect personal strengths, external opportunities, and decision-making strategies. In the lower right area, learners can access the *Developing* module, where they are invited to view their career path as a game and to design their own "life-game," conceptualising progression, challenges, and goals as part of their vocational journey.

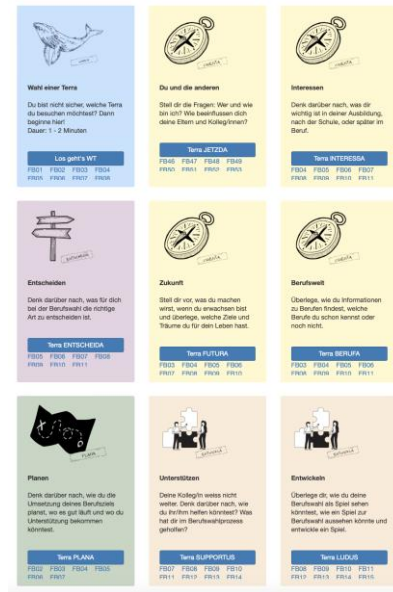


Fig. 1. Interface of the www.digibe.ch digital reflection platform.

Participation of the students was integrated into regular classroom time, supervised by teachers trained to support the digital tasks. Before beginning, both parental and student consent were obtained. The activity “Gaming and Career Choice” guided students through three steps:

1. Identifying the games they most frequently play
2. describing what skills they need for them
3. selecting one of four player types, *Killer*, *Socialiser*, *Explorer*, or *Achiever*, based on simplified Bartle [2] vignettes

The system automatically recorded responses and stored them anonymously for research analysis. Demographic information (gender, age, school type) was gathered through self-report at the beginning of the project phase. Gender was treated as a binary variable, as there were no responses for the third category “diverse”.

### 3.3 Measures

Player type was assessed using a vignette based self-classification task derived from Bartle’s player taxonomy [2]. Students were asked: “Which of the following best describes you?” and instructed to select the option that most closely matched their typical way of playing digital games. Each vignette represented a dominant motivational orientation rather than a specific game genre or mechanic.

The *Achiever* vignette emphasised enjoyment of progress, rankings, point systems, and the pursuit of rare or prestigious in game achievements. The *Explorer* vignette highlighted curiosity, long term engagement with a game world, and intrinsic motivation to experience all aspects of the game environment, independent of social comparison. The *Killer* vignette focused on competitive comparison with others, enjoyment of dominance, and the goal of outperforming opponents. The *Socialiser* vignette foregrounded social interaction, cooperation, and helping others, with shared experience taking precedence over formal game objectives.

By selecting one vignette, students indicated their dominant player type. In the present study, the term “player type” refers to this self reported motivational orientation and does not claim to represent stable personality traits or observed in game behaviour. Rather, it captures perceived tendencies that are particularly suited for guided reflection in educational contexts.

Career Adaptability was measured using an adapted version of McGonigal’s Challenge Mindset Scale [19], aligned with Savickas’ and Nye et al. five adaptability dimensions [23, 25, 26]. Items such as “*I stay optimistic even when facing difficult tasks*” were rated on a five-point Likert scale (1 = not at all true, 5 = completely true). Factor loadings corresponded with the five sub-constructs: concern, control, cooperation, confidence, and curiosity.

Player type preferences and gender were used to address RQ1, while the career adaptability dimensions were analysed in relation to player types to address RQ2. RQ3 was addressed by interpreting the results in light of gender-sensitive career guidance.

### 3.4 Reliability and Validity

A confirmatory factor analysis (CFA) was conducted to test the measurement structure of the adapted adaptability scale. The results demonstrated adequate fit (CFI = 0.858; RMSEA = 0.075). Reliability coefficients ranged between 0.66 and 0.80 (McDonald's  $\omega$ ). Table 1 presents reliability indices for each adaptability dimension.

**Table 1.** Reliability coefficients of the CFA of the adapted career adaptability scale.

| Dimension   | McDonald's $\omega$ | Cronbach's $\alpha$ | Items |
|-------------|---------------------|---------------------|-------|
| Concern     | 0.66                | 0.64                | 3     |
| Control     | 0.73                | 0.73                | 4     |
| Cooperation | 0.70                | 0.69                | 3     |
| Confidence  | 0.80                | 0.80                | 4     |
| Curiosity   | 0.67                | 0.67                | 3     |

## 4 Findings

The analyses proceeded in three steps aligned with the research questions. First, gender-related differences in player type preferences were examined (RQ1). Second, associations between player types and career adaptability dimensions were analysed (RQ2). Third, the findings were interpreted in the discussion with regard to their implications for gender-sensitive career guidance (RQ3).

### 4.1 Player Type Preferences by Gender

This section addresses RQ1 by examining gender-related differences in player type preferences among adolescents. Among 134 participants, 29 % identified as Achievers, 26 % as Explorers, 20 % as Killers, and 25 % as Socialisers. Game-type preference differed significantly by gender ( $\chi^2(3, N = 134) = 10.22, p < .05$ ). Males were over-represented among *Killers* (standardised residual =  $-2.5$ ), while females were more likely to choose *Socialiser* (residual =  $-2.6$ ). The distribution of Achievers and Explorers was balanced. These data confirm a clear gender clustering: competitive orientations dominate among male adolescents, relational orientations among female adolescents.

### 4.2 Career Adaptability Dimensions across Player Types

To address RQ2, this section analyses how different dimensions of career adaptability are articulated across player types. Mann-Whitney U analyses indicated significant gendered differences on the adaptability dimension *cooperation* ( $U = 1601, p < .05$ ). *Socialiser-females* ( $Mdn = 4.7$ ) scored higher than *Killer-males* ( $Mdn = 4.2$ ). No significant gender differences emerged for *concern*, *curiosity*, or *control*, although *confidence* approached significance ( $p = .08$ ) with males slightly higher.

## 5 Discussion

### 5.1 Interpreting Gendered Adaptability Through Life Design and Coping

The findings confirm that gender remains a key factor in shaping how adolescents engage with career adaptability resources in career planning and gaming. Addressing RQ1 and RQ2, the findings show that male students' preference for the *Killer* player type suggests a higher valuation of control, competition, and mastery. These traits correlate with the adaptability dimensions *control* and *confidence*, both central to managing self-determined transitions. However, these strengths can become limiting when overemphasised; leading to lower relational awareness or reduced capacity for collaboration.

Female students' identification with the *Socialiser* type highlights cooperative and empathetic skills that align with the adaptability dimension *cooperation*. This orientation supports social connectedness and collective coping; critical for maintaining motivation and well-being in uncertain vocational pathways. Yet, when over-reliant, this tendency may manifest as relational dependency or hesitancy in asserting one's own goals.

The results complement and extend our previous study [14], which established a positive link between gaming and career adaptability. Taken together, these findings suggest that adaptability should not be interpreted as a gender-neutral construct, but rather as a dynamic balance among multiple resources that are differentially activated across social contexts. Life-design theory conceptualises adaptability as a self-regulatory system that evolves through ongoing interaction with these contexts [26]. Within this framework, gendered experiences in gaming can shape this evolution by providing experiential microcosms for both competitive and collaborative forms of coping.

## 5.2 Gaming as a Mirror of Gendered Learning

Gaming serves as a mirror through which adolescents enact and observe their coping behaviors. The *Killer* and *Socialiser* player types represent symbolic expressions of broader learning orientations. Competitive players enact mastery-oriented, self-referential learning; cooperative players enact socially mediated, relational learning. Both are valid pathways for skill development, but each must be contextualised and reflected upon.

In this sense, video games become diagnostic instruments for understanding youth agency. They externalise individual tendencies in safe, structured, and emotionally engaging environments. Through guided reflection, educators and counselors can use gameplay narratives to make implicit patterns explicit: *How do you react when your team fails?*, *What strategies do you use when you lose?*, or *What motivates you to help others in a game?* These questions reveal self-concepts and coping logics that may otherwise remain invisible in traditional classroom settings.

At the same time, the gendered perception of competence in gaming cultures [7, 16] adds complexity. Female players often experience external questioning of their skill, while male players are socially rewarded for confidence. These asymmetries parallel real-world dynamics in education and work. Therefore, reflective GBL approaches can challenge such hierarchies by creating equitable spaces where different competencies are recognised and valued.

## 5.3 Pedagogical Reflection: From Informal Play to Formal Learning

A central implication of these findings is the potential for Game-Based Reflection (GBR); a structured pedagogical framework that transforms gaming into a site of career planning. In this approach, educators guide students to analyze their gaming experiences, draw parallels with real-world coping, and identify transferable skills. For instance, a competitive student may learn to recognise teamwork as essential to success, while a cooperative student may realise that leadership requires assertiveness.

By connecting informal play with formal guidance, GBR bridges cognitive and affective learning. It also resonates with life design [21], emphasising self-awareness and active meaning-making.

## 5.4 Limitations and Theoretical Contributions

While the study's sample is limited to binary gender identification, its integration of life-design, coping, and GBL theory offers a novel lens for analyzing digital youth culture. The results support a broader interpretation of adaptability as gender-embedded learning. They also underscore the importance of interdisciplinary approaches that unite career education, media pedagogy, and learning sciences.

Several methodological limitations must be acknowledged. First, the data rely on self-reported measures, which are subject to social desirability and recall bias; particularly when adolescents describe gaming or cooperation behaviors that may be gender-coded. Second, the study did not include direct behavioral observation or qualitative analysis of in-game interactions, which could have provided a richer understanding of how adaptability manifests during play. Third, the study design precludes causal interpretations of the relationships observed between player type and adaptability dimensions. Future mixed-method and longitudinal approaches, including classroom observation or ethnographic game-play analysis, could strengthen the validity and ecological depth of these findings.

Theoretically, this paper contributes to reimagining *game play* as *career play*: a process of experimenting with possible selves, managing failure, and negotiating agency. Such a metaphorical extension enriches both career-guidance theory and Game Studies by highlighting the developmental potential of digital play.

## 6 Implications and Future Research

### 6.1 Educational Practice: Designing Gender-Sensitive Reflection Tools

To address RQ3 the findings suggest that, in practice, career guidance should intentionally use digital and game-based learning as spaces for becoming aware of gendered coping patterns and for experimenting with alternative resources. Gaming environments allow adolescents to experience different ways of dealing with challenge, competition, cooperation, and uncertainty, including strategies that may be less encouraged for their own gender through socialisation.

Structured reflection tasks can therefore invite students to explore questions such as: *Which strategies do I usually rely on when playing? How does it feel to act more cooperatively or more competitively than I normally would? Which strengths become visible in these moments?* Such reflections can help students recognise that adaptability is not limited to gender-typical patterns, but can be expanded through experience.

This perspective is particularly relevant for career exploration. Research shows that certain occupational fields, especially in STEM, are often perceived as highly competitive and are therefore more frequently avoided by female adolescents, even when ability levels are comparable [3, 22]. Reflective engagement with gaming experiences can help students question such implicit exclusions by linking different coping styles to a wider range of career options.

By framing gaming as a space for trying out and reflecting on diverse coping strategies, gender-sensitive Game-Based Learning can support adolescents in broadening their perceived career possibilities and in making more informed, less stereotyped career decisions.

### 6.2 Teacher Training and Professional Development

For effective implementation, educators require professional development that fosters both digital literacy and gender competence. Training programs should familiarise teachers with gaming typologies (like Bartle's taxonomy), digital youth culture, and reflection strategies. This knowledge helps teachers interpret students' informal learning signals and integrate them into guidance conversations.

Importantly, such training also provides a framework for addressing gendered exclusions in career imagination. Many occupational fields, particularly in STEM, are perceived as overly competitive and are therefore prematurely ruled out by (often female) students who do not identify with dominant competitive norms. Through gender-sensitive Game-Based Learning, these implicit assumptions can be surfaced and critically examined by exposing learners to diverse forms of problem-solving, cooperation, and mastery within gaming contexts.

Professional development may therefore include simulations in which teachers themselves engage in gameplay, followed by guided reflection sessions that analyse coping styles, motivational patterns, and learning strategies. Experiencing these dynamics firsthand equips educators to challenge narrow career stereotypes and support more inclusive and differentiated career pathways.

### 6.3 Policy and Curriculum Development

At a policy level, integrating digital reflection tools like *www.digibe.ch* into national frameworks supports equitable and modern career education. Tasks, which support gender-sensitive GBL can complement traditional modules on career information by addressing the *how* of career planning and its emotions, motivation, and resilience.

Curriculum designers should consider embedding reflective gaming units in interdisciplinary subjects such as media education, ethics, or social learning. This fosters cross-curricular connections and normalises the use of play for serious learning.

### 6.4 Broader Implications: Rethinking Equity Through Play

This research reframes digital gaming as an informal learning environment in which adolescents already develop core dimensions of career adaptability, including concern, control, curiosity, confidence, and cooperation. The central contribution of the study is to demonstrate that these adaptability resources are dependent of player types and gendered rather than neutral, shaped by differential access to gaming cultures and forms of play.

By integrating a gender-sensitive, Game-Based Learning approach, the study shows how gaming experiences can be systematically reflected upon and translated into career planning. From this perspective, gaming is not

merely leisure but a meaningful site for fostering adaptive capacities that are central to navigating contemporary career trajectories.

## References

1. Bandura, A.: Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review* 84(2), 191–215 (1977).
2. Bartle, R.: *Designing virtual worlds*. New Riders, Indianapolis (2003).
3. Buser, T., Niederle, M., Oosterbeek, H.: Gender, competitiveness, and career choices. *The Quarterly Journal of Economics* 129(3), 1409–1447 (2014).
4. Cömert, Z., Samur, Y.: A comprehensive player types model: Player head. *Interactive Learning Environments* 31, 2930–2946 (2021). doi: 10.1080/10494820.2021.1914113
5. D-EDK: Lehrplan 21: Gesamtausgabe [Curriculum 21: Complete edition]. Deutschschweizer Erziehungsdirektoren-Konferenz (D-EDK), Luzern (2016).
6. Dueggeli, A., Kassis, M., Kassis, W.: Navigation and negotiation towards school success at upper secondary school: The interplay of structural and procedural risk and protective factors for resilience pathways. *Education Sciences* 11(8), 395 (2021). doi: 10.3390/educsci11080395
7. Fox, J., Tang, W.Y.: Women's experiences with general and sexual harassment in online video games: Rumination, organizational responsiveness, withdrawal, and coping strategies. *New Media & Society* 19(8), 1290–1307 (2017). doi: 10.1177/1461444816635778
8. Gaalen, A., Schönrock-Adema, M., Renken, P., Jaarsma, P., Georgiadis, J., Xsl, F.: Identifying player types to tailor game-based learning design to learners: Cross-sectional survey using Q methodology. *JMIR Serious Games* 10 (2021). doi: 10.2196/30464
9. Gee, J.P.: What video games have to teach us about learning and literacy. *Computers in Entertainment* 1(1) (2003).
10. Herzog, W., Makarova, E.: Career orientation as a coping process. In: Brüggemann, T., Rahn, S. (eds.) *Berufsorientierung*, pp. 73–82. Waxmann, Münster (2020).
11. Hirschi, A.: Career adaptability development in adolescence: Multiple predictors and effect on sense of power and life satisfaction. *Journal of Vocational Behavior* 74(2), 145–155 (2009). doi: 10.1016/j.jvb.2009.01.002
12. Hoffelner, C., Makarova, E., Nägele, C.: Killers and Socialisers revisited: What game types tell us about gender differences in career skills. In: *Trends in Vocational Education and Training Research*, vol. 8, pp. 258–264. VETNET (2025).
13. Hoffelner, C., Nägele, C., Düggeli, A.: Play for the future: A cross-sectional study on the role of video game skills in student career planning. *Simulation & Gaming* (2025). doi: 10.1177/10468781251328894
14. Hoffelner, C., Düggeli, A., Nägele, C.: Unlocking hidden resources: The role of gaming skills in fostering career adaptability for resilience in the career planning of young people. *Nordic Journal of Vocational Education and Training* 15(5), 101–139 (2025). doi: 10.3384/njvet.2242-458X.25155101
15. Hupka-Brunner, S., Burren, S., Larcher, S.: Berufe haben ein Geschlecht – Ausbildungswege auch. In: Burren, S., Larcher Klee, S. (eds.) *Geschlecht, Bildung, Profession*, pp. 153–172. Barbara Budrich, Opladen (2022).
16. Kelly, D., Nic Giolla Easpaig, B., Castillo, P.: “You game like a girl”: Perceptions of gender and competence in gaming. *Games and Culture* 18(1), 62–78 (2023).
17. Kırmacı, Ö., Çakmak, E.: The impact of scenario-based online gamified learning environment tailored to player types on student motivation, engagement, and environment interaction. *Journal of Research on Technology in Education* 57, 800–819 (2024). doi: 10.1080/15391523.2024.2323447
18. Makarova, E., Lindner, J.: Gender-sensitive career guidance using digital media as an educational resource. *VETNET Conference Series* 8, 245–257 (2025). doi: 10.21240/vetcon/2025/ecer/19
19. McGonigal, J.: *SuperBetter: The power of living gamefully*. Penguin, New York (2016).
20. Moradi, M., Mahdavinassab, Y., Mehrvarz, M.: Adapting player styles to enhance learning and retention in high school science education. *E-Learning and Digital Media* (2024). doi: 10.1177/20427530241239409
21. Nägele, C., Wyss, A.M., Hell, B., Stalder, B.E.: Online tools to support career planning on the pathway to vocational education and training or general education. In: *VETNET*, pp. 407–417 (2025). doi: 10.5281/ZENODO.15378908
22. Niederle, M., Vesterlund, L.: Explaining the gender gap in math test scores: The role of competition. *Journal of Economic Perspectives* 24(2), 129–144 (2010).
23. Nye, C.D., Leong, F., Prasad, J., Gardner, D., Tien, H.-L.S.: Examining the structure of the career adapt-abilities scale. *Journal of Career Assessment* 26(3), 549–562 (2018). doi: 10.1177/1069072717722767
24. Rochat, S., Armengol, J.: Career counseling interventions for video game players. *Journal of Career Development* 47(2), 207–219 (2020).
25. Savickas, M.L.: Career adaptability: An integrative construct for life-span, life-space theory. *The Career Development Quarterly* 45(3), 247–259 (1997).
26. Savickas, M.L.: Life design: A paradigm for career intervention in the 21st century. *Journal of Counseling & Development* 90(1), 13–19 (2012).
27. Soepriyanto, Y., Fazarini, P., Maulida, T., Nurfahrudianto, A., Afandi, Z.: The effect of player type in learning programming with online gamification activities on student learning outcomes. In: *Proceedings of the 2nd International Conference on Information Technology and Education*, pp. 382–386 (2022). doi: 10.1109/ICITE54466.2022.9759850

28. Thompson, L., Luzuriaga, T., Benson, B.: Gamification of education: Using Bartle's taxonomy for inclusive educational practices. In: ASEE Annual Conference & Exposition Proceedings (2024). doi: 10.18260/1-2--41161
29. Van der Vleuten, M., Jaspers, E., Maas, I., Van der Lippe, T.: Boys' and girls' educational choices in secondary education: The role of gender ideology. *Educational Studies* 42, 181–200 (2016). doi: 10.1080/03055698.2016.1160821
30. Vergara, D., Antón-Sancho, Á., Fernández-Arias, P.: Player profiles for game-based applications in engineering education. *Computer Applications in Engineering Education* 31, 154–175 (2022). doi: 10.1002/cae.22576