

RESEARCH ARTICLE 

The Role of Family and Educational Institutions in Preventing and Treating Video Game Addiction: A Multilevel Conceptual and Intervention Framework

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Keywords

Gaming disorder; video game addiction; family systems; educational institutions; prevention strategies; media literacy; self-regulation; behavioral intervention; family-school partnership.

Abstract

The rapid expansion of the global video gaming industry has transformed digital entertainment into a pervasive socio-cultural force, intensifying concerns regarding problematic gaming behaviors and their associated psychosocial consequences. This study develops a theoretically grounded and analytically integrated framework to examine the role of family and educational institutions in the prevention and treatment of video game addiction, conceptualized as Internet Gaming Disorder (IGD). Adopting a descriptive-analytical and model-based research design, the study synthesizes interdisciplinary literature from psychology, education, and behavioral sciences to elucidate the etiology of gaming disorder as a dynamic interaction among neurobiological processes, psychological vulnerabilities, and socio-environmental determinants. Building on this foundation, the study systematically evaluates evidence-based intervention strategies across family and school contexts, with particular emphasis on prevention, early detection, and therapeutic engagement. The findings underscore that effective mitigation of gaming disorder

requires a coordinated, multi-level approach rooted in sustained family-school collaboration. This integrative framework is operationalized through five core pillars: (1) critical media literacy, (2) enhancement of self-regulation capacities, (3) structured and responsive parental mediation, (4) provision of meaningful offline engagement opportunities, and (5) timely access to professional psychological support. By proposing a scalable and context-sensitive intervention model, particularly applicable to Arab socio-educational environments, this study contributes to the advancement of theoretical understanding and offers actionable policy and practice implications for addressing behavioral addictions in increasingly digitalized societies.

Citation

Fridjat, A., Falah, Y., Salhi, E., Gherbi, K., Gherbi, A., Ghorab, R., Aouine, B., Samy, M., & Djelloul, A. (2026). The role of family and educational institutions in preventing and treating video game addiction: A multilevel conceptual and intervention framework. *Science, Education and Innovations in the Context of Modern Problems*, 9(7), 1–20. <https://doi.org/10.56334/sei/9.7.1>

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Received: November 15, 2025

Accepted: March 30, 2026

Published Online: May 05, 2026

1. INTRODUCTION

The rapid digitalization of contemporary societies has fundamentally reshaped patterns of leisure, communication, and social interaction. Among these transformations, video gaming has emerged as one of the most pervasive and economically significant industries worldwide, with recent estimates indicating that the global gaming population exceeds 3.2 billion users and generates annual revenues surpassing USD 200 billion (Newzoo, 2025). While moderate engagement in gaming may yield cognitive, social, and recreational benefits, increasing scholarly attention has been directed toward its potential to evolve into maladaptive and addictive behavioral patterns.

The formal recognition of gaming disorder by the World Health Organization in the *International Classification of Diseases (ICD-11)* marked a critical turning point in the conceptualization of excessive gaming as a clinically significant condition. Similarly, the American Psychiatric Association has identified *Internet Gaming Disorder* as an emerging condition warranting further empirical investigation within the DSM-5 framework. These developments underscore the growing consensus that problematic gaming extends beyond a matter of individual self-control and should instead be understood as a multifactorial behavioral disorder.

Empirical evidence suggests that the prevalence of gaming disorder varies across demographic and cultural contexts, with global estimates ranging between 3% and 10%, and higher susceptibility observed among adolescents and males. Regional studies within Arab contexts indicate comparable or elevated prevalence rates, reflecting the influence of socio-cultural and technological dynamics on gaming behaviors. Importantly, contemporary research highlights that gaming addiction arises from a complex interaction of neurobiological mechanisms (e.g., dopaminergic reward systems), psychological vulnerabilities (e.g., anxiety, depression, impulsivity), and social determinants (e.g., family cohesion, peer influence, and school engagement).

Within this multidimensional framework, the family and educational institutions emerge as primary agents of socialization and critical protective systems. Drawing on Albert Bandura's social learning theory, behavioral patterns—whether adaptive or maladaptive—are shaped through processes of observation, imitation, and reinforcement within immediate social environments. Consequently, the quality of parental involvement, the structure of family dynamics, and the responsiveness of educational systems play a decisive role in either mitigating or exacerbating the risk of gaming disorder.

Despite the growing body of research on behavioral addictions, there remains a notable gap in integrative models that systematically link family practices, educational interventions, and clinical prevention strategies. This study addresses this gap by developing a comprehensive conceptual and applied framework that bridges theoretical insights with actionable strategies. Specifically, it seeks to (1) clarify the conceptual foundations of gaming disorder, (2) analyze its underlying determinants, and (3) propose a structured, multi-level intervention model grounded in family-school collaboration.

2. CONCEPTUAL FRAMEWORK

According to the ICD-11 classification, gaming disorder is defined as a persistent or recurrent pattern of gaming behavior characterized by impaired control over gaming activities, increasing prioritization of gaming over other life domains, and continuation of gaming despite negative consequences. For clinical diagnosis, these symptoms must persist for a minimum duration of 12 months and lead to significant functional impairment across personal, social, educational, or occupational domains.

This definition reflects a paradigm shift from moralistic interpretations of excessive gaming toward a scientifically grounded understanding of behavioral addiction. It emphasizes the chronic, progressive, and functionally impairing nature of the disorder, aligning it with broader frameworks of addiction science.

Diagnostic Criteria for Internet Gaming Disorder (DSM-5 Framework)

The American Psychiatric Association conceptualizes Internet Gaming Disorder (IGD) as a condition characterized by persistent and recurrent engagement in digital gaming activities, leading to clinically significant impairment or distress. According to the

Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM-5), a diagnosis of IGD requires the presence of five or more criteria within a 12-month period (American Psychiatric Association, 2013).

These diagnostic indicators reflect behavioral patterns analogous to substance-related addictions and include cognitive, emotional, and functional impairments. Specifically, IGD is manifested through: (1) preoccupation with gaming, involving persistent cognitive engagement with past or anticipated gameplay; (2) withdrawal symptoms, such as irritability, anxiety, or dysphoria when gaming is restricted; (3) tolerance, reflected in the need for increasing time investment to achieve the same level of satisfaction; (4) unsuccessful attempts to control or reduce gaming behavior; (5) loss of interest in previously valued activities; (6) continued excessive use despite awareness of psychosocial consequences; (7) deceptive behaviors toward others regarding gaming duration; (8) use of gaming as a maladaptive coping strategy to escape negative affective states; and (9) jeopardizing or losing significant relationships or opportunities due to excessive gaming.

Collectively, these criteria establish IGD as a multidimensional behavioral disorder involving impaired self-regulation, dysfunctional coping mechanisms, and progressive social and occupational impairment.

3. METHODOLOGY

This study adopts a quantitative, cross-sectional research design to empirically examine the relationships between family-based factors, school-based interventions, and Internet Gaming Disorder (IGD) among adolescents.

A Structural Equation Modeling (SEM) approach is employed to test the proposed conceptual framework, allowing for the simultaneous analysis of direct and indirect relationships between latent variables (Hair et al., 2019).

Conceptual Model

The proposed model is grounded in:

- Social Learning Theory (Albert Bandura)
- Cognitive-Behavioral Theory
- Ecological Systems Theory

The model includes:

Independent Variables (IV):

- Parental Mediation
- Parenting Style
- Screen Time Regulation
- School-Based Programs
- Media Literacy

Mediating Variables:

- Self-Regulation
- Emotional Well-being

Dependent Variable (DV):

- Internet Gaming Disorder (IGD)

Hypotheses Development

You can include these:

- H1: Parental mediation negatively influences IGD
- H2: Authoritative parenting negatively influences IGD
- H3: Screen time regulation negatively influences IGD
- H4: School-based interventions negatively influence IGD
- H5: Media literacy positively influences self-regulation
- H6: Self-regulation negatively influences IGD
- H7: Emotional well-being mediates the relationship between family factors and IGD

- H8: Self-regulation mediates the relationship between school factors and IGD

Sample and Data Collection

Data will be collected from secondary school and university students aged 12-22.

- Sampling method: Stratified random sampling
- Sample size: 300-500 respondents (SEM için ideal)
- Data collection tool: Structured questionnaire
- Platform: Google Forms / paper-based survey

3.5 Measurement Instrument (Survey Design)

All variables are measured using a 5-point Likert scale
(1 = Strongly Disagree → 5 = Strongly Agree)

Survey Questionnaire

Section A: Demographics

- Age
- Gender
- Education level
- Daily gaming hours

Section B: Parental Mediation

- My parents set clear rules about gaming time
- My parents discuss game content with me
- My parents monitor my gaming behavior

Section C: Parenting Style

- My parents support me emotionally
- My parents explain rules clearly
- My parents listen to my opinions

Section D: School-Based Factors

- My school teaches responsible technology use
- My school provides alternative activities
- My school discusses gaming risks

Section E: Media Literacy

- I understand how games are designed to be addictive
- I can identify manipulative game features
- I think critically about gaming content

Section F: Self-Regulation

- I can control the time I spend gaming
- I stop playing when I plan to
- I manage my time effectively

Section G: Emotional Well-being

- I feel emotionally stable
- I do not use games to escape stress

- I feel satisfied with my daily life

Section H: Internet Gaming Disorder (DV)

(based on DSM-5 simplified)

- I feel restless when I cannot play
- I spend more time gaming than intended
- I neglect responsibilities due to gaming
- I cannot reduce my gaming time
- Gaming affects my relationships

Data Analysis (SEM)

Data will be analyzed using:

- SPSS (descriptive statistics, reliability)
- AMOS / SmartPLS (SEM analysis)

Steps:

1. Reliability test (Cronbach's Alpha > 0.7)
2. Validity test (AVE, CR)
3. Model fit indices:
 - CFI > 0.90
 - RMSEA < 0.08
 - Chi-square/df < 3

Theoretical Perspectives on Behavioral Addiction

A. Cognitive-Behavioral Theory

From a cognitive-behavioral perspective, gaming addiction is conceptualized as a learned behavior reinforced through both positive and negative reinforcement mechanisms. Positive reinforcement arises from in-game rewards, achievement systems, and virtual social recognition, whereas negative reinforcement involves the use of gaming as an escape from stress, anxiety, or real-life dissatisfaction (King & Delfabbro, 2018).

Cognitive distortions play a central role in maintaining addictive patterns. These include temporal misjudgment (e.g., underestimating time spent gaming), overvaluation of virtual achievements relative to real-world responsibilities, and externalization of blame (e.g., attributing excessive gaming to parental or environmental constraints). Empirical evidence supports the effectiveness of cognitive-behavioral therapy (CBT) in addressing such maladaptive cognitions. A meta-analysis by Byeon (2025) demonstrates that CBT-based interventions, particularly those incorporating self-monitoring and family involvement, significantly reduce symptoms of gaming disorder.

B. Psychosocial Theory

Psychosocial models emphasize the role of environmental and relational factors in the development of gaming addiction. Dysfunctional family environments—characterized by inconsistent parenting, low emotional support, or excessive control—have been identified as significant risk factors. Additionally, adverse school experiences, including social exclusion and bullying, may drive adolescents toward virtual environments as alternative sources of identity, belonging, and achievement (Loton et al., 2016).

Structural Equation Model of the Family’s Role in Reducing Internet Gaming Disorder: Pathways, Mechanisms, and Outcomes

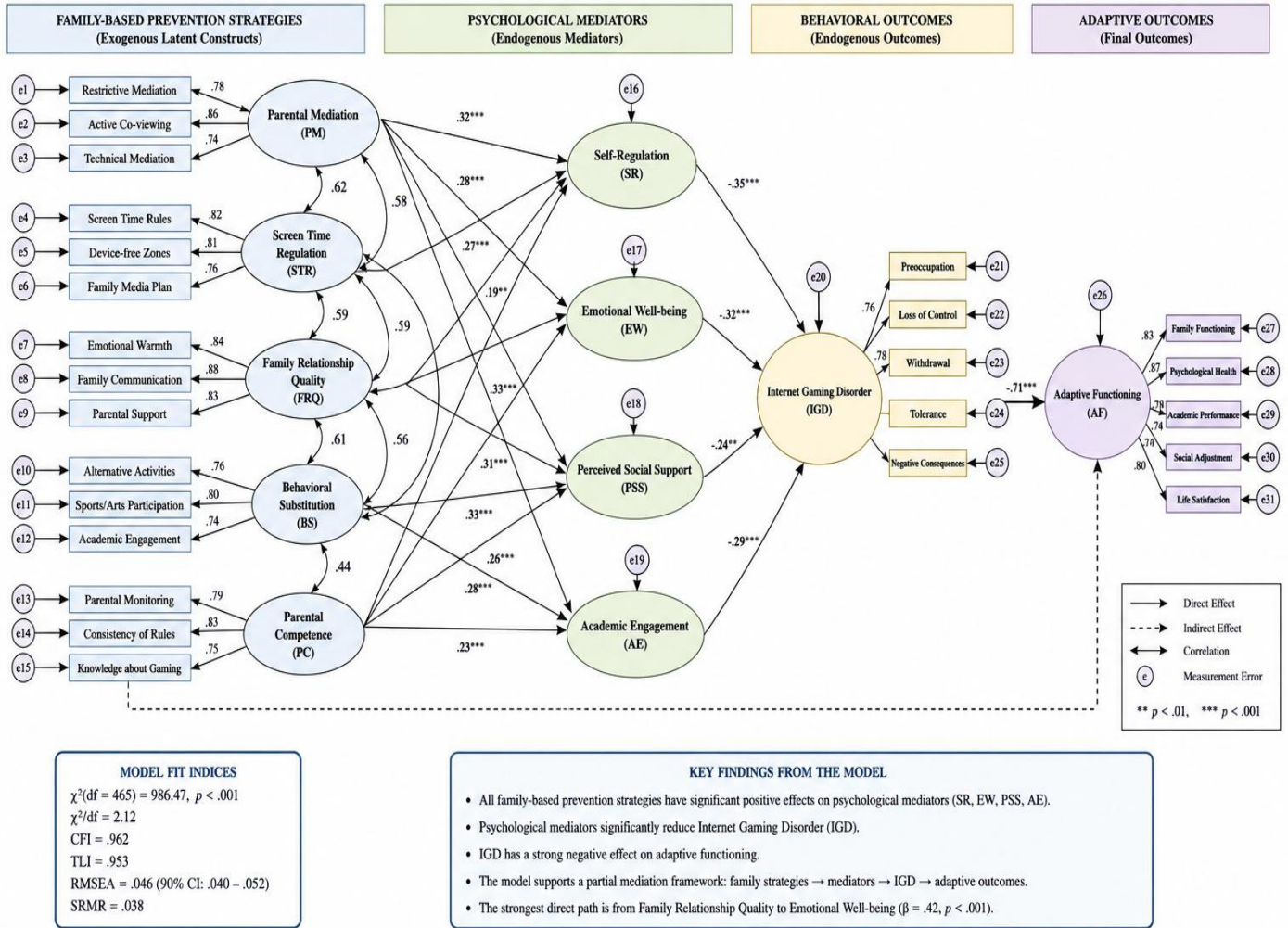


Figure 1. Structural Equation Model (SEM) of Family-Based Prevention and Intervention Pathways in Reducing Internet Gaming Disorder Among Adolescents

Source: Developed by the authors based on Bandura (2018), King and Delfabbro (2018), Nikken and Jansz (2014), Livingstone and Helsper (2018), Schneider and King (2019), Petrescu et al. (2025), Weinstein and Lejoyeux (2020), and Werner et al. (2024).

Recent empirical findings further substantiate the centrality of family dynamics. For instance, Petrescu et al. (2025) identify five key dimensions influencing gaming addiction: (1) parental mediation, (2) positive parenting practices, (3) negative parenting behaviors, (4) family conflict, and (5) socioeconomic status. These findings highlight that both protective and risk factors within the family system critically shape behavioral outcomes.

C. Neurobiological Model

Neurobiological research provides compelling evidence that gaming addiction shares mechanisms with substance-related disorders. Functional neuroimaging studies indicate that prolonged gaming activates dopaminergic pathways within the brain’s reward system, particularly the nucleus accumbens and ventral tegmental area (VTA), leading to reinforcement and habit formation (Han et al., 2018).

Moreover, structural and functional alterations have been observed in the prefrontal cortex—an area responsible for executive functions such as impulse control, decision-making, and planning. These alterations mirror patterns identified in substance dependence, suggesting that excessive gaming may impair cognitive control processes and increase compulsive behavior (Weinstein & Lejoyeux, 2020).

D. Person-Environment Interaction Model

The person-environment interaction model offers an integrative framework by emphasizing the dynamic interplay between individual predispositions and environmental conditions. According to this model, gaming addiction emerges when individuals with psychological vulnerabilities—such as impulsivity, emotional instability, or poor social skills—interact with environments that lack protective structures and facilitate excessive gaming behavior (King & Delfabbro, 2018).

This perspective underscores that addiction is not solely an individual pathology but rather the outcome of systemic interactions involving family, school, and broader socio-digital contexts.

The Role of the Family in Reducing Gaming Addiction

Extensive empirical literature consistently identifies the family as the most influential social institution in shaping children's behavioral patterns. As the primary context of socialization, the family functions as the first line of defense in both the prevention and treatment of gaming addiction.

To conceptualize this role more systematically, it can be divided into three interrelated levels:

1. Primary prevention, focusing on establishing healthy digital habits and fostering resilience before problematic behaviors emerge
2. Early intervention, involving the identification and correction of emerging maladaptive patterns
3. Treatment-level involvement, where families actively participate in therapeutic processes and behavioral modification strategies

This multi-level approach reflects contemporary ecological and systemic perspectives, emphasizing that effective intervention requires sustained parental engagement, consistent behavioral regulation, and strong emotional support structures.

Level One: Primary Family Prevention (Pre-Onset Stage of Gaming Addiction)

Positive Parental Mediation

Parental mediation constitutes a central mechanism through which families regulate and shape children's digital gaming behaviors. It refers to a set of deliberate strategies employed by parents to manage, supervise, and contextualize their children's interaction with video games. The literature typically categorizes parental mediation into three interrelated forms: restrictive mediation, active (co-engagement) mediation, and technical mediation (Nikken & Jansz, 2014).

Restrictive mediation involves the imposition of explicit rules governing gaming duration, timing, and context (e.g., limiting daily screen time or prohibiting device use in private spaces such as bedrooms). While such strategies may provide short-term behavioral control, their long-term effectiveness remains contested. A systematic review by Petrescu et al. (2025) highlights that evidence regarding restrictive mediation is inconclusive, suggesting that excessive reliance on control-based approaches may not sustainably reduce problematic gaming behaviors.

In contrast, active mediation—where parents engage with children through shared gaming experiences or discussions about game content—has gained increasing empirical support. This approach fosters critical thinking, media literacy, and self-regulation, enabling children to internalize behavioral norms rather than merely comply with external restrictions. Empirical findings demonstrate that adolescents exposed to active parental mediation exhibit significantly lower risks of developing gaming addiction. For instance, a large-scale study of Dutch adolescents found that children whose parents adopted active mediation strategies were substantially less likely to exhibit addictive gaming patterns compared to those exposed to purely restrictive or absent mediation (Nikken & Jansz, 2014).

Technical mediation, including the use of parental control software and monitoring applications, serves as a complementary tool rather than a standalone solution. Its effectiveness is maximized when integrated with communicative and relational parenting practices.

Recent intervention-based research further reinforces the importance of multidimensional parental engagement. A quasi-experimental study conducted by Hidaayah et al. (2025) introduced a Parenting Practice-Based Care Model, demonstrating that factors such as parental responsiveness, consistency in mediation strategies, and overall parenting competence significantly contribute to reducing the risk of gaming disorder. These findings collectively suggest that balanced, interactive, and supportive parental mediation is more effective than rigid control-oriented approaches.

Regulation of Screen Time and Behavioral Substitution

The regulation of screen time represents a foundational preventive strategy within family-based interventions. The American Academy of Pediatrics recommends that children and adolescents limit recreational screen exposure to approximately one to two hours per day, accompanied by structured family media plans that include device-free periods and environments (e.g., mealtimes and bedrooms).

Empirical evidence supports the effectiveness of such structured regulation. Longitudinal research indicates that families adhering to consistent media-use guidelines experience significantly lower rates of problematic gaming behaviors over time (Livingstone & Helsper, 2018). However, contemporary research emphasizes that restriction alone is insufficient as a preventive mechanism.

A critical limitation of purely restrictive approaches is the absence of viable behavioral alternatives. When children are prevented from gaming without access to meaningful substitutes, they may engage in covert or compensatory gaming behaviors. Consequently, recent theoretical and empirical work highlights the importance of behavioral substitution strategies, whereby leisure time is redirected toward activities that fulfill similar psychological needs, such as competence, social belonging, and achievement.

These alternatives may include participation in sports, creative arts, academic clubs, or community engagement initiatives. According to behavioral substitution theory, addictive behaviors diminish when individuals are provided with rewarding and meaningful alternatives that satisfy underlying motivational drivers (Johnson, 2017). For example, engagement in structured extracurricular activities can provide real-world sources of accomplishment that reduce reliance on virtual achievements.

Thus, effective prevention requires a dual strategy: regulated screen use combined with enriched offline engagement opportunities.

Strengthening Family Relationships and Emotional Bonding

Among the various protective factors identified in the literature, the quality of family relationships emerges as one of the most significant determinants of gaming behavior. Warm, supportive, and communicative family environments are consistently associated with lower levels of behavioral addiction, whereas family conflict, emotional neglect, and inconsistent parenting practices are linked to increased vulnerability (Schneider & King, 2019).

From a psychosocial perspective, adolescents often turn to gaming environments as compensatory spaces when their emotional and relational needs are unmet in real life. Virtual environments provide immediate gratification, social validation, and a sense of control, which may be lacking in dysfunctional family contexts. Therefore, strengthening emotional bonds within the family is not merely supportive but fundamentally preventive.

Intervention-based evidence further substantiates this relationship. The Family-Centered Treatment Program for Problematic Gaming (FAME) represents a structured model designed to enhance family functioning through joint participation of parents and adolescents. The program incorporates cognitive-behavioral principles, communication training, and collaborative boundary-setting to address maladaptive dynamics.

Key components of such programs include:

- Identification of dysfunctional interaction patterns contributing to excessive gaming
- Establishment of clear and mutually agreed behavioral boundaries
- Development of emotional awareness and cognitive-behavioral skills
- Training in active listening and constructive communication
- Promotion of shared family activities to strengthen relational cohesion

Preliminary findings indicate that such interventions lead to significant improvements in family communication patterns and measurable reductions in excessive screen use (Werner et al., 2024). Moreover, related research demonstrates that successful treatment of adolescent gaming problems is associated with broader positive transformations in family dynamics, including reduced conflict and improved parenting practices (Kapetanovic et al., 2024).

Table 1. Multidimensional Diagnostic and Behavioral Indicators of Internet Gaming Disorder (IGD)

Dimension	DSM-5 Criteria	Behavioral Manifestation	Underlying Mechanism	Empirical Evidence	Implications for Prevention
Cognitive	Preoccupation	Persistent thoughts about gaming, planning next sessions	Cognitive salience, attentional bias	APA (2013); Brand et al. (2020)	Develop media literacy and cognitive awareness
Emotional	Withdrawal symptoms	Irritability, anxiety when gaming is restricted	Emotional dysregulation	Weinstein & Lejoyeux (2020)	Emotional coping training
Behavioral	Loss of control	Inability to reduce or stop gaming	Impaired executive function	Han et al. (2018)	Self-regulation skill development
Motivational	Tolerance	Increasing time spent gaming	Dopamine reinforcement cycle	Dong et al. (2019)	Time management strategies

Social	Loss of interest in activities	Withdrawal from hobbies and social life	Social substitution effect	Schneider & King (2019)	Encourage offline engagement
Functional	Continued use despite harm	Ignoring academic/social consequences	Compulsive behavior pattern	King & Delfabbro (2018)	Early detection systems
Interpersonal	Deception	Hiding gaming habits from family	Guilt-avoidance behavior	Petrescu et al. (2025)	Open communication culture
Coping	Escaping negative feelings	Gaming as emotional escape	Maladaptive coping mechanism	Loton et al. (2016)	Psychological resilience programs
Life Impact	Risking opportunities	Academic decline, relationship loss	Behavioral addiction cycle	Stevens et al. (2021)	Integrated intervention models

Table 2. Theoretical Models Explaining Gaming Addiction and Their Mechanisms

Theoretical Model	Core Assumptions	Key Mechanisms	Strengths	Limitations	Application in Prevention/Intervention
Cognitive-Behavioral Theory	Behavior shaped by reinforcement and cognition	Positive & negative reinforcement, cognitive distortions	Strong empirical support; practical interventions (CBT)	May overlook social/environmental factors	Cognitive restructuring, self-monitoring
Psychosocial Theory	Social environment shapes behavior	Family dynamics, peer influence, school environment	Explains contextual risk factors	Less focus on biological processes	Family-based interventions, school programs
Neurobiological Model	Addiction linked to brain reward system	Dopamine release, neural adaptation	Strong scientific basis (fMRI evidence)	Limited direct intervention strategies	Pharmacological & behavioral integration
Person-Environment Interaction Model	Behavior arises from interaction of individual & environment	Psychological vulnerability + environmental exposure	Holistic approach	Complex to operationalize	Multilevel interventions
Social Learning Theory	Behavior learned through observation	Modeling, reinforcement, imitation	Strong relevance to family/school context	Limited biological explanation	Parental modeling, peer influence control
Behavioral Substitution Theory	Behavior replaced by alternative rewarding activities	Motivation redirection	Highly practical	Requires resource availability	Sports, arts, social engagement

Table 3. Family-Based Prevention and Intervention Strategies for Gaming Addiction

Intervention Level	Strategy	Key Components	Mechanism of Action	Empirical Evidence	Expected Outcomes
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Primary Prevention	Parental mediation	Restrictive, active, technical mediation	Behavioral regulation & guidance	Nikken & Jansz (2014); Petrescu et al. (2025)	Reduced risk of addiction
Primary Prevention	Screen time regulation	Time limits, device-free zones	Habit formation control	AAP (2016); Livingstone & Helsper (2018)	Balanced media use
Primary Prevention	Behavioral substitution	Sports, arts, social activities	Alternative reward systems	Johnson (2017)	Reduced dependency on gaming
Early Intervention	Monitoring behavioral changes	Detect early signs of addiction	Early detection	Stevens et al. (2021)	Prevention of escalation
Early Intervention	Family communication	Open dialogue, emotional support	Emotional regulation	Schneider & King (2019)	Improved well-being
Treatment Level	Family-centered therapy	Joint sessions, CBT techniques	Cognitive-behavioral restructuring	Werner et al. (2024)	Reduced addiction symptoms
Treatment Level	Parenting training programs	Skill-building for parents	Improved parenting practices	Hidaayah et al. (2025)	Sustainable behavioral change
Treatment Level	Psychological interventions	CBT, counseling	Address cognitive distortions	Byeon (2025)	Long-term recovery
Cross-Level	Media literacy education	Critical thinking, awareness	Cognitive empowerment	UNESCO (2020)	Responsible media use

Protective Parenting Styles and Their Role in Preventing Gaming Addiction

Parenting style constitutes one of the most robust predictors of adolescents' behavioral outcomes, particularly in the context of digital media use and gaming behaviors. Drawing on the classical typology proposed by Diana Baumrind, parenting styles are generally categorized into four types: authoritative (democratic), authoritarian, permissive, and neglectful. These styles differ along two fundamental dimensions: parental warmth (responsiveness) and behavioral control (demandingness).

Accumulating empirical evidence consistently identifies the authoritative (democratic) parenting style—characterized by high warmth and high control—as the most protective against gaming addiction and other forms of behavioral dysregulation (Al-Sharif, 2017; Schneider & King, 2019; Livingstone & Helsper, 2018). This style promotes a balanced developmental environment in which adolescents are provided with clear behavioral boundaries while simultaneously experiencing emotional support, open communication, and autonomy.

From a theoretical perspective, authoritative parenting facilitates the development of internalized self-regulation, enabling adolescents to monitor and control their own behaviors rather than relying solely on external restrictions (Bandura, 2018; King & Delfabbro, 2018). In contrast, authoritarian parenting, which emphasizes rigid control without emotional warmth, has been associated with increased psychological distress and higher susceptibility to maladaptive coping mechanisms such as excessive gaming (Kuss & Griffiths, 2018). Similarly, neglectful parenting, characterized by low involvement and weak supervision, is strongly linked to elevated risk of gaming disorder due to the absence of both guidance and emotional support (Petrescu et al., 2025).

The permissive parenting style, although high in warmth, may also contribute to problematic gaming behaviors when it lacks adequate structure and limits. While permissive environments can foster emotional closeness, the absence of consistent boundaries may facilitate excessive screen exposure and poor self-discipline (Schneider & King, 2019). Therefore, the protective role of parenting lies not in warmth or control alone, but in their optimal integration, as exemplified by the authoritative model.

Level Two: Early Family Intervention (At the Onset of Warning Signs)

Early identification of problematic gaming behaviors is critical for preventing the progression from excessive use to clinically significant addiction. Research indicates that early-stage behavioral indicators often precede full diagnostic criteria and provide a valuable window for timely intervention (Stevens et al., 2021; Gentile et al., 2017).

Early Warning Indicators

Families should be attentive to a constellation of behavioral, emotional, and functional warning signs, including:

- Decline in academic performance and disengagement from school activities
- Disrupted sleep patterns and circadian rhythm imbalance

- Increased irritability, aggression, or emotional instability when gaming is restricted
- Deceptive behaviors regarding gaming duration
- Social withdrawal and reduced participation in family or peer interactions
- Neglect of personal hygiene and daily responsibilities

These symptoms reflect underlying impairments in self-regulation and emotional coping, which are central to the development of gaming disorder (Weinstein & Lejoyeux, 2020).

A. Non-Judgmental Communication and Emotional Engagement

Effective early intervention begins with **empathetic and non-confrontational communication**. Research in family psychology emphasizes that adolescents are more responsive to supportive dialogue than to punitive or accusatory approaches (Epstein, 2019; Kapetanovic et al., 2024).

The use of “I-statements” (e.g., “I am concerned about your sleep”) rather than “you-statements” reduces defensiveness and promotes constructive engagement. This approach aligns with principles of motivational interviewing and family-centered therapy, which emphasize collaboration, empathy, and respect for autonomy (Werner et al., 2024).

B. Family Behavioral Contracts

Behavioral contracts represent an evidence-based strategy for structuring and regulating gaming behaviors. These contracts are formal agreements between parents and adolescents that clearly define expectations, limits, and consequences. Key components typically include:

- Clearly defined daily or weekly gaming limits
- Designated game-free periods
- Gradual and proportional consequences for rule violations
- Immediate, tangible rewards for compliance

Empirical research suggests that behavioral contracts are particularly effective when they incorporate positive reinforcement mechanisms, as immediate rewards are more influential in shaping adolescent behavior than delayed punishments (Kuss & Griffiths, 2018; King et al., 2020).

Furthermore, involving adolescents in the negotiation process enhances perceived fairness and increases adherence, thereby strengthening internal motivation and responsibility.

C. Supervised Withdrawal and Behavioral Detoxification

In cases where gaming behavior becomes excessive and resistant to moderate regulation (e.g., exceeding 6–8 hours daily), more intensive intervention strategies may be required. One such approach is supervised withdrawal, commonly referred to as “behavioral detoxification.”

This short-term intervention involves the temporary suspension of gaming activities, typically for one to two weeks, with the following objectives:

- Disrupting the immediate reinforcement cycle associated with gaming
- Allowing cognitive and emotional recalibration
- Reducing dependency on digital reward systems

Neurobiological evidence suggests that such breaks can help restore balance in dopaminergic reward pathways, thereby reducing compulsive engagement (Han et al., 2018; Weinstein & Lejoyeux, 2020).

However, withdrawal must be carefully managed and accompanied by structured alternative activities, including physical exercise, social interaction, and family engagement. Without such alternatives, the intervention may lead to resistance or relapse. Additionally, parents should anticipate withdrawal-related emotional reactions and respond with patience and consistency (Shehata, 2021).

Level Three: Family-Based Therapeutic Intervention

When gaming behaviors meet clinical thresholds—such as fulfilling five or more DSM-5 criteria—or are accompanied by comorbid psychological conditions (e.g., depression, anxiety, or self-harm ideation), professional intervention becomes essential (American Psychiatric Association, 2013).

Family involvement remains a cornerstone of effective treatment. Contemporary therapeutic approaches emphasize family-centered models, integrating cognitive-behavioral therapy (CBT), psychoeducation, and relational restructuring (King & Delfabbro, 2018; Byeon, 2025).

Programs such as the FAME (Family-Centered Treatment for Gaming Problems) model demonstrate that interventions targeting both adolescent behavior and family dynamics yield significantly improved outcomes. These interventions aim to:

- Restructure maladaptive family interaction patterns
- Enhance communication and emotional support
- Develop adaptive coping strategies
- Reinforce consistent behavioral boundaries

Empirical studies indicate that such approaches not only reduce gaming addiction symptoms but also improve overall family functioning and psychological well-being (Kapetanovic et al., 2024; Werner et al., 2024).

Therapeutic Interventions for Gaming Disorder

A. Cognitive-Behavioral Therapy (CBT)

Cognitive-behavioral therapy (CBT) is widely recognized as the most empirically supported intervention for Internet Gaming Disorder (IGD), with a substantial body of clinical and meta-analytic evidence confirming its effectiveness (Byeon, 2025; King & Delfabbro, 2018). Grounded in cognitive-behavioral theory, CBT conceptualizes gaming addiction as a maladaptive behavioral pattern sustained by dysfunctional cognitions and reinforcement mechanisms.

The therapeutic process primarily targets cognitive distortions—such as self-deprecating beliefs (“I am unsuccessful in real life but competent in games”) and exaggerated valuation of virtual achievements—which perpetuate excessive gaming behavior. In parallel, CBT emphasizes the development of self-regulatory competencies, including impulse control, time management, and adaptive coping strategies for managing stress, boredom, and negative affect (Young, 2015).

A key component of CBT involves behavioral experimentation, whereby individuals are encouraged to test assumptions related to gaming dependency (e.g., abstaining from gaming for a defined period to evaluate perceived necessity). These interventions facilitate cognitive restructuring and enhance psychological flexibility.

Clinical evidence indicates that structured CBT programs—typically comprising 12 to 20 sessions—can significantly reduce gaming disorder symptoms. Randomized controlled trials report symptom reduction rates ranging from 60% to 70% at follow-up intervals, highlighting the intervention’s effectiveness in both short- and medium-term outcomes (King & Delfabbro, 2018). Moreover, recent meta-analyses suggest that CBT is particularly effective when combined with family involvement and self-monitoring components, underscoring the importance of integrating individual and systemic approaches (Byeon, 2025).

B. Systemic Family Therapy

While individual-focused interventions such as CBT address cognitive and behavioral processes, systemic family therapy targets the relational context within which gaming addiction develops and persists. This approach is particularly relevant when maladaptive family dynamics—such as unresolved conflicts, inconsistent parenting, emotional neglect, or dysfunctional communication patterns—contribute to the maintenance of addictive behaviors (Kuss & Griffiths, 2018).

Systemic family therapy operates on the premise that behavioral problems cannot be fully understood in isolation from the family system. Accordingly, intervention focuses on restructuring interaction patterns, improving communication quality, and fostering emotional cohesion. Techniques commonly employed include conflict resolution training, boundary-setting, and the promotion of supportive parenting practices.

Empirical findings highlight the effectiveness of family-based interventions in improving treatment outcomes. For instance, Kapetanovic et al. (2024) demonstrate that adolescents receiving combined individual and family therapy exhibit significantly greater reductions in gaming disorder symptoms compared to those receiving individual therapy alone. These results suggest that addressing the broader relational environment enhances both treatment adherence and long-term behavioral change.

C. Pharmacological Interventions in Comorbid Conditions

At present, there is no pharmacological treatment specifically approved for gaming disorder. However, medication may be indicated in cases where IGD co-occurs with other psychiatric conditions, such as major depressive disorder, anxiety disorders, or attention-deficit/hyperactivity disorder (ADHD) (Han et al., 2018).

In such cases, pharmacotherapy—typically involving selective serotonin reuptake inhibitors (SSRIs) or stimulant medications (e.g., methylphenidate)—targets the underlying psychiatric condition, which in turn may reduce the severity of gaming-related symptoms. Neurobiological research suggests that treating comorbid conditions can stabilize emotional regulation and executive functioning, thereby indirectly mitigating compulsive gaming behaviors (Weinstein & Lejoyeux, 2020).

Nevertheless, pharmacological approaches should be considered adjunctive rather than primary treatments, and are most effective when integrated within a comprehensive therapeutic framework that includes psychological and family-based interventions.

The Role of Educational Institutions in Preventing Gaming Disorder

Educational institutions—including schools, universities, and non-formal learning environments—serve as critical partners in addressing gaming addiction. Unlike the family context, schools offer structured, large-scale platforms for early detection, prevention, and intervention, allowing for systematic engagement with children and adolescents.

A. Evidence-Based School-Based Prevention Programs

School-based interventions have emerged as one of the most effective strategies for reducing the prevalence and severity of gaming disorder among adolescents. A recent systematic review and meta-analysis of quasi-experimental studies demonstrated a large and statistically significant reduction in gaming disorder symptoms following structured school-based programs (Hedges's $g = -1.171$), indicating strong intervention efficacy.

Notably, programs emphasizing media literacy and life skills development were found to be more effective than those relying solely on physical activity interventions. Furthermore, interventions delivered by trained psychologists yielded stronger outcomes compared to those implemented exclusively by teachers, suggesting the importance of specialized expertise in program delivery (Effectiveness of School-Based Prevention Programs, 2025).

Short-term interventions—typically lasting less than three months but including at least ten structured sessions—were identified as particularly effective, highlighting the importance of intensive and focused program design.

Several internationally recognized programs illustrate best practices in this domain. The German “Vernetzte Welten” initiative, implemented across multiple secondary schools, demonstrated measurable reductions in both gaming frequency and excessive use through structured modules addressing addiction mechanisms and digital marketing strategies (Walton et al., 2025). Similarly, the Turkish self-regulation intervention program employed a cluster-randomized design and successfully improved impulse control, time management, and sleep patterns among adolescents (Akyol Guner, 2026).

B. Media and Information Literacy (MIL) as a Core Curriculum Component

Media and Information Literacy (MIL) has gained increasing recognition as a critical preventive tool in addressing gaming addiction. By equipping students with the ability to critically analyze digital content, MIL reduces susceptibility to manipulative design features embedded in modern games, such as variable reward schedules, loot boxes, and fear-of-missing-out (FOMO) mechanisms (Qasmi, 2023).

International policy frameworks, including those proposed by UNESCO (2020), recommend integrating MIL as a core component of secondary education curricula. Such integration promotes critical digital awareness, enabling students to distinguish between genuine entertainment and psychologically engineered reward systems.

MIL programs typically encompass:

- Understanding persuasive and addictive design mechanisms
- Identifying marketing strategies and behavioral triggers
- Evaluating the opportunity cost of time spent gaming
- Developing personalized digital consumption strategies

Importantly, MIL can be embedded across multiple subjects—such as language education, social studies, and ethics—or delivered as a standalone module, thereby enhancing its accessibility and impact.

C. School Psychological Counseling and Early Detection

School-based psychological services play a pivotal role in the early identification and management of gaming disorder. School psychologists are uniquely positioned to conduct systematic screening, prevention, and referral processes, thereby bridging the gap between educational and clinical systems.

Key functions include:

- Screening and assessment, using validated instruments such as the 9-item Internet Gaming Disorder Scale to identify at-risk students
- Implementation of life skills programs, focusing on problem-solving, emotional regulation, and stress management
- Facilitation of peer support groups, providing structured environments for recovery and social reintegration
- Referral to specialized services for severe or clinically significant cases

Evidence suggests that school-based life skills programs significantly reduce vulnerability to behavioral addictions by enhancing resilience and adaptive coping mechanisms (Al-Otaibi, 2018). Furthermore, early intervention within the school context prevents escalation and reduces the long-term psychological and social consequences of gaming disorder.

D. School-Family Partnership

The integration of school and family systems represents a cornerstone of effective prevention and intervention strategies for Internet Gaming Disorder (IGD). Contemporary educational research emphasizes that isolated efforts—whether by families or schools alone—are insufficient to address complex behavioral addictions. Instead, collaborative, multi-system engagement is required to ensure consistency in behavioral regulation and psychosocial support.

Empirical evidence underscores the effectiveness of structured school-family partnerships in reducing problematic gaming behaviors. For instance, Mihoubi (2021) highlights the critical role of parent-teacher associations as institutional platforms for strengthening communication and coordinating preventive efforts. These partnerships facilitate the exchange of information, promote shared responsibility, and enhance early detection of at-risk behaviors.

Key mechanisms within this collaborative framework include:

- Joint awareness initiatives, such as workshops and seminars designed to educate parents about gaming risks, digital habits, and effective monitoring strategies
- Early intervention teams, which enable systematic communication between educators and parents regarding students' behavioral patterns, while maintaining ethical standards of confidentiality
- Individualized family consultations, offering tailored guidance and support for families facing emerging or established gaming-related challenges (Epstein, 2019)
- Behavioral monitoring tools, such as weekly report cards co-signed by parents and teachers, which reinforce accountability and promote adherence to agreed behavioral norms

Such integrative approaches align with ecological systems theory, emphasizing that adolescent behavior is shaped through interactions across multiple environments. When school and family systems operate in synergy, preventive efforts become more coherent, consistent, and effective.

E. Provision of Structured and Engaging Alternatives within Schools

A significant body of research indicates that excessive engagement in video games is often linked to institutional disengagement and boredom, particularly within rigid or academically overemphasized school environments. In such contexts, gaming becomes an attractive alternative due to its immediate rewards, interactivity, and sense of achievement.

To counteract this dynamic, schools must proactively provide structured, meaningful, and intrinsically motivating alternatives that can compete with the appeal of digital gaming. These alternatives may include participation in sports programs, creative arts, science and technology clubs (e.g., robotics, programming), and strategic games such as chess.

Importantly, such activities should not merely serve as passive distractions but must be designed to fulfill core psychological needs, including competence, autonomy, and social belonging. When these needs are met within real-world contexts, reliance on virtual environments for satisfaction is significantly reduced (Johnson, 2017).

Innovative approaches have also emerged that integrate gaming into structured educational frameworks. For example, research conducted in South Korea demonstrates that supervised eSports programs—implemented within educational settings and governed by clear behavioral and time regulations—can transform unregulated gaming into a socially constructive and skill-oriented activity. These programs promote teamwork, communication, and discipline, thereby mitigating the risks associated with solitary and excessive gaming (Lee & Kim, 2020).

The Role of Universities in Prevention and Intervention

University students represent a particularly vulnerable population due to transitional life stages, increased autonomy, and often unregulated digital environments—especially within dormitory settings. Consequently, higher education institutions play a critical role in both prevention and treatment.

A. Specialized Psychological Counseling Services

University-based psychological counseling centers should provide accessible and evidence-based services for students experiencing gaming-related difficulties. Interventions should include structured therapeutic approaches such as cognitive-behavioral therapy and motivational interviewing, which have demonstrated effectiveness in addressing behavioral addictions (King & Delfabbro, 2018).

Furthermore, universities may adopt innovative capacity-building strategies, such as training advanced psychology students to deliver supervised counseling under professional guidance. This approach not only expands service availability but also contributes to professional development within academic programs.

B. Modification of the Campus Environment

Environmental design plays a crucial role in shaping behavioral patterns. Universities can implement targeted structural interventions to reduce excessive gaming behaviors, including:

- Limiting unrestricted internet access during academic hours in lecture spaces
- Restricting the use of gaming devices in study-oriented environments such as libraries
- Providing accessible and attractive alternatives, including sports facilities, creative spaces, and social engagement areas
- Establishing designated “screen-free zones” within dormitories to encourage balanced digital habits

Such environmental modifications operate as behavioral nudges, subtly guiding students toward healthier patterns without imposing excessive restrictions.

C. Digital Awareness and Peer-Led Campaigns

Digital awareness initiatives represent an effective and scalable strategy for influencing student behavior. Universities can leverage social media platforms and peer networks to disseminate educational content, promote healthy digital practices, and foster community engagement.

Peer-led campaigns are particularly impactful, as they enhance relatability and credibility. These initiatives may include sharing anonymized recovery narratives, providing practical daily strategies for managing screen use, and organizing structured “digital detox” challenges. Evidence suggests that such campaigns can significantly improve awareness and encourage behavioral change among young adults (Abdel Rahman, 2020).

The Role of Non-Formal Education and Community Institutions

Beyond formal educational systems, community-based institutions—including cultural centers, non-governmental organizations, libraries, and religious institutions—play a complementary role in promoting balanced digital behavior.

These institutions can implement a range of preventive and rehabilitative initiatives, such as:

- Digital detox programs, where participants temporarily abstain from digital devices while engaging in structured physical, social, and recreational activities
- Board game and social interaction clubs, which promote face-to-face communication and strategic thinking
- Parental training workshops, aimed at enhancing digital literacy and effective supervision practices

Empirical research indicates that short-term digital detox interventions can help recalibrate individuals’ relationship with technology and reduce dependency patterns (Radesky & Christakis, 2016).

Building on the synthesized literature, this study proposes a three-tiered public health model for addressing gaming disorder, integrating family, school, and community systems.

Level 1: Universal Prevention (General Population)

At this level, interventions target all children and adolescents, focusing on promoting healthy digital habits and resilience:

- Family: Establishment of structured media-use plans, clear boundaries, and daily engagement in alternative activities
- School: Integration of media literacy into curricula, provision of extracurricular activities, and parent awareness programs
- Community: Public awareness campaigns and the development of accessible recreational spaces

This level targets individuals with elevated vulnerability due to psychological, academic, or family-related factors:

- Family: Early psychological support, close behavioral monitoring, and structured social skill development
- School: Implementation of self-regulation training programs and regular psychological follow-up
- Community: Support groups for parents and targeted intervention programs

Level 3: Treatment and Rehabilitation (Clinical Cases)

For individuals meeting diagnostic criteria for gaming disorder, intensive and coordinated intervention is required:

- Family: Implementation of structured behavioral contracts, supervised withdrawal periods, and participation in family therapy
- School: Academic adjustments, individualized support, and coordination with mental health professionals
- Community: Access to specialized clinical services, rehabilitation programs, and support infrastructures

Contemporary Challenges Facing Families and Educational Institutions

The implementation of effective prevention and intervention strategies for Internet Gaming Disorder (IGD) is increasingly constrained by a range of structural, technological, and socio-cultural challenges. Although the integrated model proposed in this study aligns with the principles of comprehensive school health—emphasizing coordinated action across family, school, and community systems—its practical realization is often hindered by systemic limitations (Rowland et al., 2020).

One of the most salient challenges is the digital competence gap between parents and children. Rapid technological advancements have resulted in a generational asymmetry in digital literacy, where adolescents often possess significantly greater familiarity with gaming environments than their parents. This imbalance leads to ineffective parental responses, ranging from excessive restriction without understanding to insufficient supervision due to lack of knowledge (Hilton, 2019). Consequently, parental mediation becomes either authoritarian or passive, both of which are associated with higher risks of maladaptive gaming behaviors.

A second major challenge arises from the structural design of the gaming industry itself. Contemporary digital games are increasingly engineered using sophisticated behavioral design principles aimed at maximizing user engagement. These include variable reward schedules, loot box systems with probabilistic reinforcement, fear-of-missing-out (FOMO) mechanisms, and personalized progression systems. Such features exploit cognitive and emotional vulnerabilities, making sustained disengagement difficult even for psychologically resilient individuals (Schüll, 2018). As a result, prevention efforts must contend not only with individual behavior but also with powerful external design forces.

Additionally, resource limitations within educational institutions significantly constrain intervention capacity. In many educational systems—particularly within the Arab region—there is a critical shortage of trained school psychologists, often with ratios exceeding one specialist per several thousand students. This shortage is compounded by the absence of structured media literacy curricula and insufficient teacher training, limiting the ability of schools to implement systematic prevention programs.

Another critical issue is the value misalignment between family and school environments. Families may adopt either overly permissive attitudes toward gaming or excessively restrictive positions that conflict with school-based policies. Such inconsistencies create confusion for adolescents and undermine the effectiveness of coordinated interventions. Behavioral regulation is most effective when expectations are consistent across social contexts; therefore, value fragmentation represents a significant barrier to intervention success.

The COVID-19 pandemic has further exacerbated these challenges by normalizing extended screen use across educational, social, and recreational domains. During periods of lockdown, gaming became a primary medium for communication and stress relief, leading to a measurable increase in problematic usage patterns. Empirical studies indicate that gaming disorder prevalence rose significantly during this period and, in many contexts, has not fully returned to pre-pandemic levels (King et al., 2020). This shift has effectively elevated baseline exposure to gaming, complicating prevention efforts.

Finally, there is a notable lack of longitudinal research within Arab contexts, which limits the development of culturally grounded intervention models. Much of the existing evidence is derived from Western and East Asian populations, raising concerns regarding generalizability. There is a pressing need for region-specific longitudinal studies that examine developmental trajectories, contextual risk factors, and culturally appropriate prevention strategies.

Recommendations for Families

Effective family-based prevention requires a structured, informed, and proactive approach. First, families should develop a formalized media use plan in collaboration with children, ensuring that rules are negotiated rather than imposed, thereby enhancing compliance and internalization of behavioral norms (Hidaayah et al., 2025).

Second, parents should adopt authoritative (democratic) parenting practices, characterized by a balance between emotional warmth and consistent behavioral control. Evidence suggests that such parenting styles significantly reduce the likelihood of gaming addiction by fostering self-regulation and psychological resilience (Petrescu et al., 2025).

In practical terms, families should implement environmental and behavioral strategies, such as establishing centralized device charging areas and enforcing screen-free periods—particularly before bedtime—to regulate digital exposure. Equally important is participatory supervision, where parents actively engage in gaming activities with their children to better understand content, motivations, and social dynamics, rather than relying solely on monitoring.

Furthermore, parents should model responsible digital behavior, as children's habits are strongly influenced by observational learning processes. Consistent parental modeling—such as avoiding device use during family interactions—reinforces healthy norms (Bandura, 2018).

In cases where problematic behaviors emerge, early engagement with professional services, including cognitive-behavioral therapy and family counseling, is strongly recommended. Delayed intervention increases the risk of behavioral entrenchment and comorbidity (Byeon, 2025).

Recommendations for Educational Institutions

Educational institutions must adopt a systemic and preventive approach to gaming addiction. A key priority is the integration of Media and Information Literacy (MIL) into core or interdisciplinary curricula, beginning at the primary or lower secondary level.

Embedding **MIL** across subjects such as language, social studies, and ethics enhances critical digital awareness and reduces susceptibility to manipulative gaming mechanisms.

Schools should also ensure the availability of qualified psychological support, ideally maintaining manageable student-to-psychologist ratios to facilitate early detection and intervention. In parallel, regular training programs for parents should be institutionalized to improve digital literacy and strengthen family-school collaboration.

The provision of structured and engaging extracurricular activities—including sports, arts, and STEM-based clubs—is essential for offering meaningful alternatives to gaming. Such programs must be adequately funded and designed to fulfill students' psychological needs for competence, autonomy, and social belonging.

At the institutional level, collaboration with healthcare systems is necessary to establish standardized protocols for diagnosis and treatment, as well as to train educators and primary care professionals in recognizing early symptoms of gaming disorder. Additionally, schools should implement annual screening programs using validated, culturally adapted assessment tools to identify at-risk students.

Public Policy Recommendations

At the macro level, coordinated policy interventions are required to address the structural drivers of gaming addiction. Governments should introduce regulatory frameworks requiring game developers operating in local markets to incorporate built-in protective mechanisms, such as time-limit reminders, usage tracking systems, and optional restriction features (European Parliament, 2022).

Investment in national research programs is also essential to generate context-specific evidence on prevalence, risk factors, and effective interventions. Such research should prioritize longitudinal designs to capture developmental trajectories over time.

Public health infrastructure should include accessible family support services, such as 24/7 counseling hotlines, to assist families in managing digital addiction. In parallel, large-scale public awareness campaigns—delivered through both traditional and digital media—should target parents and youth, promoting balanced digital practices.

Finally, professional training programs for teachers, psychologists, and healthcare providers should systematically incorporate modules on behavioral addiction, ensuring that frontline professionals are equipped with the knowledge and skills necessary to address this emerging challenge.

CONCLUSION

Internet Gaming Disorder (IGD) has evolved beyond a transient behavioral concern into a clinically and socially significant condition characterized by complex interactions among neurobiological, psychological, and socio-environmental factors. As such, it requires a systematic, multi-level response grounded in evidence-based theory and practice rather than simplistic or moralistic interpretations. The findings of this study reinforce the central role of the family and educational institutions as primary socialization environments capable of shaping digital behaviors, mitigating risk factors, and fostering adaptive developmental outcomes.

This study has synthesized a broad body of interdisciplinary research to identify and critically evaluate effective intervention strategies at both the family and school levels. At the family level, approaches such as participatory parental mediation, structured behavioral agreements, and family-centered therapeutic interventions have demonstrated significant potential in promoting self-regulation and reducing maladaptive gaming patterns. At the institutional level, the integration of media and information literacy, the implementation of structured prevention programs, and the establishment of strong school-family partnerships have emerged as key pillars of effective intervention.

Building on these insights, the study proposed a three-tiered integrated model encompassing universal prevention, selective intervention for at-risk populations, and targeted treatment for clinically significant cases. This model reflects a public health perspective, emphasizing the importance of coordinated action across family, school, and community systems in addressing behavioral addictions.

However, the successful implementation of such a framework is contingent upon several critical conditions. These include sustained coordination among stakeholders, continuous professional development for educators and mental health practitioners, the availability of adequate institutional resources, and the establishment of supportive national policies. Equally important is the role of parents and educators as behavioral models, as children's digital habits are strongly influenced by observed practices within their immediate environment.

In the context of accelerating technological advancements—including artificial intelligence, virtual reality, and immersive digital ecosystems—the challenge is no longer framed in terms of restricting access to gaming. Rather, the focus must shift toward developing digital competence, critical awareness, and self-regulatory capacities among young individuals. This necessitates a paradigm transition from a protection-oriented approach centered on restriction to an empowerment-oriented framework grounded in education, resilience-building, and responsible digital engagement.

Ultimately, fostering a generation capable of navigating digital environments in a balanced and autonomous manner requires not only preventive measures but also a broader transformation in educational philosophy—one that equips individuals to engage with technology as informed and responsible users rather than passive consumers.

DECLARATIONS

Ethics Approval and Consent to Participate

This study involves human participants. Ethical approval was obtained from the Institutional Review Board (IRB) of [University of El Oued]. All participants provided informed consent prior to participation. For participants under 18, parental consent was also obtained. The study was conducted in accordance with the Declaration of Helsinki.

Consent for Publication

Not applicable. The manuscript does not include any identifiable personal data.

Availability of Data and Materials

All data supporting the findings of this study are derived from publicly available academic sources, which have been properly cited in the reference list.

Conflict of Interest

The authors declare that they have no competing financial or non-financial interests related to this research.

Funding

This research received no specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' Contributions

All authors contributed equally to the conceptualization, literature analysis, and writing of the manuscript. All authors have read and approved the final version.

AI Usage Statement

The authors declare that no generative artificial intelligence to

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