

TAKING A BREAK FROM ELECTRONICS: THE BENEFITS OF PHYSICAL ACTIVITY



Taking a Break from Electronics: The Benefits of Physical Activity Grades 4-7

Physical and Health Education, Arts Education & Social Studies

Purpose of the Lesson:

In this day and age of technology, it is hard to encourage our children to take a break from their devices. Video games are increasingly popular and one study has shown that frequent players can get “video game brain.” This means key parts of their frontal lobe become underused, which can alter moods. Overall, too much screen time can affect the following areas: psychosocial risks, physical health, language delays, impediments with life skills, advertising concerns, and poor sleep quality (more details in the graphics on the last page). It is well known that physical activity not only has benefits for our physical health but also our mental health. Exercise is a natural antidepressant and helps produce endorphins, which makes us feel good! The purpose of this lesson is to inform students of the risks of overusing technology and the impact on their brain, physical and mental health.

Curriculum Competencies:

Health and Physical Education:

- Personal and Social Management
 - K.4.4.A.1: Demonstrate an awareness of factors (e.g., personal attitudes, supportive environment, accomplishments, positive thinking, genetics, media stereotyping...) that influence self-esteem and self-confidence (Grade 4)
 - K.4.4.C.1a: Identify characteristics of and/or behaviours associated with different emotions (e.g., fear, helplessness, anger, affection, excitement, frustration, disappointment, enthusiasm...) in self and/or others (Grade 4)
 - S.4.4.A.1: Set goals to enhance health and physical well-being (Grade 4)
 - K.4.5.A.2b: Describe the importance of self-regulation and taking responsibility for one’s own actions for personal success (Grade 5)
 - K.4.5.A.3: Identify the influence of self (e.g., personal goals, emotions...) and others (e.g., expectations of family, teachers, friends; values and beliefs of home, religion, culture, community, society in general...) on setting priorities and making responsible personal decisions (e.g., academic achievement, leisure activities...) (Grade 5)
 - K.4.6.B.1b: Recognize personal participation and responsibility (e.g., respect for and acceptance of individual differences, awareness of social norms and values, concern and compassion for others, cooperation, motivation to solve interpersonal problems...) in different social contexts (Grade 6)
 - S.4.7.A.3: Demonstrate functional use of interpersonal skills (i.e., communicate effectively, cooperate/ collaborate, be respectful, be responsible) for dealing with new activities, situations, and/or changes in class activities. (Grade 7)

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- Health and Lifestyle Practices:
 - K.5.4.B.1: Describe feelings associated with participation in physical activities as these feelings contribute to personal health and well-being (Grade 4)
 - K.5.6.B.1: Recognize the physical benefits and socio-emotional benefits of participating in daily physical activities (Grade 6)
 - K.5.7.E.2b: Identify positive ways of coping with daily moods and emotions associated with puberty (Grade 7)

Visual Arts:

- GLO: The overarching goal of the visual arts curriculum is to support, nurture, and inspire the growth of every learner as an artist and as an artful learner through: making (VA-M), creating (VA-CR), connecting (VA-C), and responding (VA-R).
 - VA-CR1: The learner generates ideas for creating art using a variety of sources
 - VA-CR.1.1 (Grades 4-8): Draw inspiration from personal experiences and relevant sources to ignite ideas and questions for art creation
 - VA-CR.1.2 (Grades 4-8): Engage in collaborative idea generation/brainstorming as inspiration for art creation
 - VA-CR2: The learner develops original artworks, integrating ideas and art elements, principles, and media
 - VA-CR.2.1 (Grades 4-8): Experiment with art elements, principles, and media to test and elaborate ideas
 - VA-C3: The learner demonstrates an understanding of the roles, purposes, and meanings of the visual art in the lives of individuals and in communities
 - VA-C3.1: Demonstrate an appreciation of art as a means of experiencing and exploring own and others' lives (eg. feelings, values, stories, events, cultures)
 - VA-C3.5: Demonstrate an awareness of ways in which visual arts reflect, influence, and shape issues and events, as well as traditions, values, beliefs, and identities of individuals and groups
 - VA-R4: The learner constructs meaning and applies new understandings from art experiences
 - VA-R4.4: Identify ways that art contributes to personal, social, cultural, and artistic identity

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Social Studies (Grades 4-8):

- Grades 4-8:
 - Critical and Creative Thinking
 - S-300 Formulate questions for research.
 - S-301 Consider advantages and disadvantages of solutions to a problem.
 - S-302 Draw conclusions based on information and evidence.
 - S-303 Evaluate personal assumptions based on new information and ideas.
 - S-304 Distinguish fact from opinion.
 - S-305 Observe and analyze material or visual evidence for research.
 - Communication
 - S-400 Listen actively to others to understand their perspectives.
 - S-401 Use language that is respectful of human diversity.
 - S-402 Support their ideas and opinions with information or observations.
 - 4-S-403 Present information and ideas orally, visually, concretely, or electronically.
- Grades 5-7:
 - Critical and Creative Thinking
 - 5-S-306 Assess the validity of information sources. Examples: purpose, context, authenticity, origin, objectivity, evidence, reliability...
 - 5-S-307 Compare differing accounts of historical events.
 - 5-S-308 Compare diverse perspectives in a variety of information sources.
 - 5-S-309 Interpret information and ideas in a variety of media. Examples: art, music, historical fiction, drama, primary sources...
 - 5-S-310 Recognize that interpretations of history are subject to change as new information is uncovered or acknowledged.
 - Communication
 - 5-S-404 Elicit and clarify questions and ideas in discussions.
 - 5-S-405 Articulate their beliefs and perspectives on issues.

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- Grade 7:
 - Critical and Creative Thinking
 - 7-S-311 Analyze prejudice, racism, stereotyping, or other forms of bias in the media and other information sources.
 - Communication
 - 7-S-400 Listen to others to understand their perspectives.
 - 7-S-401 Use language that is respectful of human diversity.
 - 7-S-402 Persuasively express differing viewpoints regarding an issue.
 - 7-S-403 Present information and ideas orally, visually, concretely, or electronically.
 - 7-S-404 Elicit and clarify questions and ideas in discussions.
 - 7-S-405 Articulate their beliefs and perspectives on issues

Aboriginal Perspectives:

- General Inclusive Aboriginal Perspectives:
 - All students will be treated with dignity and respect, and recognition will be given that all students have gifts that can be shared with others
 - Student motivation should be provided through intrinsic rather than extrinsic means
 - Curriculum materials will be made relevant to the students who are learning it
 - Experiential learning opportunities will be used when possible and appropriate
 - Members of the family and community will be involved in the education of students
 - Elders will be invited to share their knowledge and wisdom with the students
 - Traditional knowledge, histories, values, and cultures of Aboriginal peoples will be included in the classroom

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Step-by-Step Lesson Plan

1. Lesson Hook: Ask students: “How many hours do you spend on technology per day?” (This includes: cell phones, computers, video games, iPads or tablets, etc.)

Have students put their heads down on their desk. Start with 1 hour a day and put a tally on the board of the number of students. Next ask 2 hours, then 3 hours or more a day on technology. At the end, the visual tally on the board will speak for itself that students spend far too much time on their devices. Guidelines [HERE](#) indicate that children 5 years old and up should spend no longer than 2 hours a day or less on technology.

2. Follow-up Question: “How much time per day do students spend doing physical activity?”

Follow the same process as above and tally the results on the board. Start at 30 minutes, then 1 hour, and finally more than 1 hour a day. Discuss with the class how much time they think is ideal to spend doing some sort of physical activity. (Answer: 60 minutes or more of physical activity each day. Most of the 60 minutes should be either moderate or vigorous intensity aerobic physical activity). See full explanation [HERE](#).

4. Display the below “Neurology of Gaming” graphic and “How too Much Screen Time Affects Children” graphic for your students. Use the below guiding questions to spark discussion:

- Do you think violent video games have the potential to make youth more aggressive? Why or why not?
- What are some positives of playing video games? (Possible answers: some are good for memory recall, or logical thinking areas of the brain that contribute to decision making.)
- What are some negatives of playing video games? (Possible answers: emotional response gets suppressed when playing violent video games, decreased frontal lobe activity which could lead to altered moods and aggressive behaviour, lower activation of the left interior frontal lobe during emotional tasks, lower activation of the anterior cingulate cortex in numerical tasks, those that play highly aggressive games are significantly more anxious than those that don't.)
- How does screen time affect your sleep? What about your eating habits and overall health? (Answer: negatively impacts sleep and increases behaviour, advertising on devices increasing snacking behaviours, and more screen time can lead to obesity and diabetes.)

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Step-by-Step Lesson Plan

5. Follow-up Activity:

Have students create their own poster of technology guidelines by researching other Canadian websites and resources. For example, there is some great information on Fraser Health's website [HERE](#) and Healthy Families BC [HERE](#). Alternatively, have students create a skit to act out for the class after researching the benefits of exercise on mental health.

6. **Lesson closure:** Have students look at the Activity Generator on the Student Mental Health Toolkit Youth Activities page for suggestions of things to do other than time spent on devices. You can find the Activity Generator [HERE](#).

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The Neurology of Gaming

Video games have both positive and negative effects on the human brain. They can be used to educate through repetition and feedback, but they also have some less-positive side effects.

The parts of the brain impacted by games

Different gaming scenarios and situations affect different areas of the brain by provoking certain reactions.

- Game play involves repeated actions that strengthen the brain cell connections underlying memory and learning.**
- PREMOTOR & FRONTAL CORTEX:** Games that require real-time action, like "space shooter", activate these areas, which control sensory movement.
- FRONTAL LOBE:** One study showed frequent players can get "video game brain". This means key parts of their frontal lobe become underused, which can alter moods.
- PREFRONTAL CORTEX:** Games that require logical thinking, like "Call of Duty" and "Sims", activate this area, which oversees decision-making.
- DOPAMINE:** Dopamine, which is involved in learning and feelings of reward, is released in the brain's nucleus during video game play.
- CORRAL ANTERIOR CINGULATE CORTEX:** Immediately after firing a weapon in a video game, players show greater activity in this area, which controls cognition and use map.
- ROSTRAL ANTERIOR CINGULATE CORTEX & AMYGDALA:** Areas that receive emotional conflict showed less activity while players used a weapon and soon afterwards. Studies say players may suppress their emotional responses to cope with their violent actions.

The effects of violent video games

- When gamers play frequently, there's a decrease in prefrontal lobe activity. This can lead to altered moods and aggressive behavior, which can last even after the game is turned off.
- One week of violent game play can lead to lower activation of the left insular frontal lobe and also in the anterior cingulate cortex during numerical tasks.
- Those who play high-aggression games are significantly more anxious than those who don't.
- Playing violent games increased aggressive thoughts, feelings and behaviors in the short and long-term.

The positive and negative effects of video game

Depending on what area of the brain is being tested, studies can produce very different results.

- Games that require teamwork help develop collaborative skills.
- Games designed to help children manage health problems that adults are more effective than doctor prescriptions.
- Violent content in games increases aggressive responses.
- Violent game play increases active suppression of emotional responses.
- Improves ability to reason and solve new problems independently of previously acquired knowledge.
- Can improve peripheral vision, eye-focusing skills, hand-eye coordination and mental rotation.
- Long-term playing can lead to obesity, attention problems, and poor school performance.
- Increased risk of violence in people with bipolar or schizophrenia disorder.

MALE GAMERS VS. FEMALE GAMERS

On average, male brains show a much greater activation in the mesocorticolimbic center (associated with reward and addiction) than female brains. This amount correlated directly with how much advancement they made through the game-play.

Sources: doha.org, neurologist.elsevier.com, www.sciencedirect.com, indiaamer.com, www.mindfulgame.com, www.onlinenurses.com/

OnlineUniversities.com

How too Much Screen Time Affects Children



Psychosocial Risks

There is a lack of social interaction and engagement with family and peers.



Language Delays

There are fewer vocalizations and less babbling from infants. Significant expressive and receptive language delays in preschool children.



Physical Health

There are increases in childhood health disorders such as obesity and diabetes.



Impediments with Life Skills

Children are experiencing an inability to tie shoes, swim, ride a bike, or build blocks when exposed to too much screen time.



Advertising Concerns

On TV, there are food related advertisements that lead to more snacking and higher rates of being overweight in young children.



Poor Sleep Quality

Children have decreased quality and quantity of sleep resulting in increased behavioral concerns at home and school.