Clinical Trial Protocol
Iranian Registry of Clinical Trials

08 Nov 2026

Investigating the effectiveness of computer games on problem-solving skills and thinking training

Protocol summary

Study aim
Determining the effectiveness of computer games on problem-solving skills and thinking training in students

Design
This study is a quasi-experimental, two-group, double-blind, randomized trial conducted on 30 sixth-grade students in Baghmalek County, 15 in each group. The sample allocation is done by simple randomization using the RAND function in Excel; first, each student receives an identification code and is sorted by a random number, then they are divided into two groups of 15: experimental and control.

Settings and conduct
This research will use a field experimental research method and an extensive pre-test and post-test design. The research will be conducted in a second-grade elementary school. All participants and clinical caregivers and evaluators who interpret the data will be kept confidential and all information will be kept anonymous.

Participants/Inclusion and exclusion criteria
Inclusion Criteria Being between 11 and 12 years of age. Being enrolled in the sixth grade of elementary school. Students and their parents being interested in participating in the study and providing informed consent. Exclusion Criteria Having a physical illness that could interfere with the research process. Use of psychiatric medications.

Intervention groups
Intervention group: Computer game-based training, based on a researcher-made protocol, is implemented in groups in 8 90-minute sessions, one session per week. The sessions include intellectual, strategic, adventure, simulation, and content creation games and are designed to strengthen problem-solving skills, analytical thinking, planning, decision-making, creativity, and emotion control. Control group: They do not receive any intervention during the research.

Main outcome variables
Problem-solving skills; thinking.

General information

Reason for update

Acronym

IRCT registration information
IRCT registration number: **IRCT20260728070411N1**
Registration date: **2026-08-16, 1405/05/25**
Registration timing: **prospective**

Last update: **2026-08-16, 1405/05/25**
Update count: **0**

Registration date
2026-08-16, 1405/05/25

Registrant information

Name
Pouran Farhadi Vandi

Name of organization / entity

Country
Iran (Islamic Republic of)

Phone
+98 902 016 2980

Email address
pwranfrhady@gmail.com

Recruitment status
Recruitment complete

Funding source

Expected recruitment start date
2026-09-11, 1405/06/20

Expected recruitment end date
2026-09-21, 1405/06/30

Actual recruitment start date
empty

Actual recruitment end date
empty

Trial completion date
empty

Scientific title

Investigating the effectiveness of computer games on problem-solving skills and thinking training

Public title

Examining the effectiveness of computer games

Purpose

Education/Guidance

Inclusion/Exclusion criteria

Inclusion criteria:

Being between 11 and 12 years of age. Being enrolled in the sixth grade of elementary school. Students and their parents being interested in participating in the study and providing informed consent.

Exclusion criteria:

Having a physical illness that could interfere with the research process. Use of psychiatric medications.

Age

From **11 years** old to **12 years** old

Gender

Both

Phase

N/A

Groups that have been masked

- Care provider
- Outcome assessor
- Data analyser

Sample size

Target sample size: **30**

Randomization (investigator's opinion)

Randomized

Randomization description

In this study, a simple randomization method is used to assign participants to two experimental and control groups. The randomization unit in this study is sixth grade students in Baghmalek County who are eligible to enter the study. First, a complete list of volunteer students who have been selected based on the study entry criteria is prepared. Then, each student is assigned a unique numerical identification code. These codes are entered into the Random Number Generator software and a random number is generated for each student. After generating these numbers, the students are sorted in ascending order based on the value of the random number. Then, the individuals are assigned to two groups; sequentially, the first 15 people on the list are assigned to the experimental group and the next 15 people are assigned to the control group. The experimental group participates in computer game-based training sessions, and the control group will not receive any intervention during the research. With this method, the order of entry into the study and the researcher's knowledge of the students will have no role in determining the group. To conceal allocation, the person responsible for entering the data and carrying out the randomization process in the software will be independent of the intervention administrator and the study evaluators and will not have the possibility of knowing the implementation process of the training or changes in the allocation of students. Also, the identification codes of the students are kept confidential and separate from their other personal information. Therefore, it will not be possible to predict the assigned group for each student before the randomization process is carried out.

Blinding (investigator's opinion)

Double blinded

Blinding description

In order to control bias and improve the internal validity of the study, this study was designed with a double-blind protocol; in this way, the outcome evaluator and data analyst will be kept unaware of the allocation of sixth-grade students in Baghmalek County to the experimental and control groups. In this process, the outcome evaluator will collect data related to problem-solving and thinking skills in all stages of the pre-test, post-test, and follow-up, without knowing the students' assigned group, in order to prevent bias in the assessment; also, all raw data with anonymous codes, such as Group 1 and Group 2, will be provided to the statistical analyst, and the true nature of the groups will not be revealed until the end of the data analysis process. All stages of assigning students to the experimental and control groups will be carried out by an individual independent of the computer game-based education provider and the research evaluators, and the decoding of the assignment codes will only be done after the final completion of the statistical analyses.

Placebo

Not used

Assignment

Parallel

Other design features

Secondary Ids

empty

Ethics committees

1

Ethics committee

Name of ethics committee

Behbahan Islamic Azad University Ethics Committee

Street address

Shahid Bayani St., Amir Kabir Blvd.

City

Behbahan

Province

Khouzestan

Postal code

6361713198

Approval date

2026-06-29, 1405/04/08

Ethics committee reference number

IR.IAU.BEHBAHAN.REC.1405.156

Health conditions studied

1

Description of health condition studied

Educational and psychological issues in elementary

school students

ICD-10 code

ICD-10 code description

Primary outcomes

1

Description

Problem-solving skills

Timepoint

before performing the intervention and two weeks after completion of the intervention

Method of measurement

Heppner and Petersen Problem Solving Skills Questionnaire (1982)

2

Description

Thinking training

Timepoint

before performing the intervention and two weeks after completion of the intervention

Method of measurement

Robert Sternberg's Thinking Training Questionnaire (1991)

Secondary outcomes

empty

Intervention groups

1

Description

Intervention group: Computer game-based training sessions will be conducted in 8 90-minute sessions, one session per week for the experimental group, based on the designed protocol. This intervention is designed to enhance various dimensions of thinking and problem-solving skills and includes intellectual and puzzle games, strategic, adventure, role-playing and exploration, simulation, content creation, and emotional and timed games. The main themes of this program are: familiarization with the environment and game rules, strengthening accuracy and concentration, analysis and planning, problem identification, information collection and evaluation, decision-making and selection of solutions, creativity and generation of new solutions, emotion control and crisis management, and finally summarizing and evaluating individual and group performance. The main emphasis of this intervention is on enabling students to generalize their cognitive and problem-solving skills to real situations through purposeful experiences in games.

Category

Behavior

2

Description

Control group: They do not receive any intervention or treatment.

Category

N/A

Recruitment centers

1

Recruitment center

Name of recruitment center

17 Shahrivar Elementary School

Full name of responsible person

Pouran Farhadi Vandi

Street address

next to Sepah Bank, City center

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6395146773

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2

Recruitment center

Name of recruitment center

Parvin Etesami Government Girls' Elementary School

Full name of responsible person

Pouran Farhadi Vandi

Street address

No. 70. Shahid Beheshti Street.

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pwranfrhady@gmail.com

Sponsors / Funding sources

1

Sponsor

Name of organization / entity

Islamic Azad University

Full name of responsible person

Behrang Mohammad Salehi

Street address

Daneshjo Square, Zagros Blvd.

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6391693627
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Email
bsalehi@iau.ac.ir
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
Islamic Azad University
Proportion provided by this source
100
Public or private sector
Public
Domestic or foreign origin
Domestic
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
Academic

Person responsible for general inquiries

Contact
Name of organization / entity
Islamic Azad University
Full name of responsible person
Pouran Farhadi Vandi
Position
Master's student
Latest degree
Bachelor
Other areas of specialty/work
Psychology
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Person responsible for updating data

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
No - There is not a plan to make this available
Justification/reason for indecision/not sharing IPD
Participant data is completely confidential and I do not intend to publish it.
Study Protocol
Undecided - It is not yet known if there will be a plan to make this available
Statistical Analysis Plan

No - There is not a plan to make this available

Informed Consent Form

Undecided - It is not yet known if there will be a plan to make this available

Clinical Study Report

Undecided - It is not yet known if there will be a plan to make this available

Analytic Code

No - There is not a plan to make this available

Data Dictionary

No - There is not a plan to make this available