ESCAPE ROOM STRATEGY TO MOTIVATE THE LEARNING OF HEALTHY HABITS IN HIGH SCHOOL STUDENTS

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Resumen

El presente estudio se basa en la implementación de una estrategia lúdica y gamificada, específicamente un Escape Room, con el objetivo de fomentar hábitos saludables entre estudiantes adolescentes de una unidad educativa. La utilización de la tecnología, que los estudiantes manejan de diversas formas, permitió una asimilación clara de los conceptos abordados. El estudio se llevó a cabo con una muestra de 75 estudiantes de bachillerato pertenecientes a la Unidad Educativa ATENAS, ubicada en la ciudad de Ambato. Estos participantes respondieron a un Test denominado FANTASTICO, que lleva este nombre debido a las iniciales de cada una de sus letras. Dicho test evaluó inicialmente (PRE TEST) las condiciones de los estudiantes en cuanto a los hábitos saludables en su vida diaria. Posteriormente, se implementó una intervención utilizando un Escape Room diseñado específicamente para el aprendizaje y el conocimiento de hábitos saludables. Los estudiantes se vieron inmersos en un juego en el que debían rescatar a un personaje protagonista. El Escape Room aprovechó la tecnología y la motivación intrínseca que este tipo de actividad genera. Al finalizar la intervención, se aplicó nuevamente el Test FANTASTICO para evaluar el progreso en los hábitos saludables de los estudiantes. Los resultados revelaron un avance significativo en comparación con los resultados obtenidos en el PRE TEST, lo que indica que la estrategia gamificada implementada fue efectiva para promover hábitos saludables entre los participantes. En conclusión, la integración de un Escape Room como estrategia lúdica y gamificada demostró ser un enfoque exitoso para motivar a los estudiantes adolescentes a adoptar hábitos saludables en su rutina diaria. Este estudio resalta la importancia de aprovechar la tecnología y el interés intrínseco de los estudiantes para lograr un impacto positivo en su bienestar general.

Palabras clave: *Escape Room, hábitos saludables, adolescentes.*

Abstract

The present study is based on the implementation of a playful and gamified strategy, specifically an Escape Room, with the objective of promoting healthy habits among adolescent students of an educational unit. The use of technology, which students handle in different ways, allowed a clear assimilation of the concepts addressed. The study was carried out with a sample of 75 high school students belonging to the ATENAS Educational Unit, located in the city of Ambato. These participants responded to a test called FANTASTICO, named after the initials of each of its letters. This test initially evaluated (PRE TEST) the conditions of the students in terms of healthy habits in their daily lives. Subsequently, an intervention was implemented using an Escape Room specifically designed for learning and knowledge of healthy habits. Students were immersed in a game in which they had to rescue a protagonist character. The Escape Room took advantage of technology and the intrinsic motivation that this type of activity generates. At the end of the intervention, the FANTASTICO

Test was applied again to evaluate progress in the students' healthy habits. The results revealed significant progress compared to the results obtained in the PRE TEST, indicating that the gamified strategy implemented was effective in promoting healthy habits among the participants. In conclusion, the integration of an Escape Room as a ludic and gamified strategy proved to be a successful approach to motivate adolescent students to adopt healthy habits in their daily routine. This study highlights the importance of leveraging technology and students' intrinsic interest to positively impact their overall well-being.

Keywords: *Escape Room, healthy habits, adolescents.*

Introduction

Nowadays, an adequate lifestyle is becoming more and more important due to the fact that human habits have been changing in terms of the way in which human beings carry out their daily activities in terms of their routine. It should be widely considered that an adequate lifestyle is a fundamental element in the integral development of students from an early age, especially within the educational context of the country, since this space involves a large part of the day and has supervision. The development of a physical condition adequate to the physical, evolutionary and cognitive characteristics of each individual should be considered (Ruiz & Baena, 2015).

In general, healthy habits include a balanced diet, regular physical activity, adequate sleep, stress management, avoiding the consumption of harmful substances and maintaining positive social relationships; which in the current times we live in as a post-pandemic time, have been reduced and therefore it is necessary to reflect on all the social spaces in which the human being develops.

It is imperative to cultivate these notions in youth, establishing healthy habits is decisive, as it establishes the basis for a healthy lifestyle that will be maintained throughout a person's life. Incorporating healthy habits from an early age will benefit in preventing disease, cause proper development, stimulate academic performance and foster positive self-esteem.

In this same sense, healthy habits have a significant impact on humanity as a whole, as a healthy population is more productive, reduces health care costs, contributes to the sustainability of the health care system and promotes overall quality of life. By working on this issue and educating young people about the importance of healthy habits, a healthier and more resilient society is built, fostering a more balanced life for all (Sorrosal, 2011).

The effects of the pandemic cannot be ignored; that is why the COVID-19 pandemic has made it clear that it is very important to maintain a strong immune system and in general a good health to face this type of infectious diseases. The appropriation of healthy habits, such as good personal hygiene, a balanced diet, regular exercise and stress management, can strengthen the immune system and reduce the risk of disease.

Also, the pandemic has had a significant impact on people's mental health, mainly in a sector that spends much of its time studying, i.e. young people. Healthy habits, such as maintaining a daily routine, exercising, maintaining social connections, and taking care of mental health, were diminished by the confinement, which directly resulted in young people's weakness in coping with the stress, anxiety, and depression associated with the pandemic. These habits can help maintain emotional balance, promote resilience, and improve overall quality of life (Domínguez Rodríguez & Palomares Ruiz, 2020).

Person et al. (2011) conducted a meta-analysis examining the associations between sedentary behavior and physical activity in children and adolescents. The results showed a negative relationship between sedentary time and the amount of physical activity performed, highlighting the importance of reducing sedentary behavior and encouraging participation in physical activities in this population. Later, Drenowatz (2019) investigated the associations between different types of exercise and sedentary behavior in European adolescents, in turn, they found that certain types of exercise, such as moderate to vigorous activity and organized exercise, were associated with a reduction in sedentary behavior, suggesting that these types of physical activity may be effective in counteracting sedentary behavior in youth. Guthold (2020) conducted a worldwide analysis of insufficient physical activity in adolescents using data from numerous population-based surveys.

The results showed a high prevalence of physical inactivity among youth globally, highlighting the need to implement effective strategies to promote physical activity in this population. Rodriguez-Hernandez (2020) investigated the association between physical activity, sedentary behavior and well-being in adolescents.

On the other hand, it should be taken into account that the integration of Information and Communication Technologies (ICT) in the learning of a particular subject has proven to be highly beneficial, especially in young users. It should be taken advantage of the fact that ICTs offer a wide range of resources and interactive tools that enrich the educational process, promoting active participation, collaboration and access to updated and diverse information (Díaz Levicoy, 2020). The use of applications, online platforms and multimedia allows students to explore the subject in a more dynamic and autonomous way, facilitating the understanding and retention of information. In addition, ICTs foster the development of digital skills, such as digital literacy, technological problem solving and effective online communication, essential skills for the 21st century. By providing a more motivating and interactive learning experience, ICTs have the potential to improve young people's engagement and performance in studying the subject, preparing them to face the challenges of an increasingly digitized society.

In this sense, educational gaps must be closed through the democratization of information and the fact that a large part of the population has access to technology-based tools and

Internet coverage. Taking into account that in the educational field there is a wide variety of ICT tools of different types, among which we have online learning platforms, educational applications, online collaboration tools, interactive multimedia resources, learning management platforms, online assessment tools, simulators and virtual environments, each of these has features and benefits that we must take advantage of to customize and enrich the learning experience of students, adapting to different learning styles and educational needs (Mascarell, 2019).

Taking into account that a didactic strategy is a set of planned and organized actions that the teacher uses to facilitate the teaching and learning process. These strategies are designed to achieve specific educational objectives and are adapted to the needs of students, considering their characteristics, learning styles and levels of knowledge. In addition, it should be emphasized that a didactic strategy involves the selection and appropriate sequencing of activities, resources and pedagogical methodologies, in order to promote active participation, deep understanding and skill development in students. These actions may include the use of visual resources, conducting discussions, problem solving, application of interactive teaching techniques, among others (Baque-Reyes & Portilla-Faican, 2021).

In order to be effective, a didactic strategy must take into account the different learning styles, stimulate reflection, collaboration and active construction of knowledge by the students and be mediated with the participation of the teacher.

The main objective of a didactic strategy is to generate a meaningful and motivating learning environment that promotes the integral development of students. This is achieved by creating opportunities for interaction, discovery, problem solving and the application of knowledge in real situations (Santacruz y otros, 2020).

With this background, the use of technologies that allow interaction, development of digital skills and other qualities that arise from the use of ICT; is a very effective strategy, within which the Escape Room is an option.

The Escape Room is a game and immersive learning experience in which a group of participants work as a team to solve a series of riddles and enigmas within a specific thematic environment, usually a room. The main objective is to find clues, crack codes and unravel mysteries in order to escape the room in a limited amount of time. Escape rooms offer a unique combination of intellectual challenge, teamwork and fun, stimulating skills such as critical thinking, communication, problem solving and decision making under pressure. In addition, the immersive environment and emotional tension add an element of excitement and adrenaline, making the escape room an educational and entertaining experience for people of all ages. Educational escape rooms are a methodological strategy recognized as emerging in education, which requires a thorough design of the innovation proposal (García-Tudela y otros, 2020).

The general objective of this research is to determine the incidence of an Escape Room as a learning strategy to promote healthy habits in high school students.

Methodology

For the present research work, we have worked with a quantitative and qualitative approach, with an applied purpose, quasi-experimental design, explanatory scope, field type data collection and longitudinal cut. For the theoretical foundation of the study, the synthetic method will be applied, which will allow the analysis of cooperative learning as part of learning.

As for the study population, we worked with a total of 75 students of the Educational Unit "ATENAS" located in the city of Ambato in the province of Tungurahua, a sample was not made because it is feasible to apply to the entire population of the General Unified High School levels.

The process followed consists of a pre-test and post-test in a quasi-experimental study that involves the evaluation of a variable or variables before and after the implementation of an intervention. In the pre-test, data were collected before the intervention was applied in order to establish a reference point or baseline. These data allow comparing the results with those obtained after the intervention in the post-test. The post-test is performed after the implementation of the intervention to evaluate the possible changes or effects caused by the intervention. At the end, it was possible to compare the results of the pretest and post test to determine whether the intervention had a significant impact on the variable of interest and helps to evaluate the effectiveness of the intervention in the quasi-experimental study.

The measurement of the pretest and post test was conducted using a self-assessment lifestyle TEST called FANTASTICO for its acronym: F - Family and Friends; A - Physical Activity; N - Nutrition; T - Tobacco; A - Alcohol; S - Sleep and Stress; T - Personality Type; I - Introspection; C - Driving Work; O - Other Drugs.

This FANTASTICO test is a generic instrument designed in the Department of Family Medicine at McMaster University in Canada, and allows to identify and measure the lifestyle of a particular population, in the present study, the high school students of the "ATENAS" Educational Unit.

Once the data was collected at the time called pre-test, an Escape Room was developed, in which through an ICT tool such as Genially, a sequence of activities was proposed that lead to use the qualities of the tool for students to develop the contents of healthy habits, mainly in balanced diet, regular physical activity, adequate sleep, stress management, avoiding the consumption of harmful substances and maintaining positive social relationships. The Escape Room strategy was used for a period of one month, in addition to the supervision at school

by the tutor teachers and at home the recommendation that parents should be the ones to support the cultivation of the healthy habits learned through the proposed strategy.

Subsequently, the FANTASTICO test was applied again, from which new data were obtained, with which it was also possible to verify the hypothesis: The Escape Room has an impact on the learning of healthy habits in high school students.

The design of the Escape Room was based on the ADDIE methodology, which stands for Analysis, Design, Development, Implementation and Evaluation, which provides a method of development in feedback and allows the creation of a learning (Mayfield, 2011).

Analysis. - In this phase, the needs considered through the topics to be addressed in healthy habits were taken into account; these are:

- Balanced diet
- Regular physical activity
- Adequate sleep
- Stress management
- Avoidance of the consumption of harmful substances
- Maintaining positive social relationships

The institution has computer labs with Internet service, and students also have their own computer equipment at home, either laptop or Tablet.

Design. - In this phase, a design is proposed to be followed during a path traced for the strategy. In this, different didactic resources are placed through which, initially the student learns about the theory of healthy habits with practical examples. As well as having a control within the institution and the support of parents at home. The design of the strategy's path, is proposed through passing a series of clues the caes have different challenges, that is, associated with a game, which is exploited because it is associated with the fact that adolescents like activities associated with the game.

Development. - Taking advantage of some online tools that allow the development of gamified environments, we used Genially's online tool for the development of the ESCAPE ROOM, which allows the design of a route through the interaction with different challenges.

Implementation. - The implementation process of the proposal was finally published at:

https://view.genial.ly/6436f5a5c114300013d678fe/interactive-content-escape-room-terror

It is presented with a cover that invites to rescue a character named Kaisen and consists of a series of levels where students are tested about the knowledge of healthy habits to save the character that they are asked to select at the beginning.

Figure 1: Escape Room Home

Evaluation. - In the present case, only the teachers linked to the high school students who participated in the study were consulted. The teachers analyzed the relevance of the contents, as well as the way of carrying out the process.

This process made it possible to collect data on the knowledge and put into practice the healthy habits of high school students.

Results

The findings generated by this research are based on the application of the pre-test from the application of the FANTASTICO Test, the intervention with 75 high school students, through the Escape Room strategy that proposes to save a fictitious character and finally apply again an evaluation of the FANTASTICO Test.

The research is interested in taking the most representative value of each item to be assessed, being this:

F- Family and Friends: to assess whether one has with whom to talk about important things in the personal order. The value of interest is 2 - Almost always.

A- Physical Activity: related to the fulfillment of physical activity, whether it is walking, climbing stairs, housework, etc. The value of interest is 2 - Almost always.

N- Nutrition: to measure whether the diet is balanced, where the value of interest is 2 - Almost always.

T- Tobacco: to measure if you smoke cigarettes, the value of interest is 2- Not in the last 5 years.

A- Alcohol: where you are asked to indicate the number of drinks per week, the value of interest is 2- from 0 to 7 drinks.

S- Sleep and Stress: which investigates whether you sleep well and feel rested, where the value of interest is 2- Almost always.

T- Personality Type: it measures the parameter I seem to walk fast, where the value of interest is 2- Almost never.

I- Introspection: measures whether you are a pensive and optimistic thinker, where the value 2 - Almost always is of interest.

C- Driving and Work: to know if you always wear your seat belt, where you want to know the value 2 - Always.

O- Other Drugs: to know the use of drugs such as marijuana, cocaine or cocaine paste, we are interested in knowing the value 2 - Never.

The present TEST is an authorized adaptation of Mcmaster, from the University of Ontario in Canada, whose purpose is to measure the level of Healthy Lifestyle through the personal sum of each item, according to the following Table 1:

SUMMARY	OBSERVACION
85 to 100	Congratulations. You have a fantastic lifestyle.
70 to 84	Good job. You are on the right track.
60 to 69	Adequate. You are well
40 to 59	40 to 59 Somewhat low, could improve
0 to 39	You are in the danger zone, but honesty is your real asset.

Table 1: Legends in accordance with the sum of values of Healthy Habits

This sum is obtained by adding the values of each item and multiplying the result by 2. It should be noted that regardless of the value of the sum that each student has obtained, the student is always encouraged to improve, even in the worst cases, emphasizing that honesty is the real value of the person.

Initially, the data obtained from the FANTASTICO Test applied to the group are as follows:

SUMMARY	Number of students
85 to 100	6
70 to 84	15
60 to 69	54
40 to 59	0
0 to 39	0
Total	**75**

Table 2: Number of students per criterion

In each parameter, the number of people who qualified with parameter 2, which is a positive indicator to be achieved, is of interest. Table 3 shows the number of people who reached level 2, which would be the expected level, before the intervention.

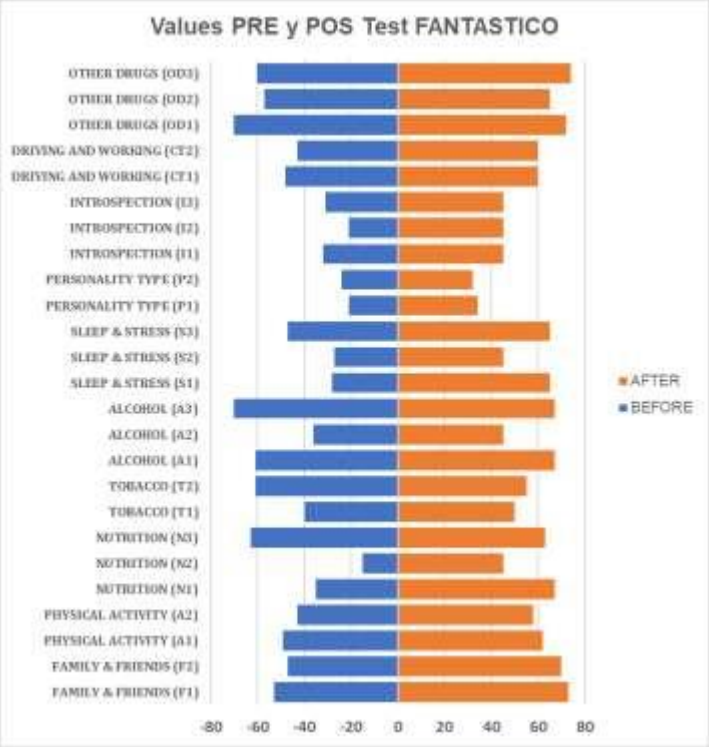
SUMMARY	Number of students
FAMILY & FRIENDS (F1)	53
FAMILY & FRIENDS (F2)	47
PHYSICAL ACTIVITY (A1)	49
PHYSICAL ACTIVITY (A2)	43
NUTRITION (N1)	35
NUTRITION (N2)	15
NUTRITION (N3)	63
TOBACCO (T1)	40
TOBACCO (T2)	61
ALCOHOL (A1)	61
ALCOHOL (A2)	36
ALCOHOL (A3)	70
SLEEP & STRESS (S1)	28
SLEEP & STRESS (S2)	27
SLEEP & STRESS (S3)	47
PERSONALITY TYPE (P1)	21
PERSONALITY TYPE (P2)	24
INTROSPECTION (I1)	32
INTROSPECTION (I2)	21
INTROSPECTION (I3)	31
DRIVING AND WORKING (CT1)	48
DRIVING AND WORKING (CT2)	43
OTHER DRUGS (OD1)	70
OTHER DRUGS (OD2)	57
OTHER DRUGS (OD3)	60

Table 3: No. of students per parameter and value 2, in the pre-test

After the intervention, a new measurement of the FANTASTICO Test was taken, which can be seen in Table 4.

SUMMARY	Number of students
FAMILY & FRIENDS (F1)	73
FAMILY & FRIENDS (F2)	70
PHYSICAL ACTIVITY (A1)	62
PHYSICAL ACTIVITY (A2)	58
NUTRITION (N1)	67
NUTRITION (N2)	45
NUTRITION (N3)	63
TOBACCO (T1)	50
TOBACCO (T2)	55
ALCOHOL (A1)	67
ALCOHOL (A2)	45
ALCOHOL (A3)	67
SLEEP & STRESS (S1)	65
SLEEP & STRESS (S2)	45
SLEEP & STRESS (S3)	65
PERSONALITY TYPE (P1)	34
PERSONALITY TYPE (P2)	32
INTROSPECTION (I1)	45
INTROSPECTION (I2)	45
INTROSPECTION (I3)	45
DRIVING AND WORKING (CT1)	60
DRIVING AND WORKING (CT2)	60
OTHER DRUGS (OD1)	72
OTHER DRUGS (OD2)	65
OTHER DRUGS (OD3)	74

Table 4: N° students per parameter and value 2, in post test



Graphic 1: Comparison of PRE and POS values, by parameter

With these data and taking into account the hypothesis that the Escape Room has an impact on the learning of healthy habits in high school students. For which the specialized software SPSS was used, where first the normality of the data was verified. Taking into account that there is a data sample greater than 50 (75), the Kolmogorov-Smirnov method was used. This method is based on the following decision rules to determine the normality of the data distribution:

p-value >=0.05 Normal distribution

p-value <0.05 Is not a normal distribution

The following table from the SPSS software shows the calculated values:

	Kolmogorov-Smirnov		
	Statistic	gl	p-valor
PRE	,092	25	,200
POST	,160	25	,097

Table 5: Normality test

With the p-value column in both the PRE and POS data is verified:

0.200>=0.05 and 0.097>=0.05; therefore, it is decided that it is a normal distribution.

This allows me to select the TStudent statistic for related samples, which will help me to verify the hypothesis:

The Escape room has an impact on the learning of healthy habits in high school students.

For demonstration purposes, the H0 and H1 are presented as follows:

H0: The Escape room does NOT affect the learning of healthy habits in high school students.

H1: The Escape room DOES have an impact on the learning of healthy habits in high school students.

The decision rule is stated:

If p-value <=0.05 H0 is rejected and H1 is accepted.

If p-value >0.05, H0 is accepted and H1 is rejected.

Once the calculation has been executed using the software we have:

	t	gl	p-valor
Pair 1 PRE - POS	-6,693	24	,000

Table 6: TStudent Hypothesis Verification

According to the data found, the comparison of the p-value=0.00 is carried out.

0.000<=0.05, therefore, H1 is accepted, which indicates that:

The Escape room DOES have an impact on the learning of healthy habits in high school youth.

Conclusions

The use of the Escape Room for the learning of healthy habits in high school students was theoretically based on the main studies on the use of these educational methods, which are applied in the curriculum of Block 6, "Body and Health" of the Ministry of Education.

Healthy living habits and unhealthy habits among young people of this age were identified, giving as a determinant a low index of healthy habits, such as nutrition, personal relationships, stress and anxiety, as well as the misuse of technology, which are related to the habits acquired in the pandemic.

Through the proposed strategy and a control both in the educational unit and at home, it was possible to have an awareness on the part of the students about what they want to achieve to improve their habits that derive in a better quality of life for the present and that will lead to better health when they are older.

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