

## **Climate Change and Social networks: The use of Instagram and TikTok among secondary-school students in relation to sustainability**

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**Abstract:** *Climate change has been identified as the greatest challenge facing humanity. In this research we sought to find out the extent to which teenagers use social media to stay informed about the climate emergency and sustainability. We studied the case of 98 teenagers, examining what types of content they view on Instagram and Tik Tok, and which accounts they follow. The main results of this research indicate that these teenagers do not use the analysed platforms to consume content on climate emergency and sustainability, highlighting the need for further educational intervention as a way to promote interest in these issues.*

**Keywords:** *Climate Change, Social media, Tik Tok, Instagram, Teenagers.*

## Introduction

Social networks are established as a double-edged sword in relation to people's beliefs (Amanda Lenhart et al., 2007), and since adolescence is a critical time of identity formation, the impact of what they see on social networks can be much more intense than in other life periods (Amy Orben, 2020). For this reason, the influence of social networks content should not be obviated (Alexandra V. Fedotova, 2019).

According to Vandana Shiva (2019), the economic and political system that we have built, and that accompanies us today, is not compatible with life. The climate emergency is a reality (Yayo Herrera, 2022); it constitutes a current and future problem (Alicia Puleo, 2019), and if it is not stopped or reversed the effects can be devastating. Reason why several experts express that to guarantee the survival of the human species on the planet it is necessary to work on a decarbonization of the system (Jorge Riechmann, 2012). Lately, we have seen young people raising their voices on environmental issues (Greta Thunberg, 2022), even creating activist groups such as Fridays for Future (Hannah Wallis, Laura S. Loy, 2021).

Therefore, in this research we want to analyse if the massive use of social media is impacting teenagers on improving climate change awareness, and if the content consumed shows an ideal way of life in which individuals reduce their consumption and, consequently, their impact on the environment.

It is true, however, that there is an ongoing debate on this issue (Karen Yeung, 2017). On the one hand, there are those researchers who consider that social media platforms promote ideas and send specific messages (Felipe González, 2019), and those who consider that, by working with the algorithm, they actually only reaffirm the beliefs that subjects already hold, isolating them from other opinions (Jaeho Cho et al., 2020). Be that as it may, in this research we focus on the content shown to this sample in order to analyse whether the message that is reaching future generations corresponds to environmental awareness. For this reason, in

this case study, we want to analyse who this sample of teenagers follows and what type of content they follow on social networks.

Previous research has delved into climate change and social media (Stephan Lewandowsky et al., 2016). Other studies have focused on the relationship between climate emergency and education (UNFCCC, 2022; Mark Lieberman, 2022; Arianna Prothero, 2022; Stefan Ellerbeck, 2022). However, we are specifically interested in reviewing the content that teenagers view and follow on social networks directly related to ecological ethics and their sustainable habits.

## **Research methodology, design and development**

### **Methodology**

The methodology, in this ex post facto research, chosen to answer the questions proposed in this particular case study is a mixed method between quantitative (Franklin, C., 2009) and qualitative (Hignett, S., & McDermott, H., 2015) techniques inspired by different previous studies (Edwards, G., 2010 & Hossain, D. M., 2012 & Mayring, P., 2007). Demonstrating the feasibility of both variables in social media (Debreceeny, R., & Wang, T., 2019) and education (Rumberger, R., & Palardy, G., 2004) contexts. If we focus on the first type of methodology, we have opted for the quantitative method, specifically the questionnaire tool.

As for the qualitative methodology, we have decided to use it also as a complement to the quantitative one since we believe it is important to talk to the sample about the profiles and contents they usually visualise in order to achieve the most reliable and concrete results possible. We have achieved this by conducting two focus groups.

Therefore, we have combined both methodologies in order to answer the following questions:

Q1: What are the most viewed contents by teenagers on Instagram and TikTok?

Q2: Who are the people most followed by teenagers on Instagram and TikTok?

Q3: Do teenagers consume content on social networks related to sustainability?

Q4: Do teenagers follow environmental activists on social networks?

To answer question number one from the data provided by the teens in the quiz, we were able to classify the type of content most consumed by the sample to detect the ten most viewed topics. From the questionnaire, we obtained the necessary information to find out which are the favourite influencers of the sample and to evaluate the content they share to classify this content them various categories such as fashion, lifestyle, video games, makeup, etc., as can be seen in the analysis of the results.

Focusing on objective number two of the survey, we asked the teenagers which were the influencers and micro-influencers (see table 1) that they followed to establish a ranking of the most followed profiles in order to later be able to take advantage of this database not only to know who they follow but also the current trends in social networks. In the same way that we asked about the sample's favourite influencers, we were able to draw up a list of the 10 most-followed profiles in order to analyse what type of influencers they were.

Table 1: Influencers category

Influencer Category	Number of Followers
Non-Influencers	<1000
Micro-Influencers	1001–10,000
Mid-Influencers	10,001–100,000
Macro-Influencers	100,001–1,000,000
Icon-Influencers	>1,000,000

Source: (Israel-Turim et al. 2021)

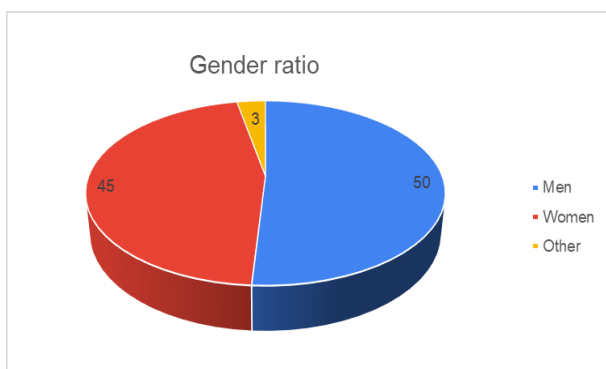
Looking at it from another perspective, question number 3 has been studied to discern which contents are included within the concept of environmental awareness and which are not, for the purpose of establishing whether or not the sample is interested in this type of content. So the information extracted from the focus group has been used, where the sample was asked if they consciously consume sustainability posts and videos.

Finally, if we consider the last objective, we use the information collected in the focus group in the same way as in the previous question to be able to assess in the same way if the students know some influencers who are dedicated to environmental activism, if they follow them, and what image they have about this type of climate activism.

### Sample

The sample used for this research is a non probabilistic sample with a total of 98 teenagers studying first of *bachillerato* at La Salle Montcada High School in Barcelona -Spain-. The gender ratio is almost equal: 50% men, 45% women, and 5% who chose others (see figure 1) and ranging in age from 16 to 18 years old.

Figure 1: Gender ratio



### **Data collection technique**

Based on these questions and objectives, the research was conducted using the questionari tool within the survey methodology, taking as a model the proposals of Nandakumar, R., and Ackerman, T. (2004). According to some experts, such as Creswell, J., and Plano, V. (2017), this hybrid technique is more effective than using only a quantitative or qualitative methodology in this specific research (Martínez, A., 2013, and Rodríguez, R., 2001).

### **Questionnaire**

The technique used in this research is the survey, specifically the questionnaire tool that includes open, closed, opinion and factual questions, following the examples of previous studies (Nalan Demircioglu Hasan Yilmaz, Metin Demir and Süleyman Toy, 2011; Olga María Luque-Alcaraz et al, 2022; Lenny Prastiwi, Diana Vivanti Sigit, Rizhal Hendi Ristanto,2019). In this case, it has been divided into four sections (see table 2). First, demographic data on the sample. Then, two sections have been introduced that aim to collect information on the profiles and content viewed by teenagers, one focusing on Instagram and the second on Tik Tok. They were asked to indicate the profiles of the last posts they had liked, the profiles of the last posts they had saved and, finally, to mark the type of content they consume according to the information they had previously collected. The last and fourth section consisted of a series of dichotomous and nominal questions of a scalar type where they were asked about issues that relate social networks to sustainability.

Table 2: Questionnaire sections

Section	Description
Section 1	Personal and demographic data
Section 2	Profiles and content viewed on Tik-Tok
Section 3	Profiles and content viewed on Instagram
Section 4	Social media and sustainability question study

### 2.3.2 Focus group

We conducted two focus groups of ten students each, where we were able to talk face-to-face and directly with the teenagers and get a more concrete idea of what interests they share, what profiles they spend the most time on, what they think of that content, and what image they have of environmental activists on social media. We prepared a list of topics to talk about the uses of social media and their perception of the impact of sustainability through social media on themselves, and we also gave the sample a grid of questions to start the conversation and guide the discussion following the academia guidance (Holly Edmunds, 1999).

## Results

### Descriptive results of the sample trends

The first result we obtained justifies why we chose these two social media platforms for the study, was the proportional amount of the sample that claims to use Instagram and/or Tik Tok (see figure 2 and 3). We obtained that Instagram was used by 97% of the sample and Tik Tok by 89% of them, and the average daily hours of use of all platforms is approximately 5 hours per day, including the cases of teenagers who have an average of 11 hours of use per day.

Figure 2: Instagram usage

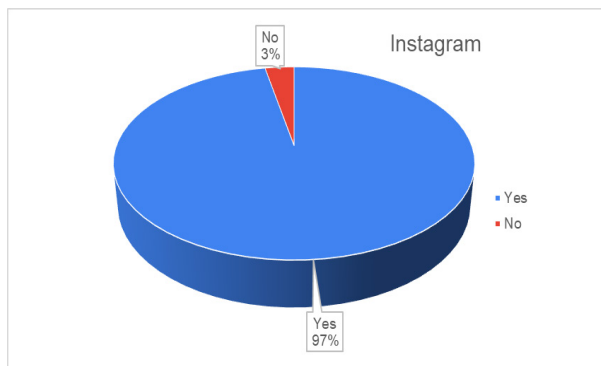
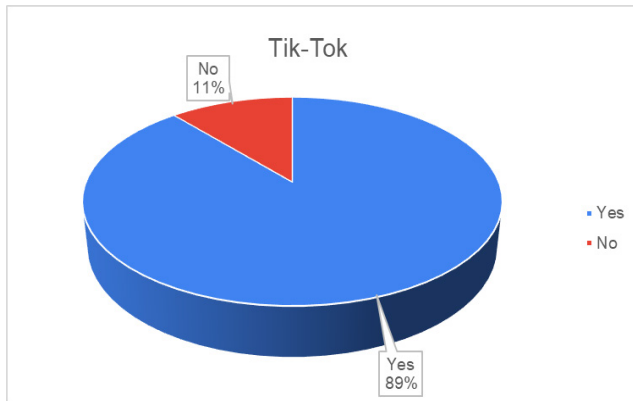


Figure 3: TikTok usage



### ***Profiles they follow.***

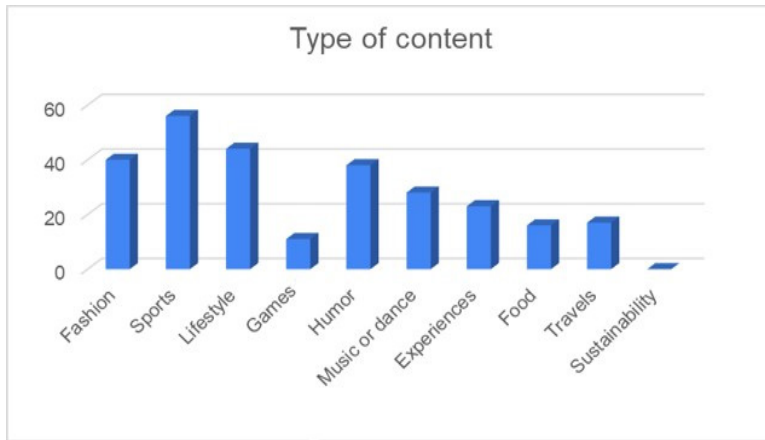
Another of the main questions we wanted to study in this research was who the students follow, that is, if there is any kind of pattern in which we see that they follow the same influencers. To do this we used the data obtained in sections 2 and 3, specifically when we asked them to indicate the profiles of the three most recent posts they had liked and three profiles of the three most recent posts they had saved. To our surprise, we were not able to detect any profile that was mostly followed, the only ones that coincided and not in the majority were two profiles; one of the football club Barcelona - the account of the most popular team in the province where the study was carried out - and the account of the Isla de las Tentaciones - the profile of a very famous reality show programme in Spain at the time-. On the other hand, we wanted to complement these results with the focus group and they confirmed what was mentioned above. They do not follow specific influencers- No Climate Change activist either- but rather these teenagers prefer to view the content that the algorithm of both platforms proposes and therefore the results that the accounts followed by the teenagers are so random that we cannot establish a pattern between them in terms of who they follow.



### ***Content they consume***

Contrary to the previous section regarding the type of content that adolescents follow, we were able to establish some common patterns. We were able to establish a usage pattern highlighting three categories: sports, fashion and lifestyle. We saw the large consumption by these teenagers of fast fashion clothing as well as cosmetics and makeup products, where they state that they do not consume them out of necessity but on a whim or for pleasure. As for the lifestyle section, we were able to see different videos that they themselves indicated in the profile, where the life of people with high purchasing power is shown and where they launch a clear message of positive consumerism, an issue that clashes with the fight for the climate emergency. In fact, regarding the item that directly asked for sustainability content, we found that 0% of the total sample checked this box (see Figure 4). Therefore, in this section, the information obtained through the questionnaire and the focus group indicated that teenagers are not interested in consuming content linked to sustainability, that the algorithm does not recommend this type of content to them. In the focus group, they themselves said that thanks to answering the questionnaire they have become more aware of what they consume on the networks and thus consider that what they see on the different accounts proposed for them encourages their consumption of products, and also consider that they do not receive any messages linked to the climate emergency.

Figure 4: Type of content



### **Social networks and sustainability**

Having analysed the questions more focused on the type of content and profiles followed by the sample, we have focused on those questions that relate climate change and how it is communicated on social networks with this profile we are studying. We found that out of 47 students out of 98, they rate with a 3 or more on the scale of 5 the life of the profiles they see on social networks and see them as their ideal life. In addition, only 18 out of 98 have scored 3 or more on the importance and frequency of the profiles they follow on sustainability and environment. One of the data we found most relevant was the difference we found between knowing and following profiles about sustainability on social networks. Given that almost 60% of the sample knows profiles of content creators that deal with the environment (see Figure 8), but only 22% follow these profiles on networks (see Figure 7), this indicates that there is no interest on the part of adolescents or tendency to follow this type of content. Furthermore, in the focus group we talked to the students and they told us that they did not remember the algorithm ever recommending any content related to environmentalism.

Figure 5: Perception questions

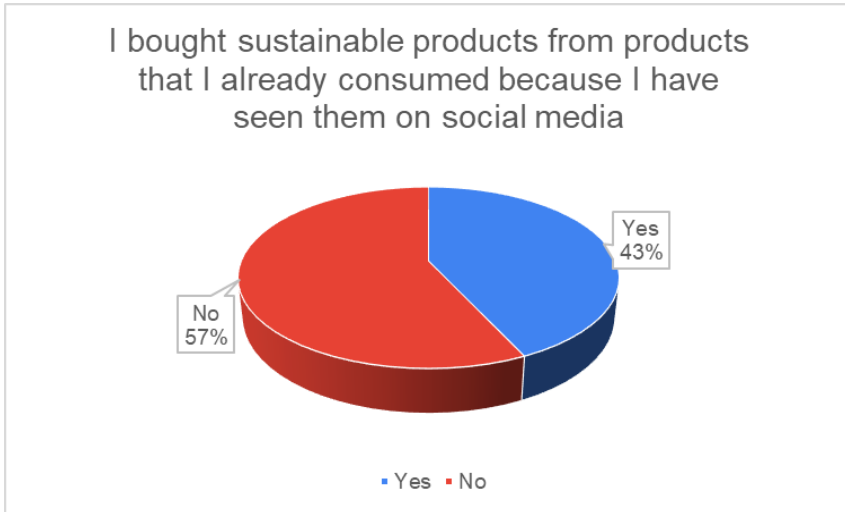


Figure 6: Perception questions

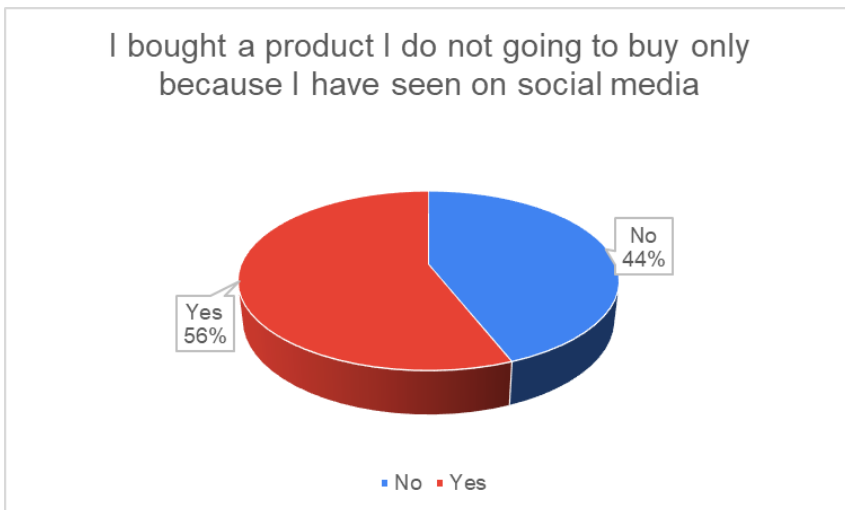


Figure 7: Followed profiles

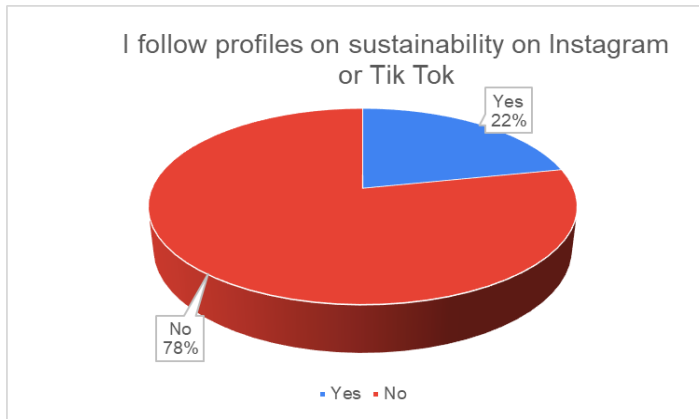
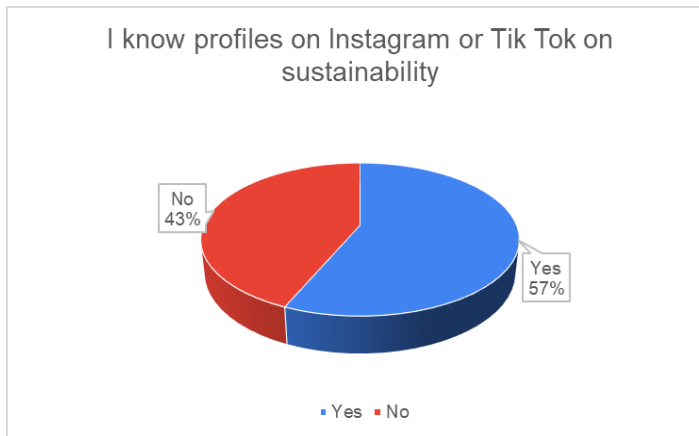


Figure 8: Known profiles



56% of the sample considered that they were aware that they had bought products because they had seen them on social networks, and that the desire to buy had generated them (see Figure 6). In the focus group, some subjects told us that they sometimes buy compulsively because they have seen a recommended product and then do not use it. Less than half also consider that they have bought products from their usual use of more sustainable brands (see Figure 5), and almost 90% say that by looking at the lifestyles shown in the networks, they have not felt

motivated to buy. For example, reducing meat consumption and thus reducing their carbon footprint (see figure 9). It was practically unanimous that social networks do not make them more or less sustainable; however, they almost unanimously considered that they had realised that because of what they see on social networks, they were adopting habits that were more against climate change than in favour of its mitigation or adaptation (see figure 10).

Figure 9: Perception questions

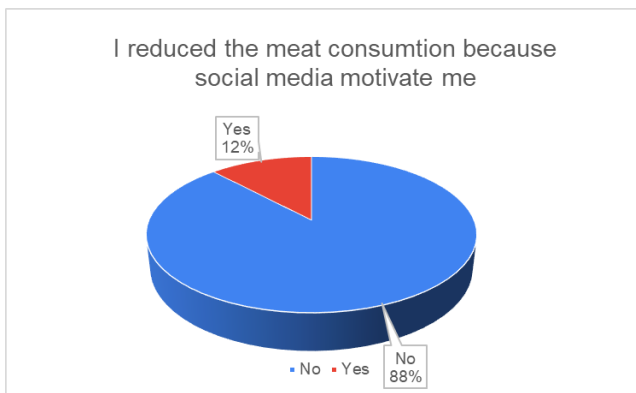
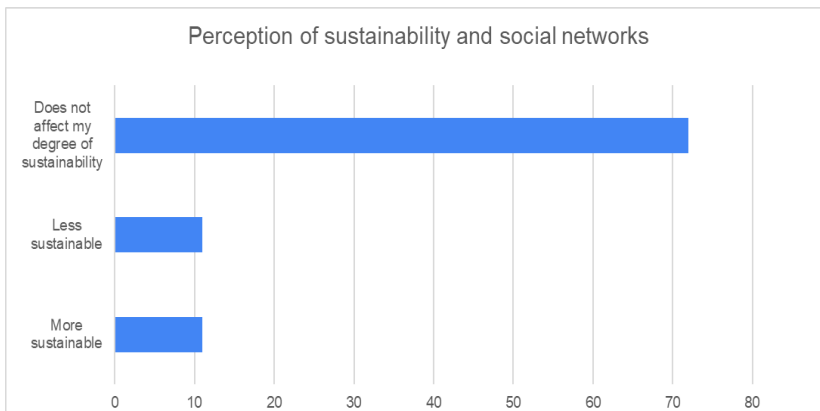


Figure 10: Perception questions



## Discussion and conclusions

The climate emergency represents the greatest social, political and economic challenge ever imagined for humanity according to several authors (Jorge Richmann, 2012 and Vandana Shiva, 2019). For many others (Alicia Puleo, 2019 & Yayo Herrero, 2022), the next generation is the tipping point that will determine the future of humankind. So studying the type of content and who teenagers follow on social media was pertinent and relevant research, as they spend many hours a day on these platforms (Vasanth, Rahul, and Seema Swamy, 2013 & Al-Sabti, Duaa Ali et al., 2017). The aim was to determine if the use by these future generations is in accordance with the necessity to improve their knowledge and awareness of Climate Change.

This study carried out with 98 students from La Salle Montcada secondary school - Barcelona, Spain - aged between 16 and 18 years old on how they use social networks, who they follow, what content they follow and whether this content is related to environmental issues has provided us with data that allowed us to learn more about the objectives we set, including determining what kind of content these adolescents see on social media, who they follow and whether we can establish any links to sustainability.

First, the most unexpected data obtained in this study was that when we studied the profiles they follow, we realised thanks to the questionari tool that we could not establish any pattern contrary to what has been seen in similar research in other countries (José Luis Rodriguez & Francesc Martinez & Cristina Galván, 2019). Also, talking to them in the focus groups, they themselves told us that they don't look at who they follow, they don't pay much attention to the profile, they care about the content. For this reason we realise that for this sample the algorithm is crucial because it determines the content they see, and therefore what messages they see on social networks (Cotter, Kelley, 2019), being precisely the question of algorithms in social networks a controversial issue (Harriger, Jennifer, et al., 2022) and an open debate in today's society, something that other research has apparently found was not the case for

previous generations (Ulas Akkukuk, 2016 & Paul Carr, 2021). Thus, we consider that this information may open up new lines of research to investigate how young people interact with the algorithm.

On the one hand, we can think that this could be a positive conclusion, as it may provide an opportunity to generate more interest in environmental issues among adolescents, and if they search for this type of content they will quickly start to see content that sends this message of sustainability, further promoting their environmental awareness. But on the other hand, if these teenagers are not interested, the algorithm will never show them content linked to climate change and they can completely ignore this problem.

On the other hand, we have detected a pattern in the type of content shown in the sample. The three most consumed categories are sports, fashion and lifestyle. A priori, sports do not provide us with anything significant, but in the case of the other two categories, they do. In the focus group, we were able to dig a little deeper, and the subjects told us that when they checked the fashion box, they were mainly referring to watching videos of people buying clothes in fast fashion stores, and they all agreed that at least once, but usually, they themselves ended up buying those clothes they had seen recommended in the video. Therefore, it is a big problem considering the need to promote degrowth and not consumerism (Elisabetta Mocca, 2019), since fast fashion is a trend that arises in the opposite direction and generates many pollution problems. Regarding the third category that we have named as lifestyle, we were also told that this type of videos always showed the life of the content creators and their daily routine, where they mentioned that the standard of living was very high and that it showed a highly consumerist life that once again is not sending the right message if what we are looking for is a greater awareness of future generations about the climate emergency as has already been pointed out from the marketing field (Elena Santamaría de la Piedra & Rufino J. Meana, 2018).

Another idea we put forward is that, initially, the analyzed teenagers do not have a natural interest in the climate issue. In fact, we can verify

this when they comment that only 22% of the sample follows some kind of content linked to sustainability, and in the questions on the scale of habits, we do not find any sustainable pattern; rather, we find habits quite linked to unsustainable consumption. In the focus group, they themselves commented that the algorithm rarely shows environmental content, and in part they related this to the fact that by not showing interest -low interest and training in environmental education among adolescents as shown by previous studies (Irene Coalla, 2022)- the algorithm does not detect that it should propose content related to this topic.

As a general conclusion, the results of the present study indicate that in no case can we say that the selected sample is nourished by a strong message about the importance of creating a sustainable future. At least for this particular case, we can observe these adolescents do not use social platforms to consume content on Climate Change that could help them to improve their awareness and sustainable habits. That is why we believe that it is necessary to open up a new line of research to determine whether, with quality educational intervention, we can promote environmental awareness (Alicia Puleo, 2019 & Yayo Herrero 2022). Perhaps, once this interest has been generated through education, social media can be complementary, as their interest in the topic will likely lead to algorithms showing them more related content. Therefore, we believe it is of the essence to deepen the line of research on the impact that the introduction of ecological ethics as academic course content can have, and we hope that this same study can be replicated on a larger scale to study whether the data obtained are relevant to a particular case or not.

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