CHAPTER 5

Case Study 2: ACTIVITAL

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As noted in Chapter 4, this case study follows the same structure of presenting the findings, analysis, and discussion of the ACTIVITAL case study. The first section of findings presents the emerging results of the data collection section. The following second section focuses on the analysis and discussion of the broader themes found in the study with the research questions. For closing the chapter, the implications and suggestions present several criteria for consideration of the ACTIVITAL case study related to science communication for public engagement as guidelines to improve the communication strategies of the program.

Findings

This section reviews the emerging data from the data collection of the ACTIVITAL participatory focus group sessions developed with former participants of the program. It is important to note that the participants of ACTIVITAL who were recruited for this study were college freshmen and sophomores, as the program was developed in 2012 for the students last time in local high schools in Cuenca.

Following the research design described in Chapter 3, Research Question 1 was covered in the first and second sessions, and Research Question 2 was covered during the third and fourth sessions. Each session also included the introduction of the concepts of one communication theory of the analytical lens (see page,) as a set of flexible guidelines for consideration by the student collaborators. This procedure allowed the organization of the emerging ideas and reflections of the participants developed through a participatory action research (PAR) framework into tangible suggestions and

arguments for the case study in the framework of science communication for public engagement.

Data findings of ACTIVITAL in Dialogue with Research Questions

Prior to describing the findings, it is crucial to note that the participants of the ACTIVITAL case study were former participants of the program. That is different from the participants in the ESTPH case study, who were teen health educators. Consequently, the data reflected in this section of the research study responds to the lived experiences of the student collaborators when they were in high school approximately five to six years ago. All of the data collection sessions were conducted in January 2019.

It is also important to note that the ACTIVITAL program was implemented by the distribution of the booklets in 10 high schools of Cuenca, and providing health education workshops of nutrition and physical activity, recipes and cooking, and games the program team took part in in each high school. For more details of the program, see Appendix 2.

Research Question 1: How can researchers/scientists of health behavior studies develop better science communication strategies for public engagement, from the perspective of teenage audiences?

To answer this question, the first and second sessions were conducted using participatory data collection tools guided by prompt questions to open the facilitation of each session.

First session: **Assessment of communicational activities, materials, and existing issues.** The first research procedure with the student collaborators asked them to create a nickname for themselves and to make a tag to they would wear in each

session. The purpose of using a nickname, as noted in Chapter 3, was to ensure confidentiality of the participants and to eliminate any link to their identity in the research process and data. The student collaborators also were asked to refer to each other only by their nicknames, which were Churos, Chino, Lucy, Linda, Estrella, Merli, and Peter.

As a second activity, the student collaborators devised rules for carrying out the research process and how to proceed with communication, possible eventualities, a discussion of differing views, and how to address delicate information that could emerge. The final rule set was the following:

- *How to proceed when we disagree with each other.* Each participant presented their reasons to think differently, always with respect. All of the student collaborators agree to not interrupt or use disrespectful terms to each other at any time.
- *When we can't attend the sessions.* Student collaborators asked for the option to respond remotely to any session they might not have been able to attend. For this reason, the prompt questions were uploaded through Google Classroom so that their opinions or answers could be taken as part of the data. The missing participants would receive the prompt questions through a link through their email to access the session, the same day the session took place.

  All student-collaborators also agreed to attend at least one of four sessions so that they could be considered participants and collect their compensation by the end of each session.
- *Communication will happen always through text messages and email.* Student collaborators suggested that the best way to receive reminders and to contact

them was through text messages. If anyone needed to receive more information, an email would be the best conduit, they decided.

- *Ask for help if you feel sick.* In case of any discomfort, the student collaborators were asked to raise their hand to seek assistance from the facilitator. If a student collaborator needed medical assistance, the Student Health Center at the University of Cuenca would be contacted.

After setting the rules for participation, the student collaborators also made a poster that was sent to every participant through text message and email.

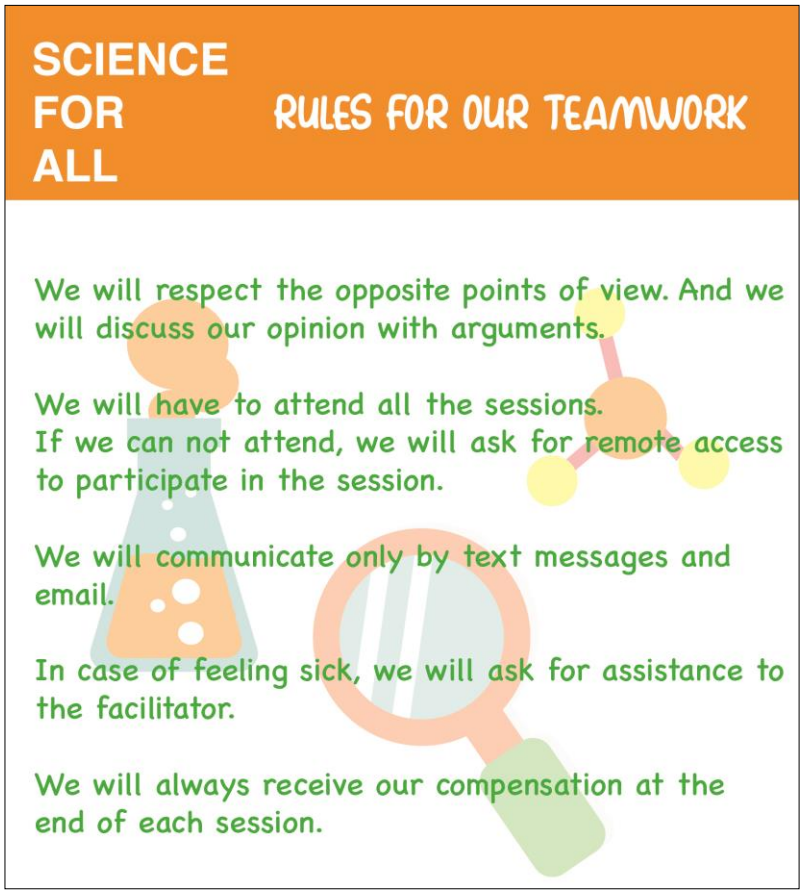


Image: "Rules for our teamwork" developed by the student collaborators of the ACTIVITAL case study.

Prompt question 1.1. What do you think about the activities that ACTIVITAL has developed to communicate their program? How well do you think

these activities are working? This question opened the first session with the participatory diagramming tool. The selected format was a grid to organize issues, positive strategies developed by the program, and suggestions. This tool allowed the student collaborators to conduct a productive facilitation by considering all of the emergent ideas and opinions that the student collaborators had that were related to the ACTIVITAL case study.

Picture: Participatory diagram elaborated by student collaborators of ACTIVITAL.

The first response of all of the collaborator students was that they remember that ACTIVITAL taught them about nutrition and physical activity, which are the two core constructs of the program. Given that this program was implemented five to six years ago in their high schools, this was a positive aspect, as they recalled the two main goals of the program.

The activities they recalled most readily were the outdoor activities and games and the workshops about nutrition. Moreover, student collaborators agreed that they

think it was an effective strategy to combine a workshop and a game or an activity. This framework helped them to learn about eating healthy and how to adopt healthy habits for physical activity.

After this first set of responses, the handbook of ACTIVITAL (see Appendix 2 of the case study for more information) was shown to the student collaborators so they could review it, analyze its content, and recall other activities of the program. One of the activities they remembered as positive was the nutritional pyramid game, which was a diagram with the food groups, and they had to locate correctly each food by cutting and pasting the food image in the correct section. However, the students said they believed this activity was quite complex for their age because they were confused frequently trying to identify the correct food portions and combinations. For example: If they had already eaten a fruit and then combined a meal with a protein portion with a carbohydrate such as bread, they had doubts about how much fruit and what kind of fruit would have less sugar (a citrus or berries) to not unbalance the intake of sugars that later become carbohydrates.

Image: ACTIVITAL's *Nutrition and Physical Activity Guide* for students.

Even though the pyramid activity was difficult, the student collaborators acknowledged that they learned to vary their foods and to balance their meals in the long term. Yet they suggested that this activity could be redesigned as a game through an app or a website, which would make it more interactive and fun also might help to correct wrong ideas for future participants.

As for the booklet (Image) serving as a communicational piece, student collaborators believed it was a functional piece, with a clear design and content, and helped to keep them engaged with the nutritional information they learned through the workshops and the games/activities the ACTIVITAL team took part in during their high school years.

Another activity that student collaborators described as effective was *The Healthy Day*, or in Spanish, El Día Saludable. This was a healthy breakfast day where the students brought a healthy breakfast food to share with their classmates. This activity was recalled as fun and positive. Yet the students believed it could have been enhanced as a cook-off day so they could learn about portions and healthy recipes that are easily prepared at home.

Another activity the student collaborators remembered as positive was the visits of athletes who talked about how a healthy lifestyle (balanced nutrition and physical activity) helped them to reach milestones in their careers. The student collaborators agreed that having a successful figure as a guest speaker who supported the program in their schools was motivating and encouraged them to follow the program.

A less effective element of the ACTIVITAL program, the student collaborators said, was the self-evaluation test, which was in the booklet *Nutrition and Physical Activity Guide*. The students did not mention the test initially, but when

it was shown in the guide to them, they said it was confusing and not very interactive. This activity could have been done online, they said, and still would have provided tips about how to improve their habits.

Ultimately, the student collaborators said most of the strategies were effective. But if the ACTIVITAL program was to be implemented again in high schools, the activities should be redesigned and the communication conduits should be more interactive, more fun, more easily learned, and it should use dynamic strategies to capture the high schoolers' attention.

Prompt question 1.2. Which activities of ACTIVITAL do you think are most effective? Why? Student collaborators considered the games and the interactive spaces for learning to be the best features of ACTIVITAL. For example, all of the student collaborators learned habits that they still use daily or frequently. For example, they eat fruit and vegetables every day or make time for physical activity.

The structure of teaching and combining this activity with a game or outdoor activity was very effective, they said, because they had a combination of scientific information about nutrition and physical activity, and later, there was time for having fun using the same concepts they had learned. The student collaborators said this strategy base should be maintained in the future as a major guideline and framework to design new activities or redesign existing activities.

Second Session: Opinion leaders for ACTIVITAL and mapping assets for health information and activities. Student collaborators said it is necessary that opinion leaders for the ACTIVITAL program create a more personal and interactive approach for the communication strategies of the program. After discussing some of the constructs of the two-step flow theory, there were crucial factors to consider for ACTIVITAL.

The presence of an expert in nutrition as an opinion leader to present information about the program would be a new key element that student collaborators thought was crucial. This person does not need to be necessarily a scientist or a researcher but should have charisma, should be approachable, should have a positive attitude and be open to talk to high schoolers with good humor and an upbeat personality. Moreover, this person should look healthy and be a good example of the discourse that will be communicated.

Another group of opinion leaders that would be interesting to include, the student collaborators said, would be former ACTIVITAL participants. The student collaborators said they thought that having someone who speaks from their own experience would create a closeness and establish trust with the teenagers. Moreover, this person would foster a more interpersonal approach to communicating with the target audience.

Prompt Question 2.1. What do you think about the prizes? This question was discussed only during the ACTIVITAL data collection, because the program did not offer prizes for the participation of high school students. The program was focused exclusively on providing health education about nutrition and physical activity and games. The student collaborators said they believed that the new games and activities needed prizes to motivate participants and to reinforce the goals of the ACTIVITAL program. The suggestion was that healthy meals and snacks would be the best prizes.

Summary of solutions and suggestions for the issues of ACTIVITAL suggested by the student collaborators

After reviewing the results and guidelines provided by student collaborators in the first session, two main suggestions emerged: activities to promote the

ACTIVITAL program through interactive games and new conduits for communication. The activities to promote interactive games would summarize activity suggestions, detailing what type of events would be key to promote ACTIVITAL. The new conduits for communication would present new channels focused on offering interactive experiences for the teen audience of the program.

Both suggestions would complement and reinforce the need to create a more interactive approach for communicating the program. As for ACTIVITAL, the student collaborators said that in the current scenario, it would be important to integrate technology and games in order to engage teenagers and their families. It also would be important, they said, to motivate teenagers to be active in their spare time.

Suggestions for interactive activities. Student collaborators discussed different options for proposing fun and interactive activities that focused on providing teenagers different opportunities to learn about how to adopt a healthy lifestyle.

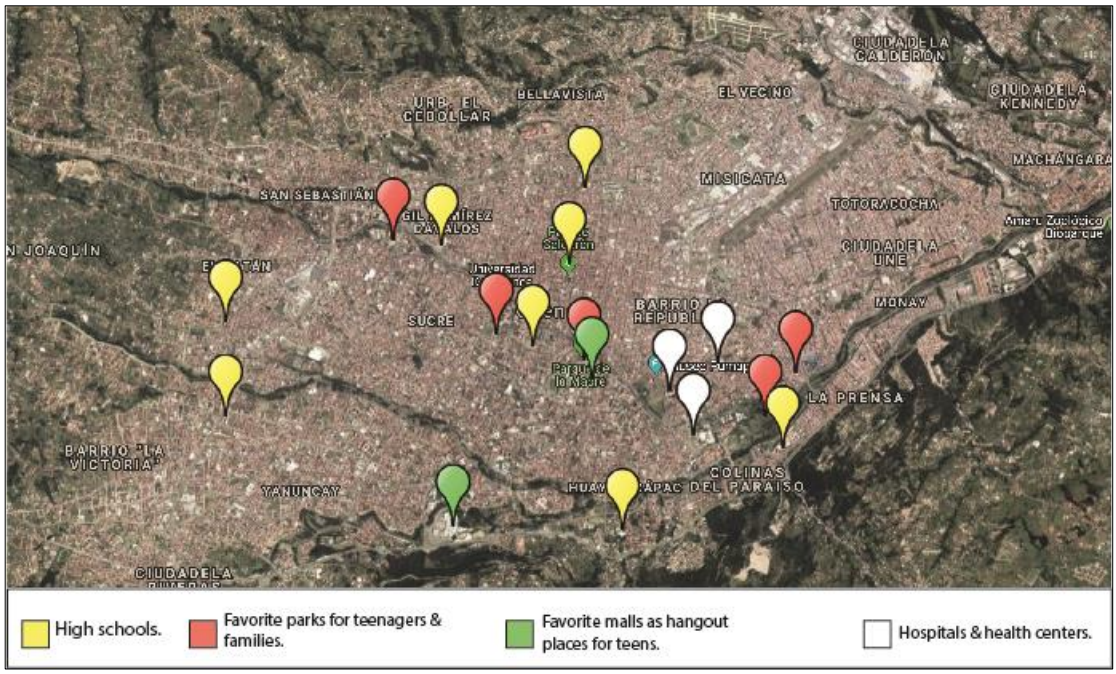
Outdoor activities. Student collaborators also said they believed that ACTIVITAL needed to create events that are interactive and fun so that the goal of the program could be fulfilled. For this purpose, there were several suggestions about activities oriented for high schoolers and their families. For this purpose, in the second session, asset mapping was done to locate the best venues for outdoor events and to locate other venues that could be information resources for physical activity.

Prompt Question 2.2. Which places in the city are available for teens and parents to do physical activity and play? Student collaborators said that parks might be the best places to engage teenagers and their parents. The favorite parks (*see map 2, red sites)* for families were Parque de La Madre and El Paraíso Parks, especially on weekends. In those parks, families in groups of three to five people could play soccer, volleyball, ride bicycles, jog, or run. Cuencanians typically enjoy meeting up with

friends to socialize on Saturdays and Sundays in these spaces. For that reason, the following activity was proposed by student collaborators.

Fin de semana ACTIVITAL. The best way to approach families, according to the suggestions of the student collaborators, would be to make family events one weekend per month. Such events could be organized as booths that offer ACTIVITAL information, an intervention for assessing the physical health of parents and teenagers with the researchers of the program, and free workout routines, such as dancing lessons or yoga in the park. The student collaborators suggested that these spaces could be useful to engage parents and family groups with the ACTIVITAL program by offering interactive activities that are accessible and fun.

Other spaces mapped as key sites to engage teen participants were local high schools (*see map 2, yellow sites*). The student collaborators mapped out several local high schools where games and health snacks could be offered to the teenagers. Suggestions for addressing teenagers were to create team games related to healthy food and to physical activity. Ideas included small soccer and basketball games, yoga lessons, and trivia about balanced nutrition. A key aspect mentioned was to offer games that teenagers could choose and get healthy snacks along with information about the ACTIVITAL program and invitations for their parents to follow ACTIVITAL on YouTube.



Map 2: Asset map created by student collaborators of ACTIVITAL, locating sites for family physical activity and key sites to promote the program.

Other spaces where teenagers gather in their spare time and that could be centers for distributing information are the two local malls, Millenium Plaza and Mall del Río (*see map 2, green sites).* The student collaborators said these places could be useful to promote online access to the ACTIVITAL app by placing QR codes and the links to access the game. Some nontraditional advertising could be placed in elevators, bathrooms, and at entry points to the mall, for example, with floor advertising that has an eye-catching design.

Prompt Question 2.3. Where can (or where do) teenagers find information about healthy habits? Hospitals and health centers in Cuenca were also considered as venues that could be used as information centers for the program (*see map 2, white sites).* The student collaborators said that having permanent information about the

program at hospitals would be important, i.e., a booklet of information and posters with links for the social media profiles of the program on Facebook and Instagram.

Communicational suggestions. As mentioned, the student collaborators agreed that it was important to consider new technology that allows people to interact through the internet, social media, and on mobile devices. Moreover, in the case of ACTIVITAL, it was important to reflect about how to use these communication conduits to promote a healthy lifestyle through nutrition and physical activity. For this purpose, internet-based conduits and social media aim to engage parents and to concentrate the program's information on different platforms that are integrated.

The last section of communicational suggestions also provides several insights for developing a communicational tone for the program's messages.

Internet-based conduits and social media. The ACTIVITAL app is considered an online activity and strategy that summarizes the core goals of ACTIVITAL, which are physical activity and healthy nutrition. Also, it is important to the program to the need to improve with a more interactive approach that is fun and enjoyable for teenagers. The app should have a first step where the avatar of the participants (male and female versions) can be personalized with the age, height, and weight of the user. The second step would be to offer a meal registry for breakfast, lunch, dinner, and snacks that should be filled in every day. This section should also have a place to register physical activity. The app should be able to send reminders to the user to register their eating and exercising and/or physical activity. This aspect should be linked to the ideal intake of food groups and calories. Also, the avatar's look should be transformed, depending on the healthy or unhealthy habits. For example, with junk food and not exercising, the app should have images of looking sick, chubby, and sad. And if the registry is healthy, the avatar would look leaner, healthy, and happy. The

app should be available as a free download for smartphones but also should offer a website version for teenagers who do not have access to such devices.

Other activities would focus on engaging parents and families as a support system for teenagers. In the second session, the student collaborators said they remembered that their parents knew about ACTIVITAL through a letter sent by the high school that informed them that their sons and daughters would be learning about healthy nutrition and physical activity. Even though the reaction of the parents was positive, they did not seem very interested. Another challenge for parents was to engage in a healthy behavior at home, where their eating habits still were sometimes unbalanced. For this reason, the student collaborators thought that ACTIVITAL should create an Online Health School.

This activity would be a series of videos available through YouTube, teaching parents and families about healthy recipes, nutrition, and workouts. The student collaborators suggested that a local chef could lead the cooking show along with the researchers of ACTIVITAL and that local athletes with former ACTIVITAL participants could be the faces of the workouts. This online-based channel could also invite families in contests to upload photos dishes with hashtags such as #loncheraACTIVITAL (#ACTIVITALlunchbox) or show a picture of the family working out with the hashtag #familiaACTIVITAL (#ACTIVITALfamily). As a prize and motivation to participate, families could win a basket of vegetables or fruits every month.

Facebook and Instagram are other social media platforms that would be useful to incorporate. According to the student collaborators, these platforms are largely used by teenagers and allow them to interact with different content. Having a profile of the program would be useful to create an online community of the

participants, providing them information about healthy nutrition and physical activity, create contests, and inviting the family and teen audiences to the program's events.

After discussing framing in the second session, the student collaborators defined a tone for the overall discourse that ACTIVITAL must have.

Insights for communicational tone for the ACTIVITAL program. As new activities were suggested, it was important to define a communicational tone for the messages of the program. For this purpose, the framing theory concepts were reviewed and discussed with the student collaborators as a guideline to explore the discourse framing and message design. The student collaborators suggested that the messages should be fun and use slang that teenagers use to talk to their friends with positivity.

The student collaborators also said the messages of the program needed to inform high school teenagers about the consequences of unhealthy habits, such as chronic diseases. The student collaborators also said they believed the messages should always focus on how and which habits can be useful to prevent these illnesses. For this reason, the teenagers' personal stories could be a positive approach to share ACTIVITAL's message. An example would be a participant who talked about her experiences of how changing her habits represented a challenge, but also how her new healthy behavior improved her overall health. The student collaborators agreed that using personal stories that other teens could relate to could motivate high schoolers to believe they also could adopt a healthy lifestyle.

Some examples of messages were:

- "Dude, don't forget to eat fruits and veggies in your snacks."
- "Hey, squad, let's have fun this weekend with a soccer match."
- "Hey, buddies, let's make a healthy lunch for everyone today."

- “Bro, don’t forget to have breakfast this morning before class.”

Research Question 2: How Can Teen Audience Engagement with Science/Health Communication be Improved?

The response to this question was explored during the third and fourth sessions of data collection. The primary goal of this part of the research was to explore alternatives to improve the engagement of audiences of the ACTIVITAL program. This section of the results focuses on the participatory process of designing and defining the activities that would be best-suited for attracting the interest of high schoolers as future audiences of the program.

Third session: Designing new activities for ACTIVITAL. In this session, student collaborators created a collaborative zine. The two main suggestions addressed two categories: (a) technology conduits, which would be an app linked to Facebook, Instagram, and YouTube; and (b) outdoor activities in parks and class breaks in high schools. The zine described in detail the content and functioning of each of the activities.

Prompt Question 3.1. What activities will you develop to create engagement with your audience around healthy habits (eating and physical activity)? *The ACTIVITAL app*. The student collaborators said the app should include a game that invited the participants to move around and be active. According to the student collaborators, high schoolers of Cuenca enjoy and play games on smartphones frequently, and this could be an opportunity to gain their engagement. A good example was Pokemon Go, a game that makes the users move and walk to collect creatures with their smartphones; when the user has more creatures, more points can be accumulated. For the ACTIVITAL version, the participants play the game by

collecting fruits, vegetables, and healthy snacks that would make their avatar healthier. The game should consume at least 30 minutes per day to make the participant move around and walk. The more healthy foods the participant collected, the more points they would accumulate, and the points translate to a prize. Prizes could be coupons for healthy foods available at local businesses, the students said.

The app also could include a virtual health-meter that looked like the speedometer of a car that goes from green to red according to the overall performance of the participant; the app would show how much healthy food and physical activity were combined.

Outdoor games for class breaks. A key location for developing games for teens would be their high school during their class recess, with fun activities and prizes. The student collaborators thought that making a short competition with three challenges for two teams would be attractive to high schoolers. They named this activity *El Reto ACTIVITAL,* the ACTIVITAL Challenge. The competition would combine physical activity with a CrossFit routine, playing Twister, and following clues on the high school campus that would lead to a major prize.

Prompt Question 3.2. What would you add or suggest to ESTPH current programs? The student collaborators said they believed it was necessary to engage physicians of local health centers and hospitals as opinion leaders. A traditional health promotion strategy would place in local clinics copies of booklets with information about the program. Yet in the culture of Cuencanians, people usually do not pay much attention to such materials and frequently lose them. A worthwhile strategy might be to ask local doctors to suggest that parents become informed about ACTIVITAL and provide parents the information of the accounts of the program for Facebook and Instagram and the ACTIVITAL app. Such a recommendation by doctors would carry

an expert endorsement, which would be a useful health recommendation and might be likely to generate interest among teens and their parents.

Fourth session: Exploring the proposed strategies of teen student collaborators and opportunities of collaboration with the ACTIVITAL research team. In this session, student collaborators interacted with the researchers of ACTIVITAL. The discussion was productive and identified interest of both groups to collaborate in the future. Most of the student collaborators said they would like to design the campaign and create the communication materials with the researchers. The researchers thought it would be a good idea to create a public outreach program where the students can create new communicational pieces and promotional strategies for ACTIVITAL.

The ACTIVITAL researchers also said they believed that a peer health education program with students of Medicine and Nutrition School would be valuable as a public outreach program that allows the students to do their coursework requirement and professional practice.

As a final activity, all of the student collaborators were invited to participate in a word cloud by voting about how they envisioned ACTIVITAL. The most common results were health, physical activity, energy, life, movement, and people.

Figure (number): Word cloud of core values of ACTIVITAL.

Unexpected findings

This section describes information that emerged in the data collection process and was not expected in the study. It is important to clarify that the data of this section might not be directly related to the research questions of this study, although the data is included here because it can be useful to provide insights related to topics of interest of the audiences of ACTIVITAL that can be used as a bank of ideas to develop interventions or design communicational pieces that appeal to the audience. Moreover, it could lead to new avenues for research about health promotion programs for younger audiences of culturally diverse populations.

Other data also addressed the involvement of researchers and their willingness to innovate with science communication strategies and to collaborate with audiences.

Improving their physical appearance is a motivator for young adults to adopt healthy habits. The student collaborators frequently mentioned that the best motivator for teens to adopt healthy habits is a strategy that helps them to improve their physical appearance. Most of high schoolers care about how they look because they want to feel attractive and accepted by their peers. Moreover, student collaborators said that an attractive appearance is influenced by the stereotypes younger females and males see in the mass media. Some of the most desired looks that teenagers pursue are a fit body for females and a strong body for males. Both genders also care about having healthy-looking skin and smooth hair.

The student collaborators were open to talking about their experiences as participants of ACTIVITAL. Moreover, they said that when they were teenagers, they chose a healthy diet and exercised to improve their appearance. The content of ACTIVITAL helped them to learn about the importance of sustaining a healthy behavior as part of their lifestyle beyond pursuing an attractive appearance.

Therefore, the student collaborators also spoke about how it is important that the program promotes health over an attractive physique. The ACTIVITAL program can focus on the importance of health and how a healthy lifestyle is beneficial for self-acceptance and for helping to prevent chronic diseases.

Positive willingness of scientists and student collaborators to engage with science communication activities. The student collaborators also spoke frequently about their interest to get involved with ACTIVITAL. Moreover, they asked several times about the possibilities of becoming peer health educators as former participants for younger teenagers. Other student collaborators were interested in developing the communicational pieces for the program. This possibility was well received by the researchers of ACTIVITAL, consequently researchers were motivated to think about future public outreach programs in which student collaborators could be involved.

The possibility of such participation demonstrated a willingness to explore new avenues to update and retool the program as well as to establish relationships with common interests between the researchers of the program and the former audiences.

At the University of Cuenca, the administrative work of research projects represents a barrier and an issue for researchers in terms of paperwork and labor, the researchers said. Also, due to budget cuts by the government and funding agencies, the work of professors and researchers becomes even more challenging when developing a research project and/or a public outreach initiative. Yet researchers typically are open to explore alternatives such as finding sponsors and securing donations to carry on their projects. Another positive aspect is that the ACTIVITAL researchers give a great deal of importance to the opinions of their audiences and take time to listen to them to improve their work.

Discussion and Analysis

This section of Chapter 5 focuses on the discussion and analysis of the findings of the ACTIVITAL case study at the University of Cuenca in Ecuador. As noted in the methodology section of this section, in Chapter 3, the data was coded into categories that are part of broader themes. These themes constitute the units of analysis of the ACTIVITAL case study that respond to each of the research questions.

As noted in Chapter 4, (see page #, second paragraph of discussion of ESTPH) this study followed the suggested guidelines of science communication for public engagement research. The creation of initiatives that motivate dialogue among scientists and society (Bowater & Yeoman, 2013) and the methodological design of participatory action research to facilitate an egalitarian and mutual collaboration among scientist and society (Irwin, 2008). For the ACTIVITAL case study, this methodological suggestion led to an exploration of the issues of the program from the perspective of student collaborators and the interests of researchers through an egalitarian approach. The results led to the development of guidelines to update and retool the program for further implementation.

Discussion of Research Questions and Findings

The first research question—How can researchers/scientists of health behavior studies develop better science communication strategies for public engagement, from the perspective of teenage audiences? —focused on developing strategies for fostering audience engagement with communication strategies and tactics of the ACTIVITAL program. Here, it is important to note that the program has not been implemented in high schools since 2012. Therefore, it was necessary to update it for the current audience of high school teenagers.

The student collaborators for this case study, as former participants of the program, reviewed the program they received in their high schools and first discussed key factors to update the program, to create new strategies for implementing ACTIVITAL in current times, while preserving successful strategies and improving elements that had room for improvement and that might have been challenging to gain audience engagement.

The second research question—How can teen audience engagement with science/health communication be improved?—explored how scientists and the audiences of their research projects can find a middle ground to collaborate about a topic of research of mutual interest. Here, several avenues emerged and were accepted as interesting and feasible initiatives that can be implemented.

The next section addresses the overarching themes that emerged from the study with available scholarship of health studies and science communication to provide several considerations, implications, and suggestions. These outcomes could be useful for planning, design, and implementation of science communication for health behavior change in Latin America.

Creating Better Science Communication Strategies for Public Engagement for ACTIVITAL

This section responds to Research Question 1 through the broader theme of the creation of an interactive strategy approach for health education. It includes a subtheme that argues that to reach a teen audience, it is important to explore how to create different types of learning experiences. These experiences must have two conduits—online and offline—that provide health education, games, and fun activities that motivate the interaction of teens and their families.

Creation of an interactive strategy approach. The student collaborators of ACTIVITAL said that the program uses an efficient structure, which is based on providing information and education combined with games and dynamic activities. This approach was efficient in 2012, but today, high school teens have different habits and preferences. For this reason, it is important to think about new learning experiences that promote interactivity and are enjoyable to teen audiences.

Science communication research based on the dialogic models, specifically, the transactional model of communication (Wood, 2003), promotes interactive communication where the audiences and the sender (in this case the ACTIVITAL researchers) share a common context and experiences over time about how to adopt healthy habits. Moreover, the transactional model uses the insight of learning theory (Dierking et al., 2003) where people can share their experiences through different conduits and can establish a conversation that allows teen participants and their families and researchers to learn more about different alternatives to adopt healthy nutrition habits and physical activity (see figure) . Therefore, ACTIVITAL needs to create an interactive strategy that operates through communication conduits that promote interaction, mutual learning, and dialogue with their audiences. A key factor in the transactional model is that communication needs to be a frequent and sustained activity over time. Therefore, communication strategies that are based on one contact with the audience will not be useful (Bowater & Yeoman, 2013). Instead, constant and frequent communication will be necessary to engage teen audiences.

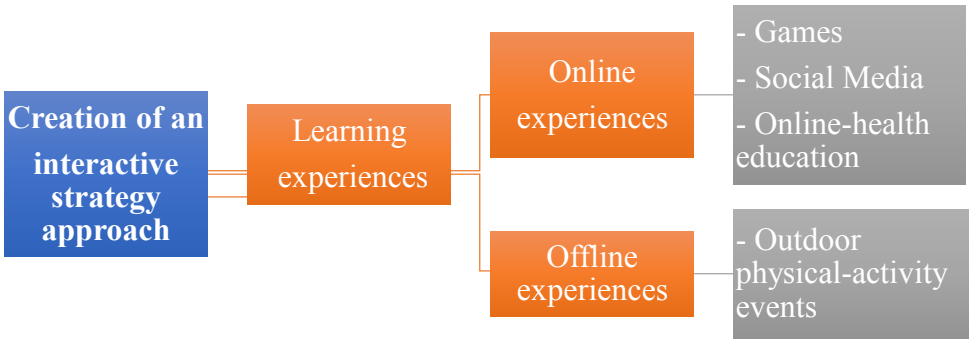


Figure #: Creation of an interactive strategy approach and the subthemes that compose the discussion.

Several communication tactics suggested by the constructs of the learning experiences of the transactional model coincide with the considerations provided by student collaborators of ACTIVITAL. Learning experiences of the transactional model are both media and events, such as websites and social media and informal social spaces with peers and family members (Dierking et al., 2003). In modern societies, individuals interact with topics of their interest through different conduits of communication and activities to have a holistic picture about a topic (Geib, 2011). For example, people can interact on social media platforms but also can attend clubs, classes, and special events that offer information and experiences to learn and interact around their interests.

For this reason, the media complementarity theory of the transactional model (Dutta-Bergman, 2004) suggested several guidelines useful for health behavior change programs. This theory proposes to use a mix of communication conduits that allow audiences to be approached through two-way communication (Tian & Robinson, 2008). Moreover, the mix of communication conduits must be selected

according to the preferences of the target audiences (Parackal & Parackal, 2018). In the specific case of ACTIVITAL, student collaborators selected two types of conduits—online and offline experiences—for the communication of the program to develop different experiences and activities to engage the audiences.

Online experiences. As noted in the results section, student collaborators suggested the creation of the ACTIVITAL app. This strategy would centralize an interactive game, the links to access the social media profiles of the program (Facebook and Instagram), an Online Health School (healthy cooking tips and recipe videos), and the virtual registry of meals and physical activity. The app would be an online platform itself for the program that provides information and fun activities for participants and their parents.

In Ecuador, studies are not available that evaluate the effectiveness of the use of mobile health apps as part of health behavior change programs. Other studies conducted in Latin America about the use of mobile health apps demonstrate that apps are used mostly for monitoring patients with chronic diseases, accessing healthcare providers, and as health information resources (Saigí-Rubio, Novillo-Ortiz, & Piette, 2017). Therefore, creating and implementing the ACTIVITAL app represents an opportunity for researchers to explore and evaluate the outcomes and experiences of audiences in Latin America for preventive healthcare and behavior change. Such an app could also introduce mobile health communications that can help teenagers not only from a city but also could reach audiences in other cities and communities of Ecuador. Consequently, the program could reach more participants outside of Cuenca.

The Online Health School feature among the online experience strategies has scholarly evidence that demonstrates it can be an effective tactic for teen and parent engagement. SCT model evaluation studies in Latino populations have revealed that a

key intervention approach for modeling health behavior is family recipe preparation (Ross et al., 2018). This feature is a set of YouTube video series based on healthy cooking and exercising; it also provides strategies that can be revisited by families over time to support the process of adopting healthier habits.

Available scholarship about the use of mobile health applications by young audiences in the United States has found that users prefer apps that are visually attractive and that can be customized according to the personal characteristics of the user (Warnick et al., 2019). Recapping the results, ACTIVITAL's student collaborators said that an attractive feature would be that users could create an avatar of themselves. The avatar would have the same age, weight, and physical characteristics of the user. Moreover, the avatar would be linked to the food registry and the game, and the user would be able to see how the avatar changes, depending on the registry of their meals and physical activity.

Regarding the effectiveness of interventions that use social media for health behavior change that has teenagers as audiences, there is evidence of positive outcomes for promoting healthy habits. A study evaluated seven health behavior change programs (Hsu, Rouf, & Allman-Farinelli, 2018). These programs used interventions that varied from using discussion boards for interaction in Facebook pages to in-person interventions to provide tips about healthy nutrition. These programs had positive results in increasing the intake of fruits and vegetables in the target group of teens. Most of the seven programs, however, were less successful in decreasing unfavorable food habits, such as the intake of fast foods. Consequently, in the case of ACTIVITAL, choosing a communicational mix that combines social media and internet-based strategies with in-person or offline events and activities for health behavior change of teenagers is a suitable communicational strategy.

Moreover, in the future, health interventions could be designed by using social media as a platform of the program to reach the target audiences of teenagers and their parents.

A key factor that can be beneficial for the program is the opportunity to create an online community of the participants and their families through social media platforms such as Facebook and Instagram. In Ecuador, 98% of people older than 12 have a Facebook account, and 56.1% of Ecuadorians use it for entertainment (INEC, 2014). Therefore, Facebook represents an opportunity for engagement and a communication conduit that could benefit ACTIVITAL to engage teens and their families around the content of the program.

Online experiences and the conduits described above will support the requirement of developing interactive experiences that ACTIVITAL requires for implementing the program. However, it is important to understand that also offline activities such as in-person interventions are necessary to promote the program. The following section will discuss the offline experiences suggested by the student collaborators with available scholarship.

Offline experiences. The student collaborators also discussed the importance of introducing outdoor activities and events to the ACTIVITAL program. Two types of offline experiences were mentioned to promote a better engagement of the teen audiences and their parents: (a) *Fin de semana ACTIVITAL* as a family activity, and (b) *El Reto ACTIVITAL* as a high school activity for teenagers.

Fin de semana ACTIVITAL was suggested as an activity that invited families to reunite around physical activity, information about the program, and an intervention based on the assessment of physical health (BMI, weight, and height checkup) with the researchers of the program. The suggested places for this activity

are public parks of Cuenca once a month on weekend days, preferably Sunday. A systematic review and meta-analysis evaluated 47 studies that used family-based interventions to increase physical activity of children and teenagers of culturally and ethnically diverse audiences (Brown et al., 2016). The results of the study concluded that motivating parents, children, and teens would have positive effects on teens, with several considerations. First, interventions should be tailored to the local culture and context of the families of the participants. Second, introducing goal-setting and reinforcement techniques increased the motivation of participants to sustain physical activity as part of their habits. Consequently, *Fin de Semana ACTIVITAL* as a family-based intervention designed by former participants considering their preferences has a high chance to be a successful strategy for audience engagement. Moreover, it gives the opportunity to engage parents and family members to the program and creates a positive environment for teen participants to adopt healthy habits. Research that evaluates the SCT model interventions in Latino populations for health behavior change reveals that parent involvement has positive outcomes. Family-based interventions increased the teen audience's knowledge about healthy habits and about the self-efficacy of the family members (Ross et al., 2018).

El Reto ACTIVITAL was suggested as an outdoor experience based on a game-competition for teens that would take place during high school's class breaks. Teens could participate in teams and would get a prize by competing in teams. A recent study evaluated the effects and mediators of the well-being of teens in resistance training, such as cross-fit routines, with team competition features. It is important to clarify that even though the study was developed in Australia, which is a context different from Latin American culture, it can provide interesting insights into this discussion. The results demonstrated that high school-based interventions have

positive outcomes, such as (a) attracting the interest of teens to participate in the activity, and (b) participants reported positive changes in their self-efficacy toward performing physical activity (Smith et al., 2018). Therefore, in the case of *El Reto ACTIVITAL*, as a promotion activity, it could be an attractive activity that is an enjoyable experience that allows participants to increase their self-efficacy for exercising frequently as part of their habits.

Other studies developed in Latin America suggest that designing health interventions based on virtual video games and physical activity games is an efficient approach for teen health behavior change. According to recent literature, the best-suited approach is to combine virtual video games and physical exercising with the health benefits of performing activities to engage the attention of Latino teenagers (Serrano et al., 2017). Consequently, the circuit of *Reto ACTIVITAL* also complements the game feature of the ACTIVITAL app, which is based on making the user move around a space to find prizes and clues for at least 30 minutes by jumping and running among other exercises for physical activity. According to the studies developed by the ACTIVITAL research team, the recommended daily routine of physical activity for children is a minimum of 30 minutes at a steady pace (Andrade et al., 2014).

The scholarship cited provides evidence that the strategies designed by the student collaborators have high possibilities to be effective when implemented in future. Moreover, the online and offline experiences complement and reinforce the content of the health promotion program of ACTIVITAL and integrate the key interaction factor that was missing before, which are the families of the teens.

Improving Audience Engagement with Science/Health Communication in ACTIVITAL

This section details the data analysis and discussion of the results of the ACTIVITAL case study and will enable this study to respond to the second research question of this project from the perspective of Latin America. This major theme is the creation of collaborative teams formed by researchers and former participants of the program. This section discusses how to organize a collaborative team to implement the strategies proposed in this study and that will allow an improvement of the engagement of teen audiences to the science communication strategies adapted to ACTIVITAL.

Creating a collaborative academia-society team. In the process of suggesting alternatives for the scientific communication for public engagement of ACTIVITAL, there were several interesting ideas. These ideas crystallized in specific communicational strategies and tactics that attended to the issues and needs of improvement of the promotion of the program. In the process of detailing each tactic (detailed above through online and offline experiences), an important consideration emerged regarding the feasibility to implement these tactics.

For this reason, the student collaborators and the ACTIVITAL researchers discussed options for implementing the new strategies suggested for the program. Several alternatives were suggested, such as creating a student contest (college students could participate) for designing the app and new communicational pieces for the program. Other options were to create a public outreach program for peer health education and interventions for teenagers and their families and in local high schools of Cuenca. In the current structure of the University of Cuenca and the higher education law of Ecuador, implementing these alternatives would be possible through

the mandatory requirement of public outreach projects that each academic department must offer (CES, 2016). Consequently, there is an administrative and policy structure that can facilitate the collaborative work of researchers and college students.

Currently, the organizational structure of the University of Cuenca facilitates the creation of interdisciplinary teams composed of researchers and students to develop projects that attend to local communities. According to the internal policy for public outreach projects of the University of Cuenca, the priority will be to support the creation of projects focused on health prevention or on any project based on research that promotes the well-being of the population (Universidad de Cuenca, 2016). Consequently, there are several viable options for creating collaborative spaces that promote the participation of students and researchers of the University of Cuenca. Moreover, this aspect represents an opportunity for designing new research projects that are interdisciplinary and implement programs that benefit the local community.

Involving families, teenagers, college students, and researchers would allow the creation of spaces for audience engagement around the ACTIVITAL program. Moreover, it would allow the integration of these stakeholders to participate, learn, interact, and establish relations that are mutually beneficial. Science communication for public engagement literature argues that creating collaborative spaces among academia and society around science communication activities allows scientists to share their knowledge with a wider audience and at the same time to ensure that scientific work is available to society for society's benefit (Bowater & Yeoman, 2013). Consequently, science communication can be the first step to establish sustainable relations between academia and society. In the Latin American scenario, the process of opening spaces for collaborative work and discussion among people of

different cultures and age groups is the cornerstone for fostering the public engagement of science.

Nonetheless, while there are several alternatives to establish collaborative teams, there are also possible barriers. The following section describes them.

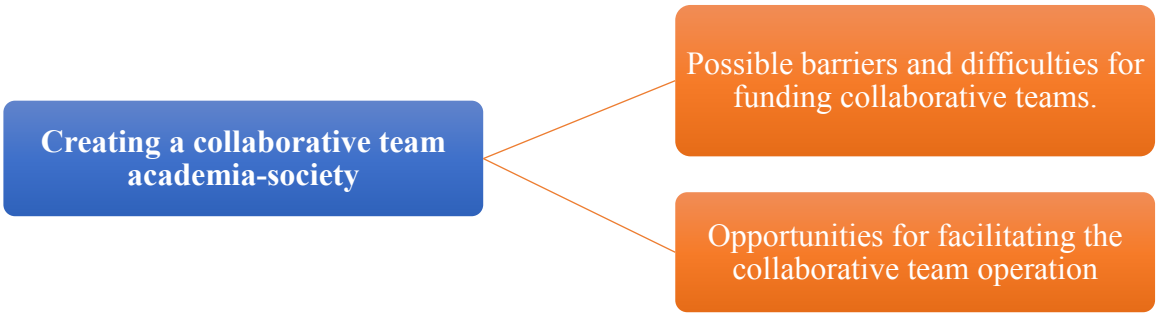


Figure #: Creating a collaborative team academia-society as a strategy for improving the audience engagement of ACTIVITAL.

Possible barriers and difficulties for funding collaborative teams. Public universities in Ecuador receive federal funds to operate. All public universities must offer free college tuition for undergraduate degrees, provide public outreach services to vulnerable groups and to the local communities where the institution is located, and must have relevant research projects. The University of Cuenca leads the ranking of the best universities in Ecuador as the best public university (CEAACES, 2015), which leads to receiving more federal funding, according to the higher education law (CES, 2016). Nonetheless, in the past five years, given the economic crisis and political instability of Ecuador, the university has suffered several budget cuts in the

middle of the fiscal year that have limited the fulfillment of research and outreach services (RTU Noticias, 2018). For this reason, due to the lack of resources, research projects and outreach projects/services were suspended, even though they had been approved.

Consequently, the funding instability represents a major threat to the sustainability of the collaborative academia-society team (See graphic 2*)*. Moreover, the implementation requires resources and funding in order to operate and implement the communicational strategies. An alternative would be to apply for external funding grants and sponsors that support the implementation of the strategies. These alternatives are discussed in the following section of suggestions and implications.

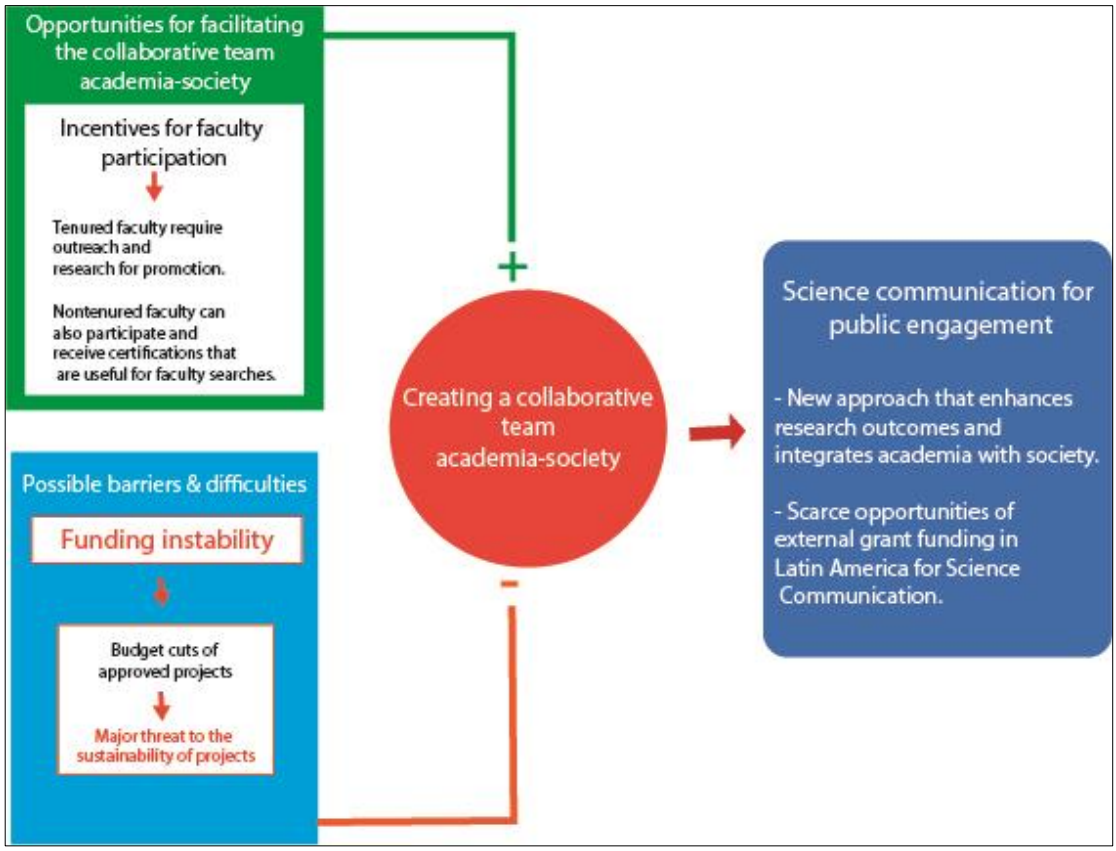
***Opportunities for facilitating the collaborative team operation*.** Funding instability represents a crucial factor that can have negative effects for sustaining and facilitating the work of the collaborative academia-society team. Nonetheless, favorable conditions exist in the scenario of the University of Cuenca that could benefit the operation of the collaborative team. Some of these conditions are:

Incentives for faculty to participate in research and outreach projects. The professors and researchers at the University of Cuenca, as at other public universities in Ecuador, once they are tenured through public contests for faculty search, have lifetime job stability, and even if federal funding is reduced, the faculty work stability is not affected. Moreover, once a professor/researcher is granted tenure, they have several opportunities for promotion. Some of the requirements that faculty must meet to get promoted to associate or full professor include research and publishing academic papers or books; public service (participating in public outreach programs); and student tutoring (serving as committee chairs for undergraduate and graduate

students) (CES, 2016). Consequently, faculty is highly motivated to collaborate in research and public outreach initiatives (See graphic 2).

Nontenured faculty also have the opportunity to participate in public outreach projects and research projects. Moreover, they receive certifications of their work and involvement from the academic department in which they work to accumulate verifiable experience. These certifications are useful for tenure-track faculty searches (Universidad de Cuenca, 2016).

For analyzing the context of ACTIVITAL, the organizational-level logic model (Yin, 2012) was also used as an analytic tool that facilitated the understanding of the possible emergent barriers and opportunities for the creation of the collaborative team academia-society for the program (See Graphic 2).



Graphic 2: Organizational-level logic model (Yin, 2012) adapted to the institutional barriers of the ACTIVITAL case study (University of Cuenca in Ecuador).

Suggestions and Implications

This section addresses the themes that emerged from the data analysis and discussion of the ACTIVITAL case study. These themes respond to (a) alternatives that will contribute to overcoming existing issues and (b) considerations that can be useful for the implementation of the suggested strategies. The suggestions and implications presented in this section discuss several reflections by consulting scholarship of health promotion studies, science communication for public engagement literature, the higher education law of Ecuador, and the internal academic policy of the University of Cuenca. Altogether, these references provide guidelines that inform how the context and its characteristics might influence the outcomes and suggestions of this study. Moreover, the implications expose possible difficulties that could emerge in the implementation of the suggested strategies for ACTIVITAL and possible alternatives that could be explored.

The Complementarity of the SCT Model and the Social Marketing Model for Planning Science Communication for Public Engagement for Health Promotion Programs

ACTIVITAL's research and implementation used the SCT model framework for designing the formative research and the health promotion programs for high school teenagers. Applying this framework led to the creation of a comprehensive approach to understand the contextual reality of teenagers. Nonetheless, regarding the promotion of the program, student collaborators, as former participants of ACTIVITAL, recognized that the program needs to improve its promotion by developing communicational pieces and activities that are more interactive'. For this reason, this section addresses how the SCT model and the social marketing model can

complement the overall health promotion and science communication of ACTIVITAL.

The SCT model as a key for understanding audience's environment influential factors. The formative research developed with the guidelines of the SCT model framework allowed ACTIVITAL to identify the environmental influences that affect teens. These influences were parent education, perceptions of nutrition and physical activity, and the health habits according to socio-economic status of the families (Ortiz et al., 2014). The formative research developed by the research team of ACTIVITAL facilitated researchers of the team in designing efficient strategies that led to effective results. Some of these results became evident also in this study, as most of the participants recognized that they learned to develop healthy habits that they still maintain eight years after their participation in ACTIVITAL. Moreover, the student collaborators identified clearly that the strategy that ACTIVITAL followed was providing them education and games that reinforced learning about healthy habits.

Available scholarship about the SCT model effectivity confirms that formative research facilitates the design of interventions that will be beneficial for the target audiences, and these interventions translate into effective strategies for the program (Baranowski et al., 2002). Nonetheless, the current environment for teens in comparison to 2012 is different. Communication strategies for health promotion have evolved. Moreover, families and teenagers might face different issues today. For this reason, updating the formative research study of ACTIVITAL will be necessary. The following section addresses several considerations that emerged from this study.

Formative research about the target audience of teenagers. As noted earlier, ACTIVITAL was implemented in 2012, and since then, teen audiences might

have some different characteristics. As reviewed in the results section, the student collaborators said that as former participants of the program, a motivator was to achieve an attractive physical appearance, but ACTIVITAL also raised their awareness about the importance of healthy habits and the impact of those habits on their health. Moreover, as described, this goal is closely related to the influence of the stereotypes they are reinforced by the media and by the need to feel accepted by their peers. Several available studies provide guidelines for future formative research for ACTIVITAL.

Studies in Ecuador demonstrate that female teenagers aged 13 to 17 are at risk, because they have tendencies toward altered perception of their body image six times more than male teenagers (Barros-Ruiz & Yánez-Arias, 2018). Another recent study developed in Cuenca determined that teenagers have high levels of body dissatisfaction. Results of this study showed that 50% of the male and female participants of 14 years old had a moderate level of body dissatisfaction (Rodríguez et al., 2018).

Regarding physical activity habits, a study found that 30% of teens younger than 18 are sedentary and do not exercise. Moreover, their high schools did not offer an appropriate physical and health education curriculum (Rodriguez-Torres et al., 2018). For this reason, it will be important to explore more in-depth several of the concerns and challenges teenagers face in current times regarding nutrition and physical activity that are in relation to the goals of the ACTIVITAL program. The data of formative research could provide useful information to enrich the strategies suggested by the student collaborators. Moreover, it will be important to develop new strategies that are interesting to teens and their families and to create opportunities for promoting a deeper engagement of the audiences.

Social marketing complementarity for the SCT model. This study found evidence that ACTIVITAL was a successful health behavior change program, although it still needs to retool its communicational strategy to develop more engagement of teenagers in the future. For this reason, several criteria of the social marketing model provide guidelines that could refine the suggested strategies proposed by the student collaborators of this study.

The notion of exchange of social marketing explains how audiences expect an immediate payback in return for performing a healthy behavior (Donovan & Henley, 2003). As mentioned by the student collaborators of this study, ACTIVITAL will need to provide prizes that reinforce the healthy behavior of teenagers and their families. Suggestions included healthy snacks during class breaks in high schools and grocery baskets to families that participate in social media contests. Consequently, participants and their families would be motivated to engage in the program by learning more about healthy habits and by having resources that facilitate their adoption of healthy behavior.

Moreover, offering prizes that motivate the engagement of participants with healthy habits is also related to the price component of the marketing mix of social marketing. Price encompasses the effort and economic expenses for performing a healthy behavior (Greene et al., 1999). Prizes that facilitate the effort of participants in health behavior change processes demonstrate that the program not only promotes the adoption of new habits but also supports the participants by providing them resources.

Promotion criteria of the social marketing model also provide useful considerations to plan activities, services, events, and strategies to persuade and engage audiences (Kotler et al., 2002). With ACTIVITAL, the student collaborators

and researchers agreed that creating online and offline learning experiences would provide more opportunities to engage not only teens but their families, as influential actors of their health behaviors. A crucial factor that social marketing promotion suggests is to plan systematically and periodically several activities that reinforce each other coherently (Grier & Bryant, 2005). The new science communication strategy designed to promote ACTIVITAL proposes different activities and conduits that complement each other. For example, the online app offers health education, information, social media, and games that offer information and interaction about healthy nutrition and physical activity. At the same time, there are offline family activities that invite participants to interact with each other with outdoor physical activities. In both cases, online and offline learning experiences offer resources for participants to engage and adopt healthy practices based on their preferences and needs.

The social marketing model allows researchers to complement and refine the planning of health communication strategies of programs of health behavior change that use the SCT model framework. Moreover, both models can be used in health promotion programs of health behavior change without affecting or compromising research or its constructs. Consequently, both models can inform mutually its frameworks to develop efficient and engaging strategies for their target audiences.

Criteria for Designing the Communicational Mix for Science Communication for Public Engagement Initiatives

As noted earlier, the initiatives for science communication for public engagement require a well-structured communication mix. For this purpose, the transactional model through the media complementarity theory provides useful criteria for selecting the best-suited media conduits according to target audience

characteristics and preferences (Parackal & Parackal, 2018). For this reason, formative research about the audiences will be the first step in selecting the best media conduits and designing effective science communication tactics. A second step of the media complementarity theory is understanding that media conduits act to complement each other. Consequently, audiences would interact on conduits where they could find information about topics of their interest (e.g., on social media) (Bowater & Yeoman, 2013; Dierking et al., 2003). Additionally, audiences would search for events of their favorite activities to attend, such as festivals, special events on public spaces, and parties. These events must offer social settings for interchange and dialogue among researchers and the audiences of society (Scheufele, 2013). Consequently, if science communication has the goal of reaching public engagement, then the communicational strategy must include communication conduits and interactive activities based on the interests of the audience.

Social media: A crucial conduit for science communication for public engagement in Latin America. Because Facebook has a high level of use and penetration in Ecuador, it is a conduit that must be considered for science communication. Studies developed in Latin America argued that Facebook and Twitter support and improve the visibility of scientific publications (Torres-Salinas & Delgado-Lopez, 2009). Nonetheless, social media platforms must be considered not only as a component for promoting publications but also as an opportunity for researchers to count with a medium to dialogue with society. One of the new features that Facebook offers is Facebook Live, which lets users communicate in real time with audiences and create online events and discussion boards.

Currently, no studies are available that provide information about science-opinion leaders in Latin America who use social media platforms. For this reason,

future research could explore, in the framework of media theories (especially two-step flow theory), if scientists could act as opinion leaders of society by using social media. ACTIVITAL currently does not have or use social media conduits. However, the results of this study demonstrate that former participants of the program suggested that scientists should find new strategies to interact with high schoolers and their parents. Moreover, recapping the strategies suggested by student collaborators, online conduits (social media, an app, and the Online Health School) were considered are a "must have" communication mediums for motivating interaction.

The researchers at ACTIVITAL were open to this suggestion. By the end of the data collection phase of this study, the leading researcher of the program and a faculty member of the University of Cuenca's School of Computer Science began to design a public outreach program. The program will begin in March 2019.

Funding Alternatives: Nonprofit Grant Funding and Crowdfunding Strategies

As noted earlier, the federal funding of public universities in Ecuador is not stable. Public outreach and research projects are approved by the academic departments of universities with funds that are allocated according to the annual funding budgets of universities. However, projects are often suspended in the middle of the academic year due to the pressure of the government budget cuts. Some Ecuadorian academics argue that frequently public outreach initiatives are more affected than academic research. The main reason is that the nature of these projects supports the critical debate of government issues, advocacy, or citizen participation, which constitute strong counterarguments to politics in power. Consequently, universities are perceived as subversive and are blocked by the government through budget cuts (Picq, Guanolema, & Perez-Guartambel, 2017).

Consequently, public universities need to consider new funding alternatives that offer grant funding that allows them to maintain their research and public outreach programs without depending exclusively on federal funds. Moreover, universities in Latin America have historically defended their right to maintain their institutional autonomy in service of society. For this reason, some initiatives have considered developing academic networks among universities. One example is the Tuning-Latin America Initiative, which united 18 institutions of higher education in the region to support funding for research and public outreach initiatives and for technical-academic support among universities (González, Wagenaar, & Beneitone, 2004).

However, in the specific matter of science communication for public engagement, few organizations provide grant funding in Latin America that support research and innovation in this discipline. Scholars argue that this emergent research discipline has support through the development of graduate programs over the past decade in Perú, Argentina, and Brazil. Still, few nongovernmental organizations promote research through grant funding that facilitates exploring and implementing science communication alternatives (Massarani et al., 2016).

A possible alternative will be to develop alliances with nonprofit organizations that have health promotion programs for children, teens, and families in Latin America, such as the World Health Organization and Unicef. Selecting nonprofit organizations would avoid compromising the ethics of the research programs and would limit the sorts of conflicts of interest that can emerge with private organizations or the government.

A new alternative for funding research projects of science communication is crowdfunding. Some examples are the web-based internet platforms Kickstarter.com,

Rockethub.com, and Benefunder.com. These sites unite researchers or students who write a proposal, allowing them to present their initiatives to the public and to address the need to secure monetary donations to fund their inquiry projects (Mehlenbacher, 2017). In practice, crowdfunding for scientific research works by requesting donations from the public and reporting the results of research to the people who supported the research project. In this manner, developing science communication tactics that allow a direct dialogue among researchers and the public is crucial (Hui & Gerber, 2015). Crowdfunding can also be a viable alternative that facilitates funding science communication initiatives in Latin American scenarios. Moreover, it also can support the engagement of audiences that support projects by designing a communication strategy that periodically presents the research advancements to the public funders. Developing periodic communication would allow researchers to ensure the transparency of the use of the funding and to build trust with the audience.

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