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## **Engaging Latino Audiences in Out-of-School Programs About Science**

**Brett L. Bruyere**

Director, Environmental Learning Center; Extension Faculty

[Brett.Bruyere@colostate.edu](mailto:Brett.Bruyere@colostate.edu)

**Guadalupe Salazar**

Director, El Centro Student

[Guadalupe.Salazar@Colostate.edu](mailto:Guadalupe.Salazar@Colostate.edu)

Colorado State University

Fort Collins, Colorado

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**Abstract:** Under-represented groups such as Latinos lack sufficient voice in important conversations about science topics. Yet we know that Latinos are under-represented in the profession. One path to careers in science is through early exposure during youth. This article describes research to identify how to engage Latino groups in science programs, such as Extension-sponsored youth programs. Based on focus groups with Latino parents in two communities, we examine interest levels, barriers to participation, and preferences for program formats. The results have implications for organizations that seek to engage more Latinos in their science programs.

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The need for a future generation of capable scientists is evident by several natural resource trends (e.g., demand for more renewable energy sources, the need for innovative responses to climate change) as well as an anticipated shortage of scientists within the next decade in the United States (Rasmus, 2008). Today's youth need to be motivated and prepared to accept the torch that will be passed to them to address these issues in the future. Further, those issues need to be addressed with the full gamut of perspectives that exist among diverse groups in the United States. To date, women and diverse groups have been historically under-represented in the science profession.

Out-of-school programs have the potential to provide pivotal and meaningful experiences that potentially influence youth to choose science as a career path. This article explores how such learning experiences in the informal setting (i.e., informal science education, or ISE), such as those that occur in Extension-supported youth programs, can be most effectively formatted to reach diverse groups and ultimately motivate those individuals to consider a science career. The study reported here is guided by the research question "What influences participation in ISE programs by Latino youth and families?"

We focus on Latino populations in this article; they are the fastest-growing minority group in the United States and the largest minority group in Colorado, where the study was conducted. The research built on a previous project funded by the National Science Foundation to study how universities can engage Latino populations in science through outreach activities.

## Literature Review

Out-of-school programs have proven to enhance science achievement (Jones, 1997; Kola-Olusanya, 2005; Ponzio & Marzolla, 2002), facilitate science-related conversations among family members (Gerber, Cavallo & Mareck, 2001; Jones, 1997; National Research Council, 1996; Pedretti, 2002; Ramey-Gassert, 1997; Wellington, 1990) and inspire interest in science as a possible profession, particularly the ecological and environmental sciences (Chawla, 1999). These outcomes have been demonstrated for majority and minority populations, including African-Americans (Hanson, 2004; Wenner, 1993), Latinos (Siegel, Esterly, Callanan, Wright, & Navarro, 2007; Sorge, Newsom, & Hagerty, 2000) and females (Fadigan & Hamrich, 2004). Despite the high interest, participation by many groups is low.

Prior research about barriers to participation for many groups (e.g., low income, minority groups) has been conducted, though more work is needed. Barriers identified in previous studies include *unfamiliarity and lack of awareness, lack of transportation, cultural differences, potential for discrimination and fees* (Hong & Anderson, 2006; Rideout, 2000). Research that investigated participation in recreational programs identified additional barriers, including a *lack of shared preferences for the activity within one's cultural group* (Crawford, Jackson & Godbey, 1991); and organizational barriers such as *insufficient knowledge about community dynamics* (Allison & Hibbler, 2004).

Hobbs (2004) identified five programmatic characteristics of 4-H programs that can work to better engage Latino audiences in Oregon. These included delivery of programs in Spanish; integration of content that is desirable to Latinos; separate volunteer trainings; staff time allocated specifically to Latino programming; and recruiting Latinos to clubs with predominantly Latino membership. In a separate study in California, Behnke (2008) conducted focus groups with Latino adults and identified collaboration with other agencies, hands-on trainings, and improved marketing as variables that would enhance programming for Latino audiences. Because there is a great diversity among the Latino population in terms of origin and assimilation levels, and we should not assume a monolithic approach to understanding Latino participation is appropriate (e.g., what's true in Oregon may not be true in Colorado), the researchers for the study reported here addressed the Latino population in Colorado.

## Methods

The study applied a qualitative exploratory method using focus groups. This approach was selected due to the limited guiding theoretical framework and the fit of the focus group methodology to common cultural values of Latino populations related to building relationships and establishing trust.

Two counties in Colorado served as the study sites. The first was Larimer County, population 270,000. Twenty-three percent (23%) of the population (62,100) are school-aged children, and 25% of those are Latino children. The second was Pueblo County, with a population of 141,000. Twenty-two percent (22%) of the population are school-aged children (31,000), and 51% of those are Latino.

Purposive sampling was used to select focus group participants believed to be the most helpful in addressing the research question about how to engage Latino families in ISE. For this reason, Latino parents of school-aged children (i.e., K-6th grade) were targeted. In partnership with local schools and community organizations, researchers recruited 72 participants for 10 1-hour focus groups to address the following:

- Describe your interest level in community science programs for your children

- What are some reasons that would prevent or have prevented your family from participating in community science programs?
- What science topics do you think are of most interest to your children?
- What program formats work best with your family?
- Do you have any suggestions for how organizations can make their programs more desirable to your family?

Focus group discussions were recorded and transcribed, including focus groups conducted only in Spanish. Transcripts were reviewed multiple times and assigned themes. The first review helped identify key themes (e.g., cost, transportation), the second review grouped themes into larger categories (e.g., barriers to participation), and the final review helped understand the relationship between themes. A second researcher participated independently and collaborated with the primary researcher to insure reliability and validity of results.

## Results

Analysis of the transcripts revealed numerous findings that have implications for how to effectively reach Latino populations.

### Key Finding #1: Interest in Programs About Science Is High

There was consensus among parents that interest in science programs was high; all but one comment from the 72 participants expressed a strong sentiment about science interest. This was talked about enthusiastically.

L1: My boys love science. Their school has a science carnival every year and we go to that every time.

L2: Last year we went to the mountains to spend time together, and they had never seen this. They learned just as much as us, about the river, the water.

L3: Concerning my daughter it's about exposure to the sciences and everything under the sun so she can decide about her own interests later.

This finding is promising; it indicates there is a sufficient level of interest among Latino parents for ISE programs to be appealing. The interest is there, and it is strong.

### Key Finding #2: Family-level Programming Is Important

A preference for family-level participation was evident. Parents expressed a desire to attend programs with their children, which is often in contrast to some formats in which youth are dropped-off. The following comments represent this sentiment.

L4: Definitely a family oriented group activity program I think would be a really good deal. I would be willing to go with my kids.

L5: I think it would be nice to attend, but we're mentioning most of the time we're working families. I think that if it were in the evenings, it would be nice to be able to attend.

L6: Like a kind of family bonding, mother and child or father, that's what we want to do. So it would be very important to have a place where we could share with each other.

Family-level involvement appeals to the value on family that is particularly strong for many Latinos. It also addresses a second preference related to insuring safety and well-being of their children, who may often be in the minority in their communities and within the science programs themselves. Particularly for first and second generation Latinos to the United States, issues of trust and comfort arise when they are not familiar with an organization. The following comments illustrate this point.

L7: My wife or myself will try to be volunteers so we can go. But definitely, I think that's a concern, we don't really trust . . . I guess.

L8: There is always that little feeling, do they screen these people before? Do they check their background checks? There is so much that could happen out there.

L9: It scares me to send my children alone. There is always the fear that something is going to happen. But if you have someone you know, you feel better.

### **Key Finding #3: Parents Are Unaware of the Opportunities**

The most common reported barrier was a lack of awareness about the opportunities. Most focus groups could collectively identify only two or three actual programs in their community (and none mentioned 4-H). The most commonly reported problems were 1) advertising and promotion materials were not available in Spanish (a common first language for many of our parent participants) and 2) the opportunities did not infiltrate their networks such as churches and word-of-mouth.

L10: The problem is that we are not informed, because there are things, but no. I don't ask where the things are because no one in my group knows.

L11: In response to: What is a good way for people to get the information out to you? Put it in Spanish.

L12: We don't hear of these things. When I find out about something we can do with our children, it is usually because my neighbor or my sister (has) told me.

L13: Our community is based so much on church, and I think that is true for many in our neighborhood. We go there for all things to do more than just attend the church services. It is social for us. I learn about many things there. There are these (postings) about things we can do that we learn about.

Outreach to engage Latino families in science may have to explore non-traditional partnerships, such as with churches or similar entities that not only serve as a practical venue for disseminating promotional materials, but they are organizations which are highly trusted and familiar.

## Key Finding #4: Practical Barriers Are Secondary

Practical considerations such as cost, transportation, and time are perceived as likely deterrents to participation in programs. These issues were certainly raised during the focus groups, but often not with the same frequency or strength as those mentioned previously. In a number of instances, parents followed comments about the practical barriers with remarks that indicated they seek ways to overcome them.

L14: In my case, because my husband works very early in the afternoon and I stay in the house, and we don't have another car. Not having another car is a problem. So we have to find another way to get there like to suggest a friend go with her children and then she can drive us too.

L15: Well with me it would be money, of course. I've always applied for scholarships through all these camps, at least half.

## Conclusions

These results indicate that interest level in ISE programming among Latinos is high, but program staff must promote, adapt, and deliver such programs in new ways to tap into that strong interest. Programs such as 4-H have a strong tradition, but as the population becomes more diverse and more dynamic, long-held traditional program models may not be relevant to emerging populations such as the growing Latino base in the United States. The results from the study reported here provide implications for how traditional programs can be adapted to enhance participation by new audiences.

There is a strong preference for family-level programming, for example. This challenges the traditional model of busy parents dropping their children off to a program and picking them up later. As far as promoting programs, practitioners may need to think innovatively; advertising in church bulletins, for example, may be a viable strategy in some communities.

When combined with outcomes from other research about Latino volunteerism, the research reported here can help practitioners with a comprehensive and holistic approach. For example, Gregory et al. (2006) identified how to engage Latino adults to become volunteers (e.g., 4-H leaders) and found that building relationships and trust is critical; this is a finding reinforced by the current study about participants. These two studies collectively indicate the importance of partnership building with organizations that are trusted by Latino audiences.

Overall, the research reinforces prior findings about engaging Latino youth and families. Given that participation by Latinos in Extension programs appears to still be insufficient in many areas, however, these findings are worth repeating.

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