



Fiebre de Azúcar en Colibríes: Promoting Bilingual STEM Education in Latin America

Background. Engaging with young students from underrepresented minorities (URMs) can help combat disparities in STEM representation in life-changing ways. Children absorb, from early on, imagery from mass media that perpetuates stereotypes of what scientists “should” look like, and these harmful perceptions can persist for many years if left unaddressed. Middle school is a period of critical development for young minds, when many students form their lifelong passions—middle schoolers who express interest in STEM are up to three times more likely to pursue related degrees than those who do not. As such, fostering positive STEM dispositions amongst URM middle schoolers should be a priority. Inspiring experiences in STEM often provide this spark.

Game Overview. In 2021, I was awarded an ABS Outreach Grant to develop “Hummingbird Sugar Rush” (HSR): a STEM education curriculum designed to excited middle schoolers about animal behavior in a creative way. HSR’s main activity is an interactive game, centered around

real-world animal “characters” to improve player knowledge and perception of existing species. Racing to collect the most energy from flowers around a life-sized board, players embody different hummingbird species, which are equipped with different strengths and weaknesses—variable capacity for movement, battle, and floral access—depending on their unique adaptations (Fig. 1). Just as hummingbirds must weigh the behavioral trade-offs of searching for food, fighting to have sole access to it, and visiting flowers with variable degrees of bill-corolla matching, so must the players. By establishing a connection between players and the game world (in this case based on real life), games are not only *effective* educational tools—imparting knowledge of scientific topics as complex as biological trade-offs—they are also *enjoyable*. Indeed, role-playing games like HSR are up to 50% more satisfying for students than traditional instructional methods.

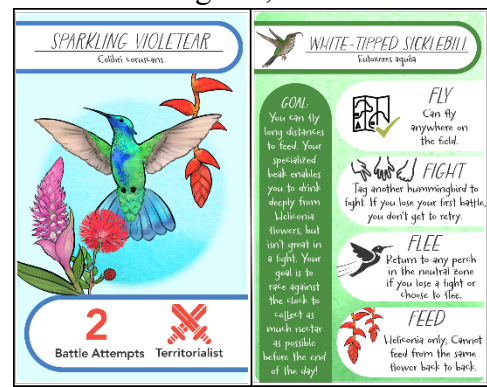


Figure 1. Sample player cards in HSR.

Approach. Alongside the Burke Museum’s Education Department, which has played a substantial role in refining the curriculum, I have now run HSR with numerous middle schools in the greater Seattle area. However, we are deeply committed to serving students in Latin America who may not otherwise have access to STEM resources or role models outside of school (e.g., those in low-income or rural communities)—and who would be able to connect with the subject material most meaningfully, as the focal species in the game (e.g., White-tipped Sicklebill, *Heliconia tortuosa*) are local fauna and flora native to their countries. With the help of early-career Colombian colleagues,



Figure 2. Playtesting in Colombia.

we have fully translated HSR into Spanish (“Fiebre de Azúcar en Colibríes”).



Figure 3. Playtesting in Colombia—Escuela Rural de Bermejál.

potential future scientists, no matter their socioeconomic status or cultural heritage. In this way, HSR is designed to improve the intersections between scientists and culture and to inspire the next, diverse generation of researchers. HSR is a UW-registered program fully in compliance with best practices in youth safety and privacy (UW Policy Statement 10.13).

With the aid of a second Outreach Grant from the Animal Behavior Society, we are building upon HSR to significantly expand the curriculum's reach. This summer (August and September 2025), I am partnering with Colombian biologists and educators to implement HSR in Spanish, for free, at four schools in Colombia (Figs. 2 and 3); based on our ongoing and previous playtesting efforts, we expect to engage with roughly 50 students per school (>200 youth total). When led by educators from similar backgrounds, STEM education programs can help young students see themselves as