

1-3-2019

Aviation in the Ville: Promoting Science and Civic Engagement through Aviation

Nithil K. Bollock
Saint Louis University

Stephen M. Belt
Saint Louis University

Aviation in the Ville is an ongoing collaborative series of activities designed to promote diversity in aviation by introducing aviation topics to the youth of an underrepresented neighborhood and providing discipline-specific service learning opportunities to aviation undergraduate students. Situated in three interrelated settings: in-school, after school, and over the summer, this paper focuses on the initial analysis of data collected during the 2018 summer camp. Utilizing a qualitative, participatory action research model, and drawing on the Harvard Family Research Project out-of-school performance measures, a number of themes emerged which seem to support the effort.

Recommended Citation:

Bollock, N.K. & Belt, S.M. (2019). Aviation in the Ville: Promoting Science and Civic Engagement through Aviation. *Collegiate Aviation Review International*, 37(1), (pending). Retrieved from <http://ojs.library.okstate.edu/osu/index.php/CARI/article/view/7804/7207>

In July of 2018, the aviation department of Saint Louis University (SLU) offered an aviation program as part of a month-long youth summer camp for underrepresented inner-city children. On the last day of the camp, the group visited the Center for Aviation Science where SLU flight instructors provided the children with discovery flights. During the field trip, a camper declared to one of the undergraduate aviation counselors, "One day I want to fly an airplane with you as my co-pilot." To an individual not in the aviation industry, this kind of statement might be little more than cute or endearing, but to those in the aviation industry such sentiments are encouraging and crucial. Though the industry is filled with opportunity, there is a need to communicate those opportunities and to foster the necessary academic preparation, particularly to underrepresented groups. With support from American Airlines, the Aviation Science department is developing a multifaceted outreach and exploration program. This program seeks to connect aviation undergraduate students with elementary school children and teachers of a neighborhood located in North Saint Louis by providing activities designed to apply relevant aviation topics and concepts to age appropriate learning outcomes. In this way, Aviation in the Ville works to share the love of aviation with a group who may not otherwise be exposed to the field and foster greater accessibility to the pilot profession. It also hopes to provide SLU aviation students with an experience of cultural immersion and service learning that is directly associated with their chosen profession. Furthermore, utilizing a model of participatory action research, the research team seeks to identify best practices in order to enable the industry better to promote the field of aviation to young people of color in ways that help them to thrive and persist as they acquire the skills and educational background necessary to become successful aviation professionals.

Background

Aviation in the Ville concentrates on three different constituent groups: underrepresented elementary school children, undergraduate students majoring in aviation, and elementary school teachers. Located in a historic African American neighborhood that is rich in heritage but now struggles with high levels of poverty and crime, the program has three interrelated objectives. The first objective is to enhance elementary school education through the exploration of various aviation topics. The second objective concentrates on promoting the diversity awareness of undergraduate students through service learning. These two objectives are addressed in three settings: in-school, after school, and over the summer. The in-school component has been implemented as an enrichment elective in a neighborhood public elementary school. After school activities currently run on Saturday mornings at a community outreach facility which also hosts the month-long summer camp. Finally, the third objective involves providing aviation topics as professional development for elementary school teachers. An initial half-day program has been offered at SLU with plans for additional activities. The following discussion focuses on the first objective by sharing preliminary findings from the most recent summer camp aviation program.

Methodology

Aviation in the Ville is a participatory action qualitative research with a transformative interpretive framework. During the summer camp, there were a total of 10 youth participants. The group was 100% African American and roughly balanced between male and female (six and four, respectively). There were eight camp counselors, two of whom were SLU aviation undergraduates. The objective of this phase of the study was to gain a better understanding of the effect of such a program on the participating children. This was achieved by assessing the academic performance and youth development of the participants throughout the camp. Observations, surveys, reflections, worksheets and focus groups were used to collect data. The data analysis was performed using Creswell's data analysis spiral (Creswell, 2007). Drawing on the Harvard Family Research Project's (2004) Academic Performance and Youth Development Performance Measures, themes were developed using initial coding, NVivo coding and process coding. Member checking, methodological triangulation, data triangulation, researcher triangulation, and environmental triangulation were used to determine validity.

Findings and Discussion

Several themes were identified in the analysis phase. Themes indicating *Academic Performance Measures* and *Youth Development Performance Measures* included: Change in Behavior, Comfort with taking Tests, Academic Knowledge in Specific Content Areas, and Connectedness to the Program.

Change in Behavior

The change in behavior in children in this research appeared to be due to specific stimulus like rewarding with candy for correct answers, one-on-one session with the camp counselors, conducting interesting activities, and peer engagement.

Rewarding with candy. When camp counselors asked questions in the camp about various aviation aspects, the youth did not initially appear to be interested in answering them. However, when camp counselors said that they would give out candy for correct answers, the children became more enthusiastic and raised their hands to answer questions.

Conducting interesting activities. In the same way, there was a noticeable difference in behavior when conducting certain activities. The children participated in activities like building and launching water bottle rockets and Estes rockets with a higher degree of interest than some of the more class-room style activities. During these activities, they took greater responsibility and demonstrated qualities like leadership, commitment, patience, and engagement. Additionally, by conducting interesting activities with children, there was less struggle to gain and maintain attention and participation. Figure 1 highlights several activities from the summer camp.



Figure 1. (Left) Rocket building activity. (Right) Flight simulator exercise.

One-on-one sessions. Change in behavior was also observed during one-on-one sessions with the camp counselors. The children who received one-on-one attention appeared to be more productive and performed better on worksheets compared to those who did the activities and worksheets on their own. Thus, one-on-one guidance with the camp counselors in outreach programs appeared to help the children to engage and succeed.

Peer engagement. Finally, a change in the behavior of the children was observed during peer engagement. For example, at first, one participant was not interested in building water bottle rockets and stated that he did not want to do the activity because he thought it was stupid. The activity leader allowed the participant to go into another room and sit quietly so that he did not disturb the other children. While in the other room, the participant could see the other children building the rockets. After some time, he quietly returned to his seat and started doing the activity. Once the participant saw other children doing the activity, he became interested in participating.

Comfort with Taking Tests

Initially, the observational data suggested that the youth were not interested in doing worksheets or taking tests (see Figure 2). However, with the support of one-on-one sessions, and simulator-based tasks, a number of participants appeared to become more engaged and began to respond favorably to the worksheets and tests. The figure below shows the survey data related to engagement and comfort with worksheets and tests. At the end of each week, the campers completed satisfaction surveys related to the activities of the week. Of the 27 responses, only five responses (18.5%) indicated that they did not like the worksheets or taking tests (see Figure 3).



Figure 2. One-on-one instructional sessions improved participant engagement in completing worksheets and assessments.

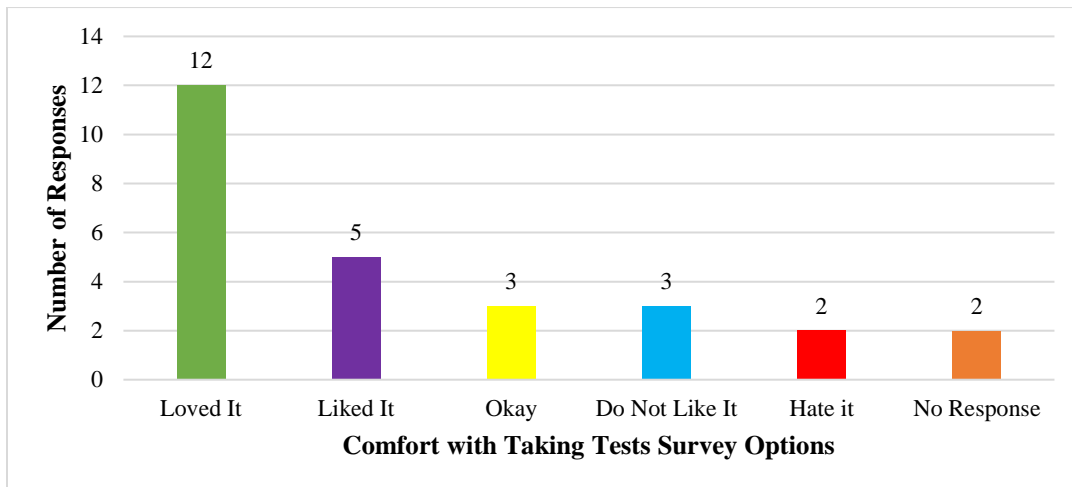


Figure 3. Survey data related to comfort with taking tests and completing worksheets.

Academic Knowledge in Specific Content Areas

On the final day, the youth went on a field trip to the Center for Aviation Science where SLU flight instructors took them on discovery flights. During the flights, the instructors quizzed the children on various topics that were covered in the camp. The instructors were asked to complete a brief survey about the quality of the responses and indicate if they needed to provide any help with the topics (see Figure 4). According to the data, it appeared that most of the time participants were able to relate aviation concepts and academic knowledge in specific content areas like the four forces, primary flight instruments, and degrees of freedom, without help.

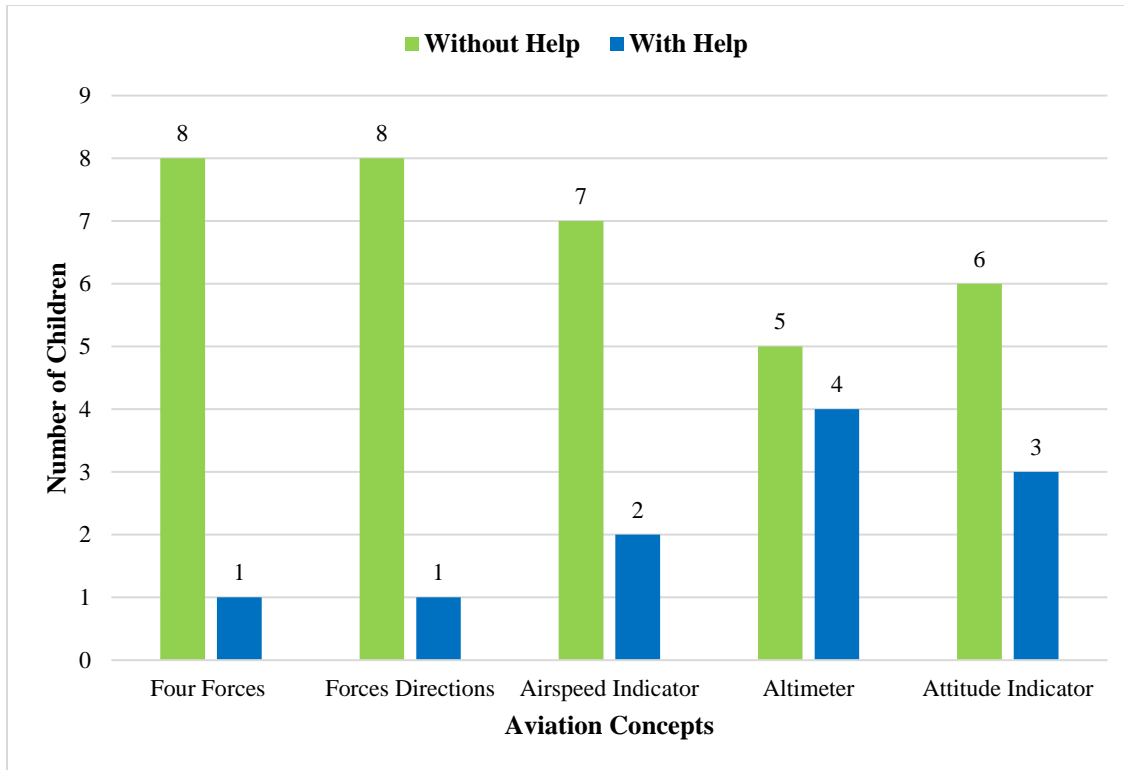


Figure 4. Survey data related to academic knowledge in specific content areas from nine participants. Data of children those who answered questions with help and without help.

Connectedness to the Program

At the conclusion of the camp, youth were asked to complete a satisfaction survey. The data from the below figure suggested that most of the youth in the program liked the aviation activities and would attend the camp again. Specifically, they enjoyed flying the simulators the best. Most of the students in the program intended to attend the program again and would recommend the camp to their friends. Perhaps the ultimate achievement of the program was that among the ten participants, four indicated a desire to become pilots (see Figure 5) in the future.

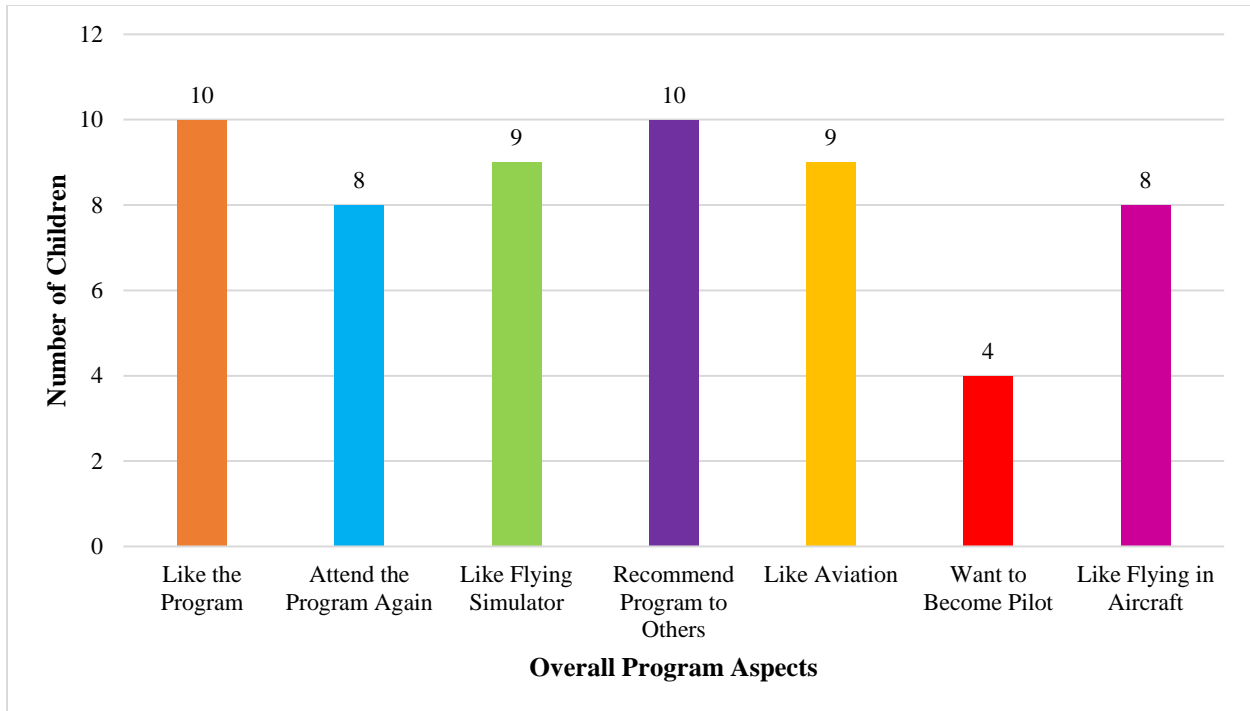


Figure 5. Data from child post checklist collected on the last day of the camp from 10 participants.

Conclusions

Overall, the summer camp appeared to be effective. The data suggested that the program positively supported a variety of Academic Performance Measures and Youth Development Performance Measures and the camp program was able to create interest in elementary youth towards aviation. Finally, the themes represented initial indications of best practices which will be developed and assessed in subsequent outreach activities.

References

- Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, Calif.: Sage Publications.
- Harvard Family Research Project, C. M. (2004). *Performance Measures in Out-of-School Time Evaluation: Out-of-School Time Evaluation Snapshot, Number 3*. Harvard University Harvard Family Research Project.