EDP 520

Petty, C., & Henry, M. L. (2014). The Effects of Technology on the Sight-Reading Achievement of Beginning Choir Students. *Texas Music Education Research,*23-28.

Article Summary

Problem

What affect does an 8-week instructional period have on the sight-reading skills on a beginning choir singer, and how does technology as well as previous experience affect the skills obtained during the instruction?

Goals

Determine the effectiveness of an 8-week instructional period on the sight-reading skills of beginning choir singers and see how different variables affect the skills obtained.

Specific Research Questions

There are several questions that this research study addresses.  
1. What are the sight-reading skill levels of beginning choir singers?  
2. If beginning choir singers engage in an 8-week sight reading instructional period using technology, is there a significant increase in their sight-reading skill?  
3. If beginning choir singers engage in an 8-week sight reading instructional period using no technology, is there a significant increase in their sight-reading skill?  
4. Is there a significant difference in the sight-reading skills gained by beginning choir students in a technology instructional period versus a no technology instructional period?  
5. Is there a significant difference in the sight-reading skills gained by students with previous choral experience or applied music instruction during an instructional period versus students without a prior background in music?

Hypothesis

There doesn’t appear to be any hypothesis mentioned for this research study. The study appears to be seeking answers to the question above and doesn’t seem to have any preconceived notions about what the results will be.

Design

The design of the experiment is a two group between-subjects experiment. Each group receives a different treatment (technology instruction versus no technology instruction). The groups were randomly assigned, while also keeping genders separate (and thus minimizing the most common individual difference: gender). Also, by giving a pretest to all groups before beginning the experiment, the most important individual difference (prior sight reading ability) can be taken into account.

Procedures

There were a total of 83 students that participated in the study. The students were randomly distributed into two types of sight-reading instruction classes, one which utilized technology and the other which did not. The breakdown was that 47 students ended up in the technology class and 36 students ended up in the no-technology class. Each of those groups was split up into two gender-specific classes, for a total of four classes. Each class took an equivalent pretest, which was scored out of a possible 24 points. Each class then met for 8 weeks daily, for about 48 minutes each day. After the course concluded, every student took an equivalent posttest (different than the pretest).

Results

The mean score for the pretest was 5.77 (out of 24). There was no significant difference between the different groups on the pretest.

The mean score for the posttest was 14.02 (out of 24). There was no significant difference between the different groups on the posttest.

The posttest scores were significantly higher than the pretest scores.

Between the technology and no-technology groups, there was no significant difference between the difference of pretest and posttest scores.

Twenty-one participants reported having at least one prior year of piano experience and thirty-four participants reported having at least one prior year of choral experience.

There was no significant difference for pretest scores among piano versus non-piano students. Posttest scores were significantly higher (a mean of 16.52) among piano versus non-piano students (a mean of 13.18).

There was no significant difference for pretest and posttest scores for students with previous choral experience versus those without.

Conclusion

In conclusion, beginning choir students in the study benefited their sight-reading skills significantly by taking an 8-week instruction course. Both technology and non-technology courses seem to be equally effective in building these skills. Students with prior piano knowledge benefit even more by taking an 8-week instruction course.

Article Critique

Introduction

This is a critique of the study “The Effects of Technology on the Sight-Reading Achievement of Beginning Choir Students”. This study is concerned with the effect of an 8-week instructional course on the sight-reading skill level of beginning choir students. The study does not appear to have a hypothesis since it is only concerned with answering some questions and has no preconceived notions or ideas of how the study will turn out. The questions asked are as follows:  
1. What are the sight-reading skill levels of beginning choir singers?  
2. If beginning choir singers engage in an 8-week sight reading instructional period using technology, is there a significant increase in their sight-reading skill?  
3. If beginning choir singers engage in an 8-week sight reading instructional period using no technology, is there a significant increase in their sight-reading skill?  
4. Is there a significant difference in the sight-reading skills gained by beginning choir students in a technology instructional period versus a no technology instructional period?  
5. Is there a significant difference in the sight-reading skills gained by students with previous choral experience or applied music instruction during an instructional period versus students without a prior background in music?

This research is definitely important, especially for music education. As stated in the study, sight-reading is an essential skill for any practicing musician. Additionally, due to the availability of technology, it is an important question to ask the effectiveness of software in teaching sight-reading skills. This can be especially important for teachers with limited budgets who are not sure which methods they should use to teach.

The study has a good introduction, as several relevant studies are presented and the context of the study is shown. The questions in the study are clearly stated, as I was able to determine them by a simple read-through.

Method

The methods and procedures were explained in detail. The design of the experiment is a two group between-subjects experiment. Each group receives a different treatment (technology instruction versus no technology instruction). The groups were randomly assigned, while also keeping genders separate (and thus minimizing the most common individual difference: gender, as well as sample bias). Also, by giving a pretest to all groups before beginning the experiment, the most important individual difference (prior sight reading ability) can be taken into account.

The procedure was as follows. The sample consisted of 83 sixth-grade students that attended the same middle school in central Texas. The article does not mention how this initial group of students was chosen. The students were then randomly distributed into two types of sight-reading instruction classes, one which utilized technology and the other which did not. The breakdown was that 47 students ended up in the technology class and 36 students ended up in the no-technology class. Each of those groups was split up into two gender-specific classes, for a total of four classes. Each class took an equivalent pretest, which was scored out of a possible 24 points. Each class then met for 8 weeks daily, for about 48 minutes each day. After the course concluded, every student took an equivalent posttest (different than the pretest).

In this study, a good deal of consideration was taken to ensure internal and external validity. First, the pretest and posttest were designed to be identical in complexity. However, since they used different notes, a student could not use knowledge gained from the first test to do better on the second test. Second, giving a pretest to everybody and seeing non-significant differences in the score ensured that the two different treatment groups were starting on equal footing. This helps eliminate relevant individual differences. Next, separating groups based on gender helped eliminate potential differences due to gender. Next, the study used two different people to grade the tests in order to help with reliability and impartiality. Additionally, the groups were randomly assigned so as to eliminate any systematic differences between the technology and no technology groups. One questions I had (that wasn’t addressed in the study) was a concern over how the 83 students in the study were chosen. Although those 83 students were randomly distributed, it is important to know how the pool was selected, as self-selected students that want to improve their sight-reading can contain bias as well. This affects the external validity of the study since we do not know this information.

Results

The data obtained by the study was reported in a clear manner and analyzed using the appropriate descriptive and inferential statistics. Below is a table that summarizes the reported values for the descriptive statistics applied to the data collected.

|  |  |  |  |
| --- | --- | --- | --- |
|  | N | Mean | Standard Deviation |
| Pretest (overall) | 83 | 5.77 | 3.71 |
| Pretest (technology) | 47 | 5.72 | ? |
| Pretest (no technology) | 36 | 5.83 | ? |
| Pretest (piano) | 21 | ? | ? |
| Pretest (no piano) | 62 | ? | ? |
| Posttest (overall) | 83 | 14.02 | 5.38 |
| Posttest (technology) | 47 | 8.53\* | ? |
| Posttest (no technology) | 36 | 8.11\* | ? |
| Posttest (piano) | 21 | 16.52 | ? |
| Posttest (no piano) | 62 | 13.18 | ? |

As can be seen in the above table, not all data was reported in the study. If a value was not reported, a ? appears in the table. Of special note are the mean values reported for the posttest technology and no technology groups, designated with a \*. These values are clearly incorrect, perhaps it is a typo in the study. In the table shown in the study, we can see that the values are around 14, and would have to be if they give an overall mean of 14.02.

For inferential statistics, the groups were compared using appropriate t-tests and data was reported as significantly different or not along with appropriate t values, degrees of freedom, and probability. According to the report, there was no significant difference between the different groups (technology vs no technology, piano vs no piano) on the pretest (t=.13, 81 df, p= .89). The posttest scores were significantly higher overall than the pretest scores (t=t=12.86, 82 df, p=< .0001). The technology group scored significantly higher on the posttest than the pretest (t=9.77, 46 df, p< .0001) and the no technology group scored significantly higher on the posttest than the pretest (t=8.24, 35 df, p< .0001). Between the technology and no-technology groups, there was no significant difference between the difference of pretest and posttest scores. (t=-.32, 81 df, p= .75). Posttest scores were significantly higher among piano versus non-piano students (t=2.54, 81 df, p= .01). There was no significant difference for pretest and posttest scores for students with previous choral experience versus those without. Much of the specific data was not reported in this last case and so not included in the above table.

My overall opinion is that most of the statistics were reported in a clear way. There was an error for some values (as mentioned above), and some of the concrete values were not reported (specific choral vs non-choral data), but for the most part, it was reported thoroughly.

Discussion

The overall takeaway from the study are the following three points.

1. Beginning choir students in the study benefited their sight-reading skills significantly by taking an 8-week instruction course.
2. Both technology and non-technology instructional courses in the study seemed to be equally effective in building sight-reading skills.
3. Students with prior piano knowledge in the study benefited their sight-reading skills significantly more than students with no prior piano knowledge by taking an 8-week instruction course.

Some ideas of further study are presented in the article. Perhaps a good way to improve this study would be to examine more practical differences between technology and no technology courses for sight-reading. For example, how does student satisfaction compare with technology and no technology courses? How much time does it save teachers in teaching these courses? If students enjoy using technology versus no technology when learning sight-reading, this is an important factor since it can motivate students to make their sight-reading improvement more of a priority (or help make teachers lives easier while using technology). In other words, a good improvement (or follow up study) should be to examine other potential advantages and/or disadvantages of using technology besides just “sight-reading skills gained”, as was done in this study. This was touched on in the final discussion in the article.