



AR IN MUSIC EDUCATION

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ABSTRACT

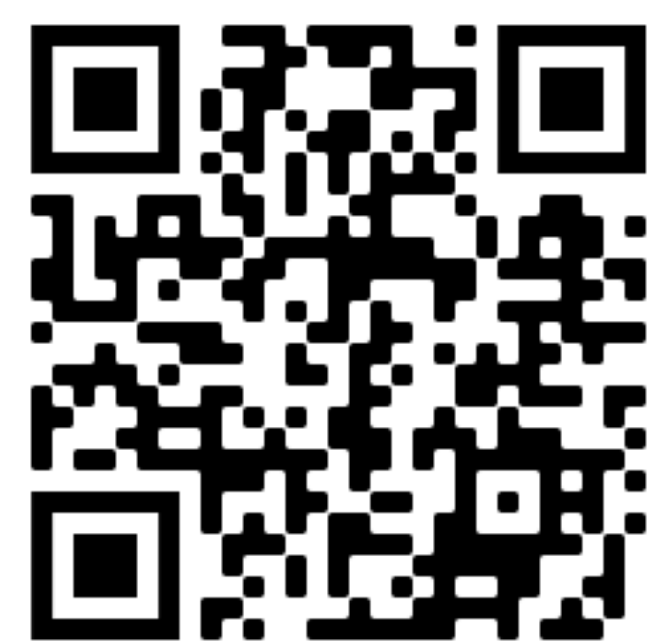
Over the past couple of years, more and more schools have continuously cut funding for music programs around the country. This increase in budget cuts can be seen affecting students by not allowing students at a young age to be creative, which discourages them as they continue their education to think within boundaries consistently. The decline in music education was most drastic between 2003 - 2004 where there was a 46% decline in music programs across the country (Peasley, Ryan). As programs continue to get cut, this decline can be seen to be drastic, especially in states such as Oklahoma (Fine 2019); our goal was to use the latest technology, specifically augmented reality, to create a free and interactive learning environment to bring back that ability to teach students of all ages music with no cost to them.

INTRODUCTION

- Augmented reality is still a fairly new technology
- Integration of augmented reality into a learning environment has proven to create a better learning experience for students in comparison to traditional learning (Chu 2019)
 - Allows students to create their own understandings
 - Students are allowed to learn at a personalized pace
 - Personalized curriculum
- Allows students to begin teaching students musical education again at no extra cost
 - No extra cost of music books and expensive equipment
 - Increase creativity
 - Pushes innovation on the newest technology

METHODS

- Created a free application to use on all smart devices with camera use for AR implementation
- Used Unity and Visual Studio to program the app
- Vuforia, an image targeting library for unity, allowed us to utilize a physical reference marker (QR code) detected by the app to triangulate note locations (Figure 2)
- Made the app easy to use by creating a simple layout and setting up a tutorial (Figure 3)
- Created lessons for students to begin learning how to play the piano (Figure 1)



<https://www.youtube.com/watch?v=qHhEpsr33WA>

Figure 1: Video demo of the app that



Figure 2: QR code placement on piano

CONCLUSION

- Working with AR proved to be a difficult challenge, however, we were able to produce a program that can teach simple songs to the user (See QR code demonstration).
- As new AR equipment is introduced and becomes more accessible, applications such as these will only become more relevant.
- Future development could include the introduction of a MIDI file reader to allow the user to insert their own songs, polishing the animations and design, and integration into various AR devices.

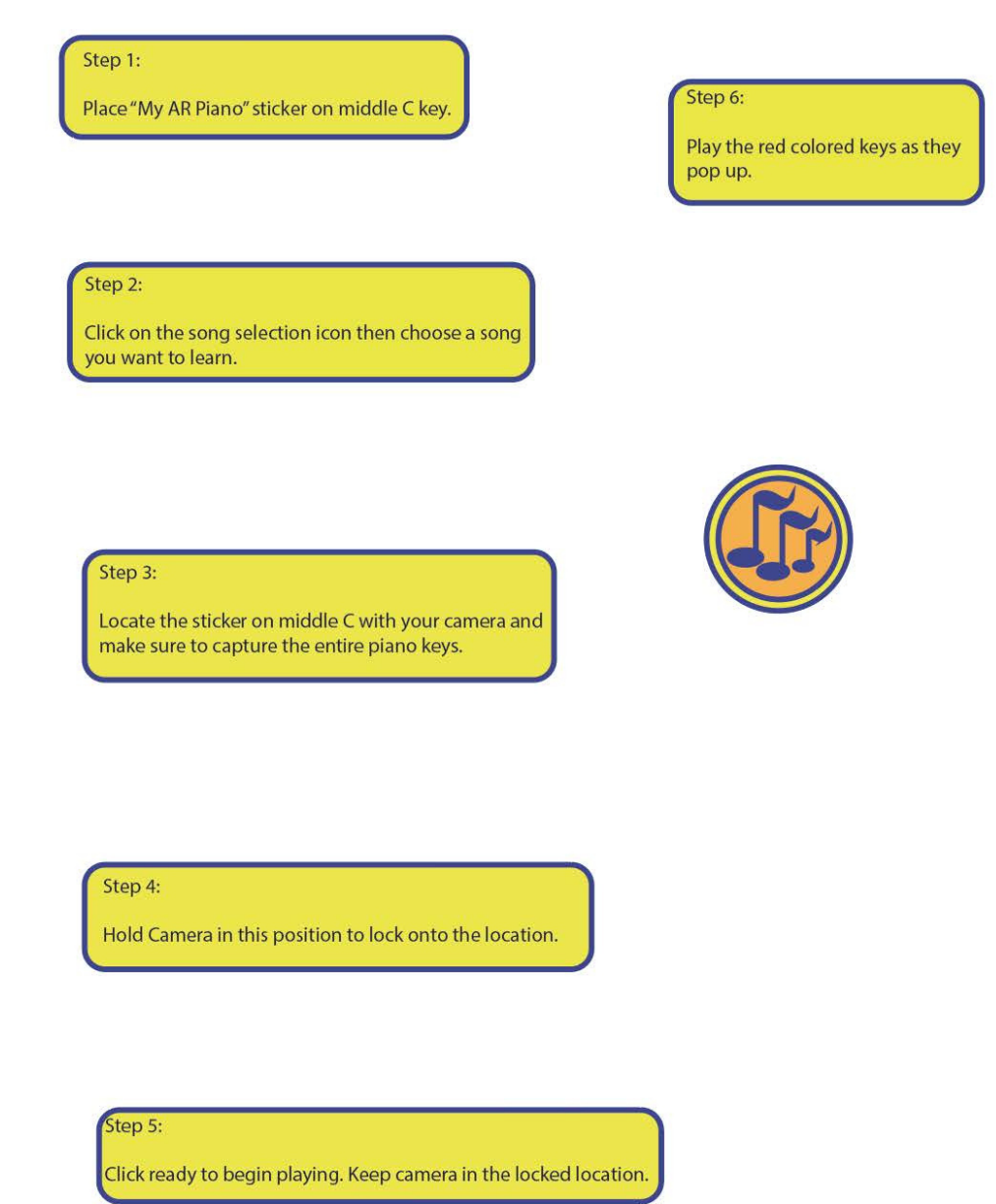


Figure 3: Tutorial within app

ACKNOWLEDGEMENT

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LITERATURE CITED

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AUTHOR CONTRIBUTIONS

Nick and Joseph worked on creating the application and creating the code. Alex B. created the designs. Alex Z. created the poster and researched target audience.