

## **Financial Literacy Virtual Voice Assistant**

A Technical Report submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science  
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Bachelor of Science, School of Engineering

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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My technical project is the creation of a voice virtual assistant in the education sector in order to better teach children financial literacy. This is moderately connected to my STS topic of exploring artificial intelligence because the virtual assistant will utilize AI in order to determine and tailor the level of difficulty of the lesson, as well as how to respond to the student's answers or questions. This will be an extremely relevant and interesting topic to explore, as AI will continually see evermore usage in our society. Education is merely one of hundreds of sectors and industries that has been, and will be continue to be transformed by AI in the coming decades.

Financial Literacy is an extremely important set of skills to learn from a young age, as it can be a precursor to financial well-being in adulthood. Teaching our youth financial literacy gives them the foundation to make better decisions with their money in the future, and will help them avoid financial struggles such as saving and investing, which plague many of America's adults today. This is imperative because financial well-being has been associated to serious health issues linked with chronic stress – whether they be mental battles such as depression, anxiety, and emotional health, or even physical ailments such as elevated blood pressure and immune functionality (Choi, 2009). Even though we have all heard the phrase “money cannot buy happiness” – it does not necessarily mean that the antithesis is untrue. The power of financial freedom goes far beyond one's ‘buying power’ – it can have serious implications on one's well-being.

Currently, only about half of K-12 teachers report teaching some form of financial literacy to their students (Godsted, 2007). As highlighted previously, it is extremely important to be teaching our youth about financial literacy. Having only half of our teachers educating students on the topic simply isn't enough. The quality of these financial literacy lessons is also in question, as there is very little uniformity as to the method of teaching our youth financial

literacy, with either unclear or nonexistent standards. In fact, the lack of specific academic standards pertaining to financial literacy education was also noted as a leading obstacle to conducting these lessons (Godsted, 2007). Teaching our K-12 children financial literacy does not have to be difficult, mundane or boring, but rather can be done in a fun and engaging way. This is our goal with the financial literacy voice assistant. Our team wants to employ artificial intelligence in order to make the voice assistant engaging and adaptable to the specific needs of each student.

Our goals for this project are twofold: to create a financial literacy lesson plan for K-12 students, and to build a voice assistant through which we can teach the lesson plan. Creating the voice assistant will be the more difficult task, as a complex user interface will need to be designed, as well as the AI necessary (decision making) for the voice assistant in order to properly conduct the lesson plan, which includes gauging the proper difficulty level and responding to questions and answers. The creation of the lesson plan will be less difficult, but will require extensive research on current lesson plans, as well as creating the dialogue framework necessary for each lesson plan. This process will have to be replicated to create multiple lessons within each difficulty category, which has been broken down into 3 groups of grades: K – 4<sup>th</sup>, 5<sup>th</sup> – 8<sup>th</sup>, 9<sup>th</sup> – 12<sup>th</sup>. The author's responsibilities include determining the proper cloud-based service, studying and formulating engaging voice-oriented lesson plans, and creating a flow process diagram for the use of the virtual assistant.